

**MIDWAY**

MAY 2000  
16-3A948A-101

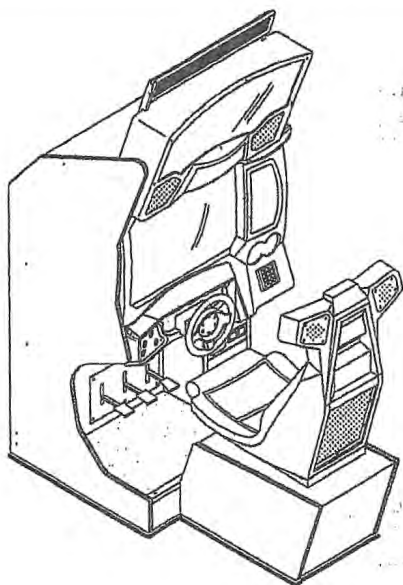
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SAN FRANCISCO  
**RUSH 2049**  
TOURNAMENT EDITION

TM

**Installation Instructions for**



**Upgrade  
Kit  
3A948**

*Upgrades Rush 2049 To Rush 2049 Tournament Edition  
Install kit on Rush 2049 models 33336, 32936 & 30136*

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Midway Games West Inc. 675 Sycamore Drive Milpitas, California 95035 USA

## SAFETY INSTRUCTIONS






The following safety instructions apply to the upgrade kit installer. Read these instructions before attempting to install this kit. Other safety instructions appear throughout this manual.

### DEFINITIONS OF SAFETY TERMS

**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.

	<p><b>WARNING: QUALIFIED SERVICE PERSONNEL ONLY.</b> This kit requires installation of components in the primary AC circuit. Improper installation of these parts can result in a shock hazard. Installation must be performed by a qualified service technician. The technician must strictly adhere to this manual's instructions.</p>
	<p><b>WARNING: DISCONNECT POWER.</b> Turn the power off and unplug the VGM (<i>video game machine</i>) before attempting to install this kit. Installing or repairing PC boards with power on can damage components and void the warranty. Be sure that you securely install ground wires.</p>
	<p><b>WARNING: INSTALL GROUND WIRE.</b> Reduce the risk of electrical shocks! Properly ground the metal mounting bracket for the LED display.</p>
	<p><b>WARNING: AVOID ELECTRICAL SHOCKS.</b> This video game system doesn't utilize an isolation transformer. Internal, cabinet AC isn't isolated from the external, AC line.</p>
	<p><b>NOTICE:</b> The term VGM refers to the video game machine.</p>

