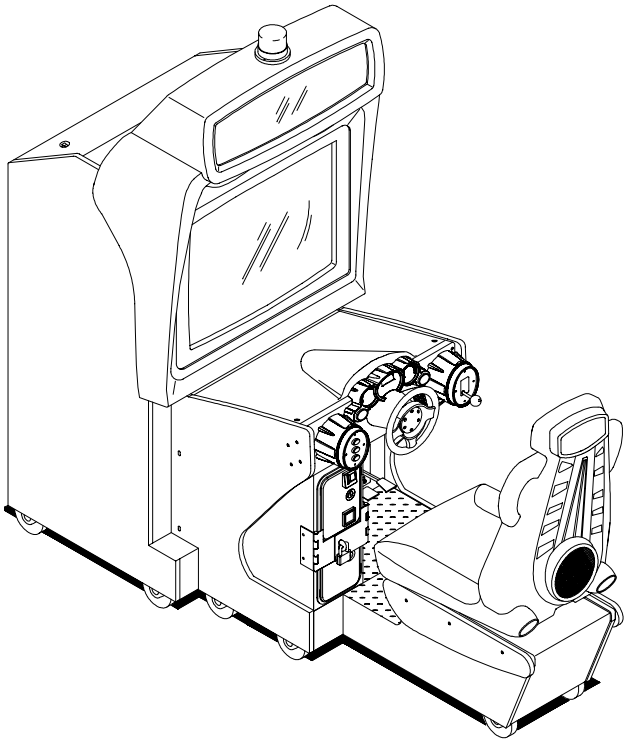
MIDWAY
AMUSEMENT GAMES, LLC

JANUARY 2000
16-40077-101

Cruis'n Exotica™



39" Dedicated Game Operations Manual

Manual Includes

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

DECLARATION OF CONFORMITY

MIDWAY AMUSEMENT GAMES, LLC

3401 N. CALIFORNIA AVE.
CHICAGO, IL 60618
U.S.A.

WE, HEREBY DECLARE UNDER SOLE RESPONSIBILITY THAT

THE MODEL: ***'CRUISIN' EXOTICA 39" VIDEO' 40277, 40377, 40477, 40777, 40977, 41077, 41177, 41277, 41377, 41477, 41877, 42077, 42177, 42277, 42377, 47177, 47277***

TO WHICH THIS DECLARATION RELATES IS IN CONFORMITY WITH THE FOLLOWING EUROPEAN PRODUCT SAFETY DIRECTIVES:

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE
(89/336/EEC AND AMENDMENTS 91/C162/08, 92/31/EEC,93/68/EEC)

ELECTRICAL EQUIPMENT DESIGNED FOR USE WITHIN CERTAIN VOLTAGE LIMITS DIRECTIVE
(73/336/EEC AND AMENDMENTS 88/C168/02, 92/C210/01, 93/68/EEC,94/C199/03, 95/C214/02)

AS IS VERIFIED BY COMPLIANCE WITH THE FOLLOWING STANDARDS:

EN55014: 1993	**EN61000-4-2: 1995**
IEC 801-3: 1984 (EN61000-4-3)	**EN61000-4-4: 1995**
EN61000-4-5: 1995	**EN335-1: 1995**
IEC 335-2-82 (DRAFT)	

Date issued: **JANUARY 24, 2000**

DAN GALARDE

CORPORATE V.P. OF QUALITY

QUICK REFERENCE CABINET LINKING INSTRUCTIONS

To link *two* cabinets, use the crossover coupler included in the spare parts bag. Connect the factory installed linking cable to the coupler and follow the instructions for "Wiring Modifications and Software Setup" located below starting with step #7.

To link *three or more* cabinets, use a standard 10 base-T ethernet hub and follow all of the instructions for "Wiring Modifications and Software Setup" located below.

CABINET ARRAYS

To create a Video Game Machine (VGM) Array, join the cabinets together. Each VGM comes equipped with the necessary hardware to connect cabinets and provide maximum stability. Hardware is located in the spare parts bag inside the cash box.

To join cabinets, remove the flat-head carriage bolts from the top and rear of adjacent cabinet sides. Position cabinets next to one another and adjust the leg levelers until all holes are aligned. Insert long carriage bolts through the holes in both cabinets, and then fasten in place with the nuts provided.

NETWORK CONSIDERATIONS

Each VGM comes complete with a factory installed network cable. Optionally, a hub can be installed and located remotely to monitor network activity. Cables up to 328 ft., or 100 meters, in length may be used in conjunction with the hub provided they are Category 3 or higher, 100 ohm unshielded twisted pair communications grade wiring. Standard telephone cables are not sufficient for this application and should not be used.

Take care to protect exposed wiring from player foot traffic, cleaning crews, service personnel, etc. Use approved conduit or wire channels to support cables. Please note that modular connectors do not have strain relief.

Prevent linking cables from becoming damaged by avoiding sources of extreme heat or moisture, and high amounts of electrical energy like neon signs, fluorescent fixtures, two-way radios, cordless phones, power circuits, public address system wiring, etc.

Universal RJ-45 modular plugs are not numbered or coded in any way. *Clearly label all network connections to avoid confusing network cables with computer or telephone circuits.*

WIRING MODIFICATIONS AND SOFTWARE SETUP

1. Place the linking hub inside the base of a cabinet nearest the center of the array. Remember that the crossover couplers supplied with the game are *not* used when creating an array using the hub. Crossover couplers are only used to link two cabinets.

2. Unlock and remove the rear door from the cabinets selected to be part of the array. Inside the cabinet you will find a coil of linking cable with one end already attached to game electronics. Uncoil just enough of the cable to reach the hub, then recoil the rest of the cable and tie it in place. Repeat this procedure for each of the other cabinets. Do not reinstall the cabinet door(s) at this time.

3. Route the free end of each cable out through the notch located in the rear door opening and plug into any jack on the rear panel of the linking hub. Route the free end of the AC adapter for the hub and plug it into the 9VAC jack on the front panel of the hub. Now all of the cables can be connected to the hub.

4. Refer to the manufacturer's instructions in order to set the hub switches for *LNK* (link) and *X* (crossover) activity.

5. Fasten the hub to the bottom of the most central cabinet using a hook-and-loop type material. Orient the hub so that the indicator lights are visible and cable jacks are accessible.

6. Make sure excess cable is tied into a coil and that all cables are routed through the notch in the rear door. Connect the AC adapter for the hub and all line cords to AC power.

CAUTION: Do not connect or disconnect any cable to the game electronics or hub with the power turned on. Circuit disruptions may damage the game and void the warranty.

7. Switch on power and closely observe the screen for each cabinet during start up. Each automatically enters ATTRACT MODE if no errors are found. Refer to *Troubleshooting* in the operation manual if errors are detected.

8. Unlock the coin door for each cabinet to access the operator control buttons inside coin vault. Press and hold the TEST button to enter the menu system.
   - Check the EPROM, GUTS, and MAIN information at the bottom of each game's SELF TEST menu screen.
   - Verify linked games have compatible software versions. Newer versions may contain instructions previous versions do not, causing games to halt or reset at random.
   - Repeat this and all remaining steps for each linked cabinet.

9. Press the View 1 or View 2 button to select GAME OPTIONS. Press the ABORT button to activate this item. Set the CABINET #; keeping in mind that each cabinet must have its own individual and unique number. The first cabinet on the left is always cabinet 1, the second is cabinet 2, etc.

10. Select NETWORK TESTS then press the ABORT button to activate it. Observe all linked cabinets will be listed in this screen. Refer to Menu System descriptions in the manual for more details.

11. Select CONTROLS TESTS. Follow on-screen instructions to confirm proper control operation. Press and hold the TEST button to reset steering wheel and pedal travel limits.

12. Select SOUND TESTS. Confirm operation of all cabinet and seat speakers, and each amplifier.

13. Select MONITOR TESTS. Perform all tests and adjustments to ensure high quality video.

14. Close and lock the coin door, and reinstall and lock the rear door for each cabinet. Lower the leg levelers for each cabinet until the casters do not touch the floor and the cabinets are level. Lock the levelers in position by tightening the nuts provided.

NOTES

CRUIS'N EXOTICA™

S E C T I O N
O N E

Operation

	NOTICE: This manual is subject to change without notice. MIDWAY 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 Information Card. Include the Video Game Machine (*VGM*) serial number from the label on the rear of the cabinet. For your records, write the serial number in the manual. SERIAL NUMBER _____

SAFETY INSTRUCTIONS

The following safety instructions apply to operators and service personnel. Read these instructions before preparing the Video Game Machine (*VGM*) for play. Other safety instructions appear throughout this manual.

DEFINITIONS OF SAFETY TERMS

- **DANGER** indicates an imminent hazard. If you fail to avoid this hazard, it WILL cause death or serious injury.
- **WARNING** indicates a potential hazard. If you fail to avoid this hazard, it COULD cause death or serious injury.
- **CAUTION** indicates a potential hazard. If you fail to avoid this hazard, it MAY cause minor or moderate injury. CAUTION also alerts you about unsafe practices.
- **NOTICE** indicates information of special importance.

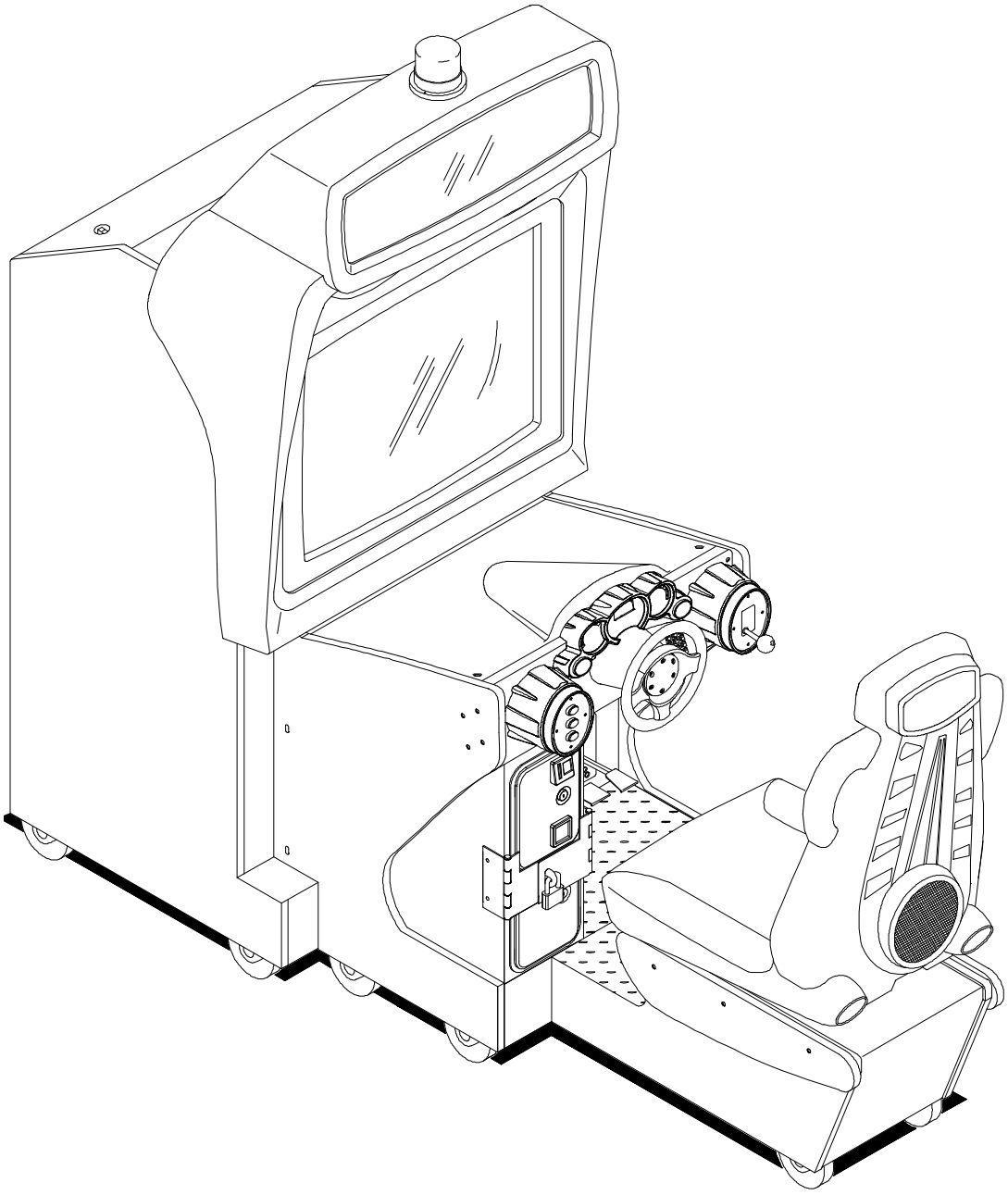
	WARNING: TRANSPORTING VIDEO GAME MACHINES (*VGM*). The *VGM* contains glass and fragile electronic components. Use appropriate care when transporting. Avoid rough handling when moving the VGM. Do not move with the power switched on.
	WARNING: DISCONNECT POWER. Always turn the power OFF and unplug the VGM before attempting service or adjustments unless otherwise instructed. Installing or repairing boards with the power switched on can damage components and void the warranty.
	WARNING: GROUND GAMES. Avoid electrical shocks! Do not plug in a VGM until you have inspected and properly grounded it. Only plug into a grounded, three-wire outlet. Do not use a “cheater” plug, or cut off the ground pin on the line cord.
	WARNING: AVOID ELECTRICAL SHOCKS. This VGM does not utilize an isolation transformer. Internal cabinet AC is not isolated from the external AC line.
	WARNING: 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.
	CAUTION: CHECK POWER SELECTOR, LAMP. Set the 115/230VAC selector on the power supply for the correct line voltage. Check the selector setting before switching on the VGM. Verify that the fluorescent lamp assembly is correct for the local line voltage.
	CAUTION: USE PROPER FUSE. Avoid electrical shock! Replacement fuses must be identically rated. Fuse voltage and current ratings must be identically rated to the original fuse.
	CAUTION: ATTACH CONNECTORS PROPERLY. Be sure board connectors mate properly. If connectors do not slip on easily, do not force them. A reversed connector may damage the VGM and void the warranty. Connector keys only allow a connector to fit one set of pins on a board.
	CAUTION: USE CARE WHEN SHIPPING HARD DISKS. The hard disk drive must be packed in an anti-static bag. When shipping the drive for repair or replacement, pack it in an approved container (P/N 08-8068). Do not stack or drop hard disk drives.

WARNING: HAZARD TO EPILEPTICS.

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 4.0 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 4.0 Amps		

Cabinet Statistics

Shipping Dimensions
Width 40" (101.6 cm)
Depth 97" (246.3 cm)
Height 86" (218.4 cm)

Shipping Weight (Approx.)
600Lbs (272kg) Main Cabinet
200Lbs (90kg) Control Cab.
125Lbs (57kg) Seat Assy.

Design Type
Upright Dedicated Video Game Machine with Steering Wheel Feedback

Game Characteristics

Player Variables
1 to 4 players per VGM (with Linking)
High Score Recognition
Suitable for All Ages (AAMA Certified)

Operator Variables
Coinage, Play Mode, Difficulty, Volume, Audits, Statistics

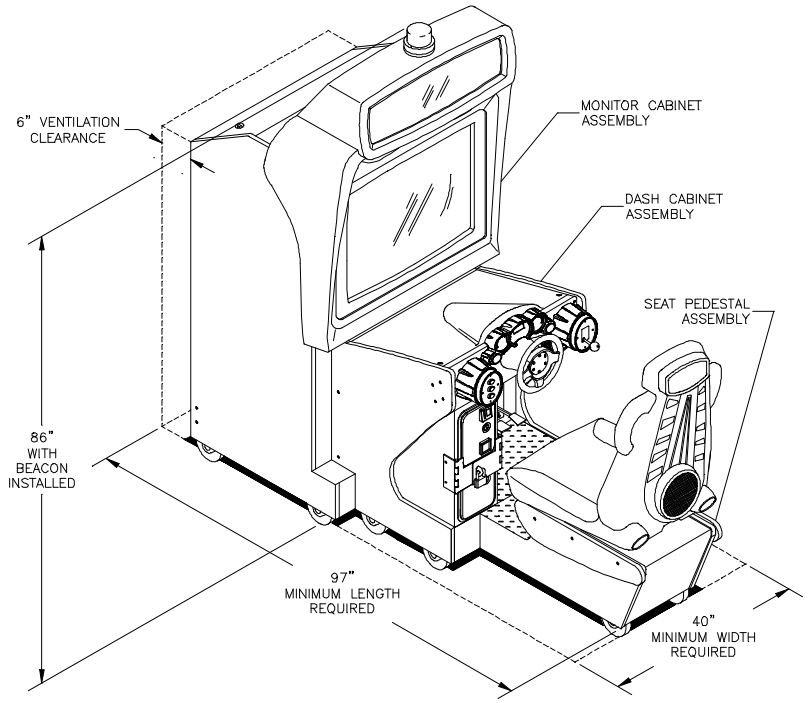
Diagnostics
Automatic Power-Up Self-Test
Manual Multi-Level Menu System

Equipment Characteristics

Video Display Monitor
Medium Resolution RGB
39” (99 cm) CRT

Audio System
Digital Stereo
5” (12.7 cm) Coaxial Full Range Speakers

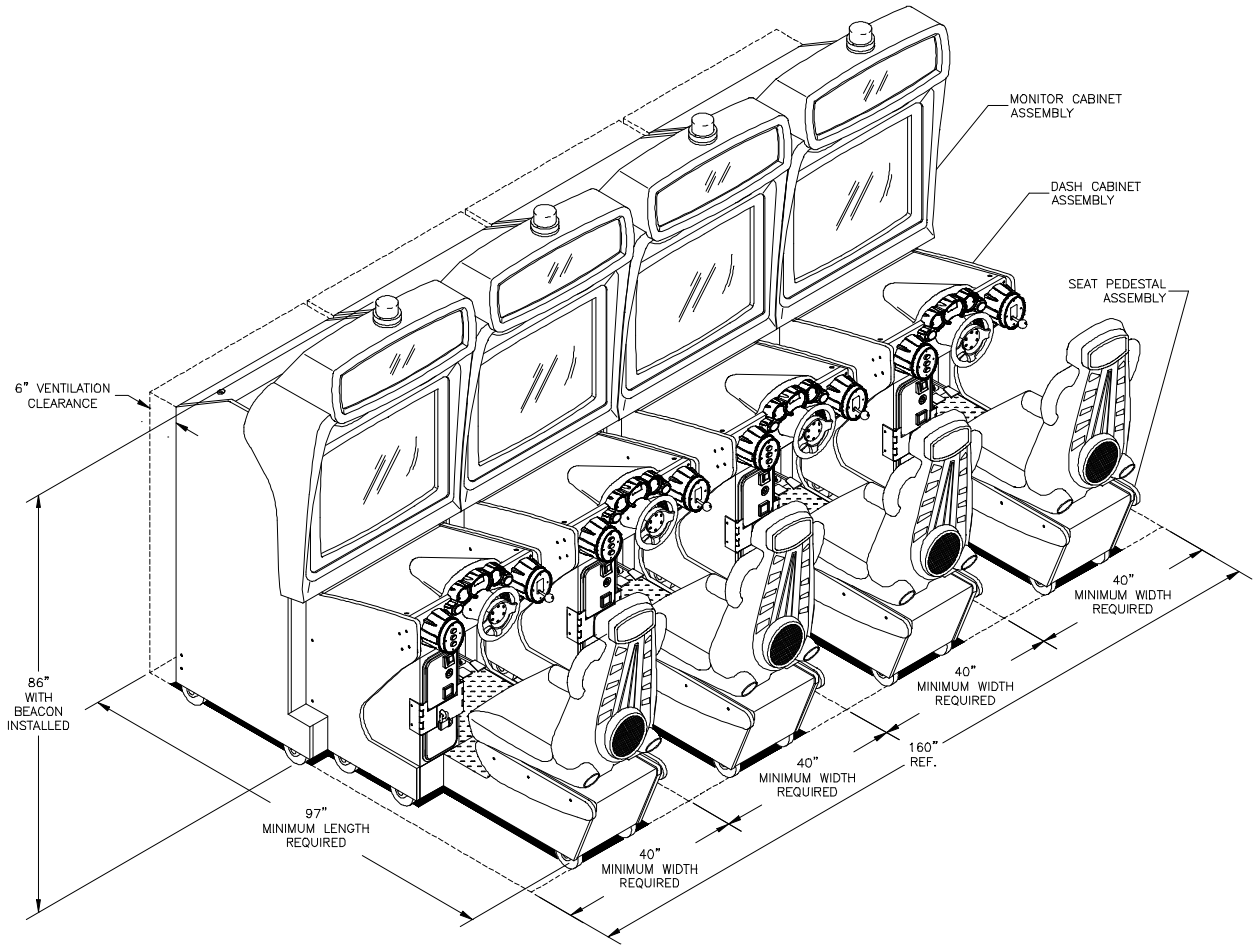
Currency Acceptors
2 Coin Mechanisms
Dollar Bill Validator Ready
Electronic Coin Acceptor Ready



PRODUCT CONFIGURATION

- **Stand Alone Video Game Machine**
  Each VGM is ready to play right out of the box. Operators may use the menu screens in the game menu system to determine some player variables in advance or leave the choices up to the players.

- **Linked Video Game Machines**
  Linking allows players to compete against each other on a single course. Operator menus are used the same way as in stand-alone VGMs. Crossover couplers and linking cables to connect two VGMs are factory installed. Use an optional 10 base-T ethernet hub to interconnect up to eight VGMs (two groups of four).



Video Game Machine Array

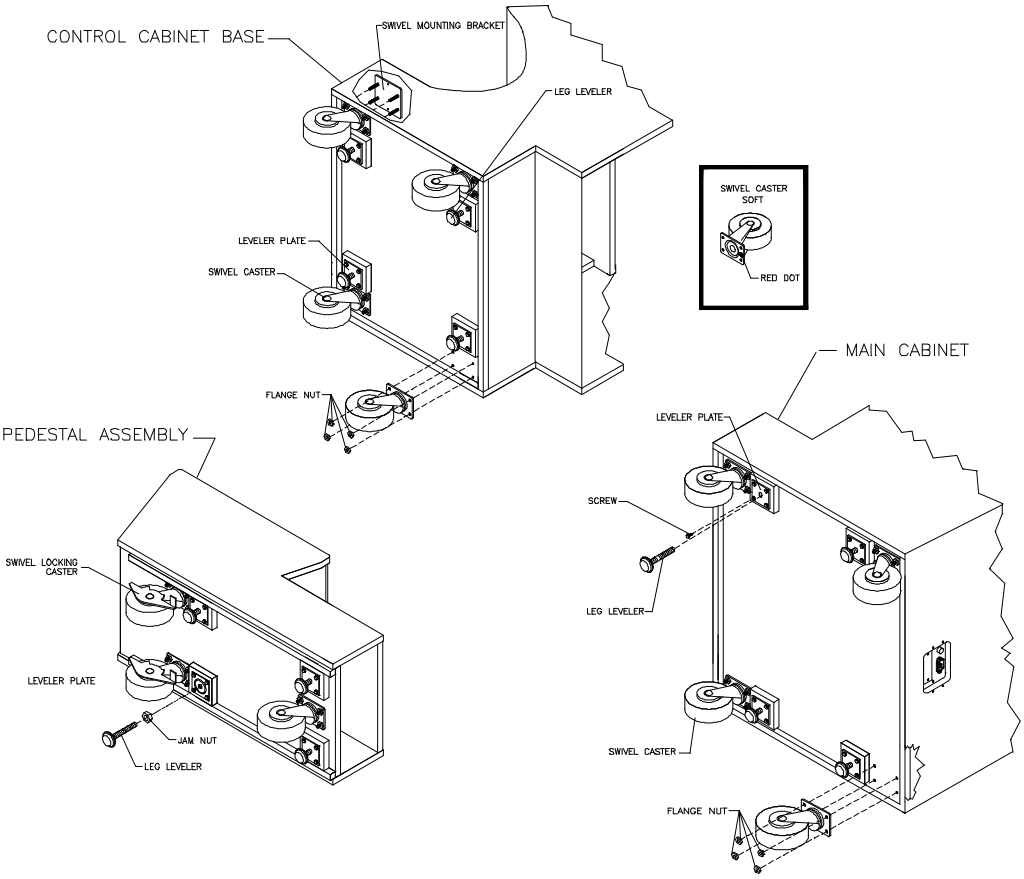
SET-UP

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

⚠	**WARNING** The cabinet is top heavy. Do not push against plastic parts during movement.

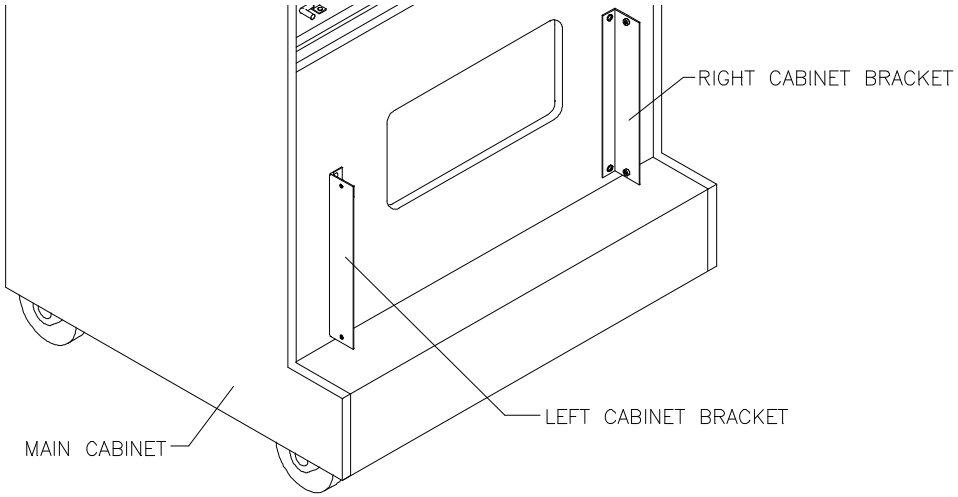
2. Remove the keys from the steering wheel. Unlock and open the rear door, and the coin and cash boxes. Electrical cords, mechanical components, and assorted spare parts are packed inside the cash box.

3. Install one nut onto each leg leveler. Tilt as needed to locate four threaded holes under both the main cabinet and control cabinet, and three holes under the pedestal. Install a leveler and nut into each hole. Do not tighten nuts at this time.



Location of Casters and Levelers

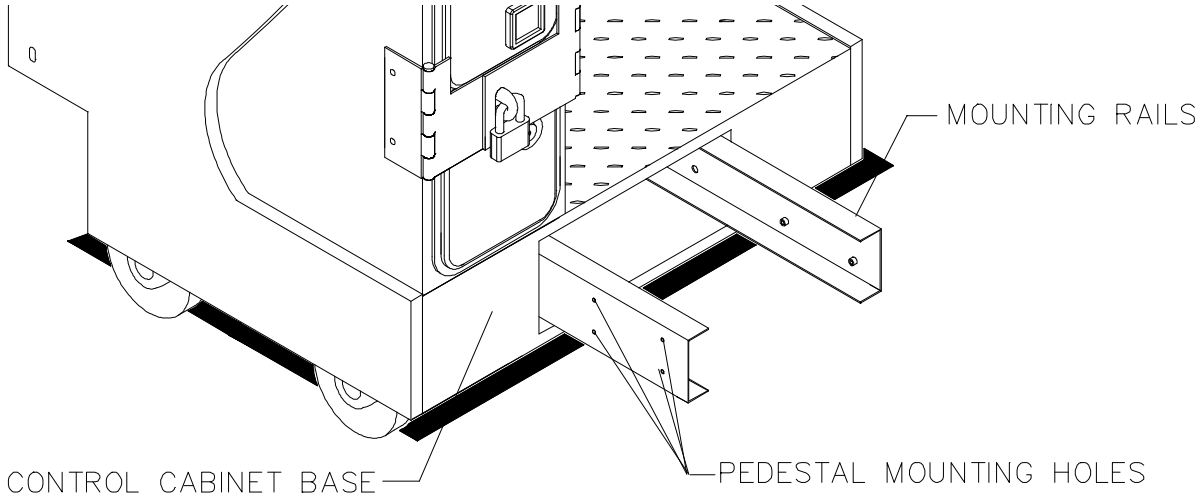
4. The main cabinet is mounted on four swivel casters. Roll the cabinet to its intended location, maintaining clearance between the cabinet and walls, drapes, other games or obstructions. Roll the control cabinet near the main cabinet, leaving enough space to attach the wiring harness. Mate each cable from the control cabinet to the main cabinet. Press firmly, but do not force, the keyed connectors to seat the contacts. Slide the control cabinet toward the main cabinet between the mounting brackets, guiding the harness and cables into the main cabinet.



Mounting Bracket Location

5. Lower and adjust each leg leveler on the control cabinet until it is stable and level. Adjust the levelers until the bottoms of both pieces are flush and parallel with each other. Inspect for binding or pinched wires. Align the bracket holes with the mounting holes in the base of the control cabinet. Insert and firmly tighten the remaining fasteners to attach the two pieces together as a single unit.

6. The pedestal assembly mounting rails are shipped bolted to the inside of the control cabinet. Remove all of the ¼ -20 hex-head bolts used to fasten the rails inside the cabinet and set aside. Individually pull each rail out of the cabinet, flip it end for end, and reinsert it. See diagram for proper placement. Fasten the rail to the inside of the control cabinet with the bolts until finger tight. Do not tighten these bolts at this time, as some movement is required in the mounting rails to align holes with pedestal assembly.



Location of Pedestal Assembly Mounting Holes

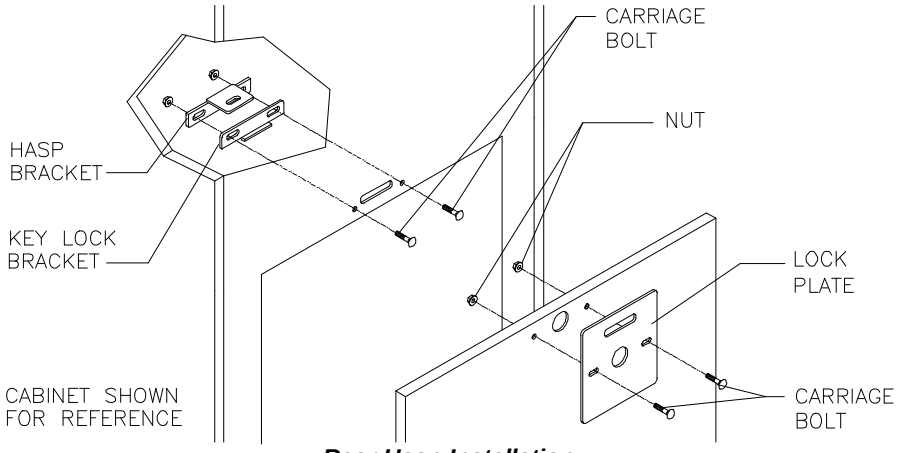
7. Roll the pedestal section near the control cabinet, leaving enough space to attach the wiring harness. Mate cables between the pedestal and the control cabinet. Press firmly, but do not force, the keyed connectors to seat the contacts. Ensure no wires are pinched during pedestal attachment.

8. Align the opening in the pedestal with the ends of the rails. Slide the pedestal forward onto extended mounting rails and align the holes. Attach pedestal assembly using 1/4-20 tamper resistant screws and large flat washers. A T27 wrench is included with the spare parts to tighten these screws firmly. Tighten the hex head bolts after the tamper resistant screws have been tightened.

9. Lower and adjust each leg leveler until the pedestal section is stable and level. Adjust the levelers until the bottoms of *all* pieces are flush and parallel with each other. Inspect for binding or pinched wires. Insert and firmly tighten the remaining fasteners to attach the two pieces together as a single unit.

10. An extra padlock may be installed to secure the rear door. A hasp is located in the spare parts bag. Remove the two lock bracket nuts from inside the cabinet, above the rear door opening. Slide the hasp bracket onto the bolts so that it protrudes from the hole in back of the cabinet, then reinstall nuts.

11. Modify the lock plate at the top of the rear door. Remove the bolts and nuts from the lock plate, then rotate the plate so that the slot will be above the door. Reinstall the bolts and nuts and tighten firmly.

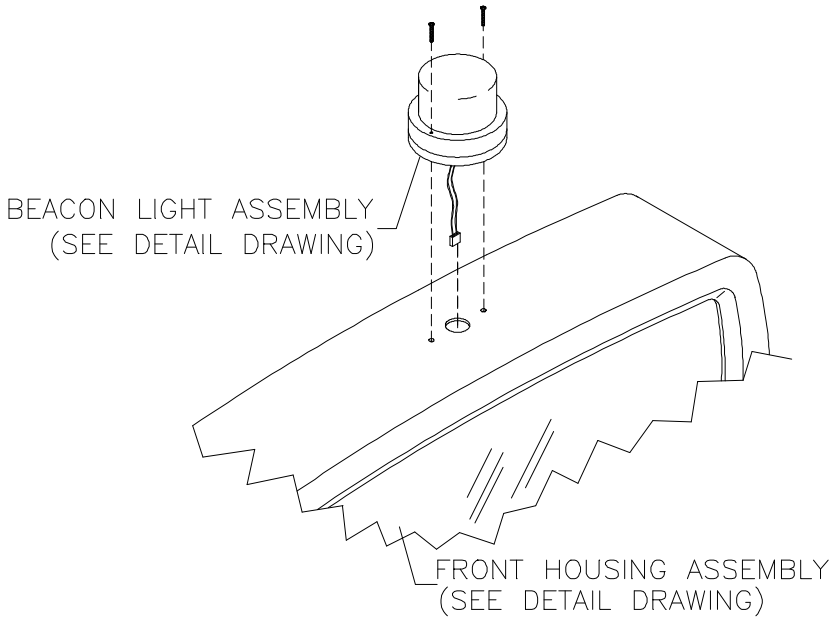


Rear Hasp Installation

12. Reinstall the rear door onto the cabinet and close it. Lock the rear door and remove the key. If required, install the extra padlock through the hasp at this time. Install the screws at the top and sides of the rear door and tighten snugly. Leave the remaining doors open at this time.

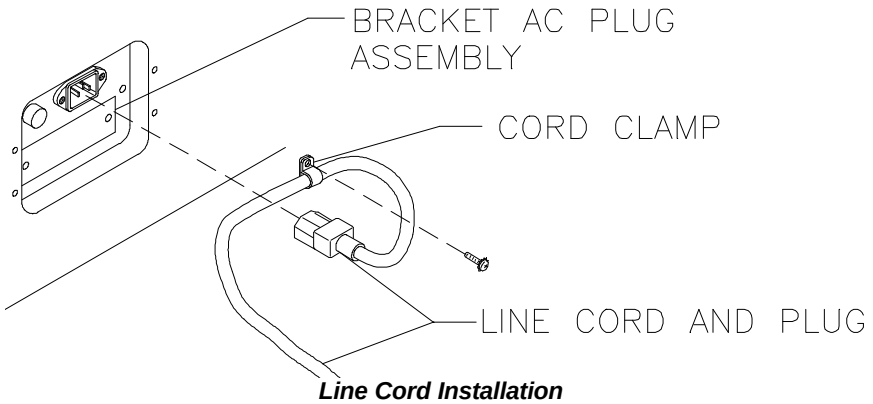
13. Install the blue beacon light. The beacon light and required mounting hardware is shipped inside the coin box with the spare parts. Mate the cable connector from the beacon light to the main cabinet wiring. Press firmly, but do not force, the keyed connectors to seat the contacts. Align the light with the pre-drilled holes along the topside of the marquee and secure in place with the hardware supplied.