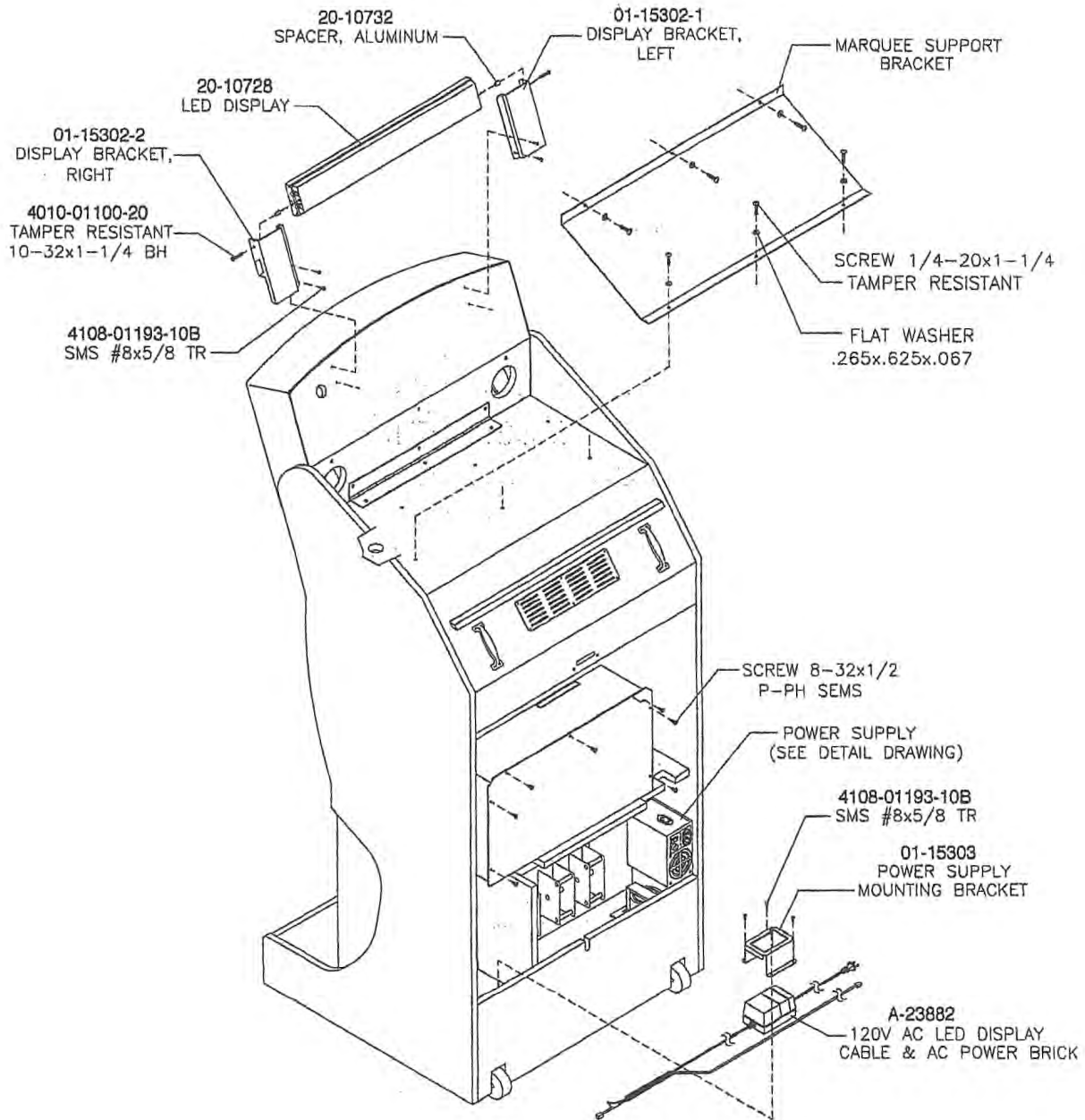
### ABOUT UPGRADE KIT 3A948

The *Rush 2049 Tournament Edition* kit adds several important features to your VGM (*video game machine*)...

- An LED display on top of the cabinet
- A modem inside the cabinet
- A new game EPROM
- New game PIC
- An update disk drive

During kit installation, you connect the VGM's disk to the *Rush 2049 Tournament Edition* kit disk. The *Rush 2049 Tournament Edition* kit disk becomes the master. The VGM disk becomes the slave. You save your VGM's player data onto the new *Rush 2049 Tournament Edition* disk. You then replace the original disk.

# MAIN CABINET ASSEMBLY, REAR VIEW SHOWING MAJOR PARTS FROM THIS KIT 3A948



*Not included in this view...*

5850-14052-00	Adapter, IEC/NEMA Cord	20-10631	Cable, Modem
5556-15272-00	Bead, Ferrite (4)	A-23841	Chipset, Update (Assy)
5827-15144-00	Block, 2-Circuit Terminal	H-23624.1	Harness, Fluorescent Lamp Adapter
04-13028	Board, MIPSMPs Modem	H-23885	Harness, RJ-11 Serial Adapter
		H-23885	Wire, Green Ground

# PARTS LIST

Item	Part #	Qty	Item	Part #	Qty
<b>ARTWORK</b>					
<input type="checkbox"/> Artwork, Backlit Marquee	31-3639.1	1	<b>ELECTRONICS</b>		
<input type="checkbox"/> Artwork, Foil	31-3646	3	<input type="checkbox"/> Board, MIPS/MPS Modem	04-13028	1
<input type="checkbox"/> Decal, Backlit marquee	31-3640	1	<input type="checkbox"/> Brick, Display AC Power	A-23882	1
<input type="checkbox"/> Decal, Keypad Update	31-3641	1	<input type="checkbox"/> Chipset, Update (Assy)	A-23841	1
<input type="checkbox"/> Decal, Seat Back	31-3642	1	<input type="checkbox"/> Display, LED	20-10728	1
<input type="checkbox"/> Instructions, Backlit Bezel	31-3640	1	<input type="checkbox"/> Drive, Programmed Hard	A-23864	1
<b>CABLES</b>					
<input type="checkbox"/> Adapter, IEC/NEMA Cord	5850-14052-00	1	<b>MECHANICS</b>		
<input type="checkbox"/> Cable, Modem	20-10631	1	<input type="checkbox"/> Bracket, LED Left	01-15302-1	1
<input type="checkbox"/> Cable, Ribbon	5795-16508-00	1	<input type="checkbox"/> Bracket, LED Right	04-13085	1
<input type="checkbox"/> Harness, Fluor Lamp Adptr	H-23624.1	1	<input type="checkbox"/> Bracket, Pwr Brick Mtg	01-15303	1
<input type="checkbox"/> Harness, Hard Drive Y-Pwr	H-23805.1	1	<input type="checkbox"/> Clamp, 1/2" Cable	03-7655-8	1
<input type="checkbox"/> Harness, RJ-11 Serial Adptr	H-23885	1	<input type="checkbox"/> Wrench, Tr/TX T25	20-10144	1
<input type="checkbox"/> Wire, Green Ground	H-23895	1	<b>MISCELLANEOUS</b>		
			<input type="checkbox"/> Bead, Ferrite	5556-15272-00	4
<b>DOCUMENTS</b>					
<input type="checkbox"/> Card, Game Registration	16-10650	1	<input type="checkbox"/> Block, 2-Circuit Terminal	5827-15144-00	1
<input type="checkbox"/> Flyer, Safe HDD Handling	16-10811	1	<input type="checkbox"/> Clamp, 1/2" Dia. Cable	03-7655-8	1
<input type="checkbox"/> Man'l, Rush Tourn Kit (This)	16-3A948-101	1	<input type="checkbox"/> Container, Hard Drive Ship	08-8068	1
<input type="checkbox"/> Sheet, Caution Elec Device	16-10077	1	<input type="checkbox"/> Pad, Update Cushion	04-13065	1
<input type="checkbox"/> Template, LED Display	16-11133	1	<input type="checkbox"/> Spacer, Aluminum	20-10628	2



**NOTICE:** You can link *Rush 2049 Tournament Edition* VGMs to other *Rush 2049 Tournament Edition* VGMs. You can't link to non-Tournament Edition VGMs.



**NOTICE:** If you're updating a video game machine (VGM) that currently generates revenue: The hard drive contains vital, player data that you must transfer to the new drive. *Player data includes many important items...* •All player accounts at the VGM's location. •Player passwords. •Player names. •Total miles driven. •Total coins collected. •Best race times. •And more. The VGM uses player data to unlock additional tracks and cars for players. Bottom line: Player data represents *a considerable investment* by avid players. If you don't transfer player data, you'll let down your players, and you'll disappoint them. Transferring player data is extremely important, both to your players and to your profits.