	NOTICE Only install the beacon light once the 39" game cabinet is situated in the *permanent* intended location. The 39" game cabinet will not fit through the average doorway once the beacon light is installed due to an overall height dimension increase. Remove the beacon light whenever the cabinet is transported or moved to another location.



Beacon Light Installation

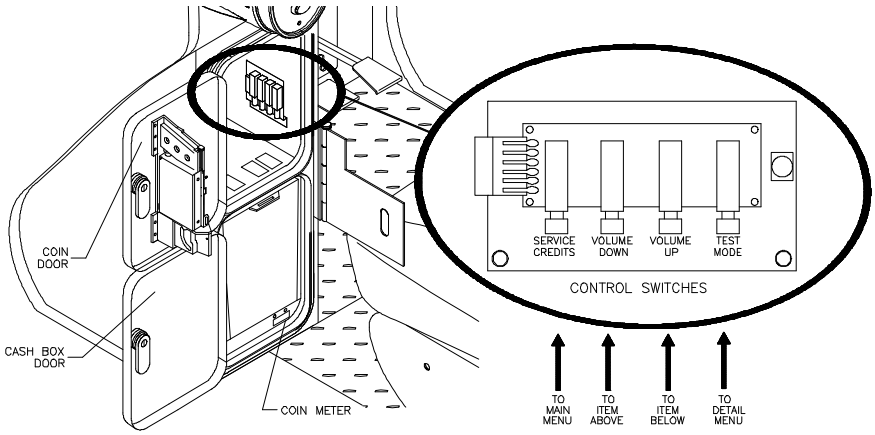
14. The power cord is packed in with the spare parts. Insert a portion of the line cord in the cord clamp leaving enough slack for the cord. Match the holes on the IEC plug with the prongs in the receptacle and push firmly to seat the line cord.



Line Cord Installation

15. Plug the game into a grounded (3-terminal) AC wall outlet. Switch on power to the game using the *ON/OFF* switch located on the upper left top of the cabinet (when viewed from the player's position). The game will power up and begin its self test. If no errors are found, the game will automatically enter the attract mode of operation (scenes and sounds from typical races, player's scores, messages, etc.).

16. Open the coin door. Press and hold the *Begin Test* button on the operator control switch panel to enter the menu system. Wait until the Main Menu screen appears on the monitor.



Typical Coin Door Switch Location

17. Follow on-screen instructions to select Diagnostics, then choose SWITCH TEST. Follow the on-screen instructions to verify that each of the controls is operational. If no errors are found, the controls should function well.

18. Return to the Diagnostics screen, then choose MOTION TEST. Follow the on-screen instructions to verify that motion seat is operational. If no errors are found, the seat should function well.

19. Return to the Diagnostics screen, then choose SOUND BOARD TEST. Follow the on-screen instructions to verify that each of the speakers is operational. If no errors are found, the audio should function well.

20. Return to the Diagnostics screen, then choose STEERING WHEEL TEST. Follow the on-screen instructions to verify the presence of steering resistance. If no errors are found, the aim will be good.

21. Return to the Main Menu screen, then choose CALIBRATE CONTROLS. Follow the on-screen instructions to set steering limits. If no errors are found, the controls will have the maximum accuracy.

22. Return to the Main Menu screen, and then choose EXIT. The game will automatically enter its "attract" mode of operation (scenes and sounds from typical races, player's scores, messages, etc.).

23. Insert currency or tokens and play a game. Change the volume and make any other adjustments. Close and lock all open doors. Tighten the leveler nuts and engage the caster locks.

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 and wipe the viewing glass. ***Do not apply the cleaner directly on the glass!*** Liquid could drip down into switch or control circuits and cause erratic game operation.

- **Player Controls**
  Use plastic-safe, non-abrasive cleaners to avoid damage. Apply cleaner to a clean cloth or sponge and wipe the player controls. ***Do not apply the cleaner directly on the controls!***

- **Cabinet and Seat**
  Use plastic-safe, non-abrasive cleaners to avoid damage. Apply cleaner to a clean cloth or sponge and wipe the seat or cabinet. ***Do not apply cleaner directly on artwork or cabinet****!*

GAME FEATURES

CRUIS'N EXOTICA™ ships configured for one-player game play. Up to four cabinets may be linked to promote player competition.

Cruis'n Exotica™ is the latest, most thrilling and adventurous driving game in the Cruis'n™ video game series. Players can select tracks located in nearly a dozen exotic locales around the globe. From Tibet to Atlantis, Mars to Hong Kong, it is every player's goal to rack up high scores and mileage points.

Speeding on their way toward a first place finish, drivers listen to cool tunes on the radio as they pass palms swaying in the breeze, 3-Dimensional animals cavorting roadside, and a variety of shortcuts hidden along the way. A player's combined speed and skill virtually assure a place in the winner's circle.

Player incentives, like free games for top speeds and distance, are sure to captivate players and ensure many trips around the track. A player finishing in first place soon discovers they have been whisked away on a free trip to an exotic locale. (Player incentives are Operator Optional and enabled at the Operator's discretion)

For added excitement the dashboard now features a keypad. Player's are encouraged to maintain a personal access code and to use the keypad to recall player statistics. Player statistics record mileage, win-to-loss ratio and high scores. As soon as the personal access code is entered, the stored player name and information is instantly recalled and displayed onscreen.

STARTING UP

Each time power is switched on or restored to the game machine, the system enters Start-up Tests. A "rug" pattern appears on the CRT screen. When the "rug" pattern ends, the screen shows a CPU Board map. Bad ICs are indicated in red, good ICs are in green. The software revision level is shown at the top of the screen.

A status screen to report on network activity will appear for about ten seconds. This screen is used to verify and troubleshoot connections on an array of cabinets.

The system enters Attract Mode once it passes all power-up tests. The Attract Mode screen will cycle endlessly and display a variety of scenes and sounds from a typical race on any given track. The system does not exit Attract Mode until the desired amount of coins or tokens is inserted and game play commences.

NOTE: An error message appears on screen and the game does not enter start up if an error is detected during the Start-Up Test. Record any messages before attempting to service the game.

GAME RULES AND OBJECTIVES

The game is configured for one-player game play, but up to four cabinets may be linked at one time to promote multiple player competition. To enter Game Mode, individual player(s) must insert the required amount of currency or tokens, press the Start button, and select a car and track. The main objective of the game is to earn top ranking against other drivers.

PLAYER CONTROLS

- **Start button**
  The start button is used to begin game play or to select certain features before a race.

- **Radio button**
  The radio button allows the player to turn radio sounds on and off, and to change stations.

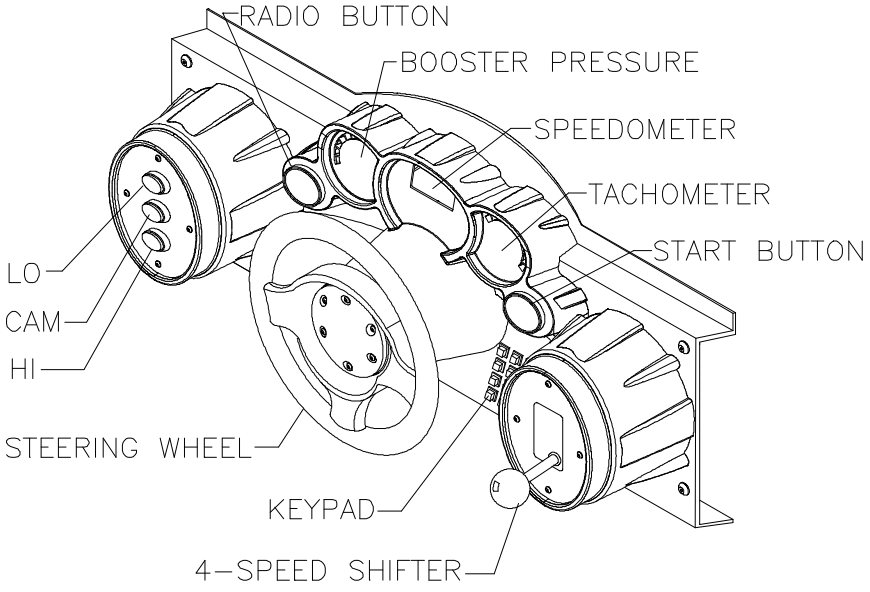
- **Lo button**
  This button shows the view from the driver's seat inside the vehicle. This is a normal driver view.

- **Cam button**
  This button shows the view from directly above. The player can see the front end of the vehicle.

- **Hi button**
  This button shows an aerial view of the vehicle. This is what a helicopter camera would see.

- **Pedals**
  The gas and brake pedals control vehicle speed. Press the gas pedal twice to create a power boost.

- **Seat Position Adjuster**
  The seat position may be changed at any time, even during competition. Pull the adjustment lever to the left while seated then slide the seat forward or backward. Release the lever to lock the seat into position.



Player Control Locations

GAME OPERATION

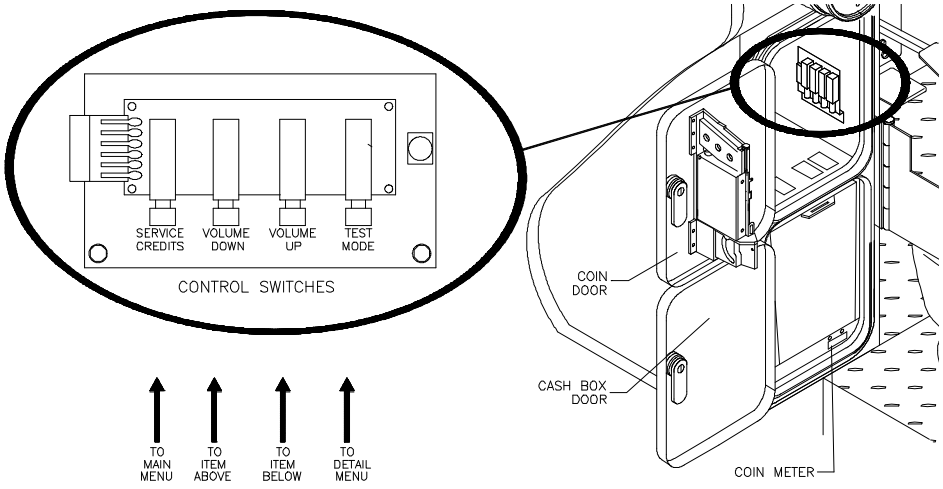
Access to the menu system for statistics, adjustments, and testing is secured by a keyed lock to prevent tampering. When the menu system is entered, on screen messages guide the operator through tasks.

CABINET SWITCHES

- The **ON/OFF SWITCH** is located on the top right side of the cabinet.
- The **REMOTE MONITOR ADJUSTMENTS** are located inside the coin vault. Use the monitor test screens with these controls to adjust the video image size, brightness, contrast, etc.
- The **SLAM TILT SWITCH** detects any forceful vibrations against the coin door. This eliminates pounding for free games. It is located on the inside of the coin door opening near the lock.
  NOTE: The Slam switch is not present on Dollar Bill Validator (DBV) ready doors**.**

CONTROL BUTTONS

- The **TEST BUTTON** activates the game Menu System. Press the Test button to access the Main Menu and select individual diagnostics, audits, utilities, etc.
- The **VOLUME UP BUTTON** moves up through the menu selections or adjustment items and raises the sound level in game play. A distinct sound accompanies the activation of this button.
- The **VOLUME DOWN BUTTON** can be used to move down through the menu selections or adjustment items and to lower the sound level in game play. A sound will accompany the activation of this button.
- The **SERVICE CREDIT BUTTON** is used to allot credits without affecting the game's bookkeeping total. This button is also used to get out of a menu selection or return to the main menu.



Typical Coin Door Switch Location

CRUIS'N EXOTICA™

S E C T I O N
TWO

Adjustment, Diagnostic & Audit Menus

MENU SYSTEM

WHAT IS THE MENU SYSTEM?

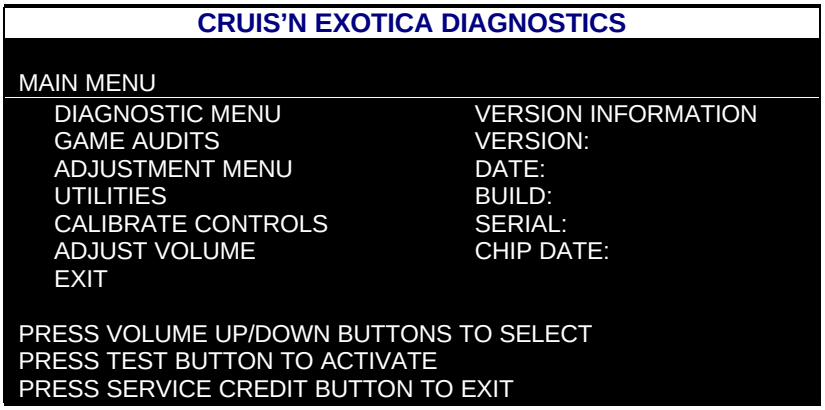
The game's Menu System is a series of auditing, game adjustments and diagnostic screens. You can easily access and apply these screens to optimize game performance. For instance…

- Use game audit screens to assess game performance.
- Use adjustment screens to help you customize game performance. For example, you can restore factory default game settings. You can also calibrate player controls for player accuracy.
- Use diagnostic screens to verify proper equipment operation.

ACCESSING THE MENU SYSTEM

Open the coin door. Locate and press the TEST MODE switch. The game system will exit game Attract Mode and enter Diagnostic Mode. The system runs a brief self-test, and then displays the Main Menu. The Main Menu is the opening screen of the Menu System.

Game audits, adjustments and diagnostics are line items on the Main Menu. Selecting an item opens its submenu. Every submenu presents various options that you may act upon.



Typical Main Menu Screen

MENU LAYOUT

Observe that each menu screen basically uses the same layout. The game ID, Serial Number, and Date of Manufacture will appear on most of the menu screens. These numbers will be helpful to factory personnel when referring to your game for parts or service.

- The block at the top of each screen displays the current menu title.
- Data, such as menu items and video reports, etc., appears in the center of the screen.
- Messages, for example explanations and active control functions, etc., appear at the bottom of the screen.

MENU NAVIGATION TOOLS

Use the operator control buttons located inside the coin door to navigate menus. Press the Volume Up or Volume Down buttons to scroll through the menu options. Notice the options sequentially become highlighted. Press the Test button to select a highlighted option and access the next menu level. Press the Service Credit button to exit from a menu option screen. **NOTE:** Only one highlighted option can be selected at a time.

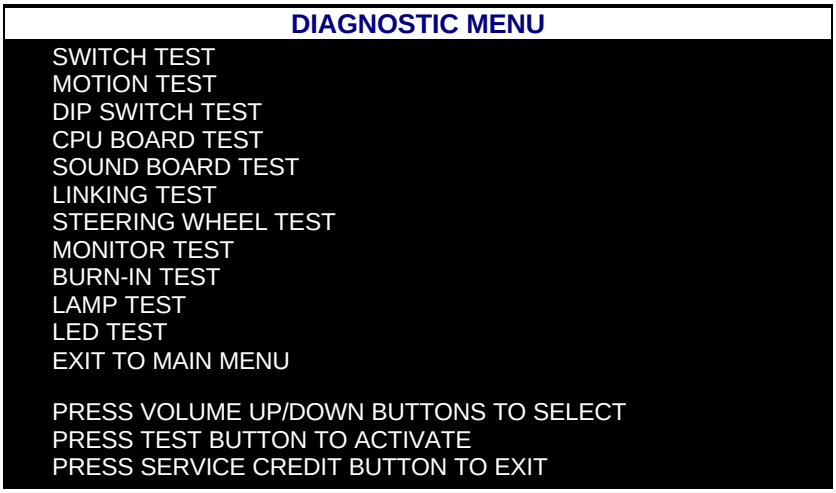
To return to play mode, press the Service Credit button while in the Main Menu screen.

Main Menu, *continued*
Diagnostic Menu

DIAGNOSTIC MENU

To verify the condition of the electrical and electronic hardware in the game, select DIAGNOSTIC MENU at the Main Menu. Diagnostic tests assist you in checking and adjusting the game's major systems. It is important to periodically run diagnostics to improve and maintain game performance and player satisfaction.

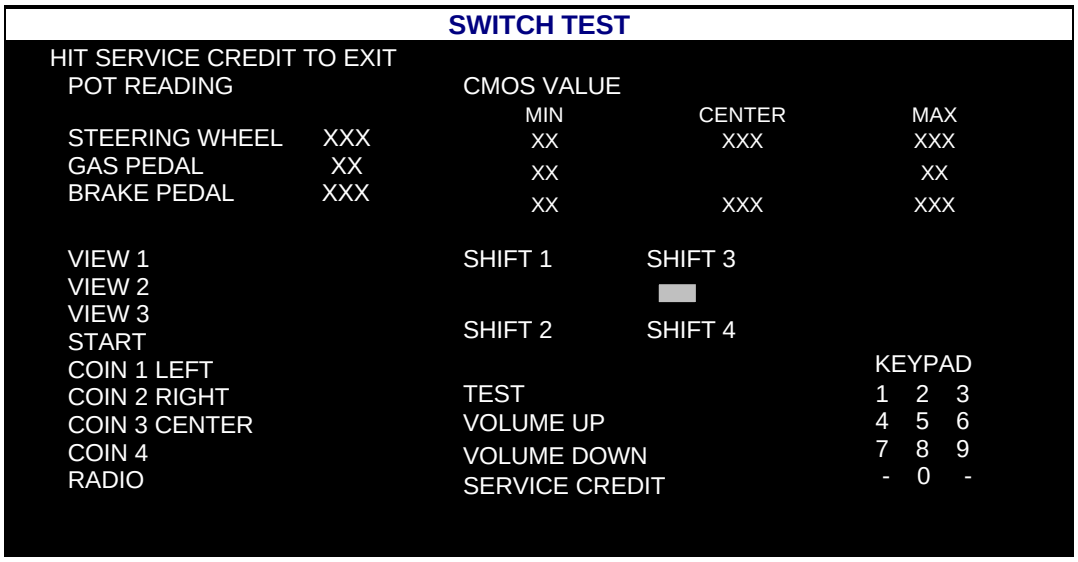
Use the Volume Up or Volume Down button to highlight the desired Diagnostic Menu option and press the Test button to enter. Use the Service Credit button at any time to exit the Diagnostics and return to the Main Menu. **NOTE:** *The Burn-In Test cannot be halted from the menus.*



Main Menu
Diagnostic Menu, *continued*
Switch Test Menu

SWITCH TEST

To verify proper operation of switch and button inputs in the game, select SWITCH TEST at the Main Menu.

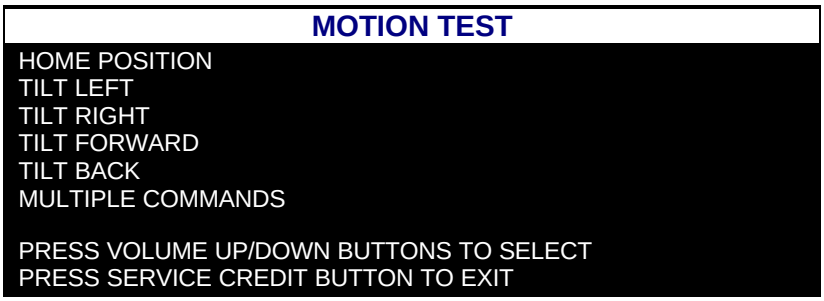


Use the Volume Up or Volume Down button to highlight the Switch Test option and press the Test button to access it. Press any switch on the control panel or coin door to cause the corresponding indicator on the screen to illuminate. Each illuminated square represents one completed switch circuit.

Main Menu
Diagnostic Menu, *continued*
Motion Test Menu

MOTION TEST
To verify functionality of motion seat controls, select MOTION TEST at the Main Menu.

Use the Volume Up or Volume Down button to highlight the Motion Test option and press the Test button to access it. Use the Service Credit button at any time to exit the Motion Test and return to the Main Menu.



HOME POSITION. The Home Position routine automatically centers the motion seat so that it is positioned upright and does not tilt at any angle.

TILT LEFT. The Tilt Left routine automatically tilts the motion seat at a left leaning angle.

TILT RIGHT. The Tilt Right routine automatically tilts the motion seat at a right leaning angle.

TILT FORWARD. The Tilt Forward routine automatically tilts the motion seat at a forward leaning angle.

TILT BACK. The Tilt Back routine automatically tilts the motion seat at a backward leaning angle.

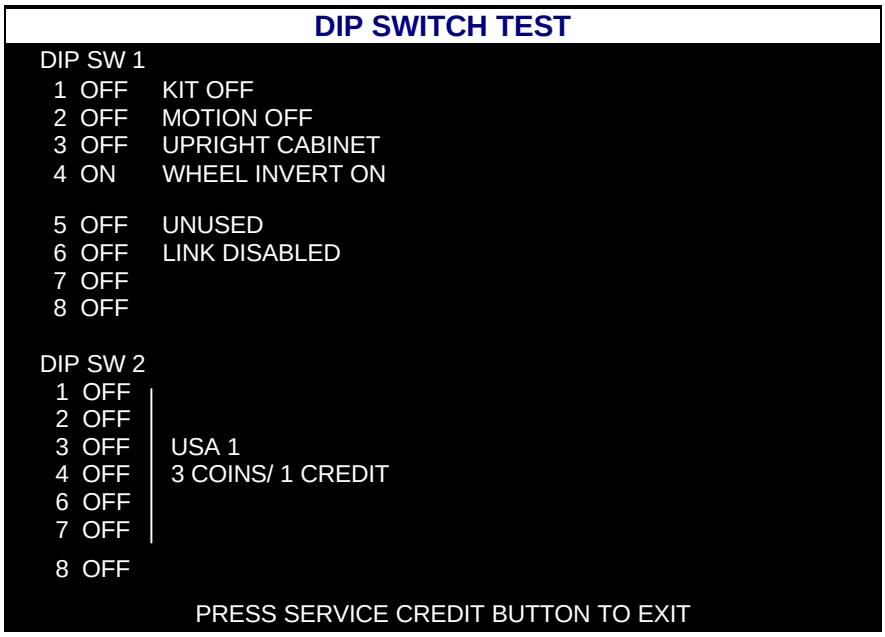
MULTIPLE COMMANDS. The Multiple Commands routine automatically cycles through and performs each of the other routines. Press the Service Credit button to stop the cycle and return to the Motion Test Menu

Main Menu
Diagnostic Menu, *continued*
DIP Switch Test

DIP SWITCH TEST
To verify the functionality of both 8-position DIP switches on the CPU Board, select DIP SWITCH TEST at the Main Menu. Observe immediate on-screen results by changing the setting on a switch.

Use the Volume Up or Volume Down button to highlight the DIP Switch Test option and press the Test button to access it. The current settings appear on-screen. Consult the table on the next page to determine if changes are required. The default switch positions are all OFF for standard operation.

A vertical bar next to the switch position column indicates a common switch function.



Function	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Dedicated * Kit	OFF ON							
Motion Disabled Motion Enabled		OFF ON						
Stand Up Style Cabinet Sit Down Style Cabinet			OFF ON					
Wheel Invert Disabled Wheel Invert Enabled				OFF ON				
Unused					OFF ON			
Link Disabled Link Enabled						OFF ON		
Linking I.D. Number Master (Game Number 1) Slave (Game Number 2) Slave (Game Number 3) Slave (Game Number 4)							OFF ON OFF ON	OFF OFF ON ON

Setting Table for DIP Switch 1

* DIP 1, Switch 1 must be set to the OFF position in order for proper operation.

Game Adjustments for Linked Operation

To avoid confusion, we recommend that all adjustments be set to identical values before Video Game Machines (VGMs) are linked. VGMs might operate incorrectly if this is not the case, with the following exceptions:

NOTE: All cabinets must have compatible software in order to link properly. Unlock the coin door and press the TEST button. The software version number is found on the Main Menu screen in game diagnostics. It does not matter what version is installed as long as all version numbers are the same.

1. **Linked VGMs must all have compatible software versions.** Newer versions may contain instructions that previous versions do not have, causing them to halt or reset at random. On-screen messages will indicate that different versions are in use when the linking feature is enabled for each.

2. **The graphic effects and added attractions for the slave cabinets must be the same as the master.** All games must have these features enabled or all must have them disabled. Mixed settings, for example road kill or a show girls setting, can cause games to become unsynchronized during competition and lead to incorrect final results (i.e., two first place finishes with different times, collisions with unseen objects, etc.).

3. **The linking feature overrides some of the individual software settings.** For instance, the master (VGM #1) sets and controls the difficulty level for all linked slaves. The difficulty level reported by the slave games may not match the setting of the master game.

4. **The linked game with the highest ranking determines software settings**. Adjustments such as bonus times will be controlled by the games in decreasing identification order. For example, if four games are linked, slave game #3 will always override game #4 but have no effect on games #1 or #2. This permits games to have different standards to help equalize players with different skill levels.

   The linking cables attach to a connector on a metal bracket located under the CPU Board Assembly at the rear of the cabinet. Unlock and remove the cabinet rear door for linking access.

Notes on Linking:

1. For a 2-way link, the leftmost VGM is the master (#1); the second VGM is slave #2. One linking cable is required.

   For a 3-way link, the left VGM is the master (#1); the center and right VGMs are slaves #2 and #3. Two cables are required.

   For a 4-way link, the leftmost VGM is the master (#1); the left center VGM is slave #2, right center machine is #3, and the right most machine is slave #4. Three linking cables are required.

2. The linking feature will not function if the master is not turned on and in normal game play mode. If the master is turned off, disconnected from the linking cable, or in any other mode of operation (offline, diagnostics, etc.), none of the slaves will be able to link.

   The linking feature will function for all other VGMs if one of the slaves is not turned on and in normal game play mode. If any slave is turned off, disconnected from the linking cable, or in any other mode of operation (offline, diagnostics, etc.), the linking ability of other slaves will not be affected.

   The linking feature will function for some VGMs, and not others, if all of the link activity switches are not enabled or the software version numbers are not the same. The master game will not recognize other games with disabled linking or different link identification numbers.

DIP SWITCH SETTING FOR COINAGE

There are many ways to select the type and quantity of currency recognized by the game machine.

1. The most common coin combinations for several countries are pre-programmed and may be selected from the table when Standard Pricing is activated (see Game Adjustments).

2. DIP Switch settings may be changed with the power switched on. Set any switch and then observe the screen to verify that the desired selection is enabled. **NOTE:** If CMOS Coin Settings are active, switch settings for an individual Country will have no effect.

3. Some European countries may accept currency used in other countries. The most popular coinage settings are listed beneath ‘Other’ in the Standard Pricing Table.

4. Alternate settings are listed beneath ‘General’ in the Standard Pricing Table.

5. Default settings are denoted by an (*). Switches 1 through 5 select country codes. Switches 6 and 7 are used to select one of four modes for each country.

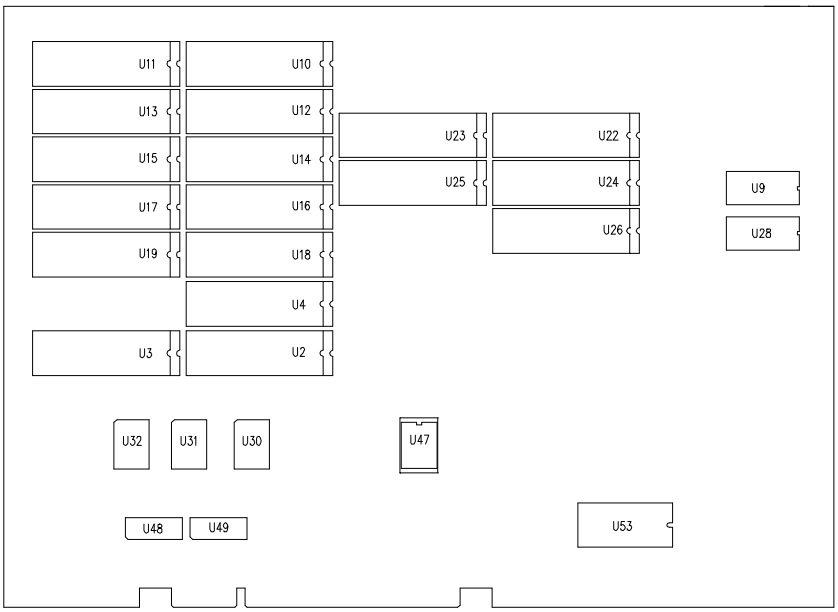
DIP Switch 2 Settings	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
COUNTRY CODE								
USA	OFF*	OFF*	OFF*	OFF*	OFF*			
GERMANY	ON	OFF	OFF	OFF	OFF			
FRANCE	OFF	ON	OFF	OFF	OFF			
CANADA	ON	ON	OFF	OFF	OFF			
SWITZERLAND	OFF	OFF	ON	OFF	OFF			
ITALY	ON	OFF	ON	OFF	OFF			
UK	OFF	ON	ON	OFF	OFF			
SPAIN	ON	ON	ON	OFF	OFF			
AUSTRALIA	OFF	OFF	OFF	ON	OFF			
JAPAN	ON	OFF	OFF	ON	OFF			
TAIWAN	OFF	ON	OFF	ON	OFF			
AUSTRIA	ON	ON	OFF	ON	OFF			
BELGIUM	OFF	OFF	ON	ON	OFF			
SWEDEN	OFF	OFF	OFF	OFF	ON			
FINLAND	ON	OFF	OFF	OFF	ON			
NETHERLANDS	OFF	ON	OFF	OFF	ON			
NORWAY	ON	ON	OFF	OFF	ON			
DENMARK	OFF	OFF	ON	OFF	ON			
HUNGARY	ON	OFF	ON	OFF	ON			
GENERAL	ON	ON	ON	OFF	ON			
USA1/GER1/FR1/SPN1/AUSTRIA1/GEN1						OFF	OFF	
USA3/GER1/FR1/SPN1/AUSTRIA1/GEN3						ON	OFF	
USA7/GER1/FR1/SPN1/AUSTRIA1/GEN5						OFF	ON	
USA8/GER1/FR1/SPN1/AUSTRIA1/GEN7						ON	ON	
CAN1/SWI1/ITL1/UK1/JPN1/TWN1/BLGN1						OFF	OFF	
CAN2/SWI2/ITL2/UK2/JPN2/TWN2/BLGN2						ON	OFF	
CAN3/SWI3/ITL3/UK3/JPN3/TWN3/BLGN3						OFF	ON	
NTHRLDS1/FNLD1/NRWY1/DNMK1/HUN1						OFF	OFF	
NTHRLDS2						ON	OFF	

Setting Table for DIP Switch 2

Main Menu
Diagnostic Menu, *continued*
CPU Board Test

CPU BOARD TEST

To verify proper operation of the memory circuits, select CPU Board Test at the Main Menu. This test checks the memory circuits in a manner similar to the Start-Up Test. A “rug” pattern representing the layout of the RAM and ROM circuits on the CPU Board will appear on-screen while the video circuits are tested.



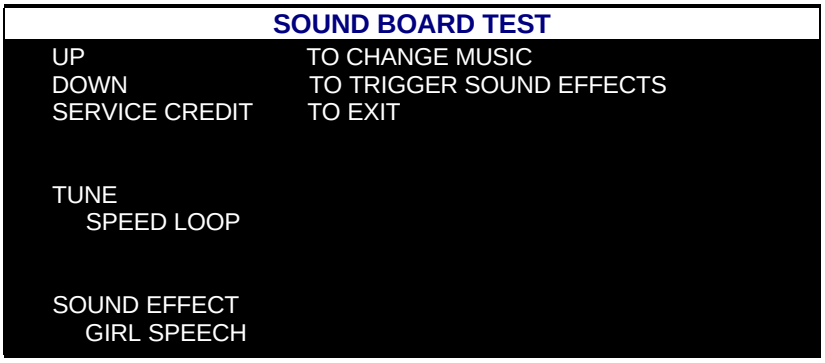
Typical Rug Pattern

Use the Volume Up or Volume Down buttons to highlight CPU Board Test and press the Test button. The memory circuits are shown as gray with a white outline. During the test, ICs are good if they turn green; they are faulty if they turn red. The game automatically returns to the Diagnostic Menu after the test is completed.

Main Menu
Diagnostic Menu, *continued*
Sound Board Test

SOUND BOARD TEST

To verify proper operation of the sound components, select Sound Board Test at the Main Menu. This test allows you to access and listen to the sounds used in the game.



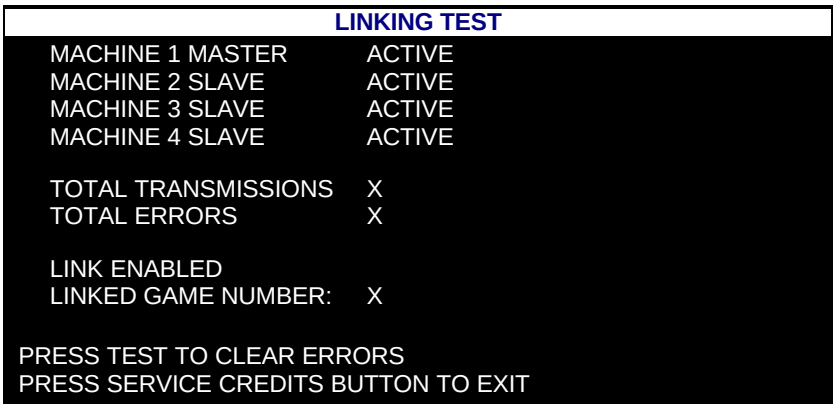
Use the Volume Up or Volume Down button to highlight the Sound Board Test option and press the Test button. Press Service Credit to return to the Diagnostic Menu when finished.

Press Volume Up to activate the tune selection and each additional push of the switch automatically selects and plays the next tune. Pressing the Volume Down button will trigger a sound effect and each additional push selects and plays the next sound effect.

Main Menu
Diagnostic Menu, *continued*
Linking Test

LINKING TEST

To verify communications between the game machine and others connected to it, select Linking Test at the Main Menu.



Use the Volume Up or Volume Down button to highlight Linking Test and press the Test button. This test runs automatically and will display results on-screen.

Press the Service Credit button to clear errors and restart the test cycle. Press the Test button to exit from this menu screen.

Main Menu
Diagnostic Menu, *continued*
Steering Wheel Test

STEERING WHEEL TEST

To verify the proper directional movement of the steering wheel, select Steering Wheel Test at the Main Menu. Make sure hands and other objects are clear of the steering wheel when this test is selected because the steering wheel will automatically rotate to the left. Follow the on-screen instructions.

Use the Volume Up or Volume Down button to highlight the Steering Wheel Test and then press the Test button. The steering wheel immediately turns to the left. Press the Test button a second time and the wheel turns to the right and will automatically return to the Diagnostic Menu.

Main Menu
Diagnostic Menu, ***continued***
Monitor Test

MONITOR TEST
To verify color clarity of the monitor, select Monitor Test at the Main Menu.

Use the Volume Up or Volume Down button to highlight the desired monitor test and press the Test button. Repeatedly press the Test button to cycle through test screens and automatically return to the Main Menu. Watch for the following results on-screen during this test.