## INSPECT UPGRADE KIT 3A948

- [ ] 1. Kit 3A948 upgrades a *Rush 2049* VGM to an *Rush 2049 Tournament Edition* VGM. Unpack the upgrade kit from the carton and check for damage. Check the parts list to be sure that you have a complete upgrade kit 3A948.



**NOTICE:** Check your upgrade kit hard drive. Do you have *Rush 2049 Tournament Edition* software? If not, return the drive to an authorized distributor for a replacement.



**NOTICE:** Leave EPROMs in the protective package until you're ready to install them. Store the devices that you remove in the packaging from this upgrade kit.

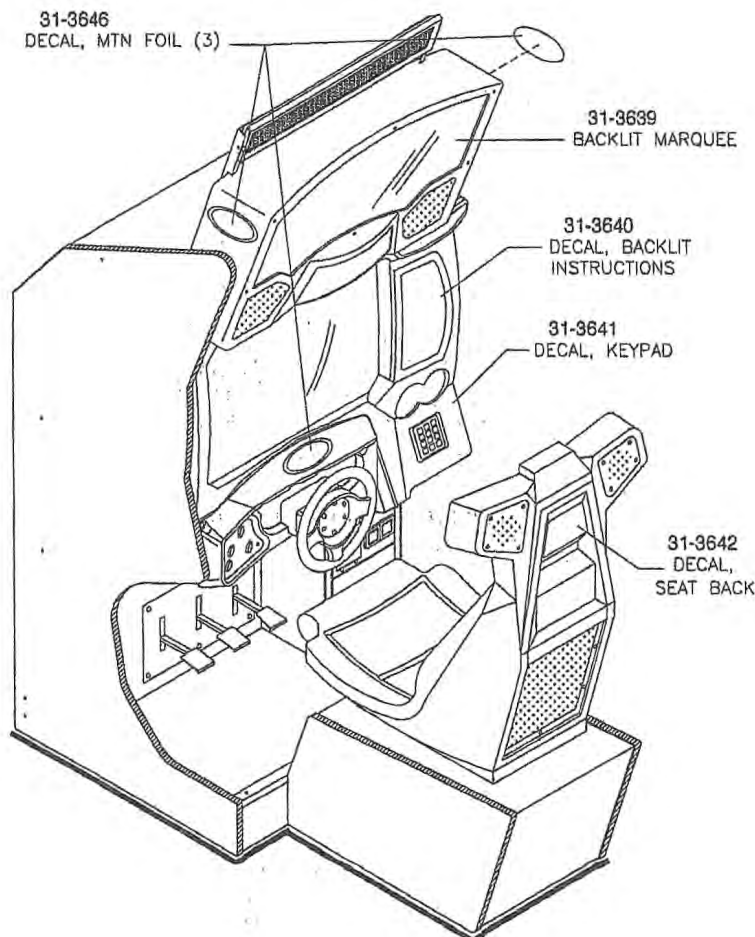


**NOTICE:** Before moving the VGM, shut off VGM power. Then allow the hard drive to spin down for 30 seconds. *Never* move the VGM with the power on, or with the disk spinning.

## PREPARE FOR TOURNAMENT OPERATION

- [ ] 2. Register your new PIC chip with the Midway office at 773-961-1493. To register, give the Midway office your PIC number and your arcade name and address.
- [ ] 3. Fill out the *Rush 2049 Tournament Edition* registration packet. The packet includes your location name, game serial number, checking account number, etc.
- [ ] 4. Sign up for tournament play by mailing your registration packet to the Midway® Chicago office. Or you may phone in the information by calling the Midway® office at 877-MPN-2WIN or 877-676-2946. The office must receive and accept your packet before your VGM can achieve network access.
- [ ] 5. Verify operation of the VGM. If necessary, make repairs so that the VGM operates properly.
- [ ] 6. Take a phone with you to test the phone line. Also take phone splitters, SuperStats sheets and your installation tools.
- [ ] 7. Make sure that the location has an analog phone line near the game. Check to see that the phone can call Midway Tournament Network (MTN) at 877-676-2946. (This is a toll-free call.)