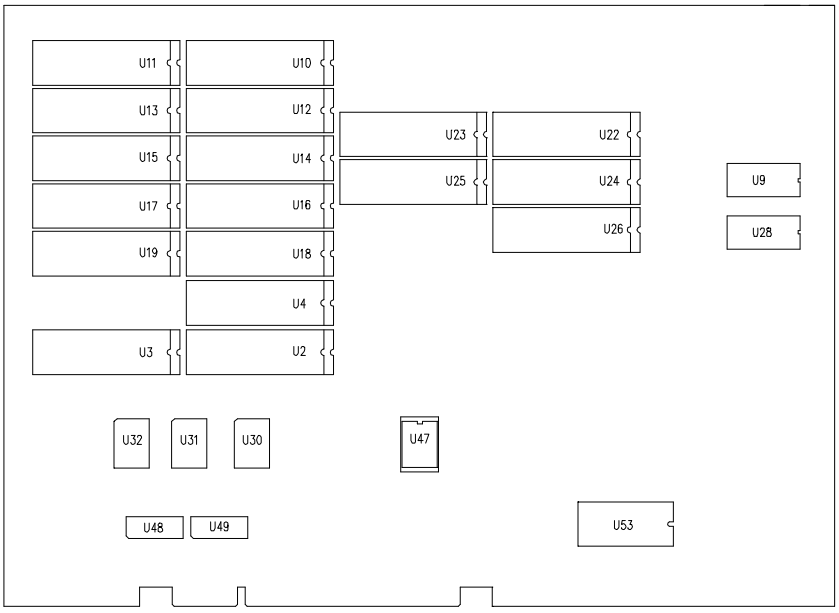
COLOR BARS. Observe 4 color bars in different shades appear on-screen as aids in adjusting the green, blue, and red color levels. Each color should appear sharp and clear. Check video brightness and contrast.

The **CROSSHATCH PATTERNS** test fills the screen with a series of dots within a grid. Observe the dots are perfectly round and that both the grid and dots are clear. Inspect monitor convergence, linearity, and screen size.

If any of the tests show a need for CRT adjustment, use the proper knobs on the Monitor Controls board.

Main Menu
Diagnostic Menu, ***continued***
Burn-In Test

BURN-IN TEST
To properly diagnose intermittent CPU problems, select Burn-in Test at the Main Menu. This test cycles non-stop through the CPU Board Test. A “rug” pattern representing the layout of the RAM and ROM circuits on the CPU Board will appear on-screen while the video circuits are tested.



Typical Burn-In Test Rug Pattern

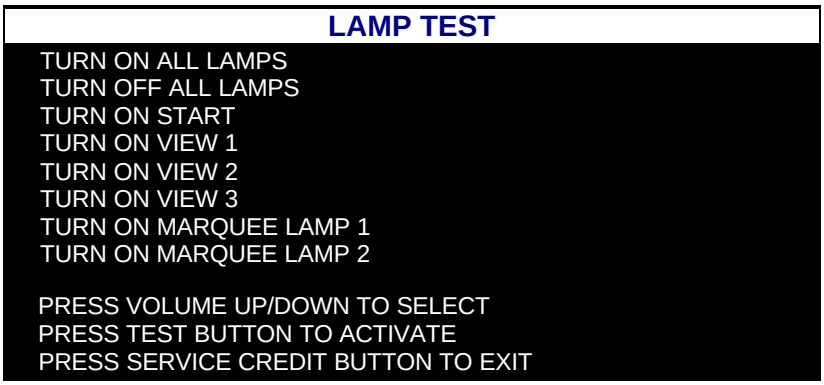
Use the Volume Up or Down Switch to highlight the Burn-in Test and press the Test button to activate. The Burn-in Test will stop and display an error message on-screen if an error is detected.

Inputs from the control buttons are ignored during Burn-in. The Burn-in Test cannot be halted from the menus, you must switch the power to the game machine off and then switch it back on.

Main Menu
Diagnostic Menu, *continued*
Lamp Test

LAMP TEST
To detect intermittent or faulty incandescent bulbs, select Lamp Test at the Main Menu. This test ensures that the incandescent bulbs critical to game operation function properly.

Use the Volume Up or Volume Down button to highlight Lamp Test and press the Test button. During the test observe the selected lamp(s) switches turn on or off when the corresponding selection is made.



NOTES ON THE LAMP TEST:
1. The RADIO button is not illuminated and requires no lamp test.

2. The MARQUEE LAMPS are located inside the lighted header as part of the Deluxe Linking Kit.

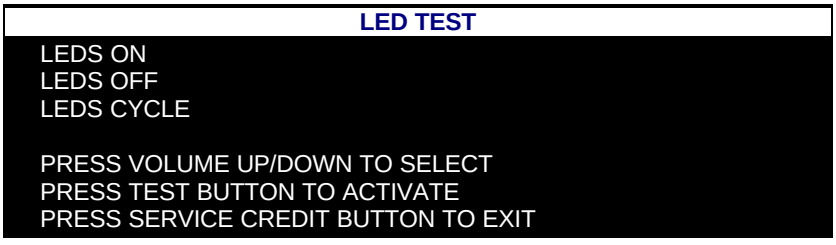
3. To override individual tests select either TURN ON or TURN OFF ALL LAMPS. The lamps also automatically switch off when the SERVICE CREDIT button is pressed to exit this screen.

Press the Service Credit button to return to the Diagnostic Menu.

Main Menu
Diagnostic Menu, *continued*
LED Test

LED TEST
To verify that the Dashboard LED's function properly, select LED Test at the Main Menu. This test allows you to control and test the illumination of the LED's located on the dash PCB.

Use the Volume Up or Volume Down button to highlight the LED Test and press the Test button. This test detects intermittent or faulty LED's that are critical to game operation. Observe the following activity on the dash PCB.



LED's ON. This option simultaneously turns on all LED's. LED's remain illuminated until switched off.

LED's OFF. This option simultaneously turns off all LED's. LED's will not be illuminated during this phase.

LED's CYCLE. This option causes the LED's to cycle sequentially turns LED's on and off beginning with those located on the far left-hand side of the dash PCB. To stop the cycle press the Service Credit button.

Main Menu
Game Audits

GAME AUDITS

Press the Volume Up or Volume Down button to highlight Game Audits in the Main Menu and press the Test button. To move between pages of the Game Audit Table, press the Volume Up or Volume Down button. Press the Service Credit button to return to the Main Menu from this screen.

The Game Audits Table displays the play statistics. The left side of the table names the Audit item; the right side shows the amount of play. Record these statistics before any service or repairs are done.

GAME AUDITS

COIN AUDITS, PAGE 1

COIN 1 LEFT	X
COIN 2 RIGHT	X
COIN 3 CENTER	X
COIN 4	X
BILL	X
SERVICE CREDITS	X
TOTAL STARTS	X
TOTAL CONTINUES	X
TOTAL GAMES	X
TOTAL FREE RACES	X
FREE GAMES PERCENT	X
EXPIRED RACES	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Typical Audit Table, page 1

GAME AUDITS

MISC. AUDITS, PAGE 2

POWER-ON TIME SECONDS	X
GAME TIME SECONDS	X
AVERAGE GAME TIME SECONDS	X
KEYPAD LOG-INS	X
EVENT	X
U-GAMES	X
WATCHDOG(S)	X
BURN-IN LOOPS	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 2

GAME AUDITS

VEHICLE SELECTED, PAGE 3

JEEP	X
PROWLER	X
VETTE	X
HUMMER	X
NASH	X
MUSTANG	X
TRIPY	X
UGLY CAR	X
JET CAR	X
VIPER	X
MUSCLE	X
SEMI	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 3

GAME AUDITS

SPECIAL EFFECTS, PAGE 4

AUTOMATIC SELECTED	X
MANUAL SELECTED	X
CUSTOM PAINT JOBS	X
WHEELIES	X
HORN BEEPED	X
TRICK JUMPS	X
SPINOUTS	X
CAM 1 TIME SECS	X
CAM 2 TIME SECS	X
CAM 3 TIME SECS	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 4

GAME AUDITS

INDIVIDUAL TRACK SELECTED, PAGE 5

VEGAS	X
KOREA	X
ALASKA	X
ATLANTIS	X
HONG KONG	X
INDIA	X
SAHARA	X
HOLLAND	X
IRELAND	X
AMAZON	X
TIBET	X
MARS	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 5

GAME AUDITS

CRUIS'N EXOTICA STARTS, PAGE 6

VEGAS	X
KOREA	X
ALASKA	X
ATLANTIS	X
HONG KONG	X
INDIA	X
SAHARA	X
HOLLAND	X
IRELAND	X
AMAZON	X
TIBET	X
MARS	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 6

GAME AUDITS

TRACK WINS, PAGE 7

VEGAS	X
KOREA	X
ALASKA	X
ATLANTIS	X
HONG KONG	X
INDIA	X
SAHARA	X
HOLLAND	X
IRELAND	X
AMAZON	X
TIBET	X
MARS	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 7

GAME AUDITS

DRIVER SELECTION, PAGE 8

JEN	X
JASON	X
CLOWN	X
RETRO	X
DUDE	X
ASIAN	X
BABY	X
AFM	X
COWBOY	X
ALIEN	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

Audit Table, page 8

GAME AUDITS

BIG HEAD DRIVER SELECTION, PAGE 9

JEN BIGHEAD	X
JASON BIGHEAD	X
CLOWN BIGHEAD	X
RETRO BIGHEAD	X
DUDE BIGHEAD	X
ASIAN BIGHEAD	X
BABY BIGHEAD	X
AFM BIGHEAD	X
COWBOY BIGHEAD	X
ALIEN BIGHEAD	X

PRESS VOLUME UP/DOWN FOR NEXT PAGE
PRESS SERVICE CREDIT BUTTON TO EXIT

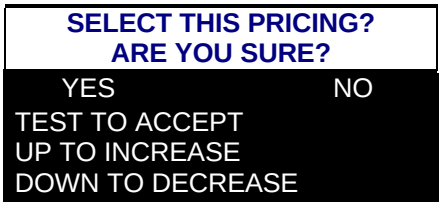
Audit Table, page 9

ADJUSTMENT MENU

To optimize game performance and earnings or to change the look or sound of the game, select the Adjustment Menu at the Main Menu. The Attract Mode features, Game Pricing and Game Difficulty may also be customized. Free races may be awarded to encourage players. *Free game player incentives may reduce earnings.* **NOTE:** Individual Game Adjustments are explained in more detail on the following pages.

Press the Volume Up or Volume Down button to highlight the desired Adjustments Menu option on the Main Menu and press the Test button. Use these screens to optimize game performance and earnings.

The Adjustments Menu offers several options. Press the Volume Up or Volume Down button to highlight an option and press the Test button. Each time an option on the menu is activated you are provided with multiple setting choices. Use the Volume Up or Volume Down button to change the current value setting and observe a confirmation box as shown below appears.



Typical Confirmation box

Press the Volume Up or Volume Down button to select YES or NO, then press the Test button to lock in the setting. Selecting NO cancels any changes values and returns the previous values to memory.

Use the Standard Pricing Table illustrated below as a guide to select the desired coin credit setting(s) for your game machine.

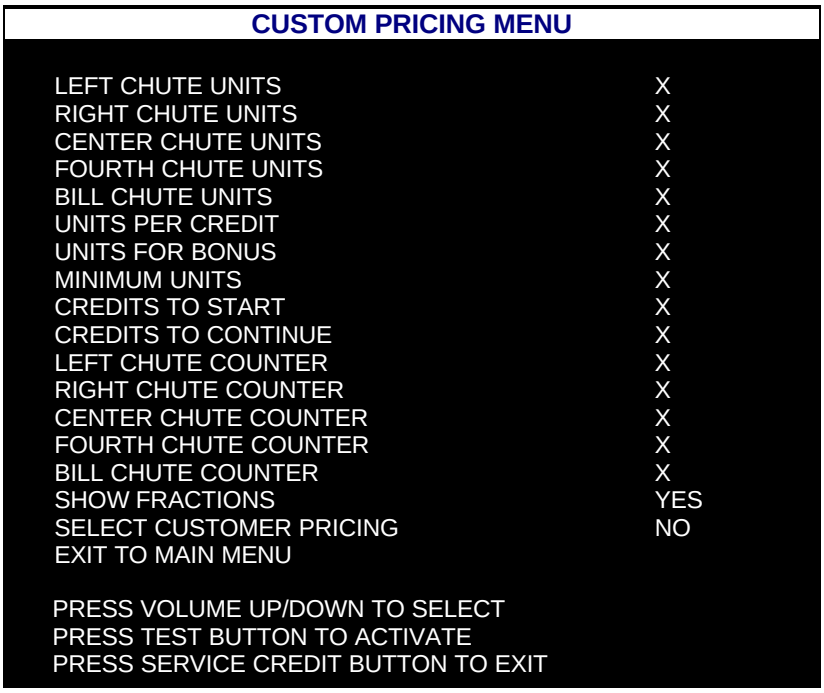
NAME	START	CONTINUE	CREDITS/COIN	COIN 1	COIN 2	COIN 3	COIN4	BILL
ANTILLES	2	2	1/25¢, 4/1G	.25¢	1G			
AUSTRALIA 1	2	2	1/3X20¢, 2/$1.00	.20¢	$1.00			
AUSTRALIA 2	2	2	1/5X20¢, 1/$1.00	.20¢	$1.00			
AUSTRIA 1	2	2	1/5Sch, 2/10Sch	5 Sch	10 Sch			
AUSTRIA 2	2	2	1/2X5Sch, 3/2X10Sch	5 Sch	10 Sch			
BELGIUM 1	2	2	1/20BF	20BF	20BF			
BELGIUM 2	2	2	3/20BF	20BF	20BF			
BELGIUM 3	2	2	2/20BF	20BF	20BF			
BELGIUM ECA	2	2	1/20BF	50BF	20BF	5BF		
CANADA 1	2	2	1 / 2 x 25¢, 3 / $1	25¢	25¢			
CANADA 2	2	2	1 / 2 x 25¢, 3 / $1	25¢	$1.00			
CANADA 3	2	2	3 / $1.00, 6 / $2.00	$1.00	$2.00			
CANADA ECA	2	2	1 / 2 x 25¢, 3 / $1	25¢		$1.00	$2.00	
DENMARK	2	2	3/5DKr, 7/10DKr	5DKr	10DKr			
FINLAND	2	2	1/1Fmk	1Fmk	5Fmk			
FRANCE 1	2	2	2/5Fr, 5/10Fr	5Fr	10Fr			
FRANCE 2	2	1	2/5Fr, 4/10Fr	5Fr	10Fr			
FRANCE 3	2	1	1/5Fr, 3/10Fr	5Fr	10Fr			
FRANCE 4	2	1	1/5Fr, 2/10Fr	5Fr	10Fr			
FRANCE 5	2	1	2/5Fr, 5/10Fr, 11/2 X 10Fr	5Fr	10Fr			
FRANCE 6	2	1	2/5Fr, 4/10Fr, 9/2 X 10Fr	5Fr	10Fr			
FRANCE 7	2	1	1/5Fr, 3/10Fr, 7/2 X 10Fr	5Fr	10Fr			
FRANCE 8	2	1	1/5Fr, 2/10Fr, 5/2 X 10Fr	5Fr	10Fr			
FRANCE 9	2	1	1/3 X 1Fr, 2/5Fr	1Fr	5Fr			
FRANCE 10	2	1	1/2 X 1Fr, 3/5Fr	1Fr	5Fr			
FRANCE 11	2	1	1/3 X 1Fr, 2/5Fr, 5/2 X 5Fr	1Fr	5Fr			
FRANCE 12	2	1	1/2 X 1Fr, 3/5Fr, 7/2 X 5Fr	1Fr	5Fr			
FRANCE ECA 1	1	1	2/5Fr, 5/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 2	1	1	2/5Fr, 4/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 3	1	1	1/5Fr, 3/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 4	1	1	1/5Fr, 2/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 5	1	1	2/5Fr, 5/10Fr, 11/2 X 10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 6	1	1	2/5Fr, 4/10Fr, 9/2 X 10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 7	1	1	1/5Fr, 3/10Fr, 7/2 X 10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 8	1	1	1/5Fr, 2/10Fr, 5/2 X 10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 9	1	1	1/3 X 1Fr, 2/5Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 10	1	1	1/2 X 1Fr, 3/5Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 11	1	1	1/3 X 1Fr, 2/5Fr, 5/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 12	1	1	1/2 X 1Fr, 3/5Fr, 7/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 13	1	1	1/10Fr, 2/20Fr, 4/30Fr	1Fr	5Fr	10Fr	20Fr	
FREE PLAY	--	--	--	None	None	None	None	None
GERMANY 1	2	2	1/1DM, 6/5DM	1DM	5DM			
GERMANY 2	2	1	1/1DM, 7/5DM	1DM	5DM			
GERMANY 3	2	1	1/1DM, 8/5DM	1DM	5DM			
GERMANY 4	2	1	1/1DM, 5/5DM	1DM	5DM			
GERMANY 5	2	1	1/1DM, 6/5DM	1DM	5DM			
GERMANY ECA 1	2	2	1/1DM, 2/2DM, 6/5DM	1DM	2DM	5DM		
GERMANY ECA 2	2	1	1/1DM, 2/2DM, 6/5DM	1DM	2DM	5DM		
GERMANY ECA 3	1	1	1/1DM, 2/2DM, 6/5DM	1DM	2DM	5DM		
HUNGARY	2	2	1/2X10Ft, 3/2X20Ft	10Ft	20Ft			
ITALY	2	2	1/500Llt	500Llt	500Llt			
JAPAN 1	2	2	1/100Yen	100 Yen	100 Yen			
JAPAN 2	2	2	2/100Yen	100 Yen	100 Yen			
JAPAN 3	1	1	1/100Yen	100	100			
JAPAN 4	1	1	2/100Yen	100	100			
JAPAN 5	1	1	4/100Yen	100	100			
JAPAN 6	1	1	1/2X100Yen	100	100			
NETHERLANDS	2	2	1/1HFl, 3/2.5HFl	1HFl	2.5HFl			
NEW ZEALAND 1	1	1	1/$1	$1	$2			
NEW ZEALAND 2	1	1	2/$1	$1	$2			
NORWAY	2	2	3/5NKr, 6/10NKr	5NKr	10NKr			
SPAIN 1	2	2	1/100Pta, 6/500Pta	100Pta	500Pta			
SPAIN 2	2	2	1/100Pta, 5/500Pta	100Pta	500Pta			
SWEDEN	2	2	1/3X1SKr, 2/5SKr	1SKr	5SKr			
SWITZERLAND 1	2	2	1/1SFr, 6/5SFr	1SFr	5SFr			
SWITZERLAND 2	2	2	1/1SFr, 7/5SFr	1SFr	5SFr			
SWITZERLAND 3	2	2	1/1SFr, 8/5SFr	1SFr	5SFr			

Main Menu
Game Adjustments, *continued*
Standard Pricing, *continued*

NAME	START	CONTINUE	CREDITS/COIN	COIN 1	COIN 2	COIN 3	COIN4	BILL
UK ECA 1	1	1	1/50p, 3/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 2	1	1	1/50p, 2/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 3	1	1	1/30p, 2/50p, 5/£1.00	£1.00	50p	20p	10p	£2.00
UK 4	1	1	1/50p, 3/£1.00	£1.00	50p			
UK 5	1	1	1/50p, 2/£1.00	£1.00	50p			
UK ECA 6	1	1	1/30p, 2/50p, 4/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 7	1	1	3/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 8	1	1	1/50p, 2/£1.00, 4/£2.00	£1.00	50p	20p	10p	£2.00
USA1	2	2	1/25¢	25¢	25¢			$1.00
USA2	2	1	1/25¢	25¢	25¢			$1.00
USA3	1	1	1/25¢	25¢	25¢			$1.00
USA4	1	1	1/50¢, 3/$1.00	25¢	25¢			$1.00
USA5	2	1	1/50¢, 4/$1.00	25¢	25¢			$1.00
USA6	1	1	1/50¢	25¢	25¢			$1.00
USA7	1	1	1/50¢, 3/$1.00	25¢	25¢			$1.00
USA8	2	2	1/50¢, 4/$1.00	25¢	25¢			$1.00
USA9	3	2	1/25¢, 4/$1.00	25¢	25¢			$1.00
USA10	3	3	1/25¢, 4/$1.00	25¢	25¢			$1.00
USA11	4	2	1/25¢, 4/$1.00	25¢	25¢			$1.00
USA12	4	3	1/25¢, 4/$1.00	25¢	25¢			$1.00
USA13	4	4	1/25¢, 4/$1.00	25¢	25¢			$1.00
USA ECA	3	3	1/25¢, 4/$1.00	$1.00	25¢	10¢	05¢	$1.00

Main Menu
Game Adjustments, *continued*
Custom Pricing

Use the custom Pricing Menu to specify pricing settings other than the ones listed in the Standard Pricing Table. Custom Pricing can also be used to select the amount of credits required to start a game and the amount of credits required to continue a game. This option is adjusted from the Dip Switch Settings.



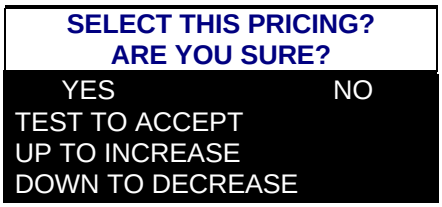
The following table clarifies Pricing Menu terms…

SCREEN TERM	DEFINITION
Chute Units	Currency inserted accumulates units. This adjustment specifies the quantity of units given for each coin or bill in each coin chute.
Units Per Credit	Units needed to accumulate a credit.
Units For Bonus	Units awarded after a player has accumulated enough points for a bonus.
Minimum Units	No credits will be awarded until the minimum required currency units have been accumulated.
Credits to Start	Units needed to enter game play.
Credits to Continue	Units needed to continue game play.
Chute Counter	Total number of units accepted by a chute.
Show Fractions	Fractional credits are observable on the credit screen when YES is selected.
Select Customer Pricing	Selecting YES enables custom pricing and overrides default settings.

Main Menu
Game Adjustments, *continued*

To further optimize game performance and earnings, select any one of the options on the Adjustments Menu. Press the Volume Up or Volume Down button to highlight an option and press the Test button.

Each time an option on the menu is activated you are provided with multiple setting choices. Use the Volume Up or Volume Down button to change the current value setting and observe a confirmation box as shown below appears.



Typical Confirmation box

Press the Volume Up or Volume Down button to select YES or NO, then press the Test button to lock in the setting. Selecting NO cancels any changes values and returns the previous values to memory.

Main Menu
Game Adjustments, *continued*
Free Play Menu

Free Play
This option selects free play. The setting choices for this adjustment are:
-ON
-OFF
-Factory Setting: OFF

Main Menu
Game Adjustments, *continued*
First Place Awards Free Game Menu

First Place Awards Free Game
Awards a player a free game on first place finish. The setting choices for this adjustment are:
-ON
-OFF
-Factory Setting: ON

Main Menu
Game Adjustments, ***continued***
Start Time Bonus Seconds Menu

Start Time Bonus Seconds
This determines the initial time a player is given to finish a race. The setting range is:
-Maximum: 90
-Minimum: 60
-Factory Setting: 75

Main Menu
Game Adjustments, ***continued***
Checkpoint Bonus Time Menu

Checkpoint Bonus Time
This awards the player a time bonus for passing a checkpoint. The setting range is:
-Maximum: 10
-Minimum: 25
-Factory Setting: 20

Main Menu
Game Adjustments, ***continued***
Attract Mode Sound Menu

Attract Mode Sound
This determines if the game will make sounds in the attract mode. The settings for this adjustment are:
-ON
-OFF
-Factory Setting: OFF

Main Menu
Game Adjustments, ***continued***
Initial Entry Menu

Initial Entry
This determines if the game will allow High Score Entry and Display Table. The setting choices are:
-ON
-OFF
-Factory Setting: ON

Main Menu
Game Adjustments, ***continued***
Minimum Volume Level Menu

Minimum Volume Level
This determines the minimum volume level of the game sounds. The setting range is:
-Maximum: 30
-Minimum: 0
-Factory Setting: 11

Main Menu
Game Adjustments, ***continued***
Steering Wheel Power Menu

Steering Wheel Power
This determines the amount of power provided to steering. The setting choices are:
-Maximum: 10
-Minimum: 1
-Factory Setting: 5

Main Menu
Game Adjustments, ***continued***
Speed in MPH or KPH Menu

Speed in MPH or KPH
This determines speedometer setting in miles per hour or kilometers per hour. The setting choices are:
-MPH
-KPH
-Factory Setting: MPH

Main Menu
Game Adjustments, ***continued***
Manual Trans Disabled Menu

Manual Trans Disabled
This provides control of the manual transmission option. The setting choices are:
-ON
-OFF
-Factory Setting: OFF

Main Menu
Game Adjustments, ***continued***
Keypad Active Menu

Keypad Active
This determines whether players' are allowed to use the keypad for inputs. The setting choices are:
-ON
-OFF
-Factory Setting: ON

Main Menu
Game Adjustments, ***continued***
Show Road Kill Menu

Show Road Kill
This determines if dead animals are shown in the game. The setting choices are:
-ON
-OFF
-Factory Setting: ON

Main Menu
Game Adjustments, ***continued***
Show Ending Menu

Show Ending
This determines if an image of the President is seen at various points in the game. The setting choices are:

-ON
-OFF
-Factory Setting: ON

Main Menu
Game Adjustments, ***continued***
Show Girls Menu

Show Girls
This determines if "sexy" girls are seen at various points in the game. The setting choices are:

-ON
-OFF
-Factory Setting: ON

Main Menu
Game Adjustments, ***continued***
High Score Reset Menu

High Score Reset
This determines the number of points required to reset the high score. The setting range is:

-Maximum: 25000
-Minimum: 1000
-Factory Setting: 5000

Main Menu
Game Adjustments, ***continued***
Game Difficulty Menu

Game Difficulty
This allows the operator to select the difficulty level of the game. The setting range is:

-Easiest: 0
-Hardest: 19
-Factory Setting: 5

Main Menu
Game Adjustments, ***continued***
Maximum Credits Menu

Maximum Credits
This allows the operator to select the maximum number of credits alotted. The setting range is:

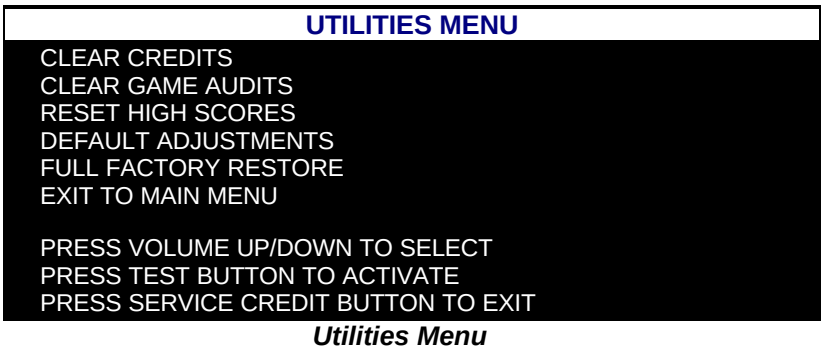
-Minimum: 1
-Maximum: 99
-Factory Setting: 30

Main Menu
Game Adjustments, *continued*
Multi Player Free Races Menu

Multi Player Free Races
This determines whether or not multiple players win free races for top scores. The setting range is:
-On:
-Off:
-Factory Setting: Off

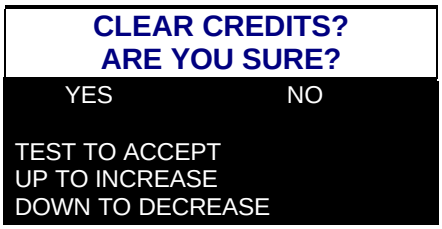
Main Menu
Utilities

UTILITIES
To clear bookkeeping memory and reset factory defaults, select Utilities at the Main Menu. Press the Volume Up or Volume Down button to highlight the Utilities option on the Main Menu, then press the Test button. Press the Service button to return to the Main Menu from this screen.



Utilities Menu

The Utilities Menu offers several options. Press the Volume Up or Volume Down button to highlight an option, then press the Test button. Each time an option on the menu is activated you are provided with multiple setting choices. Use the Volume Up or Volume Down button to change the current value setting and observe a confirmation box as shown below appears.



Typical Confirmation Box

Press the Volume Up or Volume Down button to select YES or NO, then press the Test button to lock in the setting. Selecting NO cancels any changes values and returns the previous values to memory.
NOTE: Record the numbers before they are cleared. These values cannot be restored once erased.

Main Menu
Utilities, *continued*
Clear Credits Menu

Clear Credits
Press the Volume Up or Volume Down buttons to highlight the Clear Credits option on the Main Menu, then press the Test button. This returns all credit values to zero and removes credit amounts from memory.

- Yes
- No
- **Factory Setting: NO**

Main Menu
Utilities, *continued*
Clear Game Audits Menu

Clear Game Audits
Press the Volume Up or Volume Down buttons to highlight the Clear Game Audits option on the Main Menu, then press the Test button. This returns all audit values to zero and removes totals from memory.

- Yes
- No
- **Factory Setting: NO**

Main Menu
Utilities, *continued*
Reset High Scores Menu

Reset High Scores
Press the Volume Up or Volume Down buttons to highlight the Reset High Scores option on the Main Menu, then press the Test button. This deletes all high scores and removes player identities from memory.

- Yes
- No
- **Factory Setting: NO**

Main Menu
Utilities, *continued*
Default Adjustments Menu

Default Adjustments
Press the Volume Up or Volume Down buttons to highlight the Default Adjustments option on the Main Menu, then press the Test button. This sets the adjustments back to their original values.

- Yes
- No
- **Factory Setting: NO**

Main Menu
Utilities, *continued*
Full Factory Restore Menu

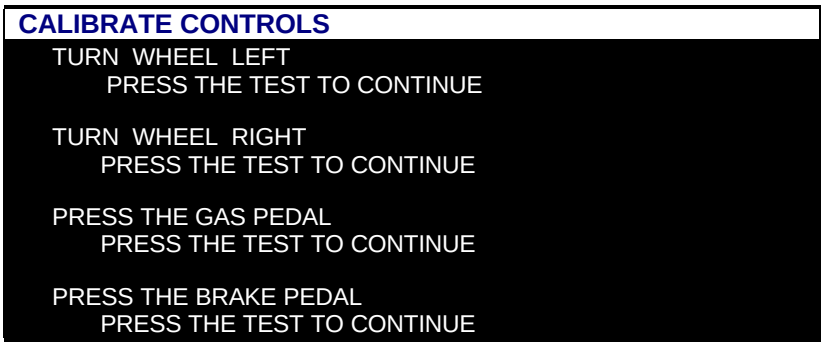
Full Factory Restore
Press the Volume Up or Volume Down buttons to highlight the Full Factory Restore option on the Main Menu, then press the Test button. This returns every variable in the game to the original factory settings.

- Yes
- No
- **Factory Setting: NO**

Main Menu
Calibrate Controls

CALIBRATE CONTROLS

To calibrate controls for optimum performance, select Calibrate Controls at the Main Menu.



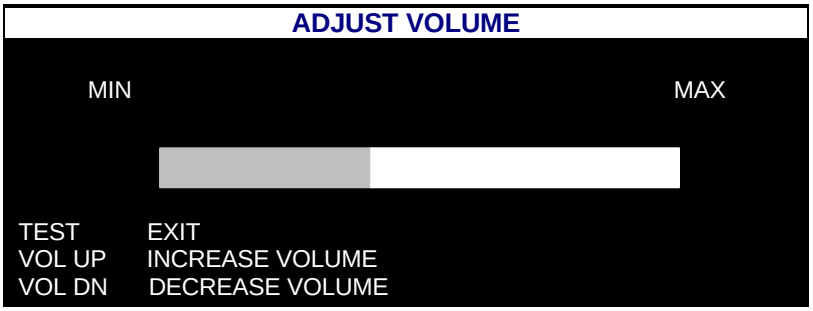
Press the Volume Up or Volume Down buttons to highlight the Calibrate Controls option on the Main Menu, then press the Test button. Follow the instructions that appear on-screen.

Main Menu
Adjust Volume

ADJUST VOLUME

To select a desirable volume level, select Adjust Volume at the Main Menu. Press the Volume Up or Volume Down button to highlight the Adjust Volume option on the Main Menu, then press the Test button. Remember that the minimum sound level is set under Game Adjustments.

Press the Volume Up button to increase, or the Volume Down button to decrease the sound level of the game. Press the Test button to lock the volume level at the selected value and return to the Main Menu.



Adjust Volume Screen

NOTES

CRUIS'N EXOTICA™

SECTION THREE

Service

SAFETY INSTRUCTIONS

The following safety instructions apply to operators and service personnel. Read these instructions before servicing or preparing the Video Game Machine (VGM) for play. Other safety instructions appear throughout this manual.

DEFINITIONS OF SAFETY TERMS

- **DANGER** indicates an imminent hazard. If you fail to avoid this hazard, it WILL cause death or serious injury.
- **WARNING** indicates a potential hazard. If you fail to avoid this hazard, it COULD cause death or serious injury.
- **CAUTION** indicates a potential hazard. If you fail to avoid this hazard, it MAY cause minor or moderate injury. CAUTION also alerts you about unsafe practices.
- **NOTE** indicates information of special importance.

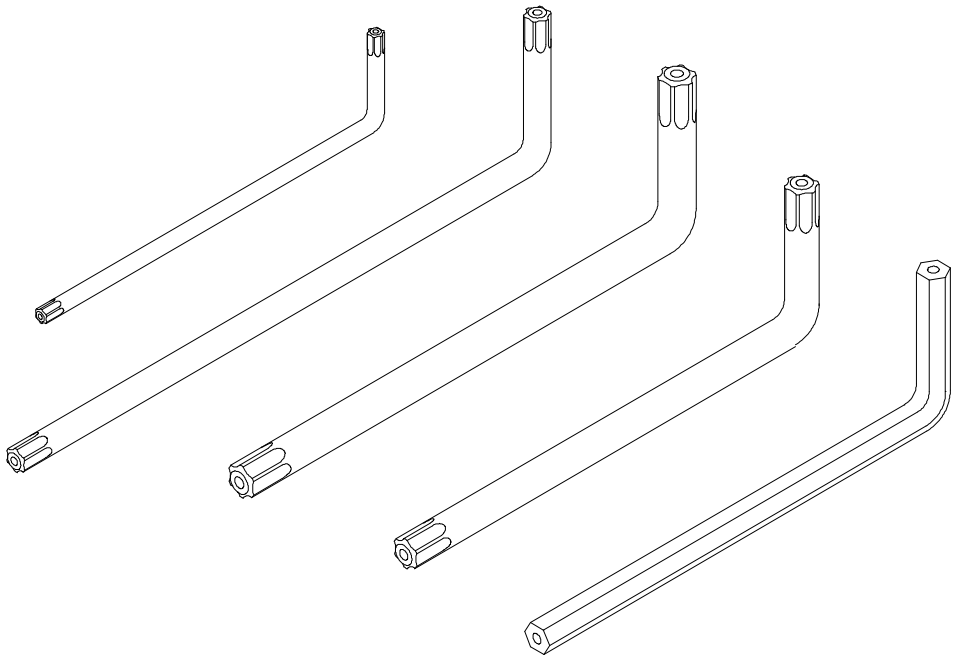
	WARNING: TRANSPORTING GAMES. The VGM contains glass and fragile electronic devices. Use appropriate care when transporting. Avoid rough handling when moving the cabinet. Do not move with the power switched on.
	WARNING: DISCONNECT POWER. Always turn the power OFF and unplug the VGM before attempting service or adjustments unless otherwise instructed. Installing or repairing boards with power switched on can damage components and void the warranty.
	WARNING: GROUND GAMES. Avoid electrical shocks! Do not plug in a VGM until you have inspected and properly grounded it. Only plug this game into a grounded, three-wire outlet. Do not use a “cheater” plug, or cut off the ground pin on the line cord.
	WARNING: AVOID ELECTRICAL SHOCKS. The VGM system does not utilize an isolation transformer. Internal cabinet AC is not isolated from the external AC line.
	WARNING: 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.
	CAUTION: CHECK POWER SELECTOR, LAMP. Set the 115/230VAC selector on the power supply for the correct line voltage. Check the selector setting before switching on the VGM. Verify that the fluorescent lamp assembly is correct for the local line voltage.
	CAUTION: USE PROPER FUSE. Avoid electrical shock! Replacement fuses must be identically rated. Fuse voltage and current ratings must be identically rated to the original fuse.
	CAUTION: ATTACH CONNECTORS PROPERLY. Be sure board connectors mate properly. If connectors do not slip on easily, do not force them. A reversed connector may damage the VGM and void the warranty. Connector keys only allow a connector to fit one set of pins on a board.
	CAUTION: USE CARE WHEN SHIPPING HARD DISKS. The hard disk drive must be packed in an anti-static bag. When shipping the drive for repair or replacement, pack it in an approved container (P/N 08-8068). Do not stack or drop hard disk drives.