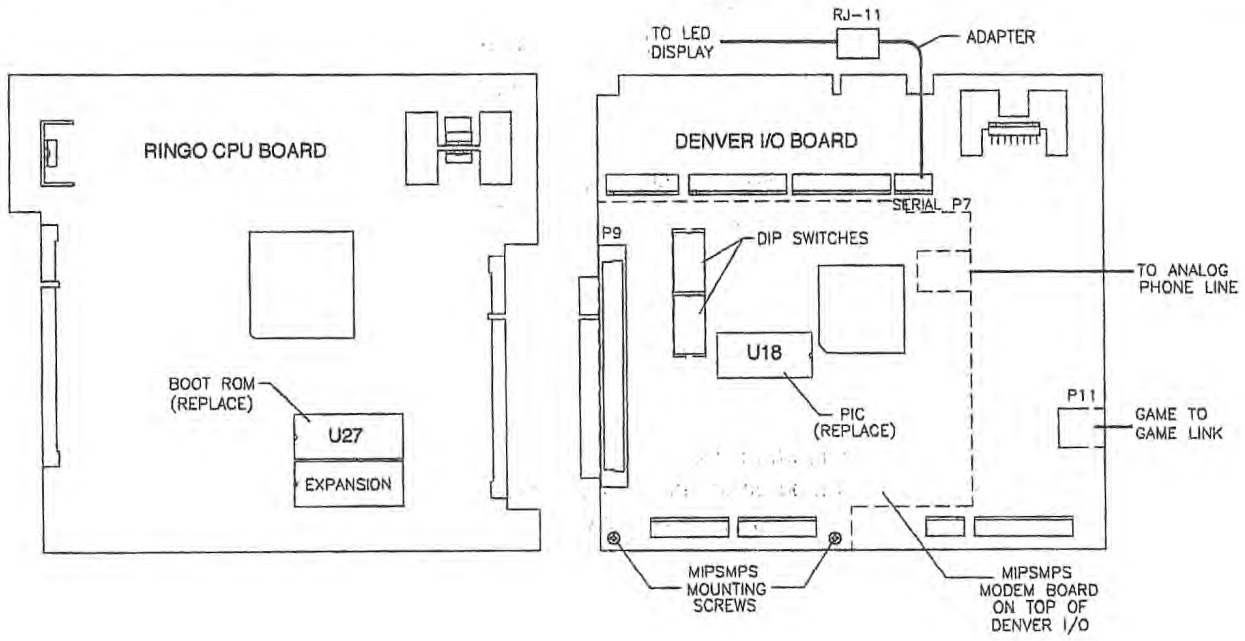
- [ ] 8. Find the three pieces of foil artwork. Remove the backing from the first foil piece. Apply the foil to the left side of the marquee. Start at the top of the foil and work downward. After you've positioned the foil, smooth it outwards. Take care to squeeze out air bubbles. If you can't remove a bubble, pop it with a knife or pin. Then smooth the bubble down. Allow the adhesive to set. Now apply foils to the right side of the marquee. Apply the third foil to the raised area atop the player panel. This area is just over the steering wheel shaft.
- [ ] 9. Unbolt and remove the old seat-back artwork. Replace it with the new artwork from the kit.
- [ ] 10. Note the old bezel instructions beside the monitor. Unbolt and remove these instructions. Replace them with the new instructions from the kit.
- [ ] 11. Find the new keypad overlay in the kit. Remove the overlay's adhesive backing. Carefully apply the new overlay over the old keypad overlay.
- [ ] 12. If you're upgrading an game that people have played, proceed. If you're upgrading a new (*never played*) game, skip ahead to *Install Chips*.
- [ ] 13. Write down the Stats and SuperStats. (Press and hold Music for 5 seconds. While pressing, add VIEW #1, then VIEW #2 and then VIEW #3.)
- [ ] 14. Log on as joint Team Rush and play a game. (You'll need the record of this game later. It will help you to verify that player data transfers to the new hard drive.) Write down your PIN # (*personal identification number*). See your Rush manual 16-30036-101 for more details about logging on.
- [ ] 15. Note coin settings, the cabinet number and other settings. After installation, the settings revert to default values.



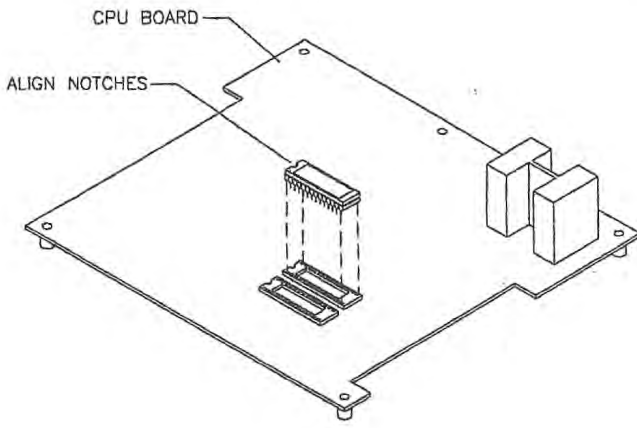
# INSTALL CHIPS



**NOTICE:** Installing new software clears a number of important game options. These include coin options, control calibration, audio settings, statistics and the VGM cabinet number. Write down any of these settings that you want to reuse.




- [ ] 16. Switch off power to the VGM. Disconnect the line cord from the AC power. Clear the work area.
- [ ] 17. Open the VGM's back door. If this is a linked cabinet, disconnect the linking cables. (You'll reconnect them after kit installation.)
- [ ] 18. Remove the Phillips screws from the card cage door. Fold down the card cage door.
- [ ] 19. Locate the socket for the memory circuit in one corner of the Ringo CPU Board.





- [ ] 20. Use a chip extraction tool to remove EPROM U27 on the Ringo CPU Board. Gently rock the chip until it becomes loose in its socket. Remove the chip from the Ringo CPU Board.
- [ ] 21. Locate the EPROM labeled *Rush 2049 Tournament Edition U27 Boot*. Remove the protective packaging. Orient the chip over the empty socket. Align the notches on the chip and socket. Insert the chip pins into the socket. Press the chip firmly to seat it.

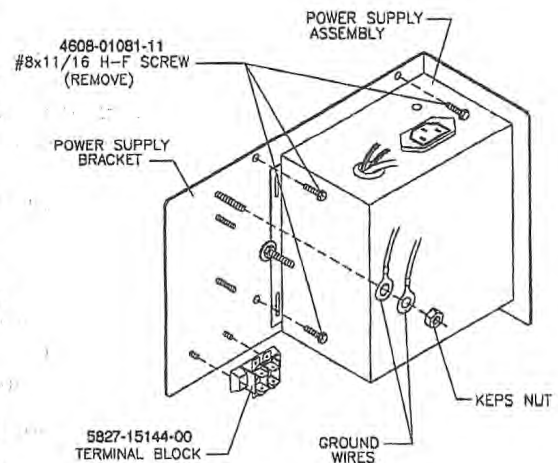
- [ ] 22. Use a chip extraction tool to remove the PIC at Denver I/O Board location U18. Gently rock the chip until it becomes loose in its socket. Remove the chip from the Denver I/O Board.
- [ ] 23. Find the new PIC chip in the upgrade kit. Remove the protective packaging. Orient the PIC over the empty socket. Align the notches on the chip and socket. Insert the chip pins into the socket. Press the chip firmly to seat it.


	<p><b>NOTICE:</b> Boot ROM and PIC chip notches must face away from one another.</p>
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## INSTALL LINE-VOLTAGE AC WIRING

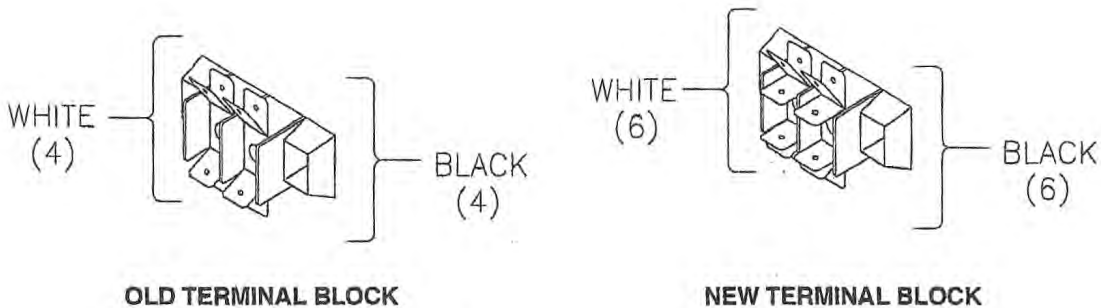
	<p><b>WARNING: QUALIFIED SERVICE PERSONNEL ONLY.</b> This kit requires installation of components in the primary AC circuit. Improper installation of these parts can result in a shock hazard. Installation must be performed by a qualified service technician. The technician must strictly adhere to this manual's instructions.</p>
	<p><b>WARNING: DISCONNECT POWER.</b> Turn the power off and unplug the VGM (<i>video game machine</i>) before attempting to install this kit. Installing wiring with power on can damage components and void the warranty.</p>

- [ ] 24. Use one screw to hold the card cage door up.
- [ ] 25. Find the VGM power supply and bracket at the base of the cabinet. Unplug the fluorescent lamp cable from the VGM power supply.
- [ ] 26. Three H-F screws fasten the VGM power supply and bracket to the cabinet wall. Remove these screws.
- [ ] 27. Remove the VGM power supply and bracket from the cabinet.
- [ ] 28. Leaving wires connected, unscrew the eight-tab terminal block from the power supply bracket.
- [ ] 29. Locate the 12-tab terminal block in the kit. Position the new block where the eight-tab terminal block was on the VGM power supply. Mount the 12-tab terminal block.



	<p><b>WARNING:</b> Avoid a fire hazard! Wire the terminal block properly, and check your work! Connect only black wires on one side of the terminal block. Connect only white wires on the other side of the terminal block. Otherwise you may create a short circuit. Sparks from a short circuit can start a fire.</p>
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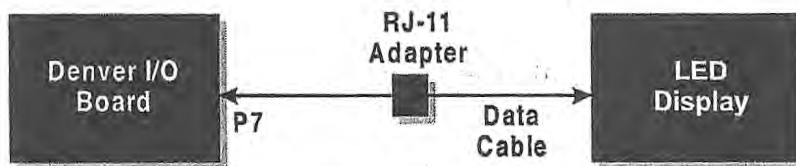


- [ ] 30. Disconnect one wire from the old terminal block. Connect the wire to the equivalent tab of the new terminal block. One by one, reposition the other wires on the new terminal block. Use the old terminal block as your guide. Be sure that you move the wires to equivalent tabs on the new terminal block.
- [ ] 31. Find the fluorescent lamp adapter cable in the kit. Connect the harness to two of the new terminal block's free pins. Be sure that white wires only connect to white wires. Black wires must only connect to black wires. If necessary, check your connections with an ohmmeter. Never connect black and white wires together.

**WARNING: INSTALL GROUND WIRE.** Reduce the risk of electrical shocks! Properly ground the metal mounting bracket for the LED display.