WARNING: HAZARD TO EPILEPTICS.

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.



Contents of Typical Tool Pack

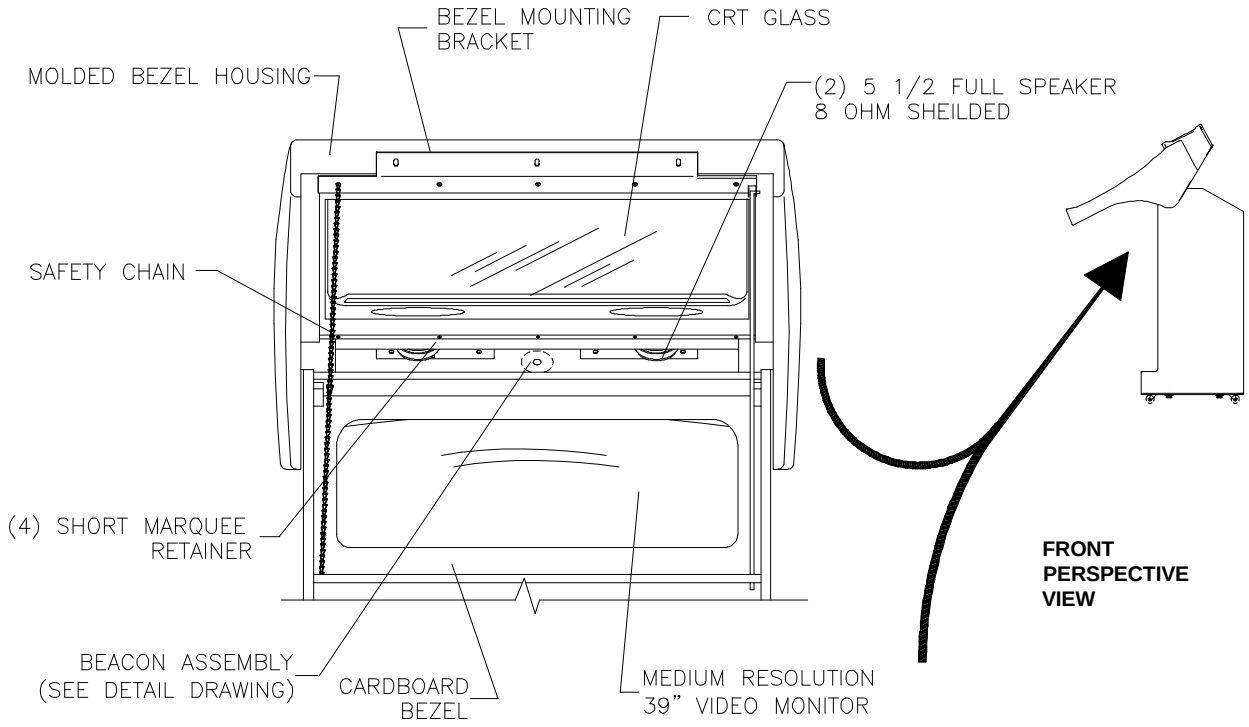
SERVICING

Only qualified service personnel should perform maintenance and repairs. The product guidelines apply to all operators and service personnel. Specific notes, cautions, and warnings appear throughout the manual where they apply. We recommend that you read the SAFETY NOTICES section thoroughly before beginning service. **NOTE:** *Always switch off power to the game machine before servicing.*

To service the Marquee…

Refer to *Marquee Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the center control cabinet. *Refer to service instructions for Control Cabinet.*
- Remove the tamper resistant screws from the bracket along the bottom edge of the marquee housing.
- Grasp the bracket and lift the marquee housing up. The hinged marquee housing uses a prop rod located inside the main cabinet to keep it extended during service. Remove the free end of the prop rod from its retaining clip and insert it in the rod bracket on the lower right side of the marquee housing.
- Perform the desired repair or equipment replacement.
- To reinstall, unhook the prop rod and return it to the retaining clip. Slowly lower the marquee housing and thread the tension chain back into the main cabinet.
- Fasten the marquee housing's bracket in place with the screws provided.



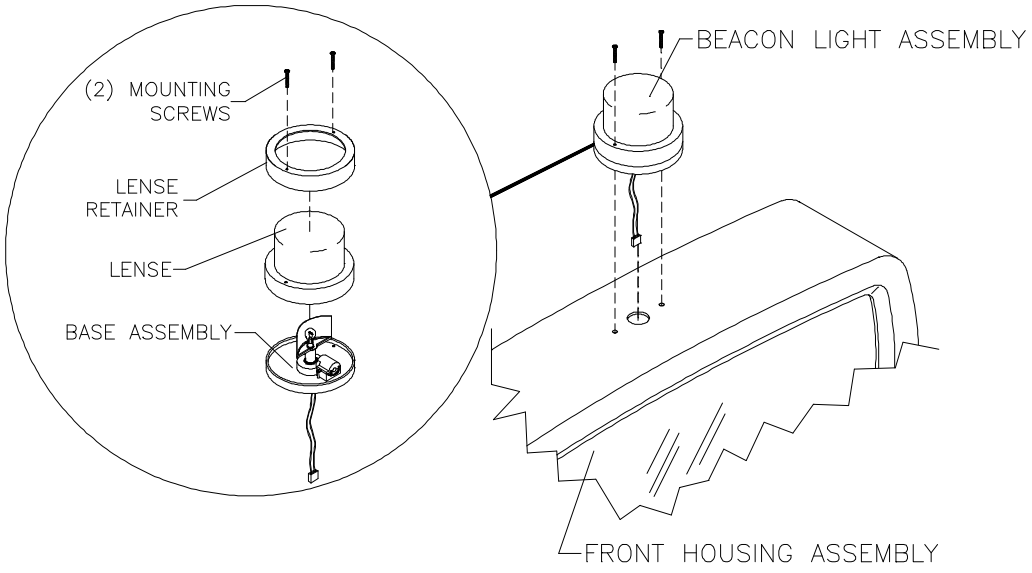
Marquee Service

To service Blue Beacon Light…

Refer to *Beacon Light Service* and *Marquee Service* illustrations.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the mounting screws used to fasten the beacon light to the marquee housing. Set the screws aside for reuse later.
- Lift the beacon light up from the housing enough to expose the cable connection. Disconnect the cable and continue to lift the beacon light until it clears the marquee housing.
- Perform the desired repair or equipment replacement.

NOTE: All replacement bulbs must match the original in voltage, current and brightness rating.



Beacon Light Service

To service the Backlit Marquee …

Refer to *Marquee Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Lift open the Marquee Housing. *Refer to service instructions for Marquee.*
- Reach up inside the opening toward the marquee artwork. The marquee artwork and marquee glass is held in place at the top and sides by spacers/brackets fastened with screws.
- Remove the screws from each of the brackets. Set the screws and brackets aside until reinstallation.
- Lift the marquee artwork or marquee glass out of the housing.
- Perform the desired repair or equipment replacement.

To service the Fluorescent Light Assembly…

Refer to *Marquee Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Lift open the Marquee Housing. *Refer to service instructions for Marquee*.
- Reach up inside the opening in the cabinet and disconnect the power cable from the fluorescent light assembly.
- Loosen, but do not remove the screws fastening the assembly to the cabinet.
- Slide the assembly slightly forward to disengage the keyholes. Lift out the assembly.
- Perform the desired repair or equipment replacement.

To service the Fluorescent Lamp or Starter…

Refer to *Marquee Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Lift open the Marquee Housing. *Refer to service instructions for Marquee.*
- Reach up inside the opening in the cabinet and remove the fluorescent lamp locks.
- Both the fluorescent tube and the starter require a quarter turn for removal. Grasp the tube or starter, give it a quarter turn and pull it from its socket.
- Carefully place a new starter or tube into the sockets and rotate it a quarter turn to reinstall.
- Reinstall both fluorescent lamp locks. Clean the tube to remove fingerprints and dust.

WARNING
Fluorescent tubes implode on impact when dropped. Use care in handling.

To service the Cabinet Speakers…

Refer to *Marquee Service* illustration. Speakers are located on the underside of the marquee housing.

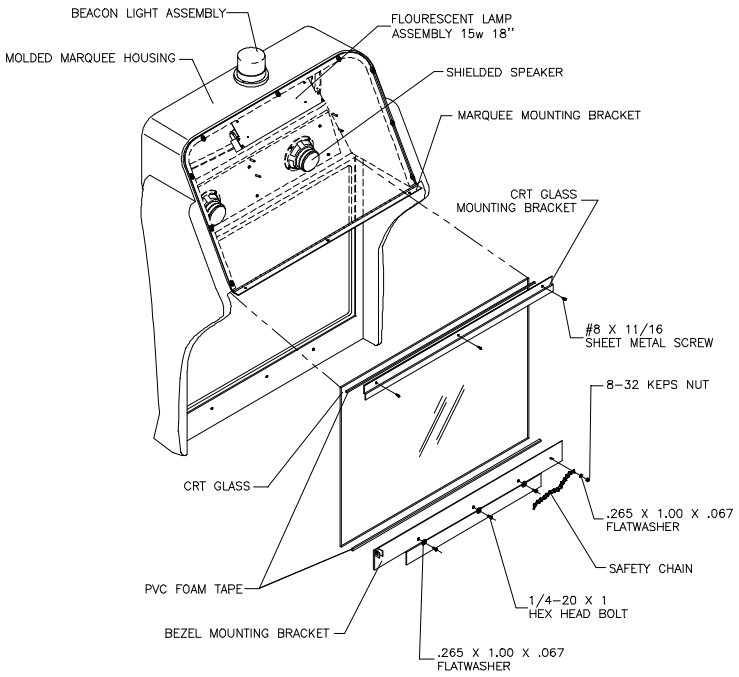
- Switch off the power to the game machine and unplug the AC line cord.
- Lift open the Marquee Housing. *Refer to service instructions for Marquee*.
- Reach up inside the opening in the cabinet and disconnect the speaker wires, including the ground strap.
- Remove the nuts on the mounting screws before removing the speakers from the enclosure.
- Perform the desired repair or equipment replacement.
- Carefully reseat the seals upon completing any task in the speaker enclosure.
- Reconnect the wires, including ground. Refer to the Cabinet Wiring Diagram for correct speaker polarity.

NOTE: The speakers are magnetically shielded to prevent video monitor color impurity. Be sure that any replacement speakers are also magnetically shielded.

To service Viewing Glass…

It is recommended that two service personnel be present when servicing the viewing glass. Refer to *Viewing Glass Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Control Cabinet. *Refer to service instructions for Control Cabinet.*
- Lift open the Marquee Housing. *Refer to service instructions for Marquee.*
- Label and disconnect all wiring. Disconnect one end of the tension chain. Close the marquee.
- Remove the tamper resistant screws from the hinge for the marquee located at the top rear of the cabinet. Both service personnel should grab an edge of the marquee housing and lift it off of the cabinet. To prevent scratches, the marquee housing should be placed on a cloth covered work surface.
- Remove the tamper resistant screws and bracket from the bottom edge of the housing. Remove the screws and bracket from along the top edge of the housing.
- Gently lift the viewing glass up and clear of the housing. Set Viewing Glass aside.
- Perform the desired repair or equipment replacement.
- Clean the glass before reinstallation.



Viewing Glass Service

To service Monitor Bezel…

- Switch off the power to the game machine and unplug the AC line cord.
- Lift open the Marquee Housing. *Refer to service instructions for Marquee.*
- Grasp the monitor bezel at the bottom and lift it out of cabinet.
- Perform the desired repair or equipment replacement.
- Wipe the bezel clean before reinstallation.

To service the Monitor (CRT)…

We recommend that you read the WARNINGS thoroughly before beginning this procedure.

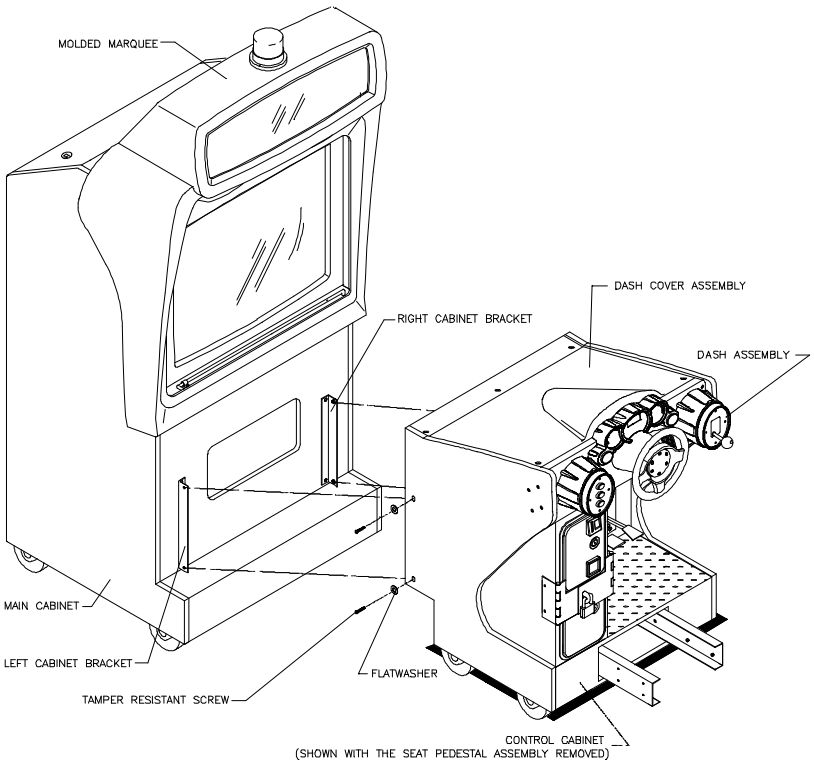
	CAUTION The video monitor is heavy, with most of the weight toward the front of the assembly. Be sure it is firmly supported as it is moved from the cabinet.
	WARNING The monitor does not require isolation from the AC line voltage in normal operation. When operating outside the cabinet or servicing the monitor on a test bench, ISOLATE THE MONITOR FROM LINE VOLTAGE WITH AN ISOLATION TRANSFORMER.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Control Cabinet, Marquee Housing, and Monitor Bezel. *Refer to service instructions for the Control Cabinet, Viewing Glass and Monitor Bezel.*
- Open the rear cabinet door and disconnect the monitor from the wiring harness and ground wires.
- Remove 4 nuts securing the monitor mounting flanges to the mounting panel.
- Pull the monitor carefully from the cabinet and set aside.
- Perform the desired repair or equipment replacement.

To service the Control Cabinet…

Refer to the *Control Cabinet Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the tamper resistant screws from either side of the control cabinet used to fasten it to the cabinet brackets in the main cabinet.
- Slide the control cabinet halfway back along the rails to expose wiring. Label and disconnect all wiring.
- Continue to slide the cabinet away from the main cabinet until it clears the mounting rails.
- Perform the desired repair or equipment replacement.

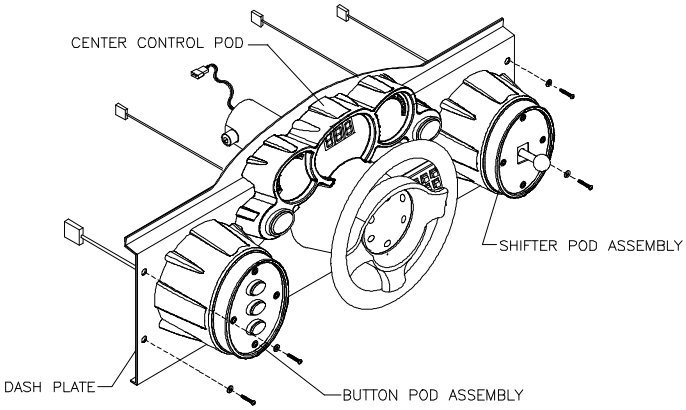


Control Cabinet Service

To service the Dashboard…

Refer to *Dashboard Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Control Cabinet. *Refer to service instructions for Control Cabinet.*
- Remove the tamper resistant screws from the molded control cabinet cover. Lift the lid off of the cabinet and set aside in a safe place.
- Label and disconnect all dash wiring, including the ground strap.
- Remove the four screws used to fasten the Dashboard to the cabinet.
- Firmly grab the dash and pull it straight out.
  NOTE: *The Dashboard is heavy, with most of the weight concentrated in the center near the Steering Mechanism.*
- Perform the desired repair or equipment replacement.
- To reinstall, line-up the holes on either side of the Dashboard and push straight back.
- Check for pinched wires, and then reconnect dash wiring and ground strap.
- Fasten in place with the screws provided.

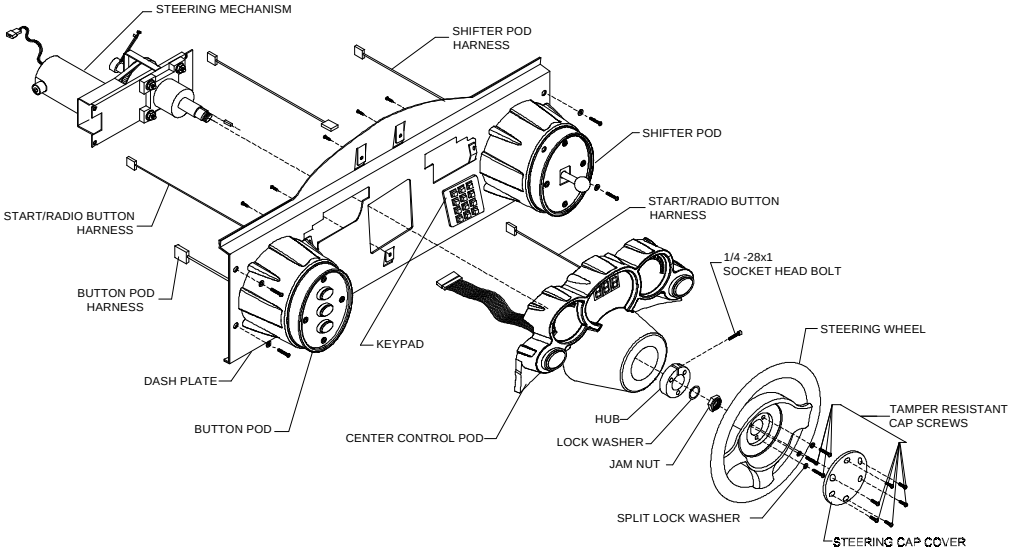


Dashboard Service

To service the Center Control Pod…

Refer to the *Center Control Pod Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Dashboard. *Refer to service instructions for Dashboard.*
- Remove the steering mechanism. *Refer to service instructions for steering mechanism.*
- Disconnect the light bulbs from the sockets for both the Radio and Start buttons, and set aside.
- Remove 5 hex head screws that form the outline of the pod and set aside.
- Lift the Center Control Pod from the Dashboard.
- Perform the desired repair or equipment replacement. **NOTE:** *It may also be necessary to remove the Dash PCB. Refer to service instructions for Dashboard PCB.*
- Reinstall and fasten in place with the screws provided.



Center Control Pod Service

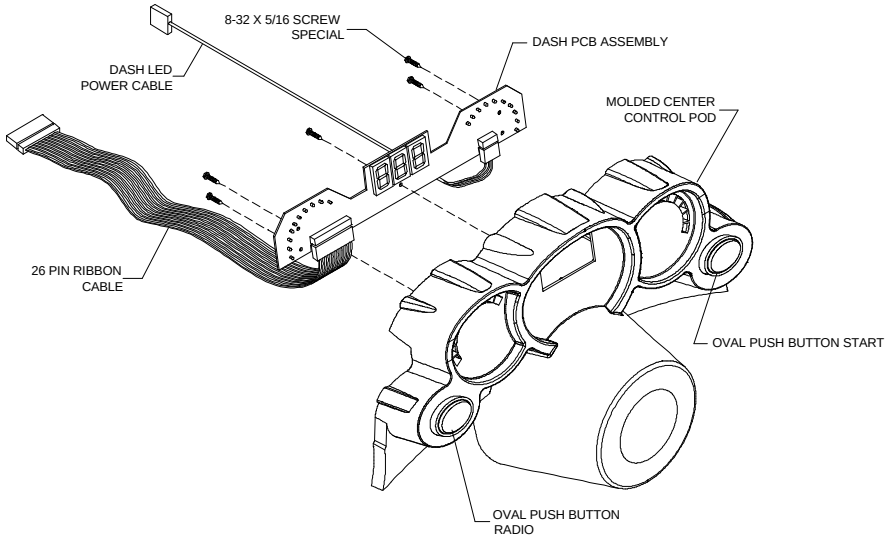
To service the Dashboard PCB…

Refer to the *Dash PCB Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Dashboard and the Center Control Pod. *Refer to service instructions for the Dashboard and the Center Control Pod.*
- With the Center Control Pod removed from the dash, remove 5 hex head screws that are used to fasten the PCB to the pod and set aside.
- Remove the ribbon and power cable connections.

Dashboard PCB Service, continued

- Perform the desired repair or equipment replacement.
- Connect the ribbon and power cable to a Dashboard PCB. **NOTE:** *The red stripe on the ribbon cable must be lined up with pin 1 on the PCB, and the black wire on the power cable must line up with pin 1 on the power connection for the Dashboard.*
- Reattach the PCB to the pod, and then fasten the pod to the dashboard.
- Check for pinched wires.
- Reinstall the Dashboard and fasten in place with the screws provided.



Dash PCB Service

To service the Left or Right Control Pods…

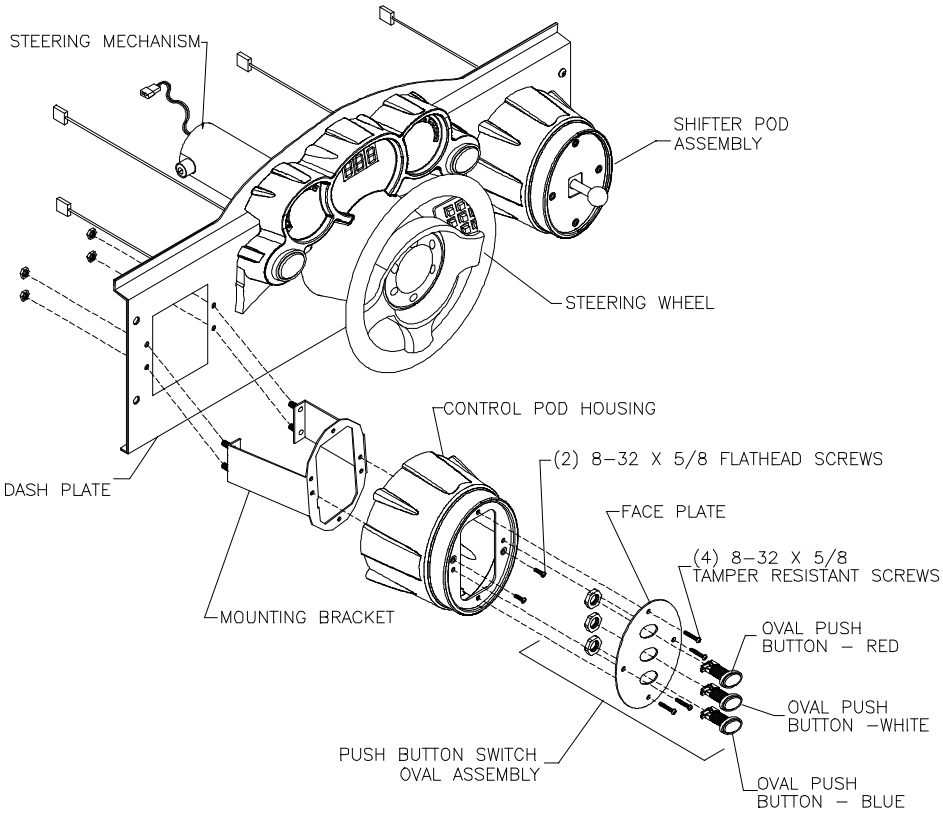
Refer to the *Control Pod, Buttons and Shifter Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the 4 tamper-resistant buttons used to fasten the faceplate.
- Pull the plate forward enough to expose the switches.
- Label and disconnect the wiring for the pod(s) being serviced.
- Lift the buttons *or* shifter mechanism out of the pod and set aside.
- Remove the 2 hex head screws used to fasten the pod to the dash, and then gently lift the pod off the dashboard.
- Perform the desired repair or equipment replacement.
- Reinstall and fasten in place with the screws provided.

To service a Start or Radio Button…

Refer to the *Control Pod, Buttons and Shifter Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Dashboard. *Refer to service instructions for Dashboard.*
- Gently remove the bulb(s) from the socket using a rocking motion.
- Perform the desired repair or equipment replacement. **NOTE:** If changing a bulb, simply reseat it in original socket. If repairing a button, unscrew the ring at the base and remove the button.
- Reinstall the Dashboard and fasten in place with the screws provided.



Control Pod, Buttons and Shifter Service

To service View Buttons…

Refer to the *Control Pod, Buttons and Shifter Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the 4 tamper-resistant buttons used to fasten the faceplate.
- Pull the plate forward enough to expose the switches.
- Label and disconnect the wiring for the pod(s) being serviced.
- Lift assembly completely out of the pod and set aside.
- Perform the desired repair or equipment replacement.
- Reconnect wires and reinstall buttons. **NOTE:** *Insert the left edge of the button plate, then the right edge to fully seat.*
- Check for pinched wires.
- Fasten the faceplate with the screws provided.

To service Shifter…

Refer to the *Control Pod, Buttons and Shifter Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the 4 tamper-resistant buttons used to fasten the faceplate.
- Pull the plate forward enough to expose the switches. **NOTE:** *Pulling the shifter out of the pod requires quite a bit of force.*
- Label and disconnect the wiring for the pod(s) being serviced.
- Lift assembly completely out of the pod and set aside.
- Perform the desired repair or equipment replacement.
- Reconnect wires and reinstall shifter. **NOTE:** *Orient the spring mechanism located on the bottom edge of the shifter toward the bottom of the pod and insert it followed by the top edge to fully seat.*
- Check for pinched wires.
- Fasten the faceplate with the screws provided.

To service Steering Assembly…

Refer to the *Steering Assembly Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Dashboard. *Refer to service instructions for Dashboard.*
- Remove 6 screws used to fasten the cover plate to the center of the steering wheel. Remove the cover plate and set aside.
- Remove the 3 screws used to fasten the wheel hoop to the shaft. Pull the wheel hoop off of the dashboard.
- Remove 4 flange nuts holding the motor shield, motor and shaft to the wheel assembly (Motor shield not required on all cabinet styles).
- Slide the motor and the shaft off of the assembly.
- Perform the desired repair or equipment replacement.
- Reinstall and fasten all items in place with the screws provided.

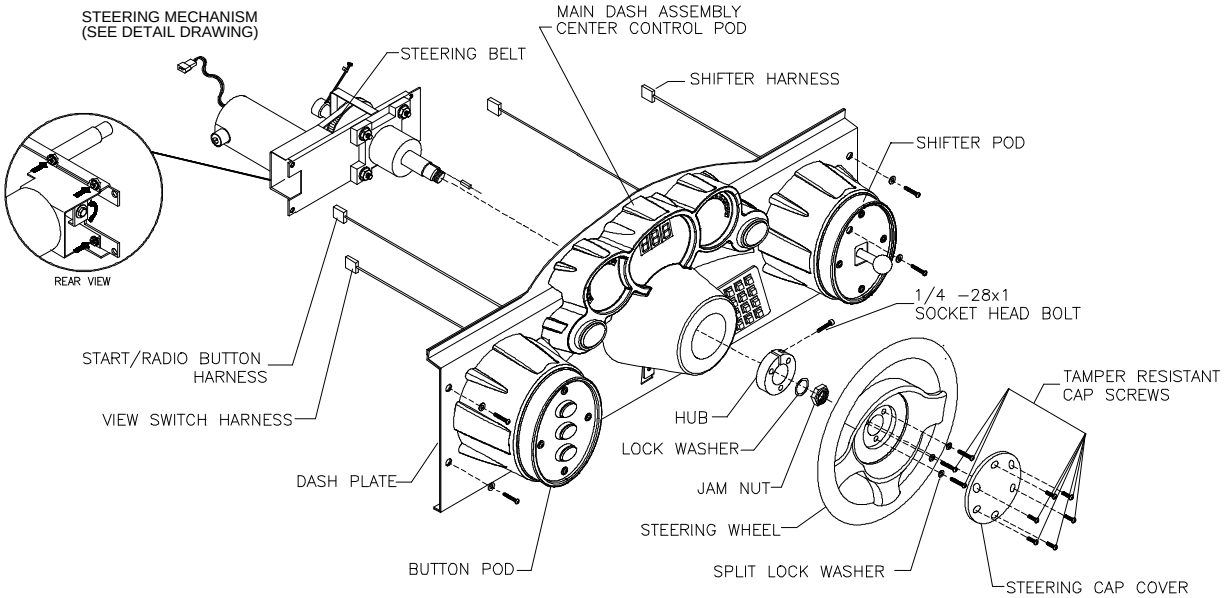
While the steering mechanism is exposed, inspect the belt for splits in the rubber or other signs of wear at the edges of the teeth. Install a new belt if necessary following the instructions below.

To service Steering Belt…

Refer to the *Steering Assembly Service* illustration.

- Loosen four mounting nuts for the motor bracket.
- Tighten the tension-adjust bolt only until there is no belt deflection, then loosen the bolt one full turn and tighten the four nuts.
- Reattach the mechanism and recalibrate the assembly.

IMPORTANT: Apply removable anaerobic adhesive thread lock (Loctite Blue 242 or equivalent) and torque set screw to seven to nine ft.-lbs. (84 to 108 in.-lbs.) if it was loosened (see illustration).



Steering Assembly Service

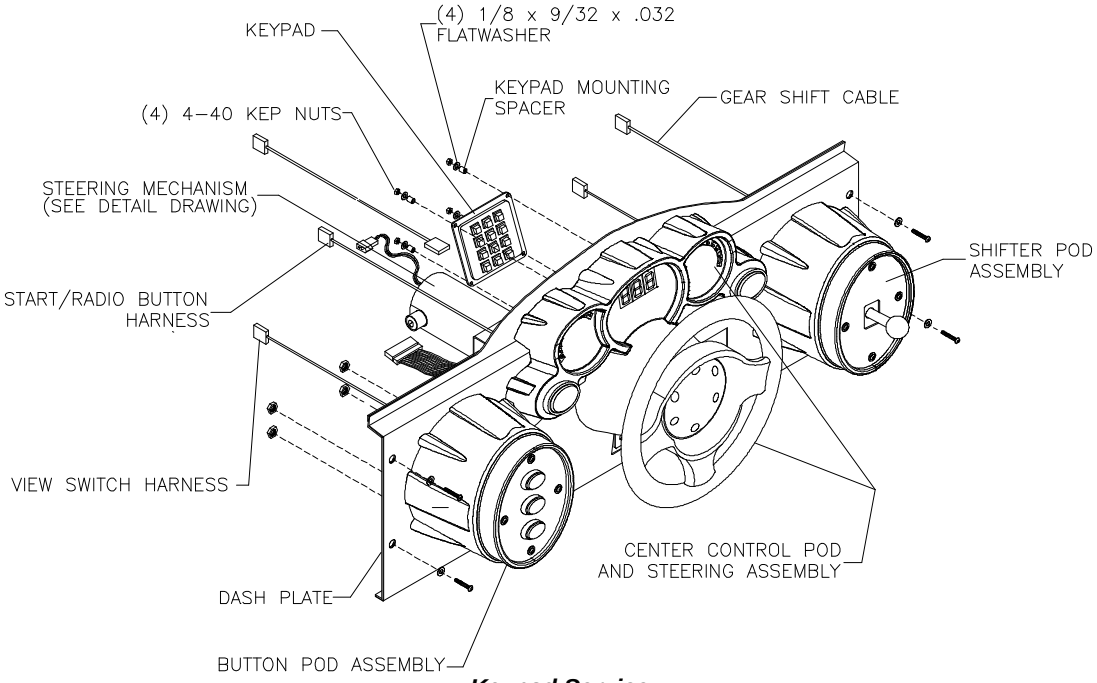
To service Keypad…

Refer to the *Keypad Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Dashboard. *Refer to service instructions for Dashboard.*
- Label and disconnect wiring for keypad.
- Remove the nuts and spacers used to fasten the Keypad to the dashboard.

Keypad Service, continued

- Lift the keypad out.
- Perform the desired repair or equipment replacement.
- Reinstall keypad, seat the spacers and fasten in place with the nuts provided.
- Reinstall Dashboard and fasten with hardware provided.



Keypad Service

To service Control Cabinet Speaker…

This speaker is located just above the pedal assembly.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Control Cabinet. *Refer to service instructions for Control Cabinet.*
- Label and disconnect wiring, including the ground strap.
- Remove the nuts on the mounting screws before removing the speaker from the enclosure.
- Perform the desired repair or equipment replacement.
- Carefully reseat the seals upon completing any task in the speaker enclosure.
- Reconnect the wires, including ground. Refer to the Cabinet Wiring Diagram for correct speaker polarity.

To service Pedal Assembly…

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the Control Cabinet. Refer to service instructions for Control Cabinet.
- Adjust the seat to the maximum rear position.
- Remove 4 tamper resistant screws used to fasten the Pedal assembly to the cabinet. **NOTE:** *Due to the weight of the pedal assembly it may slide or abruptly jerk out of the opening once all screws are loosened and/or removed.*
- Pull the assembly forward enough to expose wiring.
- Carefully note the orientation of the cable wiring. Label and disconnect wiring, including ground.
- Perform the desired repair or equipment replacement.
- Reinstall pedal assembly and reconnect wiring, including ground.
- Align the holes for the screws and fasten in place with the hardware provided.

To service Coin Meter…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock the cash door and swing it open. Remove the cash tubs.
- The meter is located on a plate at the vault bottom. Remove the screws and lift the plate just enough to disconnect the meter wires from the harness.
- Record the meter count before testing or replacement.
- Perform the desired repair or equipment replacement.

To service Coin Mechanism…

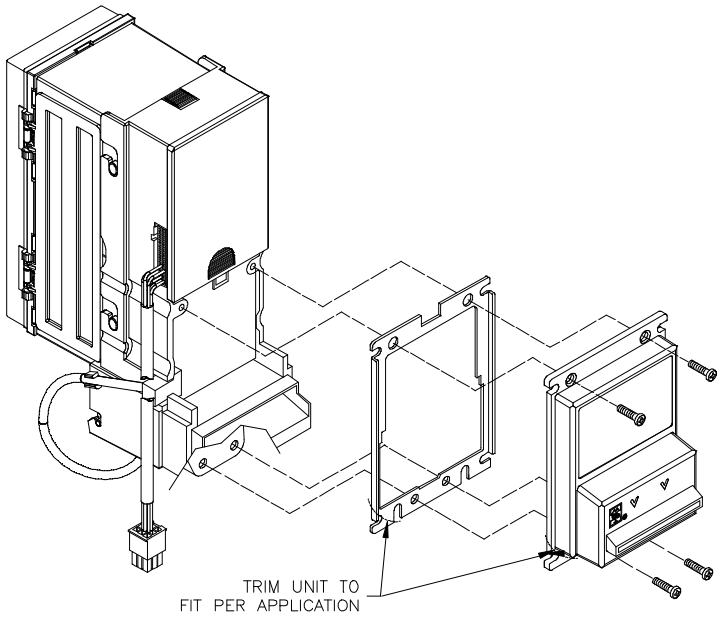
- Switch off the power to the game machine and unplug the AC line cord.
- Unlock the coin door and swing it open.
- Unlatch and remove each coin mechanism separately to clean or replace with a different type. Ensure mechanism seats fully in the holder upon reinstallation.
- Close and lock the release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

To service Dollar Bill Validator…

(Use MARS AE2411-U3 UL recognized currency changer)

Dollar bill validators or other currency acceptors may be installed in games that are manufactured with the additional wiring connector.