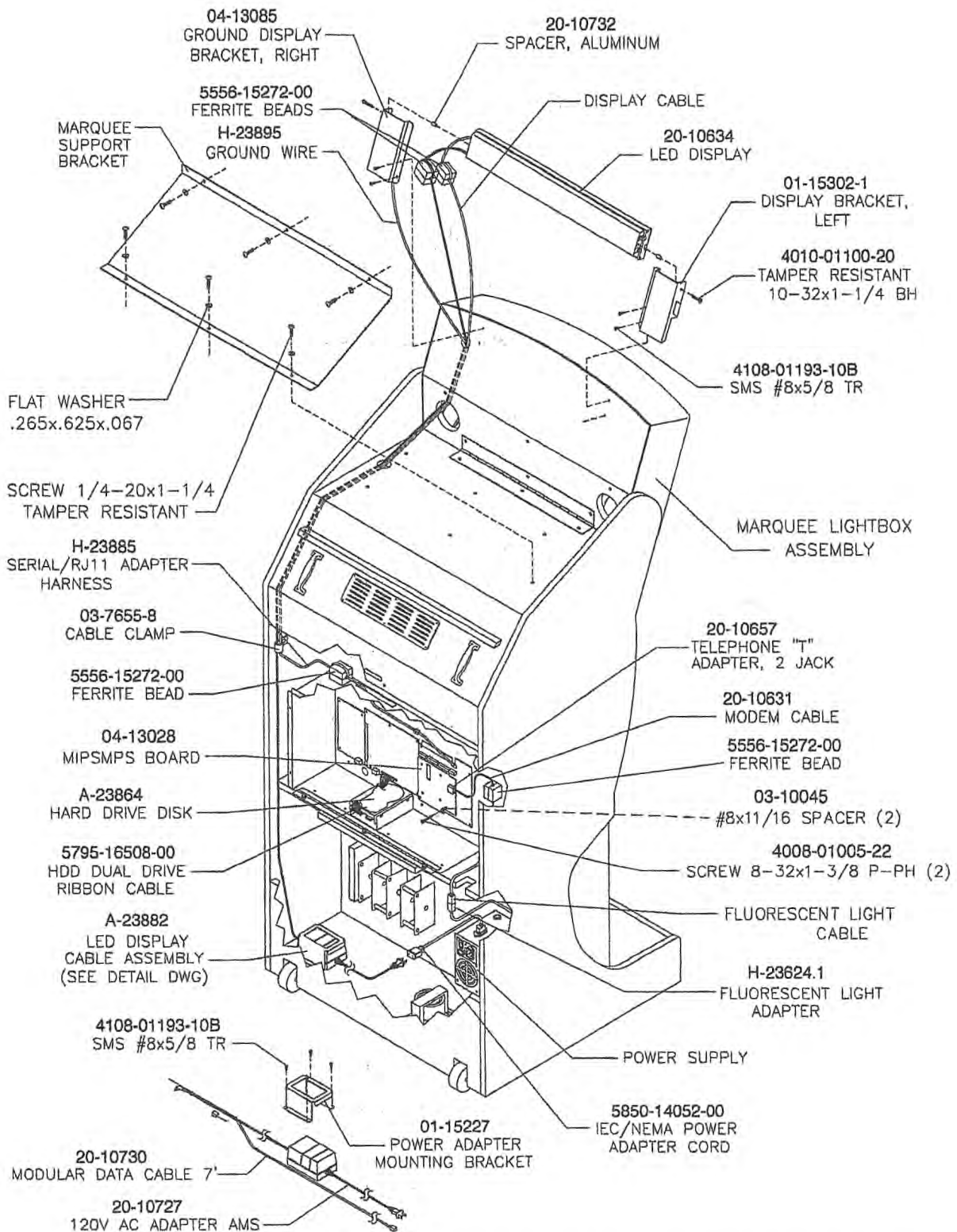
- [ ] 32. Attach the green ground wire to the power supply bracket's threaded ground stud. (Other green ground wires already connect to this stud.) Use an #8-32 KEPS nut.
- [ ] 33. Route the green ground wire across the bottom of the cabinet.
- [ ] 34. Replace and remount the VGM power supply in the cabinet.
- [ ] 35. Plug the fluorescent lamp cable into the fluorescent lamp adapter cable.

## ROUTE LED DISPLAY CABLES



- [ ] 36. Remove the six screws that retain the backlit marquee. Set the screws and attract shield aside. (You'll need them later.)
- [ ] 37. Disconnect the fluorescent lamp harness from the fluorescent lamp assembly.
- [ ] 38. Stuff the lamp harness and connector through the cable hole in the blue marquee housing.
- [ ] 39. Remove the rear marquee support panel by removing the six mounting screws.

# CABLING THE LED DISPLAY



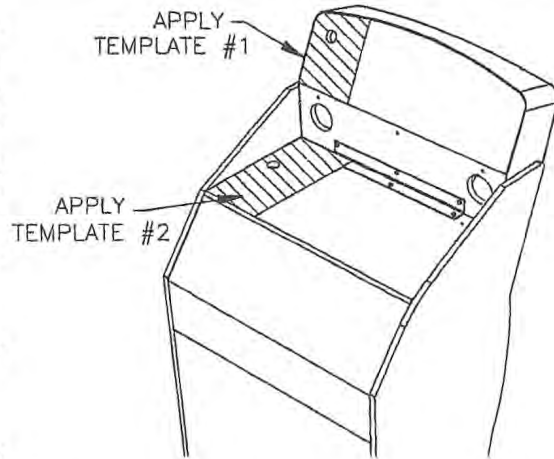
- [ ] 40. Remove the four screws that retain the blue marquee housing. These screws are beside the fluorescent lamp fixture. Tilt the marquee to the down position.
- [ ] 41. Remove the two bottom screws from the marquee housing. Lift off and set aside the housing.

- [ ] 42. Return the marquee to the upright position. Place the supplied, hole-drilling template on the cabinet according to instructions on the template. Take care to set up the template so that your drill misses the picture tube.