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock the coin door and swing it open. Read the label affixed to the door for additional information.
- Disassemble the validator and remove material to permit it to fit inside the coin door as illustrated then reassemble unit.



To service CPU Board Assembly…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear door.
- Remove the perforated metal cover to expose the CPU Board Assembly.
- Carefully note the orientation of the JAMMA connector and the other cables. Extract the harness and other cables from the board connectors.
- Remove CPU board assembly mounting screws. Lift the board out of the cabinet and set in a safe place. Use anti-static bags and protective containers from new parts for storage if not reinstalled immediately.
- Perform the desired repair or equipment replacement.
- Be certain to reinstall the perforated cover so that it seals tightly against the metal plate.

To service Memory…

The ROM (Read Only Memory) circuits contain the computer operating instructions for this game. *Memory devices are especially sensitive to static charges. Use grounding precautions when handling these parts.*

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear door.
- Remove the perforated metal cover to expose the CPU board assembly.
- Carefully note each IC position, and then remove using a chip extraction tool.
- To install memory circuits, orient a chip over the corresponding socket and press firmly to seat pins. *Do not force.*

	CAUTION Discharge any static electricity built up in your body by touching the chassis for the power supply. Do this BEFORE touching or handling the electronic assemblies.

To service the Battery…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear door.
- Carefully note the position, and then gently lift the contact arm to release tension. *Do not bend the arm.*
- Slight finger pressure may be needed to pry the cell from its holder. *Avoid direct shorts across terminals or from terminals to ground.*
- To install a battery, orient cell near its holder and slide it in under the contact arm. *Do not force.*

	CAUTION Danger of explosion if battery is replaced incorrectly. Replace only with the same or equivalent type as recommended by the manufacturer. Dispose of used batteries according to instructions printed on the battery or the manufacturers packaging.

To service Wheel Driver Board Assembly…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear door.
- Remove the perforated metal cover to expose the wheel driver board assembly.
- Carefully note the orientation of the cables. Extract the harness and other cables from the board connectors.
- Remove the wheel driver board assembly mounting screws. Lift the board out of the cabinet and set in a safe place. Use anti-static bags and protective containers for storage if not reinstalled immediately.
- Perform the desired repair or equipment replacement.
- Be certain to reinstall the perforated cover so that it seals tightly against the metal plate.

To service the Power Supply…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear cabinet door.
- Unplug the IEC AC connector from the rear of the supply and the DC connector from the front.
- Remove the two front and two rear screws from the supply, then lift it off of the power chassis. Note voltage setting.
- Perform the desired repair or equipment replacement.
- Be sure to set the voltage switch to the correct value prior to reinstallation.
- Set the supply on the power chassis and align the mounting holes. Install the four screws and the two power connectors.

To service the Transformer…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear door.
- If the power to the Video Game Machine (VGM) was only recently disconnected, the transformer may still be warm. Allow the transformer to cool completely before handling.
- Label and disconnect all wiring, including ground.
- Remove the screws used to fasten the transformer to the base of the cabinet.
- Perform the desired repair or equipment replacement.

	DANGER: High voltage present. Exercise extreme caution while servicing transformer.

To service Fan Assembly…

- Switch off the power to the game machine and unplug the AC line cord.
- Unlock and remove the rear door.
- Remove the perforated metal cover to expose the fan assembly and set aside.
- Unplug the fan power connector from the wiring.
- Remove the screws used to fasten a fan down and then lift fan out.
- Perform the desired repair or equipment replacement.

To service Speakers in Head Rest…

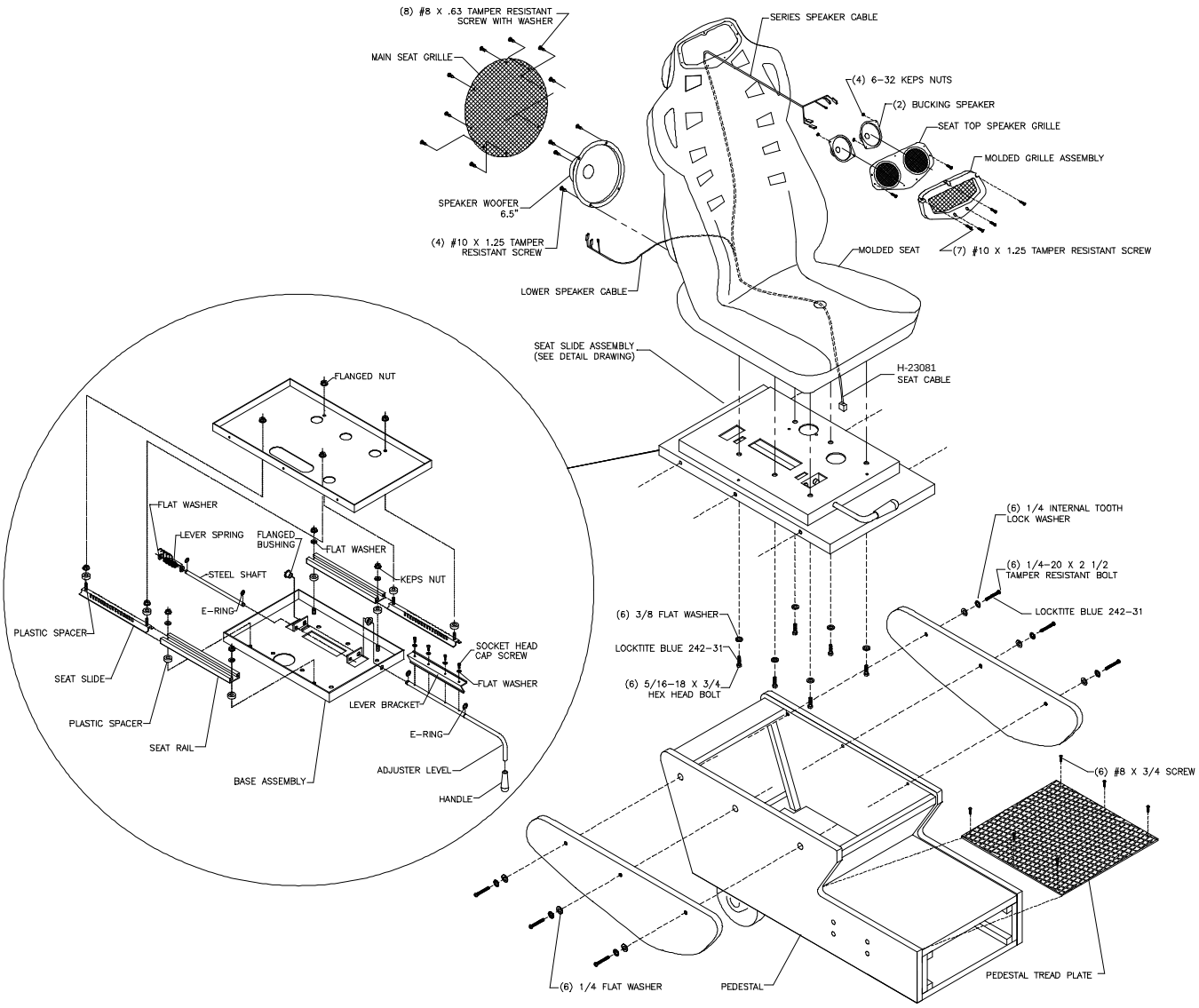
Refer to the *Seat Pedestal Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the tamper resistant screws from the speaker grille.
- Remove the tamper resistant screws used to fasten the speaker plate to the seat and pull forward.
- Label and disconnect wires, including ground.
- Remove the nuts used to fasten the speaker to the plate and remove speaker(s).
- Perform desired repair or equipment replacement.
- Reinstall the speaker(s) to the speaker plate and reattach wiring, including ground. Attach the speaker plate to the seat.
- Reinstall speaker grille and fasten in place with hardware provided.

To service Speaker in Seat Back…

Refer to the *Seat Pedestal Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Remove the tamper resistant screws used to fasten the grille to the seat and pull forward.
- Label and disconnect wires, including ground.
- Remove 4 Philips head screws used to fasten the speaker to the seat and remove speaker.
- Perform desired repair or equipment replacement.
- Reinstall speaker and reattach wiring, including ground.
- Reinstall speaker grille and fasten in place with hardware provided.



Seat Pedestal Service

To service the Seat Assembly…

*The Seat Assembly includes the pedestal base***.** Refer to the *Seat Pedestal Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Disconnect the Seat Assembly from the cabinet by removing 8 tamper resistant screws used to fasten the assembly to the slide rails in the cabinet.
- Slide the Seat Assembly halfway back along the rails to expose wiring.
- Disconnect the speaker cable and slide the seat the rest of the way off the rails.
- Remove 3 tamper resistant screws from each side of the seat mounting plate. Lift the seat and mounting plate assembly off the pedestal.
- Place the seat on its back, on a flat surface. Perform the desired repair or equipment replacement.
- Reinstall using the hardware provided.

IMPORTANT: Apply removable anaerobic adhesive thread lock (Loctite Blue 242 or equivalent) and torque each bolt to seven to nine ft.-lbs. (0.7 to 1.0 Nm) if it was loosened (see illustration).

To service the Seat Slide Assembly…

Refer to the *Seat Pedestal Service* illustration.

- Switch off the power to the game machine and unplug the AC line cord.
- Disconnect the Seat Assembly from the cabinet by removing 8 tamper resistant screws used to fasten the assembly to the slide rails in the cabinet.
- Slide the Seat Assembly halfway back along the rails to expose wiring.
- Disconnect the speaker cable and slide the seat the rest of the way off the rails.
- Remove 3 tamper resistant screws from each side of the seat mounting plate. Lift the seat and mounting plate assembly off the pedestal and set aside.
- Slide the seat assembly forward, and remove the two tamper resistant screws from the rear of the metal panel on top of the pedestal assembly.
- Slide the seat assembly backward and remove the two tamper resistant screws from the front of the metal panel.
- Lift the metal panel out of the pedestal base and turn the unit over.
- Remove the four nuts holding the metal panel to the slide assembly. Set the metal panel aside and slide assembly is exposed.
- Perform the desired repair or equipment replacement.
- Reinstall by performing the steps in reverse and fasten in place using the hardware provided.

IMPORTANT: Apply removable anaerobic adhesive thread lock (Loctite Blue 242 or equivalent) and torque each bolt to seven to nine ft.-lbs. (0.7 to 1.0 Nm) if it was loosened (see illustration).

CRUIS'N EXOTICA™

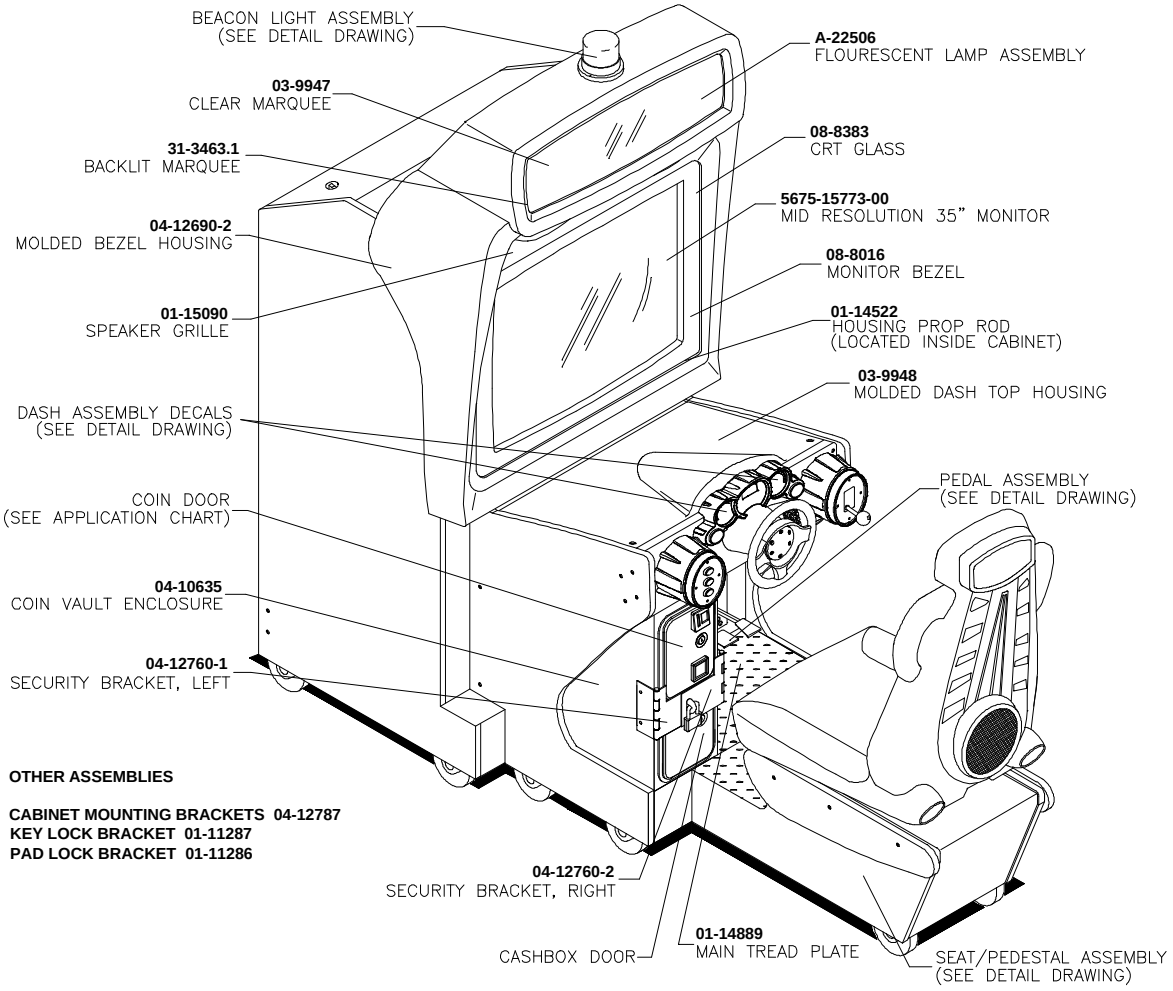
SECTION FOUR

Parts

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

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

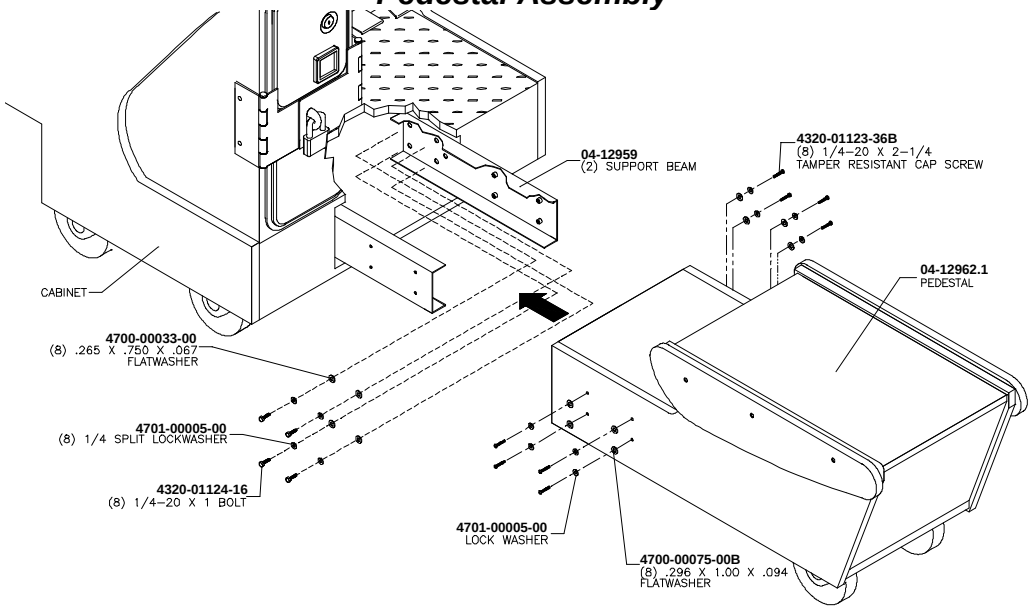
Cabinet Front View



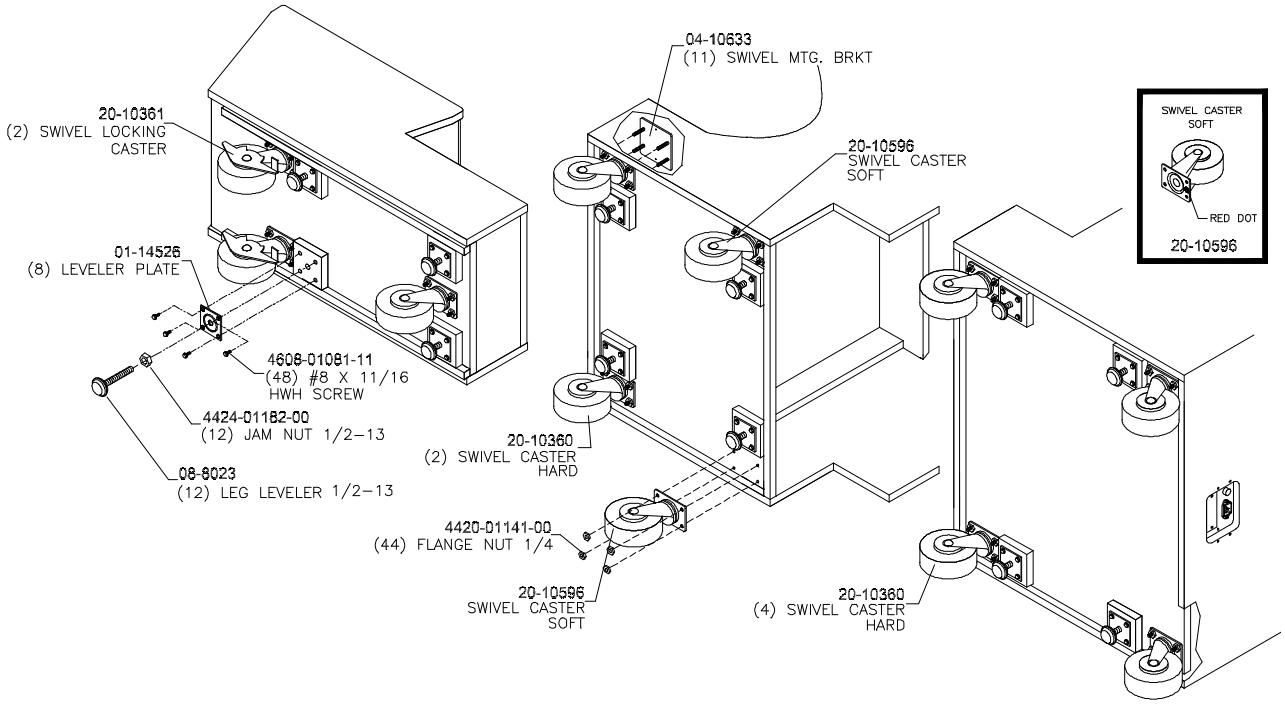
OTHER ASSEMBLIES

CABINET MOUNTING BRACKETS 04-12787
KEY LOCK BRACKET 01-11287
PAD LOCK BRACKET 01-11286

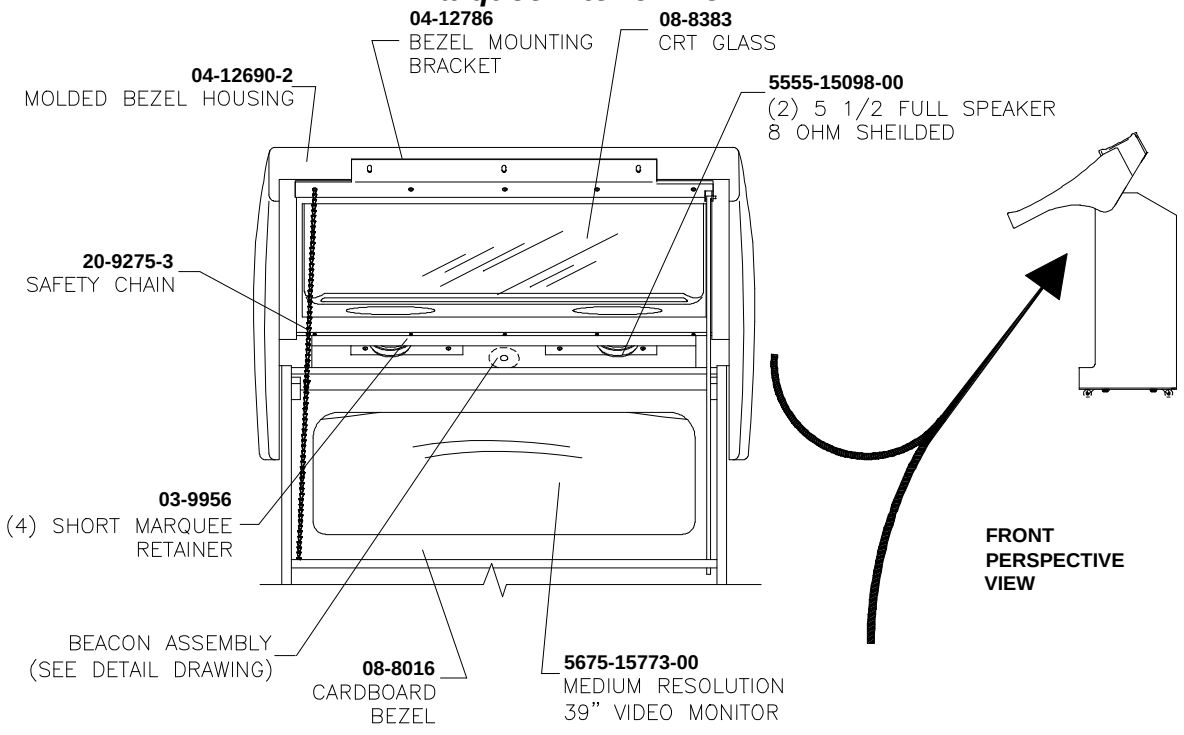
Pedestal Assembly



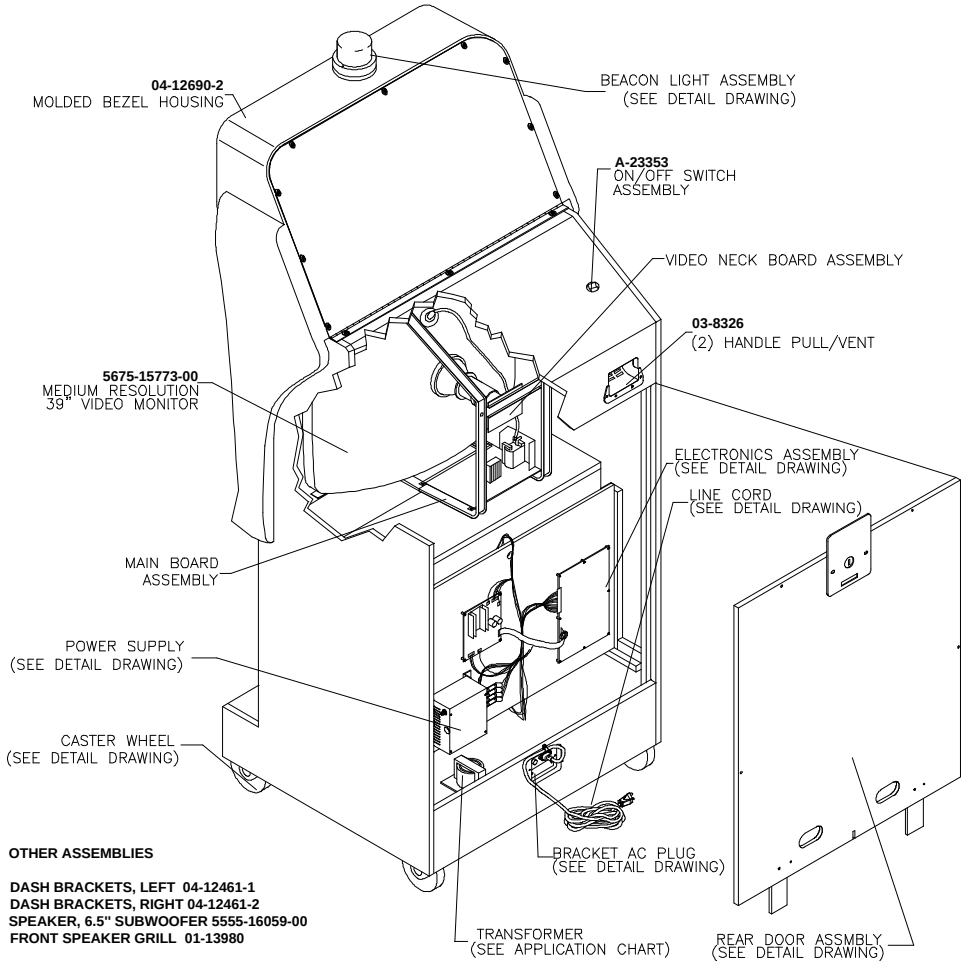
Caster & Leveler Assemblies



Marquee Interior View



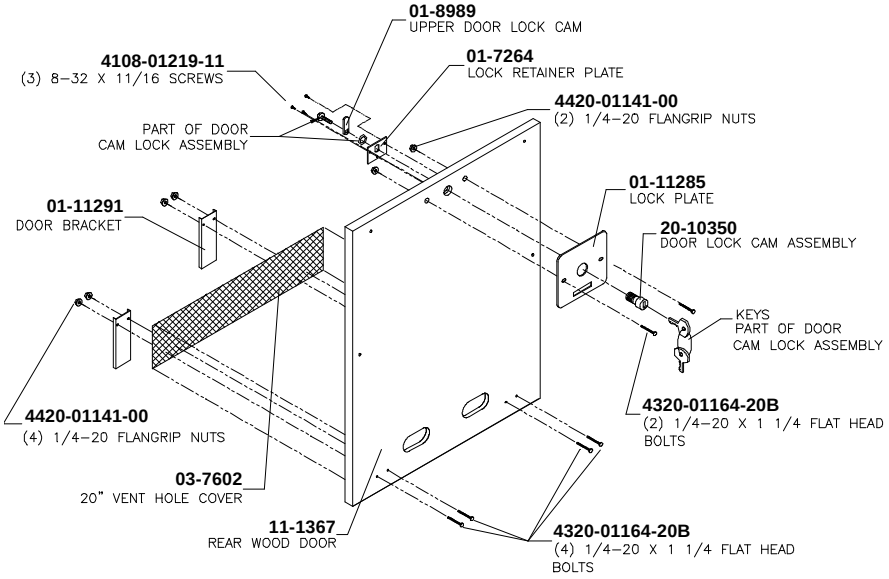
Cabinet Rear View



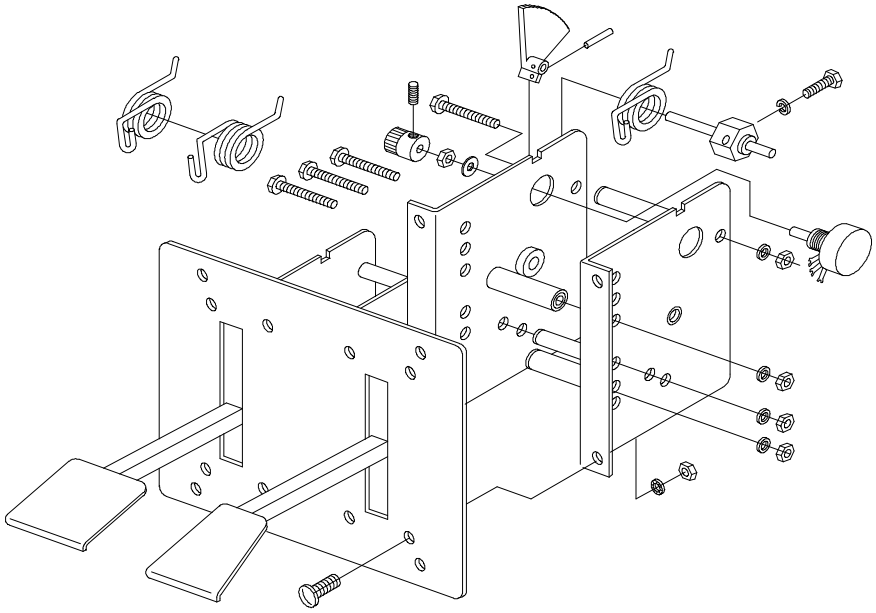
OTHER ASSEMBLIES

DASH BRACKETS, LEFT 04-12461-1
DASH BRACKETS, RIGHT 04-12461-2
SPEAKER, 6.5" SUBWOOFER 5555-16059-00
FRONT SPEAKER GRILL 01-13980