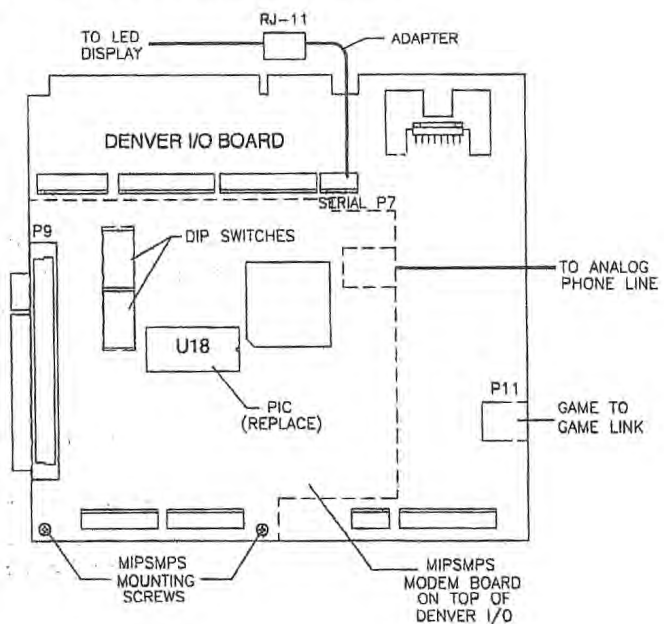
**WARNING: HANDLE CRT WITH CARE.** If you break a CRT, it implodes! Shattered glass can fly over eight feet from the implosion.

- [ ] 43. Use a hole saw, rather than a drill bit, for this step. Following the template illustration, drill a 1-1/2"-diameter hole in the top of the cabinet. Drill a second 1-1/2"-diameter hole in the back of the marquee light box. These holes will be near the marquee. You'll route harnesses through these holes and to the LED display. Also drill the pilot holes for bracket installation. Remove the templates.





- [ ] 44. Plug the IEC / NEMA connector into the top of the VGM power supply.
- [ ] 45. Find the AC power brick and the power brick bracket in the kit. Lay the power brick on the floor of the cabinet. Position the brick near the cabinet side opposite the main power supply. Use the bracket to mount the brick to the cabinet floor.
- [ ] 46. Connect the AC power brick to the free end of the IEC / NEMA cord adapter.
- [ ] 47. Find the RJ-11 adapter cable in the kit. Attach the RJ-11 adapter cable to the LED data cable.
- [ ] 48. Route the RJ-11 adapter cable through the JAMMA opening in the chassis.
- [ ] 49. Connect the RJ-11 adapter cable to connector P7 on the Denver I/O Board.

- [ ] 50. Route the LED power and data cables up the template side of the cabinet. Find the loose, green ground cable in the bottom of the cabinet. Route this with the other cables.
- [ ] 51. Fasten the cables to the cabinet wall under the base of the monitor. Use the supplied cable clamp.
- [ ] 52. Slide the LED cables through the new hole on the top panel.
- [ ] 53. Insert the LED cables into the marquee through the speaker hole.
- [ ] 54. Run the LED cables out of the marquee through the new hole in the upper marquee panel.



- [ ] 55. Near the new hole is a display mounting bracket. Notice that this bracket includes a ground stud. Slip the green ground wire's ring terminal over the ground stud. Use a KEPS nut to secure the ground wire to the display mounting bracket.
- [ ] 56. Install a ferrite bead on the 9VAC, LED power cable. Position the bead near the connectors that plug into the LED display. Route the cable through the center of the ferrite bead. Now loop the cable over the top of the bead. Then run the cable through the center of the bead again. To comply with FCC regulations, the cable must run through the bead twice.
- [ ] 57. Dress the cable away from the 27" monitor. Use the supplied 1/2"-diameter cable clamp and SMS # 8 x 11/16 screw.
- [ ] 58. Connect the LED power cable to the LED display.
- [ ] 59. Install a ferrite bead on the LED data cable. Position the bead as close to the cable connector as possible. Route the cable through the center of the ferrite bead. Now loop the cable over the top of the bead. Then run the cable through the center of the bead again. To comply with FCC regulations, the cable must run through the bead twice.
- [ ] 60. Connect the LED data cable to the LED display.

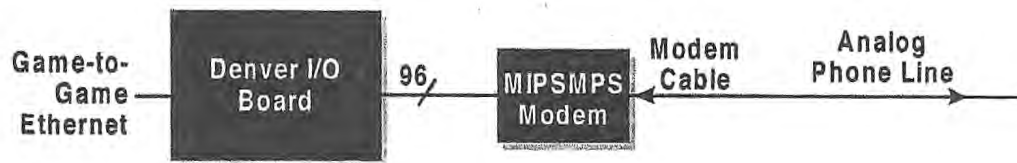
## INSTALL THE LED DISPLAY

	<p><b>NOTICE:</b> LED display installation is a two-man job.</p>
	<p><b>NOTICE:</b> The display housing is fairly soft aluminum. When installing the marquee brackets, take care not to over-torque the screws. Otherwise, you might strip screw holes or screws.</p>

- [ ] 61. Attach a display bracket to the side of the display without cables. Use a 1/2" long spacer between each bracket and the display. Fasten the bracket to the display side with #10, tamper-resistant machine screws.
- [ ] 62. Attach a display bracket to the cable side of the display. Take care to keep the ferrite beads between the display and the bracket. Use the same type hardware as with the other bracket.
- [ ] 63. Keep the LED display with the marquee. Temporarily fold the marquee down on top of the cabinet.
- [ ] 64. Reassemble the blue marquee housing. Use the original six screws.
- [ ] 65. Fold the marquee into its upright position. Meanwhile, leave the display resting on the top of the cabinet.
- [ ] 66. Use with four SMS #8 x 5/8 screws for this step. Fasten the template-side LED display bracket to the cabinet. Drive the screws into the template holes.
- [ ] 67. If necessary, drill mounting holes for the other LED display bracket. Now mount the other bracket.
- [ ] 68. Reassemble the rear marquee support panel by replacing the six mounting screws.

- [ ] 69. Reconnect the fluorescent lamp harness.
- [ ] 70. Insert the new marquee art behind the marquee shield.
- [ ] 71. Attach the marquee shield and new backlit marquee to the marquee housing.