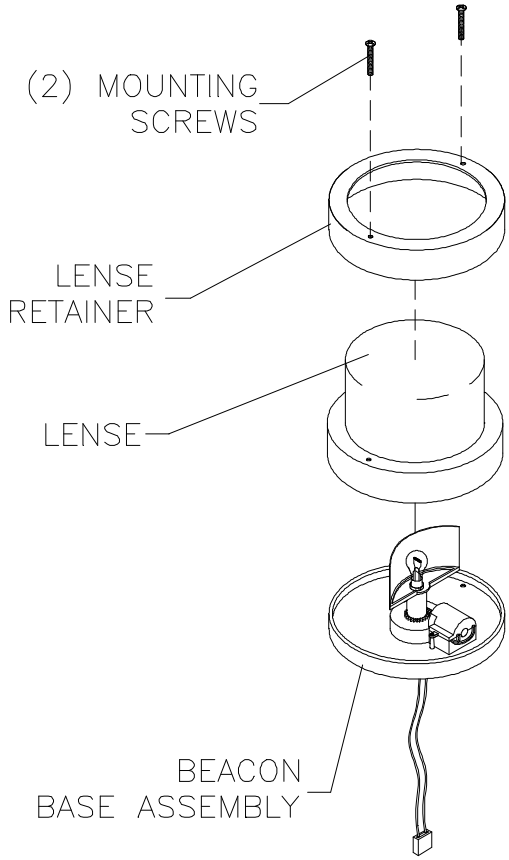
Rear Door Assembly



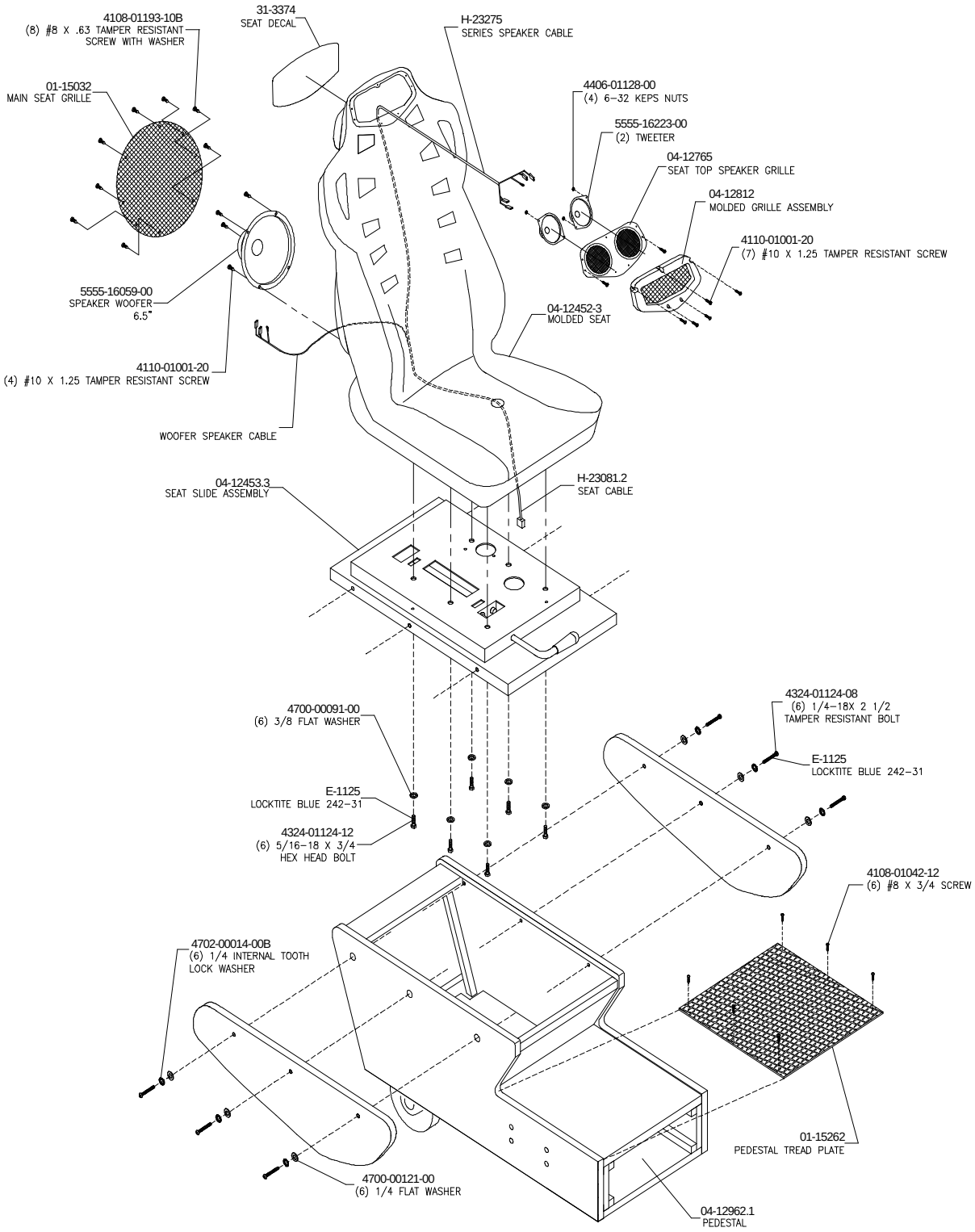
Pedal Assembly 20-10135



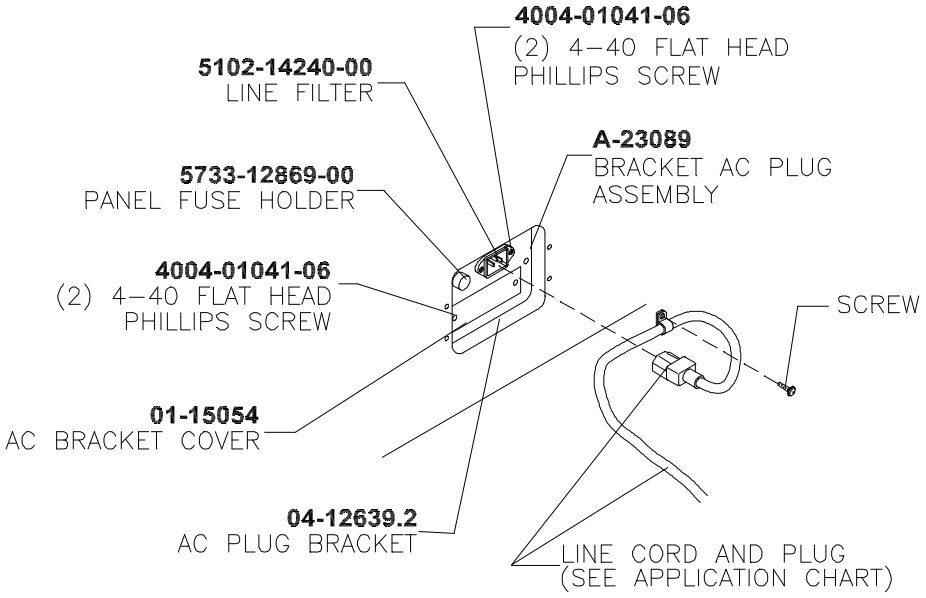
Beacon Light Assembly 20-10546



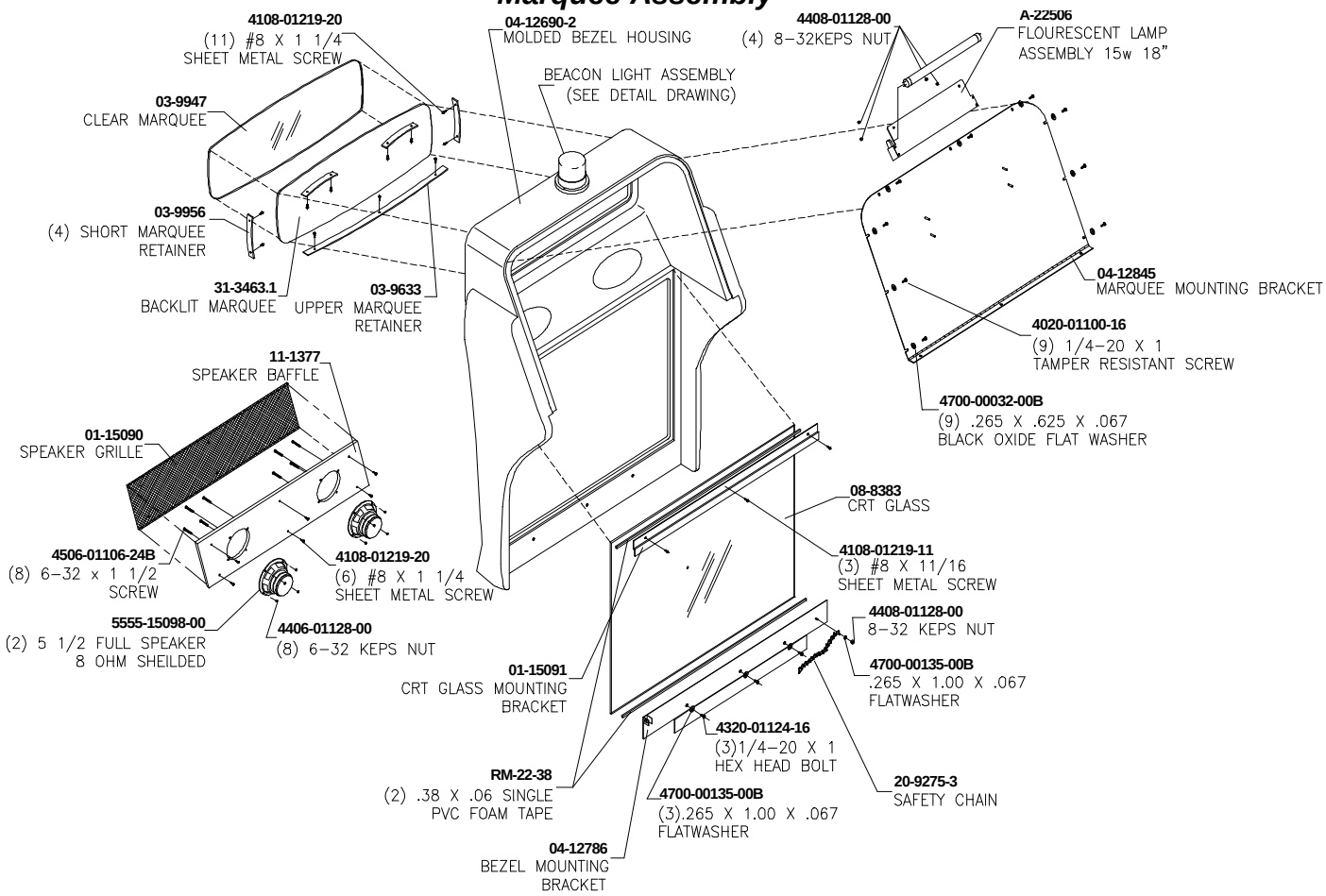
Seat Pedestal Assembly



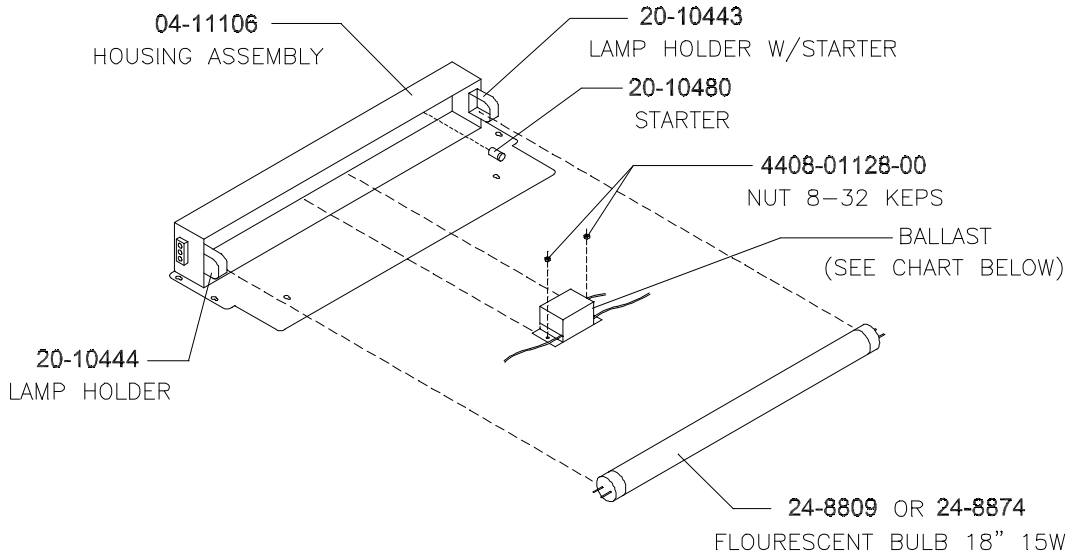
AC Power Assemblies



Marquee Assembly

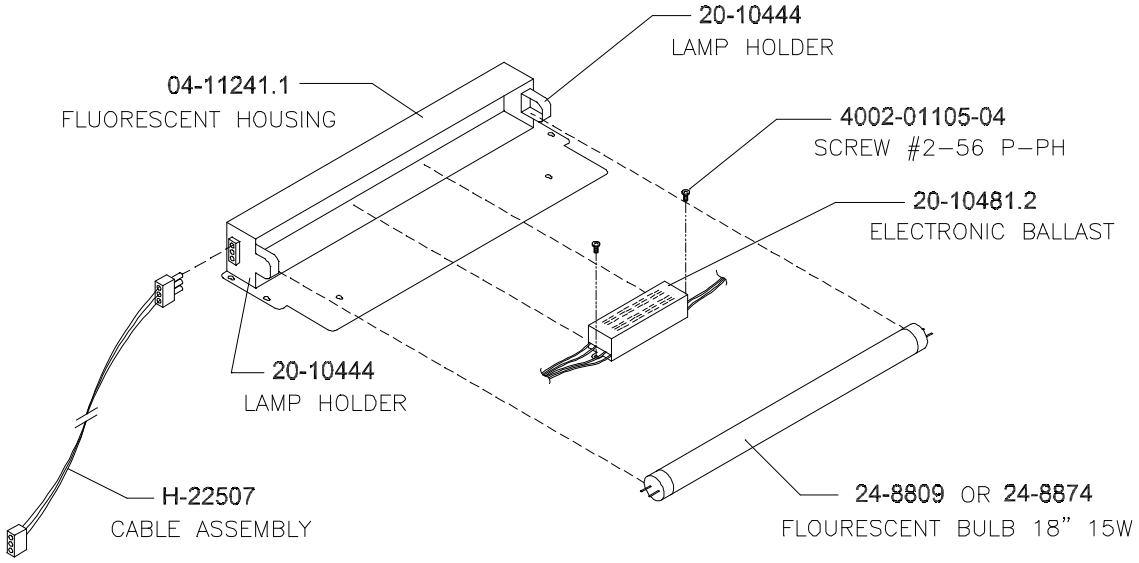


Lamp Assembly A-22506

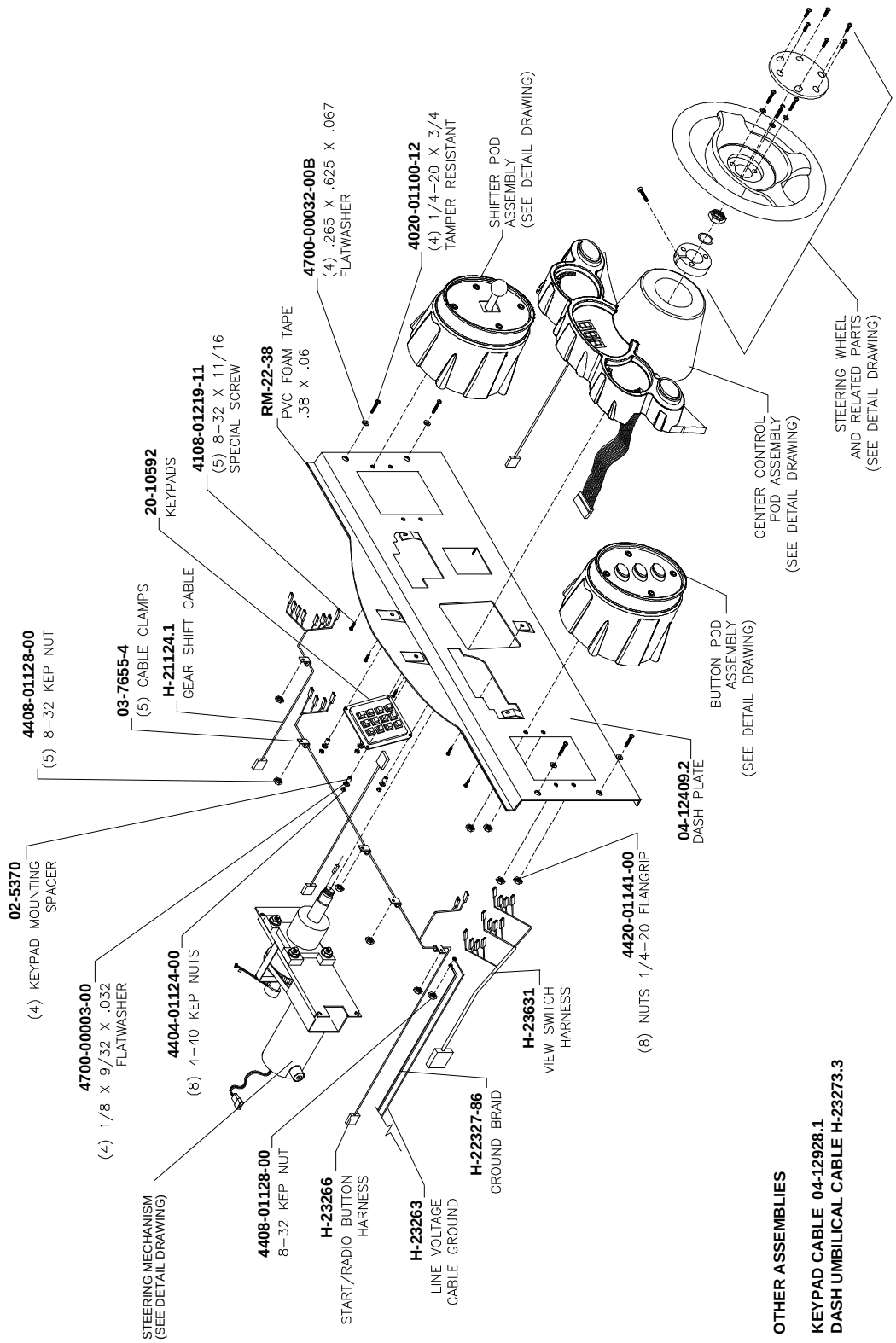


CONVENTIONAL LAMP BALLASTS:

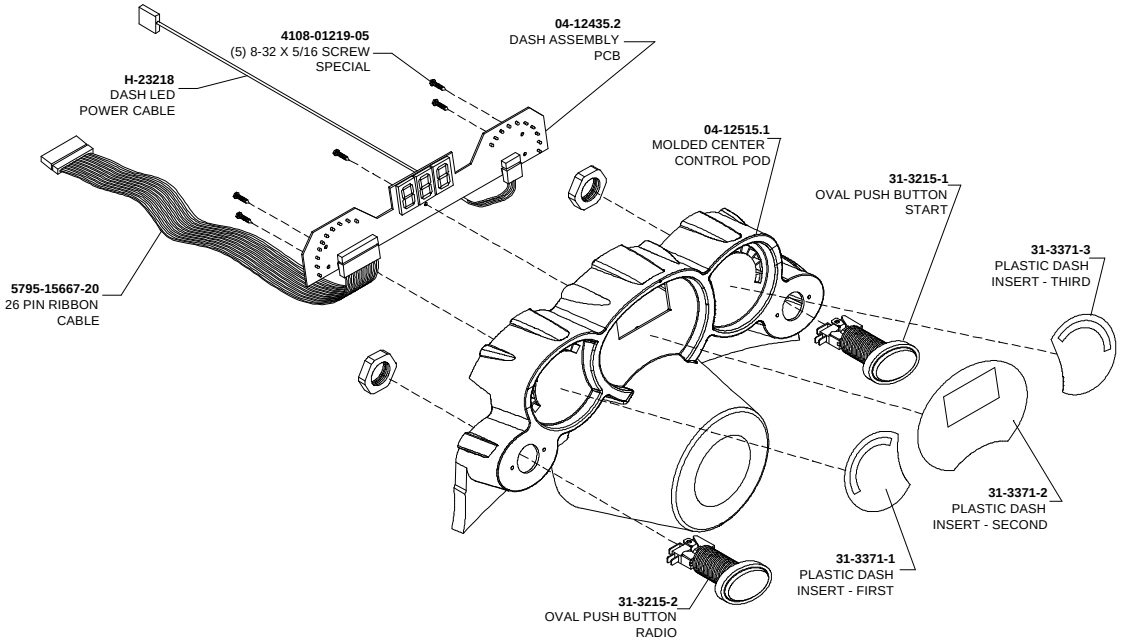
20-10263	100VOLT 50/60 Hz
20-8749-8	120VOLT 60Hz
20-10220	220VOLT 50Hz
20-10384	220VOLT 60Hz
20-10379	230VOLT 50Hz
20-10380	240VOLT 50Hz
20-10236	240VOLT 60Hz



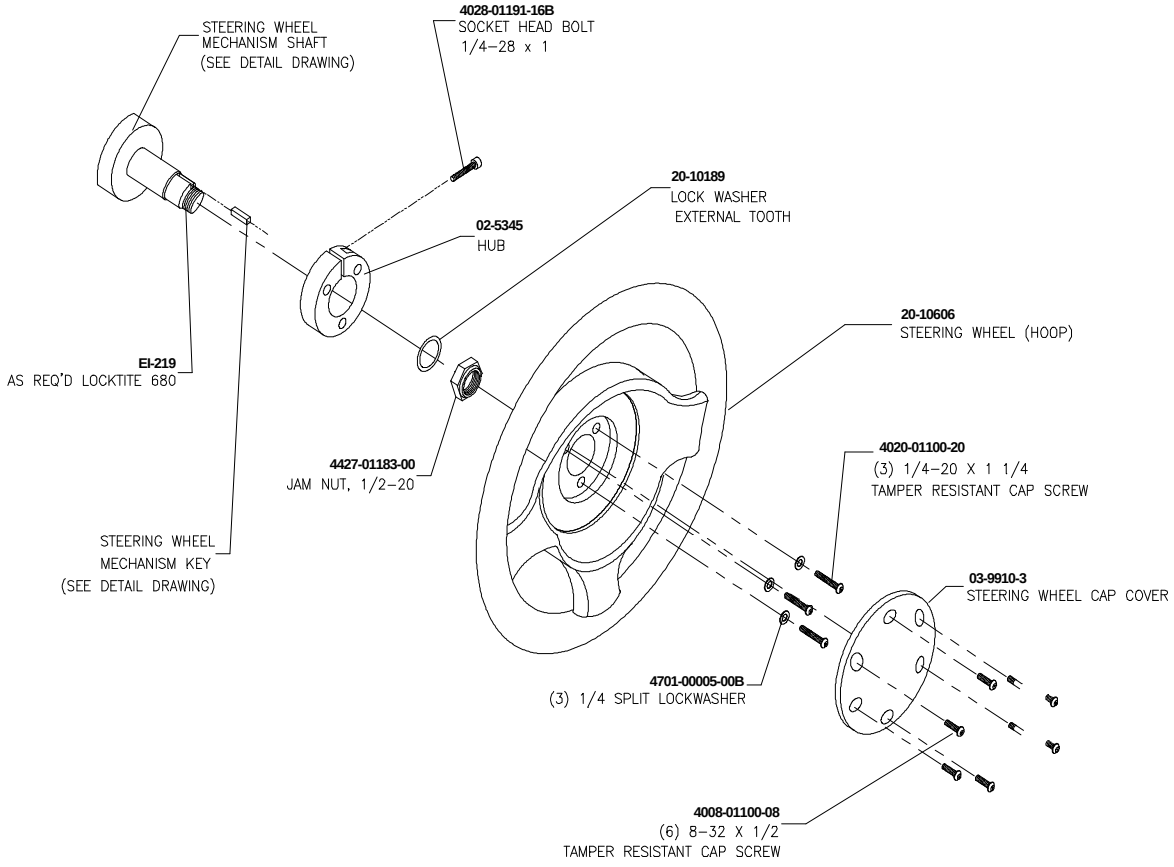
Dashboard Assembly



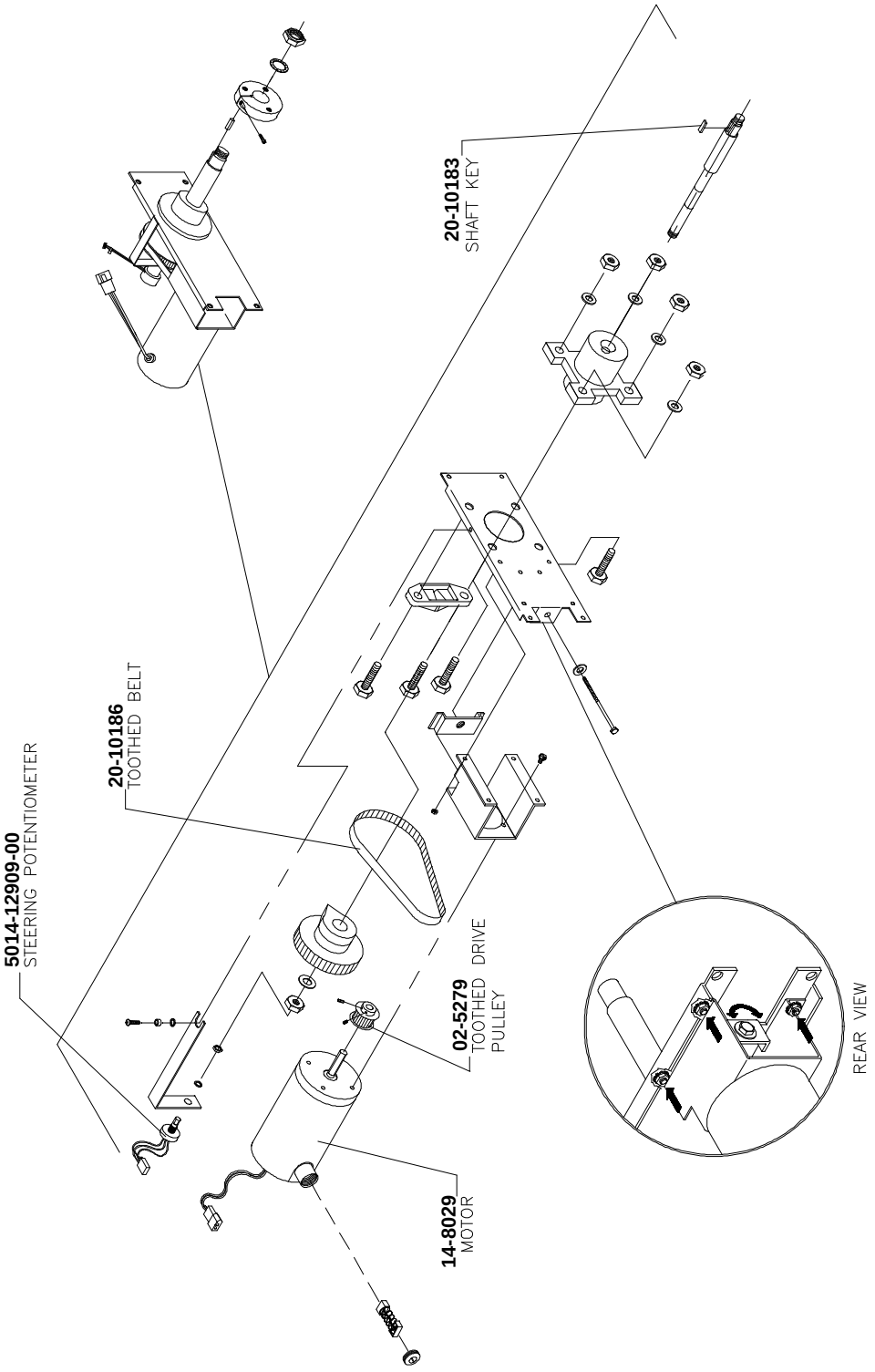
Center Control Pod Assembly



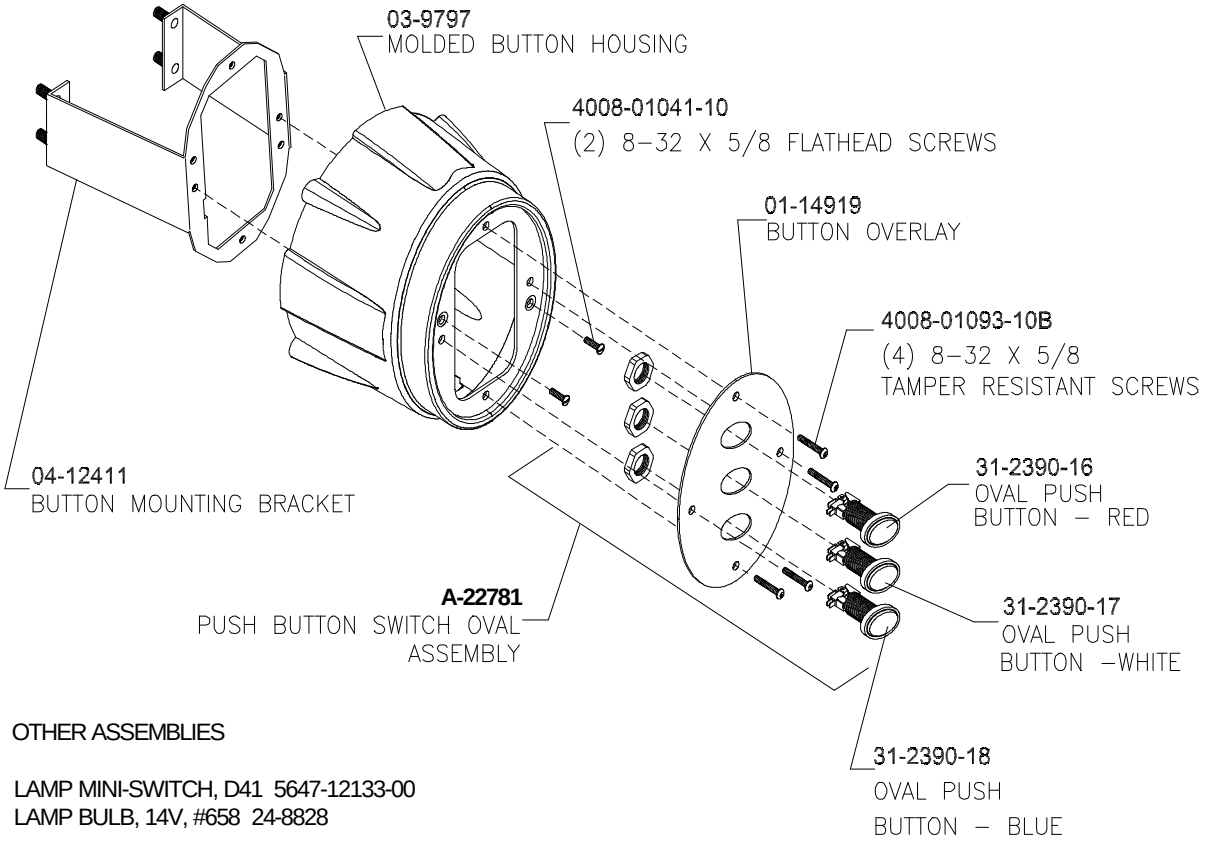
Steering Wheel



Steering Mechanism 20-10627



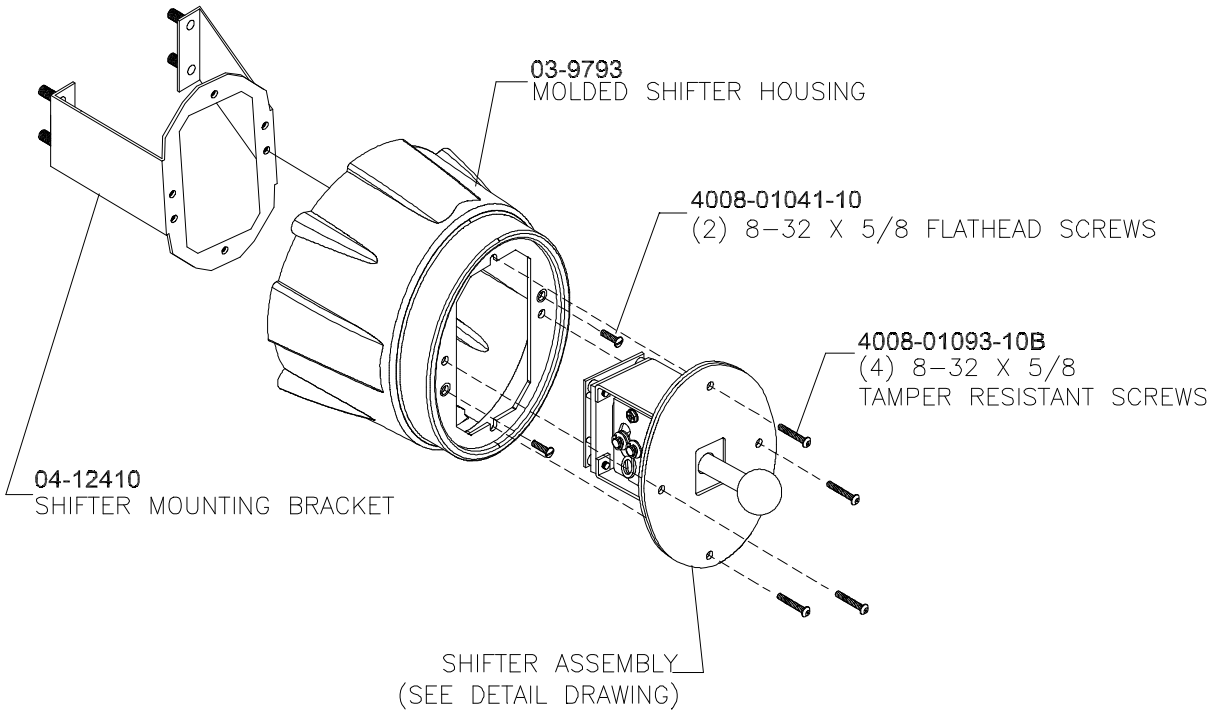
Button Pod Assembly



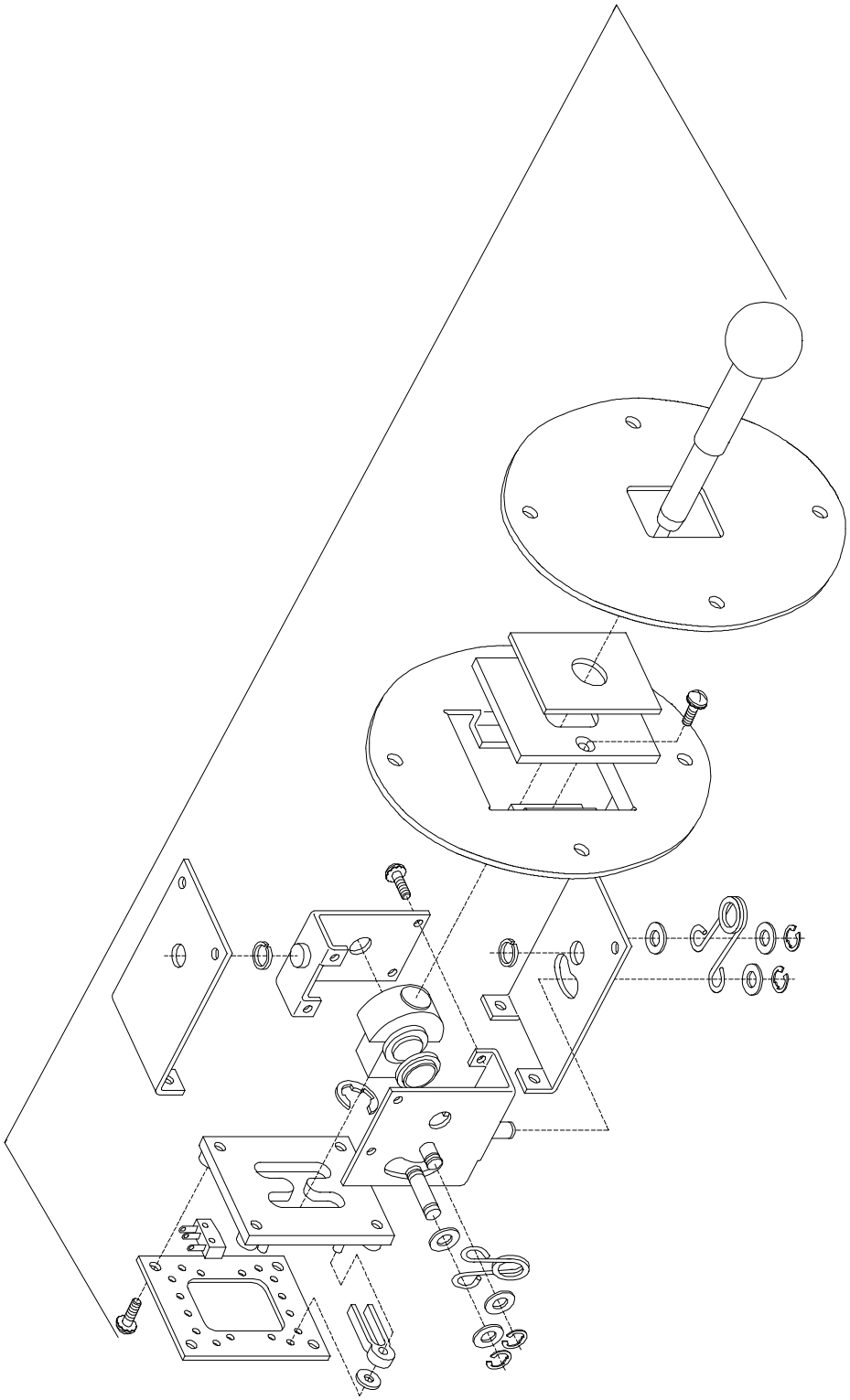
OTHER ASSEMBLIES

LAMP MINI-SWITCH, D41 5647-12133-00
LAMP BULB, 14V, #658 24-8828

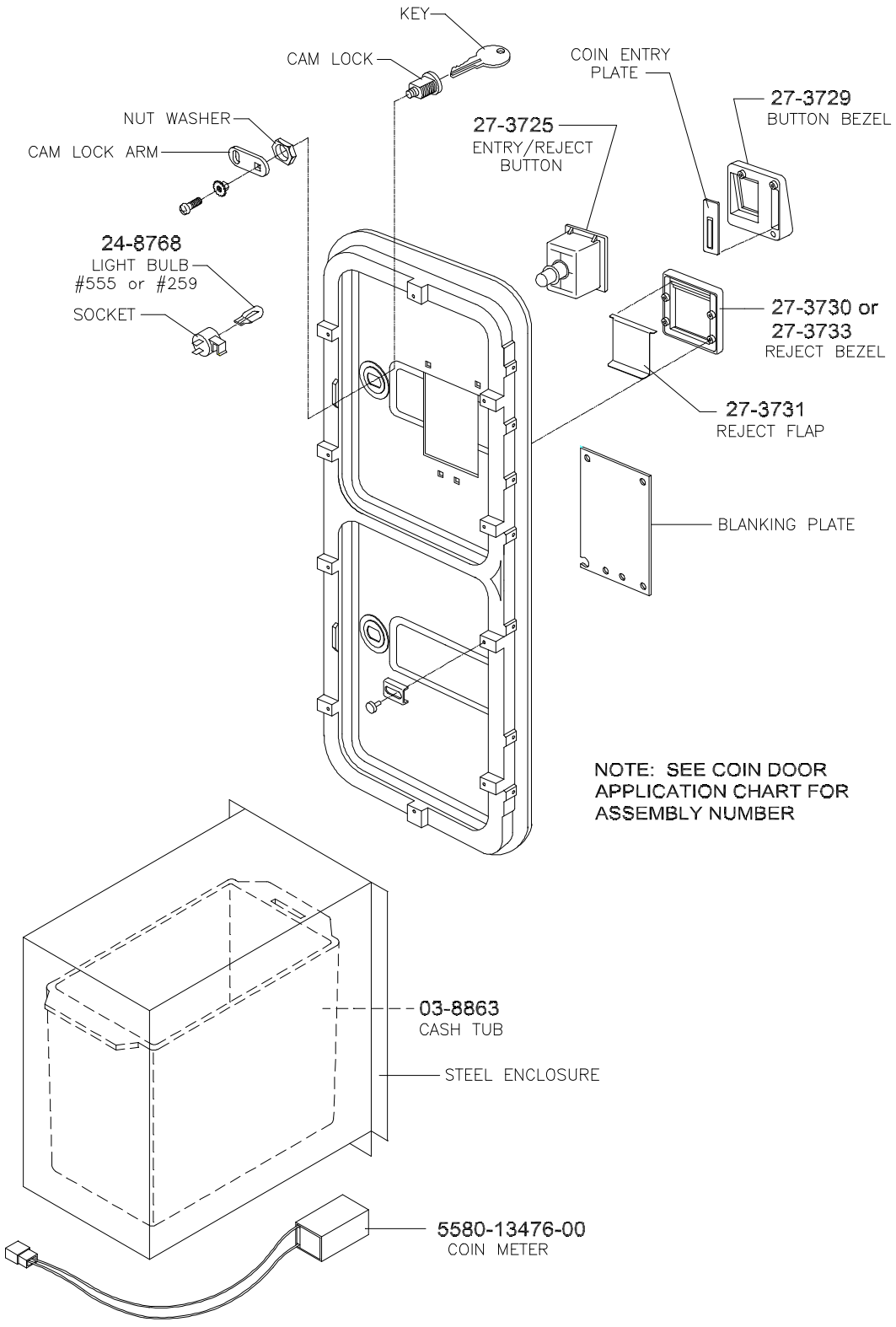
Shifter Pod Assembly



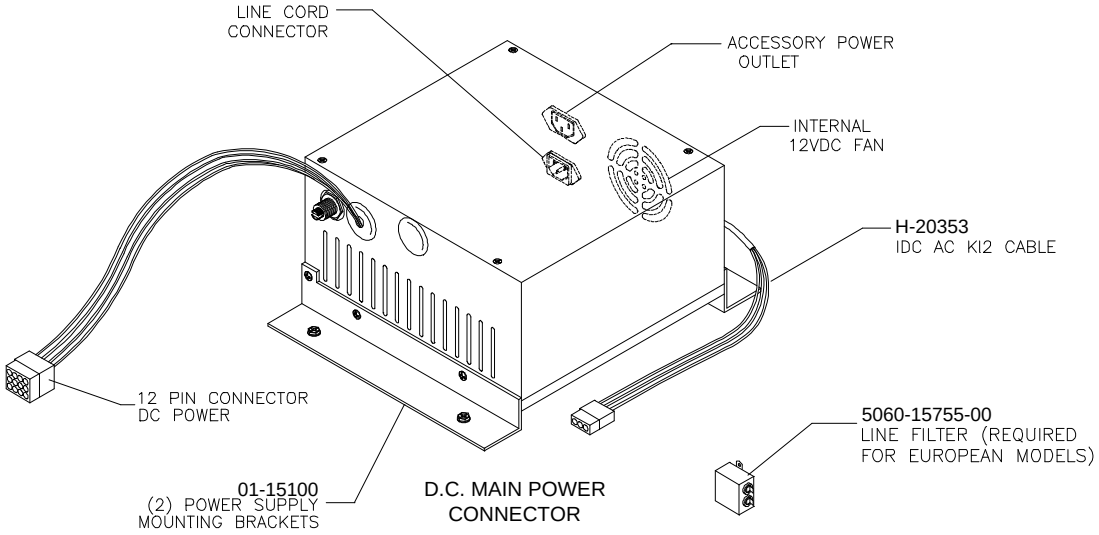
Shifter Assembly 20-10495



Coin Door Assembly



Power Supply 20-10537

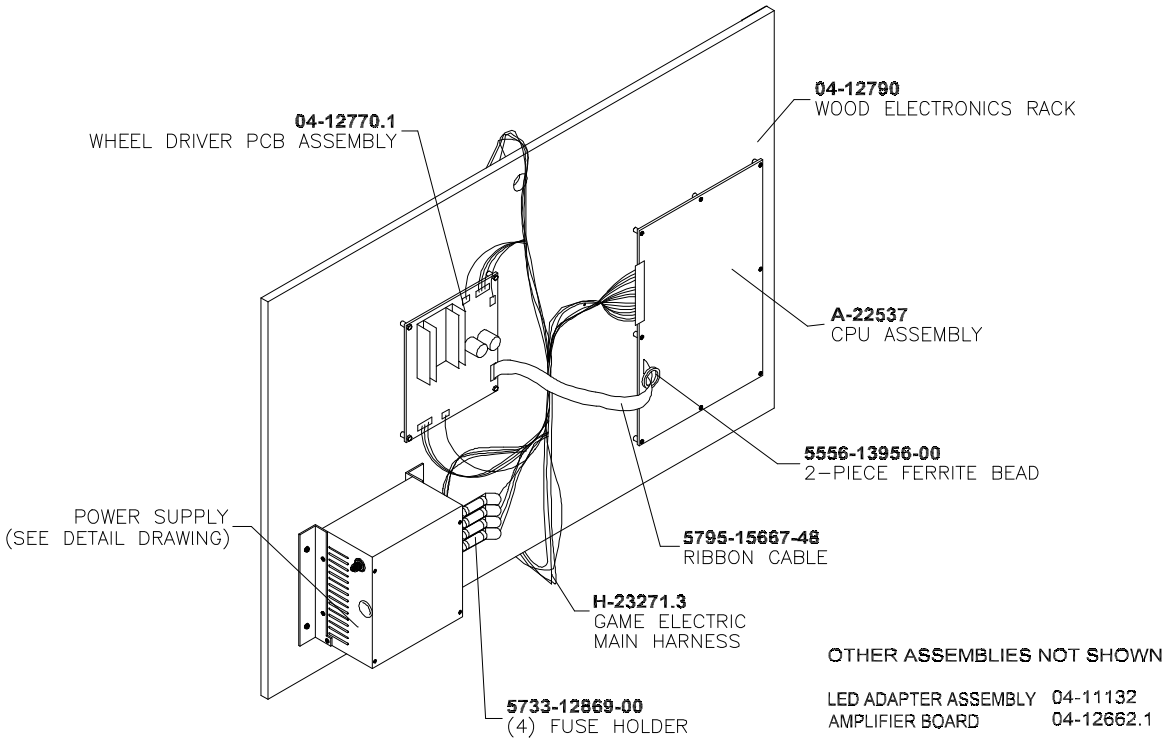


D.C. MAIN POWER CONNECTOR

PINS	FUNCTION	COLOR
1,2,3	+5 VDC	RED
4,5,6,7,8	GROUND	BLACK
9	−5 VDC	WHITE
10,11	+12 VDC	YELLOW
12	−12 VDC	BLUE

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

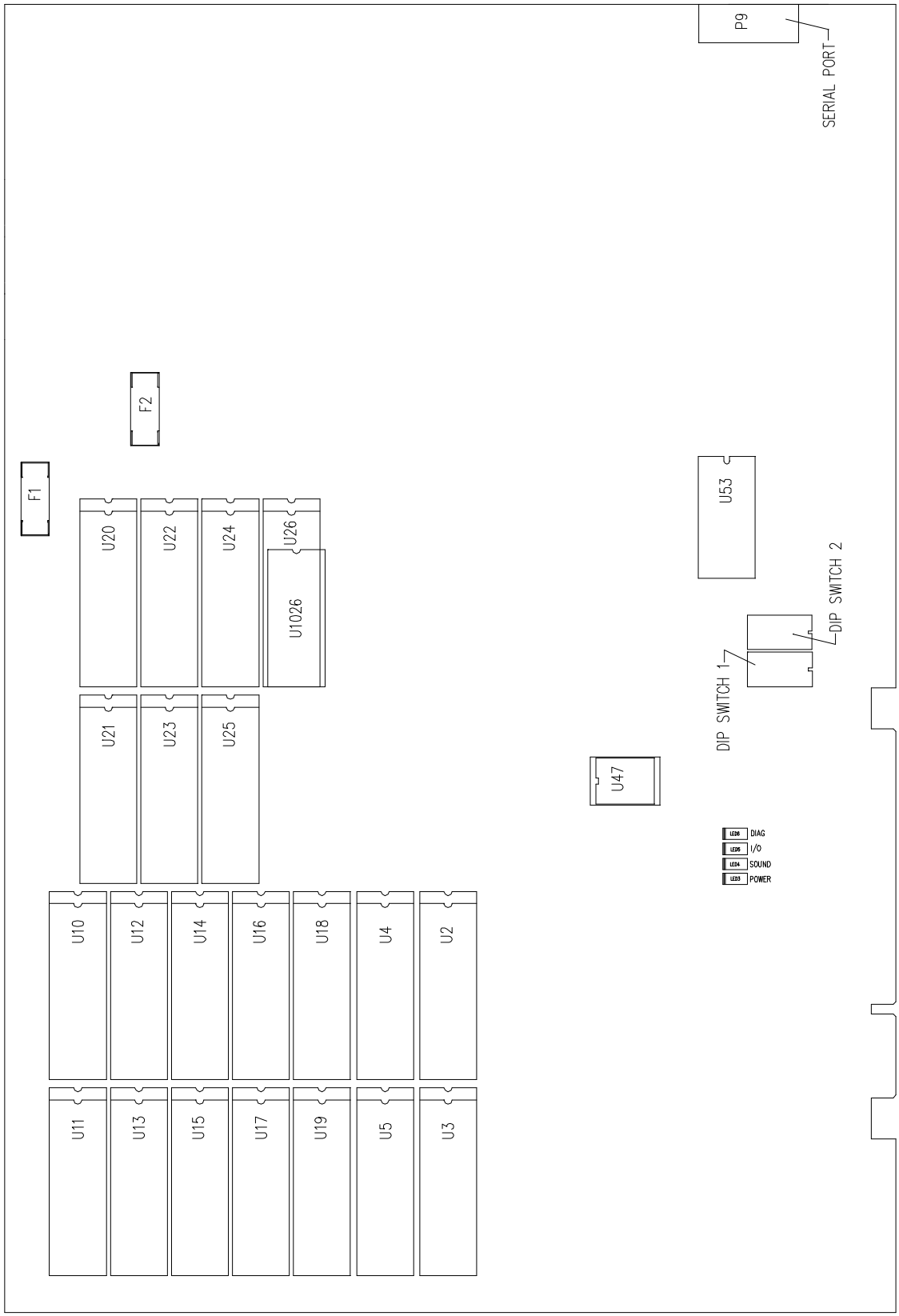
Electronics Assembly A-23332



OTHER ASSEMBLIES NOT SHOWN

LED ADAPTER ASSEMBLY	04-11132
AMPLIFIER BOARD	04-12662.1

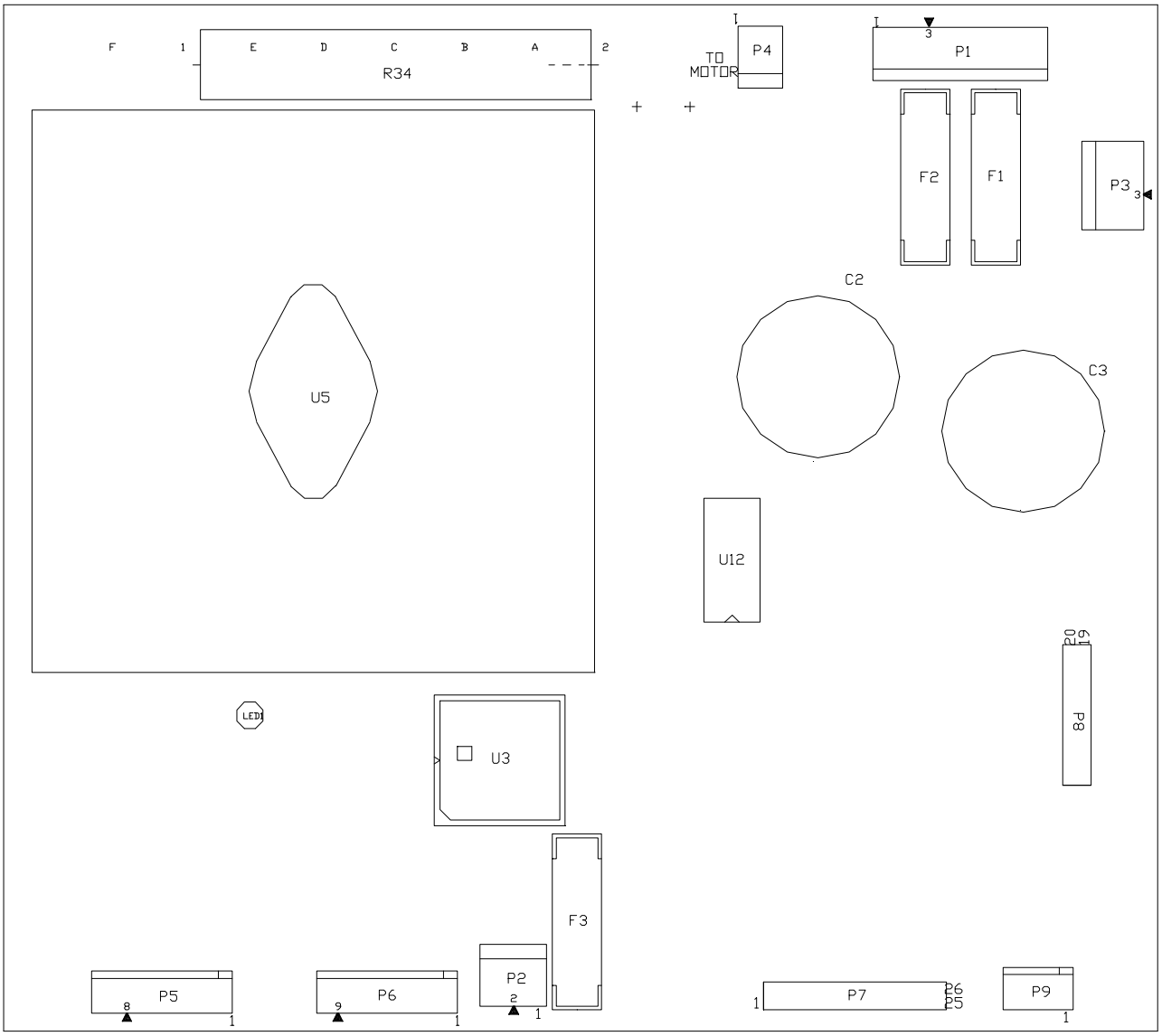
CPU Board Assembly A-22537



Field Replaceable CPU Board Parts

DESIGNATION	PART NUMBER	FUNCTION	DESCRIPTION
U47	5460-15676-00	Config Memory Backup	Module
F1, F2	5735-13853-00	Circuit Protection	2A SB Fuse 5x20mm
U2	A-5341-16431-11	Sounds	EPROM Assembly
U3	A-5341-16431-14	Sounds	EPROM Assembly
U4	A-5341-16431-15	Sounds	EPROM Assembly
U10	A-5341-16431-1	Programming & Images	EPROM Assembly
U11	A-5341-16431-2	Programming & Images	EPROM Assembly
U12	A-5341-16431-12	Programming & Images	EPROM Assembly
U13	A-5341-16431-13	Programming & Images	EPROM Assembly
U14	A-5341-16431-3	Images	EPROM Assembly
U15	A-5341-16431-4	Images	EPROM Assembly
U16	A-5341-16431-5	Images	EPROM Assembly
U17	A-5341-16431-6	Images	EPROM Assembly
U18	A-5341-16431-7	Images	EPROM Assembly
U19	A-5341-16431-8	Images	EPROM Assembly
U22	A-5341-16431-17	Images	EPROM Assembly
U23	A-5341-16431-18	Images	EPROM Assembly
U24	A-5341-16431-19	Images	EPROM Assembly
U25	A-5341-16431-20	Images	EPROM Assembly
U26	5347-16378-00	High Score Memory Backup	Module
U53	A-23251	39” Game Instructions	PIC Assembly

Wheel Driver Board 04-12770.1



Field Replaceable Wheel Driver Board Parts

Description	Part Number	Designation
Fuse 4A SB	5731-14094-00	F1, F2
Fuse .63A FB	5731-15627-00	F3
PLD Assy Primary	A-23362	U3
PLD Assy Secondary	A-23363	U3

Supplementary Parts

Power & Protection	
AC Line Filter, 5A, 250V	5060-15755-00
AC Line Filter, 6A, 250V	5102-14240-00
Ferrite Bead	5556-13956-00
Fuse, 4A, 250V, SB	5731-06314-00

Cables	
IDC Cable	H-20353
26-Pin Ribbon Cable	5795-15667-48
AC Interconnect Cable	H-23355
AC Line Voltage	H-23272
Beacon Light Cable	H-23123
Braided Ground Cable	H-22327-86
Control Panel Cable	H-22094
Dash Umbilical Cable	H-23273.3
Fire Wire Linking Cable	20-10536-16
High Current Power Cable	H-23371
Keypad Cable	04-12928
Main Harness JAMMA Cable	H-23271.3
Lower Seat Speaker Cable	H-21128
Bill Acceptor Adapter Cable	H-23639
USA DBV Acceptor	H-20398

Documentation	
Caster Installation Instructions	16- 11010
DBV Installation Instructions	16-9637
Operators Manual	16-40076-101
Product Registration Card	16-10650
Product Safety Manual	

Tools & Game Installation Hardware	
Bolt, hex head, ¼-20 x 1	4320-01124-16
Bulb, #555, 6.3V, .25 Amps	24-8768
Bulb, #161	24-8840
Fuse, SB, 4A, 250V	5731-06314-00
Fuse, SB, 1A, 250V	5731-06569-00
Fuse, SB, 7A, 250V	5731-09432-00
Fuse, SB, 3A, 250V	5731-10356-00
Fuse, SB, 4A, 5x20mm	5731-14094-00
Fuse, 5x20mm, T2.5A, 250V	5731-14532-00
Fuse, FB, .63A, 250V, 5x20mm	5731-15627-00
Screw, SMS, #8 x 1-1/2 TRX	4108-01160-24B
Screw, Tamper-Resistant, ¼-20 x 1-1/4	4020-01100-20
Torx Key, T-20	20-9620
Torx Key, T-27	20-10140
Washer, Flat, .265 x .626 x .067	4700-00135-00B
Washer, Flat, .265 x .750 x .067	4700-00033-00
Washer, Lock, ¼ , split	4701-00005-00
Washer, Lock, ¼-20, internal tooth	4702-00014-00B

Transformer Application Chart

Part Number / Voltage & Country	5610-16292-00	5610-XXXXX-01	5610-XXXXX-00
120 VAC USA	•		
230 VAC Europe		•	
100 VAC Japan			•

Line Cord Application Chart

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

Coin Door Application Chart

Part Number 09-96023- / Country	02	03	04	06	07	09	11	13	14	15	17	18	20	22	23	24	33
USA																	•
UK (09-80000)																	
Italy									•								
Japan										•							
New Zealand											•						
Germany	•																
Spain													•				
Denmark																	
Finland							•										
Holland								•									
Norway												•					
Switzerland														•			
Hungary															•		
Canada																•	
Austria		•															
France			•														
Australia				•													
Belgium					•												

CRUIS'N EXOTICA™

SECTION
FIVE

WIRING

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	H	7	Key	
Counter 2	N/C	J	8	Brown	**Coin Counter 1**
	N/C	K	9	N/C	
	N/C	L	10	N/C	
	N/C	M	11	N/C	
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 Switch**
Coin 2	Black/Red	T	16	Black/Brown	**Coin 1**
	N/C	U	17	White	**Start**
Gear 1	Green/Black	V	18	N/C	
Gear 2	Green/Brown	W	19	White/Brown	**Radio Switch**
Gear 3	Green/Red	X	20	N/C	
Gear 4	Green/Orange	Y	21	N/C	
	N/C	Z	22	White/Yellow	**View 1 Switch**
	N/C	a	23	White/Green	**View 2 Switch**
	N/C	b	24	White/Blue	**View 3 Switch**
	N/C	c	25	N/C	
	N/C	d	26	N/C	
Ground	Black	e	27	Black	**Ground**
Ground	Black	f	28	Black	**Ground**
SOLDER SIDE			**COMPONENT SIDE**		

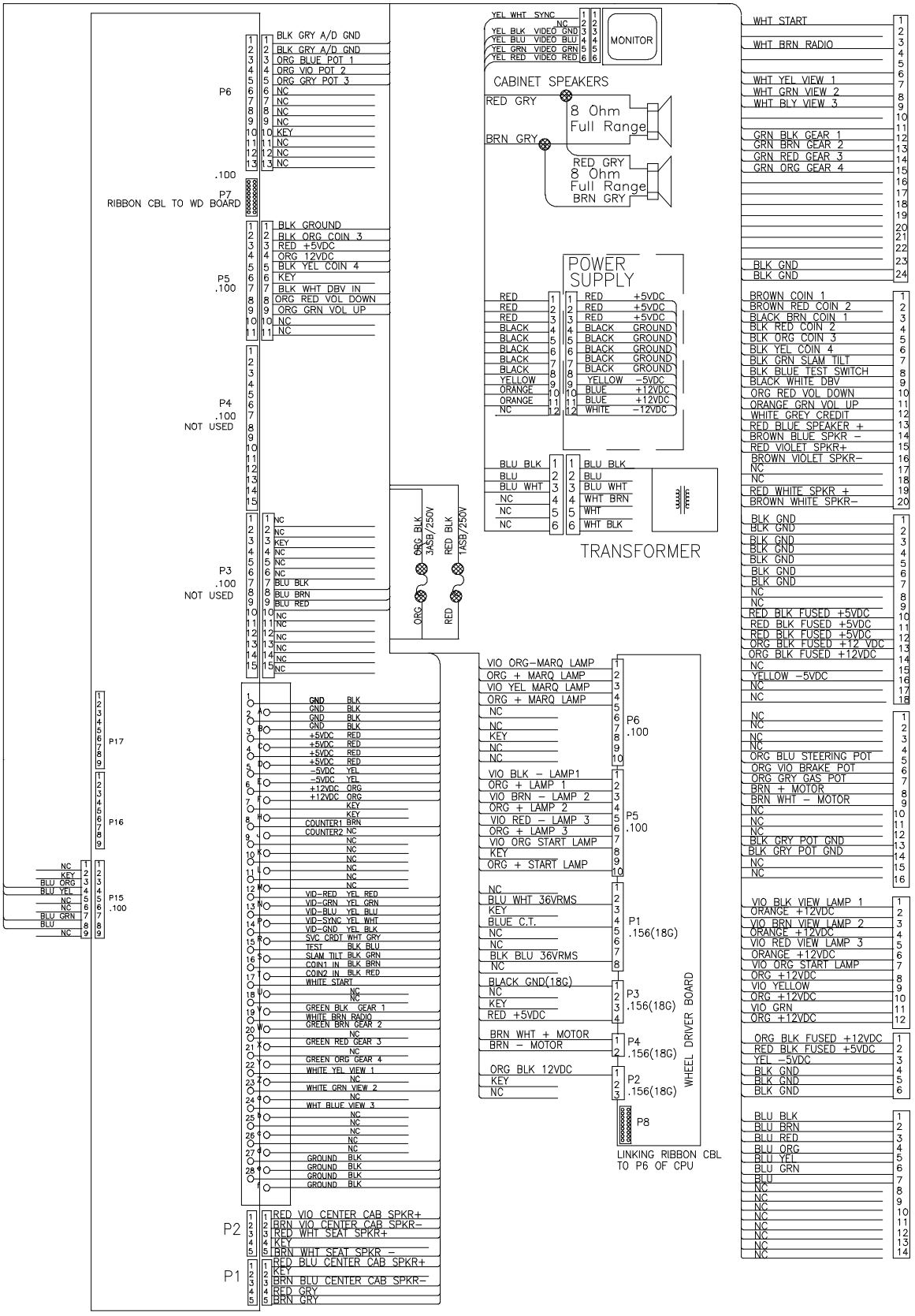
Dashboard Wires (Not part of the Main JAMMA Harness)

Wheel Motor Black	Brown/White -	Green/Black	**Gear Shift 1 (1st)**
Wheel Motor Red	Brown +	Green/Brown	**Gear Shift 2 (2nd)**
Red	**+5V Steering**	Green/Red	**Gear Shift 3 (3rd)**
Orange/Blue	**Steering Position**	Green/Orange	**Gear Shift 4 (4th)**
Black	**Ground Steering**	Black	**Gear Ground**

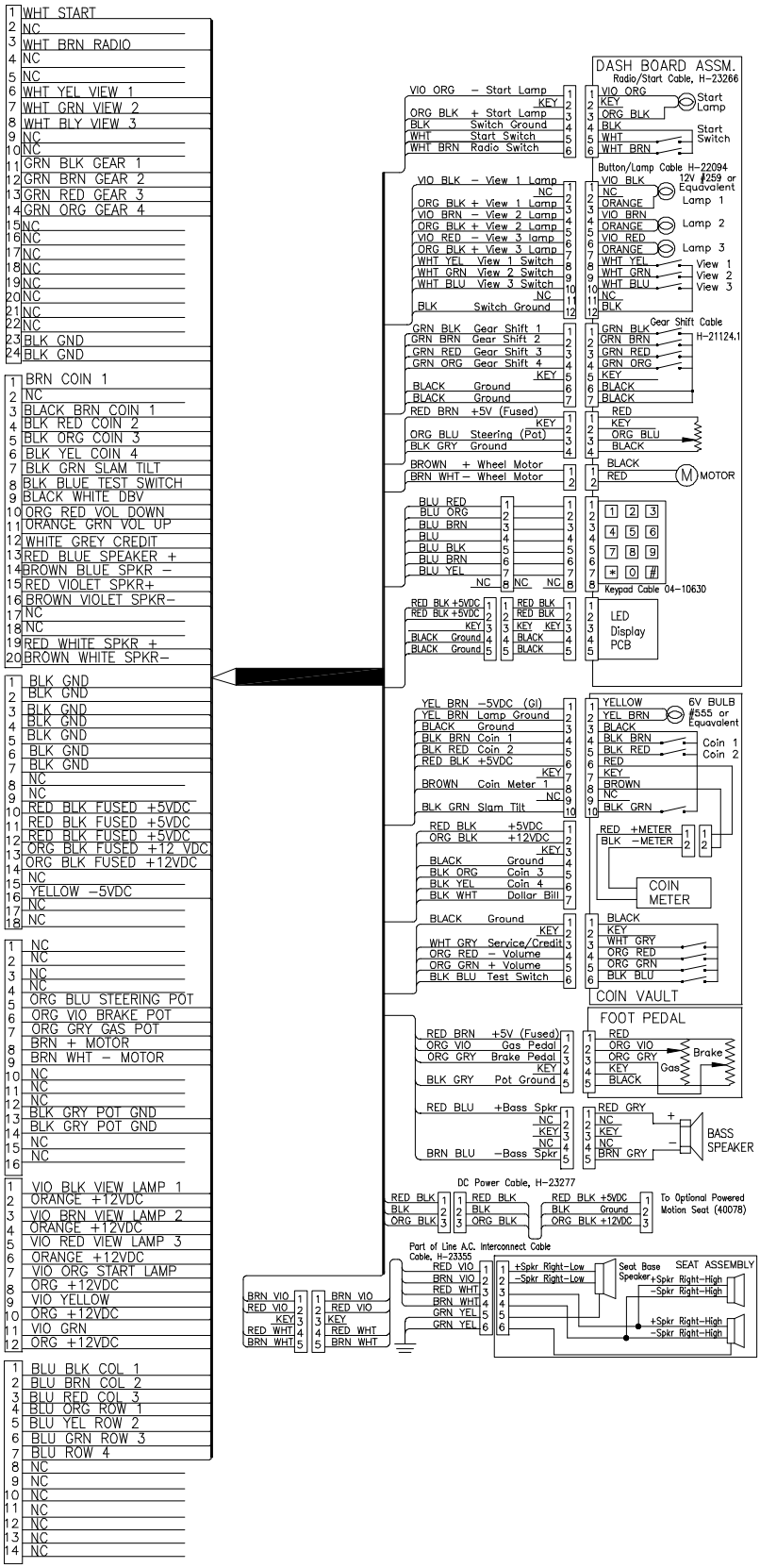
DC Power Source Voltage Limits

FUNCTION	RANGE LIMITS	ID	ID	RANGE LIMITS	FUNCTION
Digital Circuits	*+4.90V to +5.10V*	+5V	-5V	*-4.75V to -5.25V*	Audio; Lights
Audio; DBV	*+11.5V to +12.5V*	+12V	**NOTE**: +5V is adjustable on the power supply.		

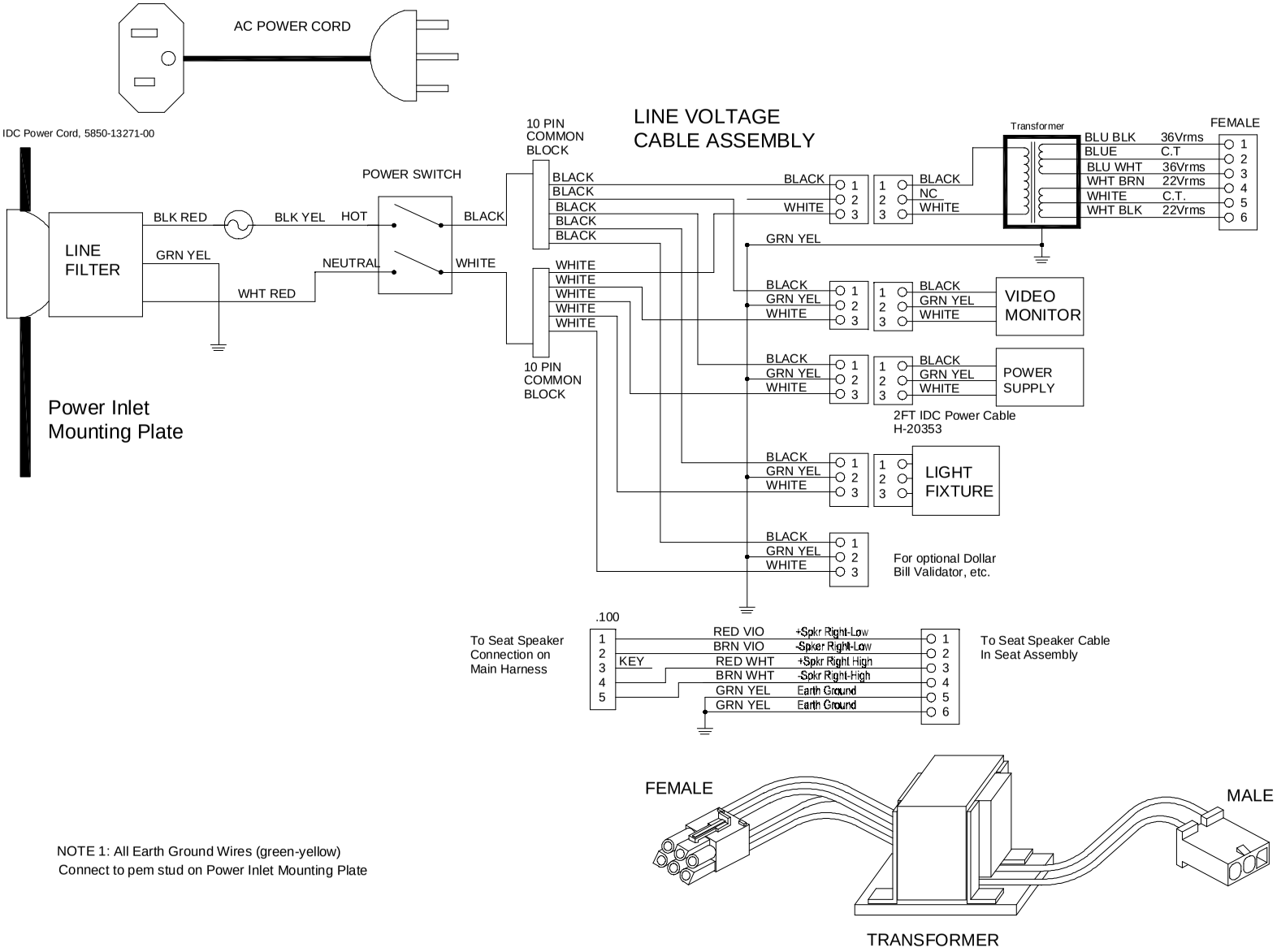
Main Cabinet Wiring



Control Cabinet Wiring



Power Wiring Diagram



NOTE 1: All Earth Ground Wires (green-yellow)
Connect to pem stud on Power Inlet Mounting Plate

CPU Board LED Indicator Status Chart					
DESIGNATION	**LOCATION**	**FUNCTION**	**COLOR**	**STATE**	**MEANING**
LED 6	Bottom Center	Diagnostic	Green	Off	Abnormal Game Play
				On	Abnormal Game Play
				Blinking	Signals Normal Game Play
LED 5	Bottom Center	I/O	Green	Off	PIC Recognized
				On	PIC Not Recognized
LED 4	Bottom Center	Sound	Orange	Off	Abnormal Operation
				On	Abnormal Operation
				Blinking	Signals Normal Operation
LED 3	Bottom Center	Power	Red	Off	Power Not Received
				On	Signals Normal Operation
				Blinking	Abnormal Power Reception

CPU DIP Switch 1 Settings

Function	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Dedicated Kit	OFF							
	ON							
Motion Disabled		OFF						
Motion Enabled		ON						
Stand Up Style Cabinet			OFF					
Sit Down Style Cabinet			ON					
Wheel Invert Disabled				OFF				
Wheel Invert Enabled				ON				
Unused					OFF			
					ON			
Link Disabled						OFF		
Link Enabled						ON		
Linking I.D. Number								
Master (Game Number 1)							OFF	OFF
Slave (Game Number 2)							ON	OFF
Slave (Game Number 3)							OFF	ON
Slave (Game Number 4)							ON	ON

CPU DIP Switch 2 Settings

DIP Switch 2 Settings	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
COUNTRY CODE								
USA	OFF*	OFF*	OFF*	OFF*	OFF*			
GERMANY	ON	OFF	OFF	OFF	OFF			
FRANCE	OFF	ON	OFF	OFF	OFF			
CANADA	ON	ON	OFF	OFF	OFF			
SWITZERLAND	OFF	OFF	ON	OFF	OFF			
ITALY	ON	OFF	ON	OFF	OFF			
UK	OFF	ON	ON	OFF	OFF			
SPAIN	ON	ON	ON	OFF	OFF			
AUSTRALIA	OFF	OFF	OFF	ON	OFF			
JAPAN	ON	OFF	OFF	ON	OFF			
TAIWAN	OFF	ON	OFF	ON	OFF			
AUSTRIA	ON	ON	OFF	ON	OFF			
BELGIUM	OFF	OFF	ON	ON	OFF			
SWEDEN	OFF	OFF	OFF	OFF	ON			
FINLAND	ON	OFF	OFF	OFF	ON			
NETHERLANDS	OFF	ON	OFF	OFF	ON			
NORWAY	ON	ON	OFF	OFF	ON			
DENMARK	OFF	OFF	ON	OFF	ON			
HUNGARY	ON	OFF	ON	OFF	ON			
GENERAL	ON	ON	ON	OFF	ON			
USA1/GER1/FR1/SPN1/AUSTRIA1/GEN1						OFF	OFF	
USA3/GER1/FR1/SPN1/AUSTRIA1/GEN3						ON	OFF	
USA7/GER1/FR1/SPN1/AUSTRIA1/GEN5						OFF	ON	
USA8/GER1/FR1/SPN1/AUSTRIA1/GEN7						ON	ON	
CAN1/SWI1/ITL1/UK1/JPN1/TWN1/BLGN1						OFF	OFF	
CAN2/SWI2/ITL2/UK2/JPN2/TWN2/BLGN2						ON	OFF	
CAN3/SWI3/ITL3/UK3/JPN3/TWN3/BLGN3						OFF	ON	
NTHRLDS1/FNLD1/NRWY1/DNMK1/HUN1						OFF	OFF	
NTHRLDS2						ON	OFF	

* Denotes default setting. Switches 1 through 5 select country. Switches 6 and 7 are used to select one of four modes for each country.

NOTES ON COINAGE:
There are many ways to select the type and quantity of currency recognized by the game machine.

1. The most common coin combinations for several countries are pre-programmed and can be selected from the table when Standard Pricing is activated (see Game Adjustments).

2. DIP Switch settings may be changed with the power switched on. Set any switch and then observe the screen to verify that the desired selection is enabled. **NOTE:** If CMOS Coin Settings are active, switch settings for an individual Country will have no effect.

3. Some European countries may accept currency used in other countries. The most popular coinage settings are listed beneath 'Other' in the Standard Pricing Table.

4. Alternate settings are listed beneath 'General' in the Standard Pricing Table.

NOTES

CRUIS'N EXOTICA™

CHAPTER SIX

TROUBLESHOOTING

CAUTION
This Video Game Machine (*VGM*) uses complex electronic components that are *very sensitive to static electricity.* Observe the following precautions before handling electronic assemblies. Failure to do so may void your warranty and could damage electronic assemblies.

- Before servicing electronics, turn off AC power to the *VGM*. Wait for capacitors to discharge.
- Before touching or handling electronic assemblies, discharge static electricity on your body. To discharge static, begin by connecting the line cord to a properly grounded outlet, but do not turn on the power! Next, touch the safety ground stud of the power supply chassis.
- Store electronic assemblies in an anti-static area. Use anti-static bags to store or transport circuit boards. Transport the hard drive in original shipping container.
- Do not remove or connect electronic assemblies when power to cabinet is switched on. Otherwise, you'll damage electronic assemblies and void the warranty.
- Replace ground wires, shields, safety covers, etc. upon completion of maintenance or service. Install and firmly tighten all ground and mounting screws.

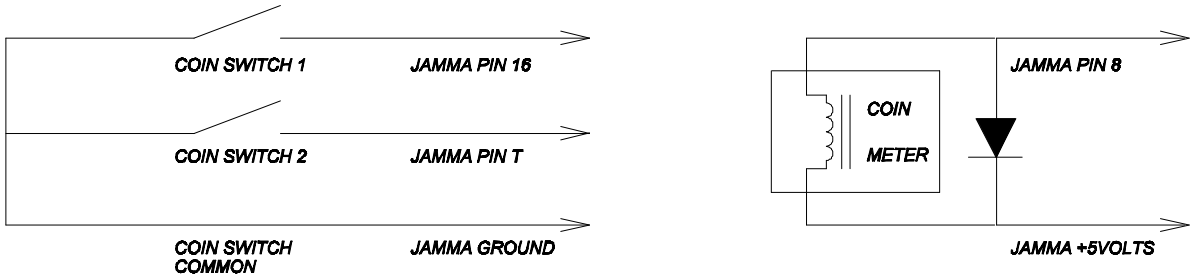
Coin Mechanism and Pricing Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
• Video Game Machine (VGM) accepts currency or tokens, but number of credits per coin or bill is incorrect.	Improper settings at Pricing Menu	1. Press and hold TEST MODE switch inside coin door to enter Menu System. Select SWITCH TEST from Diagnostics menu. Conduct test to confirm operation of game switches. 2. Select either the STANDARD *or* CUSTOM PRICING MENU from Game Adjustments Menu. Verify units and credits are set correctly.
	Faulty wiring	1. Confirm cabinet wiring is correct for this game. 2. Assure coin meter and coin switches connect properly to control input wires.
• VGM will not accept currency or tokens. • VGM will not enter play mode. • Audio and video are present.	Improper currency	1. Unlock and open cash door. Empty cash box and inspect revenue for counterfeit currency. 2. Check vault. Remove any items that block path from mechanism.
	Faulty coin mechanism	1. Unlock and open coin door. Check each mechanism for proper mounting. 2. Remove mechanism. 3. Clear currency path. 4. Reinstall mechanism and close latch.
	Tilted coin mechanism or game	1. Verify mechanism is level after doors close. 2. Repair or replace coin door if it is bent or damaged. 3. If necessary, adjust cabinet leg levelers to keep mechanisms level.
• Coin indicators do not light	Burned-out bulb	1. Burned-out bulbs may appear white or darkened. Check continuity with digital voltmeter. 2. Replace burned-out bulb with an identically rated part.
	Open fuse circuit	1. Check fuse continuity with digital voltmeter. 2. If fuse is blown, replace fuse with an identically rated part. 3. If fuse isn't blown, check wiring.

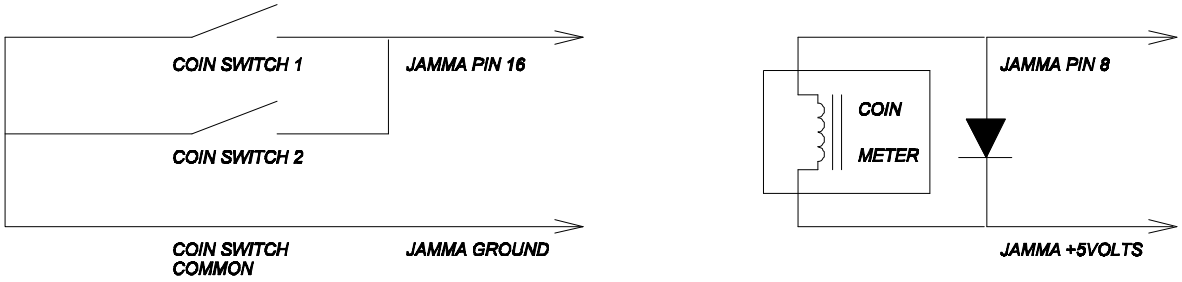
CAUTION
Do not remove or install any connector when power is turned on. Installation under power will damage the circuit boards or hard disk drive and void the warranty.

Coin Switch and Meter Wiring

FACTORY STANDARD

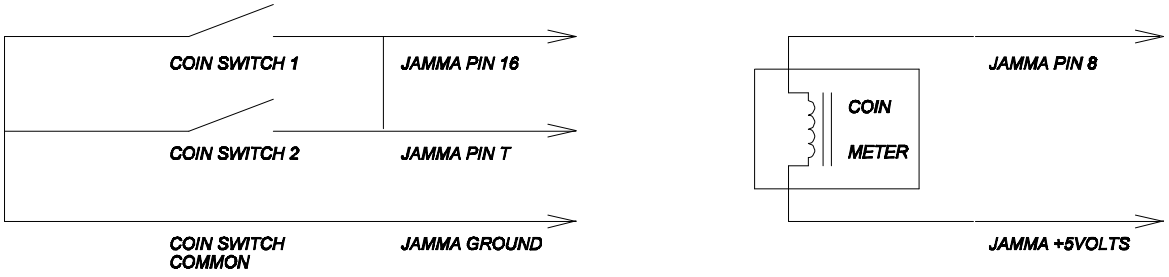


OPTIONAL WIRING



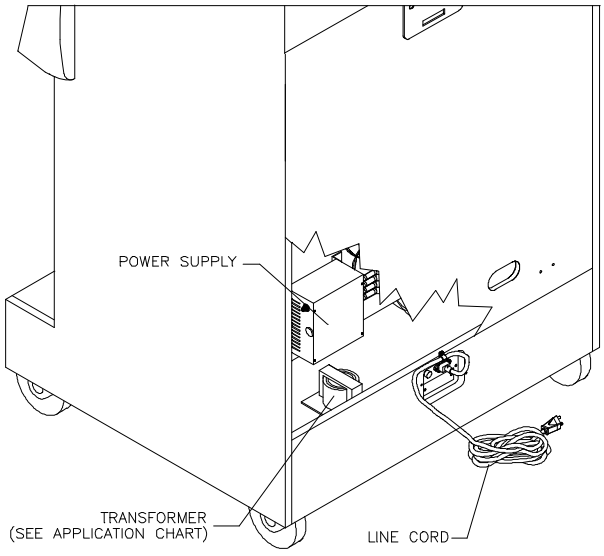
INCORRECT WIRING

A connection between JAMMA coin input pins will cause twice the desired credits for each coin inserted. A coin meter with a defective or missing diode may eventually damage driver circuits on the CPU Board.



Startup Troubleshooting Table

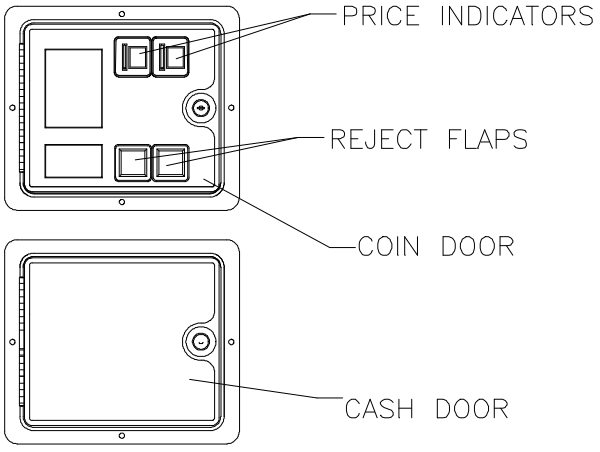
SYMPTOM	CAUSE	REQUIRED ACTION
• Video Game Machine (VGM) does not start. • VGM appears completely non-functional. • No audio • No illumination • No video display	Power problem	1. Check power is switched on. 2. Make sure fans are turning. If not: Is the power supply connected to its power cable? Is power supply turned on? 3. Plug cord into AC power outlet. Verify presence of AC line voltage.
	Improper line voltage switch setting	Turn off power. Unplug AC line cord. Check line voltage switch. If necessary, set it to agree with local AC line voltage. Retest game.
	Open fuse	1. Turn off power. Examine AC fuse on power chassis. 2. Examine DC fuses on cabinet wall or electronic equipment shelf. 3. Replace faulty fuses with identically rated parts. 4. Turn on game power. If fuse opens again, check DC wiring harness and connectors.
	Faulty wiring	1. Remove line cord. Test line cord, power plug, and IEC connector for breaks or damage. Verify continuity of each wire in cord. Install cord on power chassis. Press connector firmly to seat it. 2. Assure that cabinet wiring harness connectors fully seat in corresponding power supply and board connectors. 3. Inspect wiring for breaks or damage.



Location of Power Supply and Line Cord

Startup Troubleshooting, *continued*

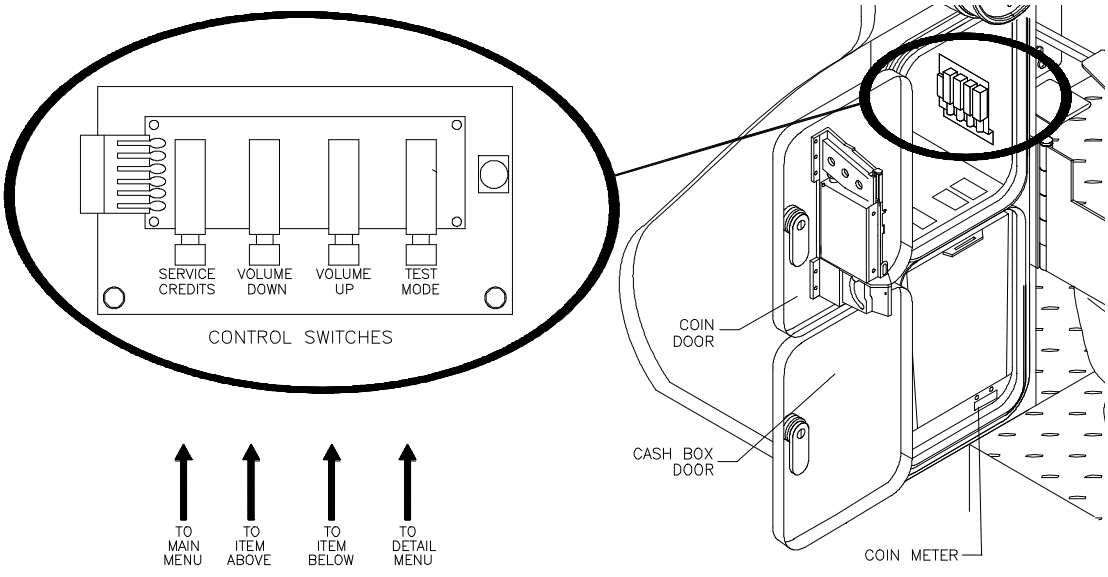
SYMPTOM	CAUSE	REQUIRED ACTION
• Video Game Machine (VGM) appears non-functional. • Currency acceptor price indicator is illuminated.	Power problem	1. Inspect circuit boards under low-light conditions. The LED's glow and the fan turns when processor circuits receive voltage and indicate presence of DC from power supply. However, voltages or signals may not be normal. 2. Turn on power. Set the digital voltmeter to the 20-volt DC setting and measure DC voltages at power connector pins. Adjust the +5V source if necessary. Refer to the Cabinet Wiring Diagram for specific wiring information and voltage limits. 3. Set the digital voltmeter to the 2-volt AC setting and measure DC voltages at power connector pins. Any reading here indicates that supply voltages are unstable and may contain ripple or noise.
	Faulty wiring	Turn off power. Check wiring harness connectors attach and fully seat onto mating board connectors. Verify harness connects to CPU Board. Check other connectors in same way.
	Improper DIP switch settings	Check DIP switch settings.
	Faulty circuit boards	1. Run power-up self-test sequence. Note errors or failures during test. Compare LED's with LED indicator status charts. Note discrepancies. 2. Press and hold TEST MODE switch inside coin door to enter Menu System. Select MONITOR TEST from Diagnostics Menu. Conduct test to confirm operation of each screen used in the game.



Typical Front View of Coin Door

Startup Troubleshooting, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
• Video Game Machine (VGM) does not start. • VGM accepts currency or tokens. • Audio and video are present.	Faulty coin mechanism	1. Unlock and open coin door. Check each currency acceptor to assure proper mounting. Verify each release latch is closed and locked. 2. Test mechanism with good and bad coins to see if mechanism accepts and rejects currency correctly. 3. Inspect to see if external acceptor indicators (Pricing, Flashing Arrows, etc.) are lit. 4. Verify each acceptor operates properly by placing it in working game. Replace bad parts.
	Faulty switches	1. Press and hold the TEST MODE switch inside coin door to enter Menu System. Select SWITCH TESTS from the Diagnostics Menu. Conduct test to confirm operation of each switch. 2. Assure no loose parts or wires are caught in switch contacts. 3. Check for continuity in each suspect switch connection (Common to Normally Open or Common to Normally Closed). 4. Replace faulty switches (bent levers, broken actuators, etc.).
	Faulty wiring	1. Assure no wires are caught in hinges, latches or switch contacts. 2. Check wiring continuity from circuit board connectors to acceptors.



Interior View of Coin Door

Linking Problem Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
• Cannot connect multiple Video Game Machines (VGMs) together	Faulty wiring	1. Do not extend linking cables supplied with VGM. 2. Install required crossover between cabinets. Each coupler connects two VGMs (one pair). Do not use standard telephone type couplers or wiring for linking. 3. Use only 10 Base-T, Ethernet-type, Category 5, twisted-pair wiring.
	Improper linking hardware	Use required network hub for your local network. A Hub Link Kit permits up to eight VGM connections. Array completion requires basic kit brackets and spacers.
• VGM does not recognize other players in linking operation • VGM functions normally by itself	Improper settings	1. Record any error messages that occur during self-test. 2. From the Diagnostic Menu select DIP SWITCH TEST. Confirm the link is enabled. 3. Be sure that each VGM has a unique ID number. 4. Select LINKING TEST from the Diagnostic menu. Run tests for each linked VGM.
	Power problem	Verify the hub receives power. AC adapter wires are thin and easily damaged.
	Faulty wiring (3 or more VGMs)	1. Inspect hub indicator lights. Illuminated indicator lights for each active port light up if the cable(s) are properly connected. Check for cable continuity from hub to VGM for each indicator that failed to light. 2. Assure no loose wires are caught in hinges, doors or under cabinet. 3. Verify linking cable connects to CPU Board for each game. 4. Verify each linking cable operates properly by placing it in working game.

CAUTION
Do not remove or install any connector when power is turned on. Installation under power will damage the circuit boards or hard disk drive and void the warranty.

Linking Problem Troubleshooting, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
• Some Video Game Machines (VGMs) in group link properly, while others do not	Improper hub switch setting	1. Assure switches on hub are set according to Hub Link Kit instructions. (VGMs on a network do not require couplers. Hub has electronic crossover.) 2. Inspect hub indicator lights for link activity. See manufacturer's literature for diagnostics.
	Wrong software version	Verify all linked VGMs use same version of software. Error message "VERSION MISMATCH" will appear if you try to link different versions. Contact your distributor.
	Faulty wiring (2 VGMs)	1. Insert only the supplied crossover connection between coupled VGMs. Standard couplers appear identical to devices supplied with games, but do not include an internal crossover. 2. Verify each linking crossover coupler operates properly by placing it in a working link between two VGMs.
	Faulty wiring (3 or more VGMs)	1. Use an additional crossover connector and cable to extend game or hub link connection. Two crossovers cancel each other out and results in same problem as no link crossover. 2. Connect cables directly to hub. Do not use a crossover coupler and hub together in single network. 3. Separate communications wiring from other wiring. Wires that must cross can only cross at right angles to limit noise pickup.

CAUTION
Do not remove or install any connector when power is turned on. Installation under power will damage the circuit boards or hard disk drive and void the warranty.

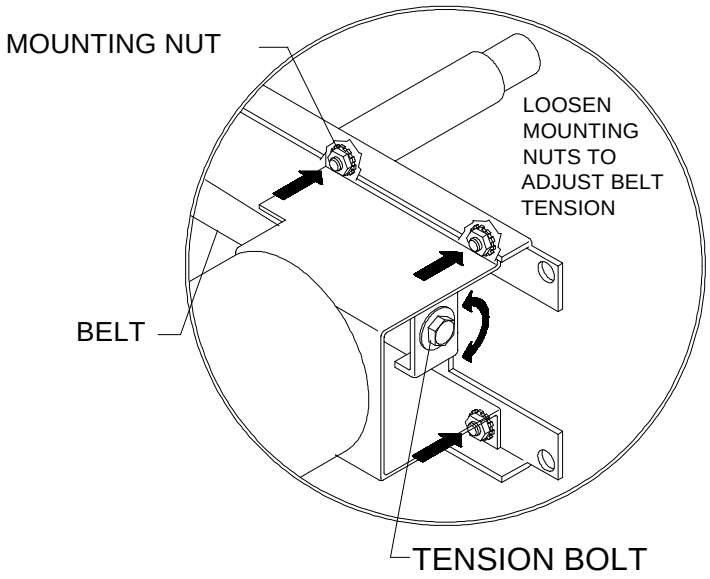
Player Control Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
• Intermittent or completely non-functional player controls • Video Game Machine (VGM) starts normally.	Faulty switches or lamps	1. Press and hold TEST MODE switch inside coin door to enter Menu System. Select SWITCH TEST from Diagnostic Menu. Conduct tests to confirm switch operation. 2. Press and hold TEST MODE switch inside coin door to enter Menu System. Select LAMP TEST from Diagnostic Menu. Conduct tests to confirm lamp operation. 3. Check for loose parts or wires caught in switch contacts. 4. Check continuity at each switch connection (Common to Normally Open or Common to Normally Closed). 5. Verify player control operates properly by placing it in working VGM. 6. Verify light bulbs used for dashboard switches are type specified in parts listing. Other types will light, but may produce too much heat. Excess heat may cause switches to bind.
	Faulty switch wiring	1. Check for wires caught in door hinges, latches, or switch contacts. 2. Verify harness connectors are attached and fully seated. 3. Assure control switches connect properly to control input wires. 4. Check cabinet wiring is correct for this VGM.
• Steering pulls to one side	Faulty Wheel Driver Board	Find power amp on Wheel Driver Board's large heatsink. Test and replace bad part or board.
• No wheel feedback • Steering aims vehicle as expected	Improperly set feedback	1. Select STEERING WHEEL TEST on the Diagnostics Menu. 2. Set feedback to match player requirements. Maximum force may be too extreme for very young or inexperienced customers.
	Faulty circuit	1. Examine fuses and cables on Wheel Driver Board. 2. Check cables and wiring between CPU board, wheel driver and motor. 3. Check resistance of motor series resistors. 4. Replace bad parts.
	Faulty motor	1. Turn off power. Open dashboard. Support steering wheel and remove outer mounting screws. 2. Remove metal shield (if VGM has one) over motor. 3. Unscrew caps. 4. Inspect motor brushes. Replace worn parts.

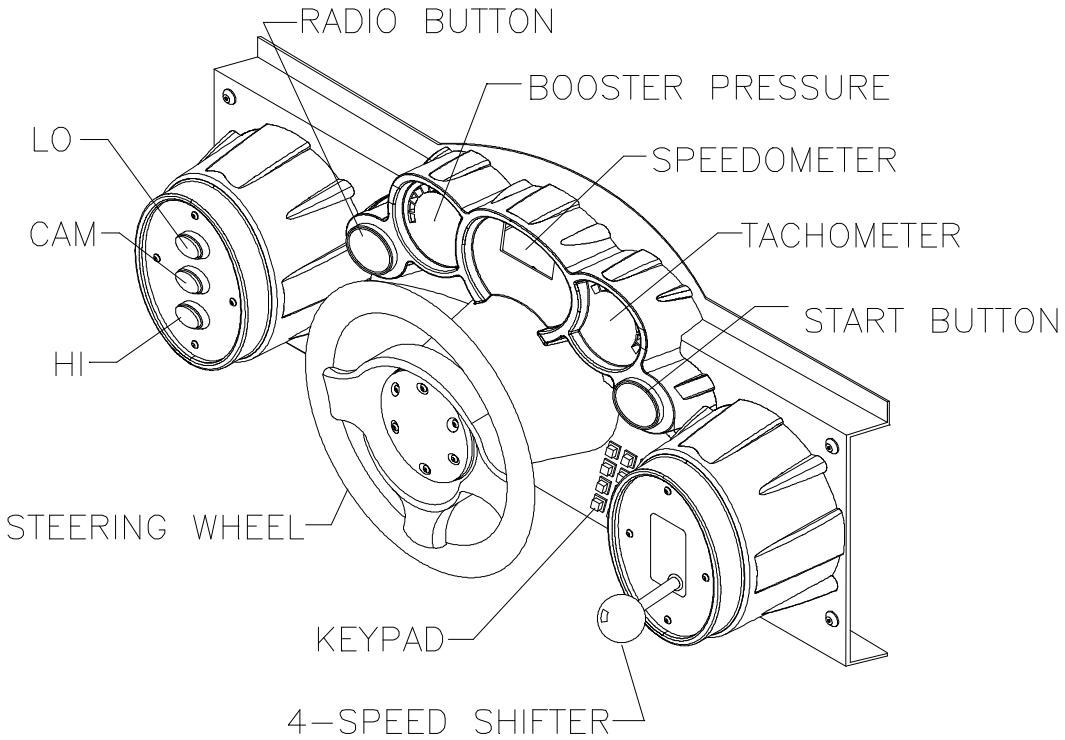
Player Control Troubleshooting, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
• Sloppy, unpredictable or ineffective steering • Video is present • Video Game Machine (VGM) operates normally	Blocked or faulty fan	Fan located on power supply functions as an exhaust fan. With power on, check airflow near each fan to assure that nothing blocks airflow.
	Faulty mechanical parts	Turn off power. Open dashboard. Support steering wheel and remove outer mounting screws. Remove metal shield (if VGM has one) over motor. Inspect for faulty or worn belts, bearings, couplings, gears, etc.
	Faulty Wheel Driver Board	1. Inspect Wheel Driver Board under low-light conditions. To indicate presence of AC from the transformer the LED's glow when voltage is received. However, voltages or signals may not be normal. 2. Examine fuses and cables on Wheel Driver Board. Replace bad fuses. Use digital voltmeter to verify AC voltage between each fuse holder and ground. You should measure approximately 25V. See Wiring Diagram. 3. Use the 20-VAC setting on digital voltmeter to measure DC voltage at motor. Do not move steering wheel, drive belt, or motor while making this measurement. Any reading indicates unstable supply that may contain ripple or noise. 4. Select the STEERING WHEEL TEST from the Diagnostic Menu. Follow on-screen instructions to verify operation of the wheel motor and steering position sensor. 5. Verify proper operation of Wheel Driver Board by placing it in working VGM.
	Loose or worn drive belt	1. Turn off power. Open dashboard. Support steering wheel and remove outer mounting screws. Remove metal shield (if VGM has one) over motor. Inspect for faulty or worn belts, bearings, couplings, gears, etc. 2. If drive belt isn't worn or damaged, check its tightness.
• Inability to make a transmission selection. • Video Game Machine (VGM) operates normally.	Improper DIP Switch setting(s)	1. From the Diagnostics Menu, choose DIP SWITCH TEST. Make sure DIP 1, SW 1 is set to the OFF position.

WARNING
The Wheel Driver Board heatsink, power resistors, and other components may be very hot. The DC Motor in the steering wheel may also be hot.



How to Adjust Belt Tightness



Player Panel Controls

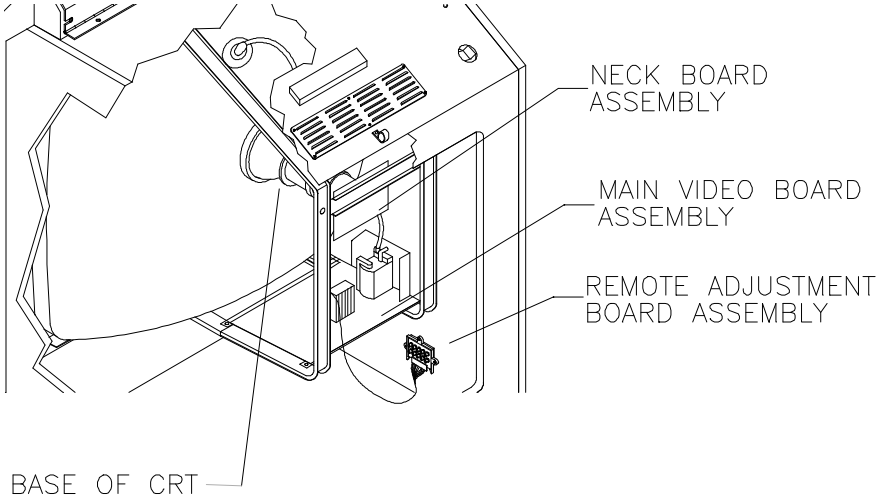
Video Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
• Monitor appears non-functional • Audio is present • Video Game Machine (VGM) controls operate normally	Power problem	Verify connection of AC Power to video monitor. Inspect neck of CRT in dim light. Glowing filament near CRT base confirms monitor circuits receive power. However, voltages or signals may not be normal.
	Faulty wiring	1. Turn off game power. Verify that video signal and Remote Adjustment Board connectors seat properly on Video Monitor Board. 2. Assure that no wires are caught on chassis or mounting brackets.
	Improper monitor adjustments	Check BRIGHTNESS (intensity) and CONTRAST are set above their minimum levels.
	Faulty monitor circuitry	1. Examine AC line fuse on Video Monitor Board. If fuse is faulty, replace it with an identically rated fuse. 2. If the fuse is good, verify video monitor operates correctly by placing it in a working VGM. 3. If monitor is bad; Check monitor power supply. 4. If the power supply is good, Check monitor horizontal output transistor and related circuitry.
• Graphic images from game do not appear • No audio • Power-up self-test runs	Improper components	1. Verify circuit boards are correct for this game. Labels on each board record manufacturers' name, assembly number and hardware version. 2. Verify ROM instruction set is correct for this game. Game set includes more than one ROM. Label on each ROM records assembly number and software version.
	Faulty Circuit Board	1. Allow game to load normally. Note and record any error messages that occur during self-test. 2. Press and hold TEST MODE switch inside coin door to enter Menu System. Select Diagnostic Menu from the Main Menu. Then select CPU BOARD TEST. Conduct this test to check operation of critical components. 3. Turn off power. Inspect CPU Board to ensure JAMMA cable connector is fully seated onto the mating edge connector of the CPU. Check all other cable connectors for correct alignment and continuity. 4. Compare activity of LED's on CPU with the CPU Indicator Chart.
	Power Problems	1. Turn on Power. Use 20-volt DC setting on digital voltmeter to measure DC voltages present at Power connector pins. Verify +5V source if it is adjustable. Refer to Cabinet Wiring Diagram for specific wiring information and voltage limits. 2. Use 2-Volt AC setting on digital voltmeter to measure DC voltages at Power Connector pins. Any reading indicates the supply voltages are unstable and may contain ripple or noise.

CAUTION
Do not remove or install any connector when power is turned on. Installation under power will damage the circuit boards or ROM's and void the warranty.

WARNING: HIGH VOLTAGE.
Video Game Machine *(VGM)* monitors generate and store potentially lethal high voltages. Avoid touching any part of the monitor until power has been off for some time. A picture tube can maintain a hazardous charge for up to several days. Only qualified technicians should service monitors. Turn off the power, unplug the *VGM* and discharge the CRT before attempting service. Even properly discharged tubes can revert to a highly charged state, *without reapplication of power.*

WARNING
In normal operation, the monitor doesn't require isolation from AC line voltage. During bench servicing, you may need to operate the monitor outside the cabinet. If you do, *isolate the monitor from line voltage with an isolation transformer.*



Typical Cutaway Rear View

CAUTION
Do not operate the monitor without its Remote Adjustment Board.

WARNING: 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.

Video Troubleshooting, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
• White areas at screen edges appear tinged with color • Dots at screen edges appear ovoid or cylindrical	Picture tube dynamic convergence is out of alignment	Have service bureau dynamically re-converge monitor. This procedure requires removing and repositioning yoke. Service bureau must follow instructions from monitor manufacturer.
• Video images tear or roll, or have black bar down middle of screen	Faulty wiring	1. Check connectors and cables for wiring continuity. Video cables connect circuit boards to video monitor. 2. Assure connection of all cabinet ground wires, especially at video monitor chassis.
	Faulty monitor circuitry	1. Verify video monitor operates correctly by connecting it to working Video Game Machine (VGM). 2. Assure video monitor is correct type for this game. Video monitors with wrong resolution can't lock sync.
	Improper sync signals	1. Check to see if Video Board puts out type of sync that your monitor requires. 2. Verify jumpers are set correctly for monitor.
	Electromagnetic fields	Move cabinet far away from machines, appliances, or competitors' video games.
• Missing colors	Faulty wiring	Check connectors and cables for wiring continuity from circuit boards to video monitor.
	Faulty monitor color drive circuitry	Verify video monitor operates correctly by connecting it to working Video Game Machine (VGM).
• One color is dimmer or brighter than others • Whites appear tinted everywhere on screen	Maladjusted color bias pots	1. Turn on Video Game Machine (VGM). 2. From Diagnostic Menu select MONITOR TEST. 3. Watch Color Bars screen in mirror. 4. Adjust three bias pots for best colors. (Most monitor neck boards include these pots.) 5. Check White Screen. Touch up controls. 6. If whites still seem tinted, have service bureau rejuvenate picture tube.
• Picture is dim or faded	Maladjusted BRIGHTNESS pot or subnormal picture tube emission	1. From Diagnostic Menu select MONITOR TEST. 2. Watch Color Bars screen. Adjust BRIGHTNESS and CONTRAST pots for greatest number of grays. You'll find these pots on Monitor Remote Control Board, behind coin door. 3. If pots have no effect, have service bureau rejuvenate picture tube.

Video Troubleshooting, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
• Picture is too narrow	Maladjusted WIDTH pot	From Diagnostic Menu select MONITOR TEST. Watch Crosshatch Screen while adjusting WIDTH pot for best picture. You'll find this pot on Monitor Remote Control Board, behind coin door.
• Picture is too short	Maladjusted HEIGHT pot or damaged vertical circuit	1. From Diagnostic Menu select MONITOR TEST. Watch Crosshatch Screen while adjusting HEIGHT pot for best picture. You'll find this pot on Monitor Remote Control Board, behind coin door. 2. If pot has no effect, service vertical output circuit.
• Picture seems shifted to one side	Maladjusted HORIZONTAL POSITION pot	From Diagnostic Menu select MONITOR TEST. Watch Crosshatch Screen while adjusting HORIZONTAL POSITION pot for best picture. You'll find this pot on Monitor Remote Control Board, behind coin door.
• Keystone-shaped picture	Shorted turns in yoke	1. Substitute working yoke. 2. Have service bureau converge monitor. 3. Retest monitor.
• Blotches of color appear on screen	Picture tube aperture mask is magnetized	Demagnetize monitor with external degaussing coil. Take care not to magnetize neighboring games. Monitor may be left on or off during this procedure.
• White areas in center of screen appear tinged with color • Object edges have fringe of one or more colors	Picture tube purity or static convergence is out of alignment	1. Turn on Video Game Machine (VGM). 2. Press and hold TEST MODE to enter Menu System. Select Diagnostic Menu from the Main Menu. Select MONITOR TEST. Perform tests for Crosshatch, Red, Green and Blue screens to find clearest display of problem. 3. Display screen with the most severe problem. 4. Display Crosshatch Screen. Locate purity and static convergence ring magnets on back of monitor neck. Watch screen in mirror. Adjust magnets to minimize problem. Follow instructions from monitor manufacturer. 5. Display Crosshatch Screen. Touch up adjustments while watching screen in mirror.

CAUTION
Do not remove or install any connector when power is turned on. Installation under power will damage the circuit boards or hard disk drive and void the warranty.

Audio Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
• No audio • Video is present • Video Game Machine (VGM) appears to operate normally	Improper volume setting	Press and hold TEST MODE switch inside coin door to enter Menu System. Select VOLUME MENU from the Main Menu. Make sure the Attract Music is on (enabled). Verify all volume levels are set well above zero. If necessary, change levels to make game audible.
	Faulty wiring	Turn off power. Assure wiring harness connectors attach and fully seat onto mating board connectors. Verify harness connects to CPU Board. Check audio cable connectors in same way.
	Faulty or obstructed speaker	Remove grilles and inspect speakers. Free speaker cones, terminals, mounting screws and magnets of loose parts or wires.
	Faulty Audio Board	Verify proper operation of Audio Board by placing it in a working VGM.
	Power Problems	Use 20-volt DC setting on digital voltmeter to measure DC voltages present at Power connector pins. Verify +5V, -5V and +12V sources. Refer to Cabinet Wiring Diagram for specific wiring information and voltage limits.
• Audio is distorted, muffled or has missing frequencies.	Faulty or improper speaker	1. Turn off power. Remove grilles and check speakers. Verify that speakers are full range (100 to 10,000 Hz response) and rated for at least 20 watts. Woofers must be rated for at least 40 watts. 2. Verify proper speaker operation by placing speaker in question in a working VGM.
	Faulty wiring	Multiple-speaker installations: Check for reversed wires at one speaker. Weak or low frequencies and thin or hollow sound quality are symptom of incorrectly phased speakers. Sound tests may not detect this condition, but you can hear it during operation.
	Improper Setting	Press and hold TEST MODE switch inside coin door to enter Menu System. Select SOUND TEST from Diagnostics Menu. Increase volume as required. This test will verify some audio circuit functions.

Audio Problems, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
• Dead sound channel	Faulty speaker	1. From Diagnostics Menu, choose SOUND TEST. Recheck speakers with audio signals provided by test. 2. Verify proper speaker operation by connecting speaker in question to working Video Game Machine (VGM).
	Faulty circuit board	Run power-up self-test sequence. Note errors found during tests. Compare CPU Board LED's with LED Indicator Status Charts. Note discrepancies.
• Constant low hum from all speakers.	Faulty wiring	1. Check cabinet wiring is correct. 2. Verify cabinet wiring provides separate wires (not common return) for each speaker. 3. Check connection of all cabinet ground wires.
	Faulty power supply	Use 2-Volt AC setting on digital voltmeter to measure voltages at speaker terminals. Any reading indicates unstable supply that may contain ripple or noise.

CAUTION
Do not remove or install any connector when power is turned on. Installation under power will damage the circuit boards or hard disk drive and void the warranty.

Miscellaneous Problem Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
• Marquee lamp is intermittent or non-functional • Video Game Machine (VGM) starts and plays normally	Faulty fluorescent tube	1. Remove fluorescent tube from sockets. If you find cracks or darkened ends, install new lamp. Clean tube. 2. Check continuity of both fluorescent tube filaments. 3. Check lamp ballast is rated for local AC line voltage and frequency. 4. Verify fluorescent tube operates by placing it in working VGM.
	Faulty lamp fixture	1. Verify lamp pins make good connection with socket contacts. 2. Check the ballast and/or starter are working properly.
	Faulty wiring	Measure fluorescent lamp AC voltages. Check wiring and connector continuity from AC power chassis to lamp assembly.
• VGM operates normally • Cabinet becomes warm after several hours of use	Obstructed fan	1. Check bottom and rear of cabinet for blocked airflow. 2. Move VGM away from sources of heat. 3. Turn off power. Remove dust from vent holes with high-power vacuum cleaner.
	Faulty wiring	Check fan wiring and connectors.
	Faulty fan	Check operation of all fans.
• Error messages appear on screen	Faulty hardware	1. Check any assembly (RAM, ROM, Battery, etc.) identified in error messages. 2. Call your authorized distributor for help with unresolved screen messages.

WARNINGS & NOTICES

WARNING

- Use of non-MIDWAY parts or circuit modifications may cause serious injury or equipment damage!
- Substitute parts or modifications may void EMC directive or FCC type acceptance.
- This game is protected by federal copyright, trademark and patent laws. Unauthorized modifications may be illegal under federal law. This also applies to MIDWAY logos, designs, publications and assemblies. Moreover, facsimiles of MIDWAY equipment (or any feature thereof) may be illegal under federal law, regardless of whether or not such facsimiles are manufactured with MIDWAY components.

WARNING

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

CAUTION

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.

CAUTION

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