## INSTALL THE MODEM



- [ ] 72. Unscrew and discard two screws mounting the Denver I/O Board. These screws flank gun connectors P12 and P13.
- [ ] 73. Notice the 96-pin connector on the bottom of the Modem Board. Now find the Denver I/O Board's 96-pin connector P9. Install the Modem Board over the Denver I/O Board by mating these two connectors.
- [ ] 74. Secure the Modem Board with two screws and spacers from the kit.
- [ ] 75. Route the modem cable through the linking cable hole in the cabinet. Run the cable up near the card cage.
- [ ] 76. Install a ferrite bead on the modem cable. Position the bead eight inches from the modem board end of the cable. When you reinstall the card cage, this bead must remain outside the card cage. Route the cable through the center of the ferrite bead. Now loop the cable over the top of the bead. Then run the cable through the center of the bead again. To comply with FCC regulations, the cable must run through the bead twice.
- [ ] 77. Run the bead end of the modem cable through the card cage's linking hole.
- [ ] 78. Plug the modem cable into connector J1 on the Modem Board.
- [ ] 79. Connect the free end of the modem cable to an analog telephone line jack.



**NOTICE:** Be sure to use an outside telephone line for the modem. *Don't* connect the modem to a PBX line. The phone line must be analog, and must support outgoing calls. Otherwise, the VGM won't be able to connect to the tournament server. An unconnected VGM can neither participate in tournaments and leaderboards, nor report scores.

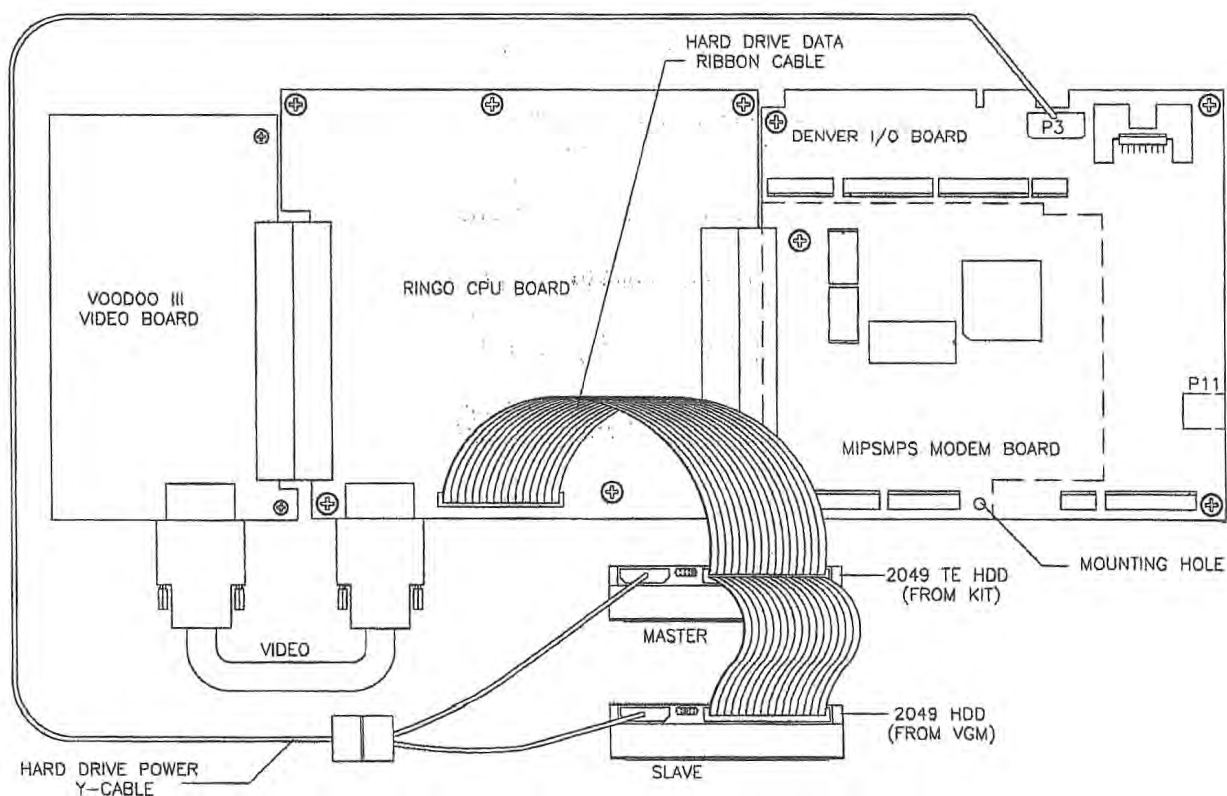
## PREPARE THE ORIGINAL DISK DRIVE

- [ ] 80. Disconnect the hard drive power cable from the hard drive. Leave the other end of this cable connected to the Denver I/O Board at P3.
- [ ] 81. Disconnect the ribbon (data) cable from the hard drive and Ringo CPU Board.
- [ ] 82. Remove the original drive from the VGM. Save the mounting hardware from the original drive.

- [ ] 83. Set the original drive to slave. Do this by removing the pin jumper located between the power and ribbon connectors. Set the drive aside for later use.

## INSTALL THE NEW DRIVE AND TRANSFER DATA

- [ ] 84. Remove the kit hard drive from its packaging. Save this packaging for use in a later step.
- [ ] 85. Mount the *Rush 2049 Tournament Edition* drive in the VGM. Use mounting hardware from the original drive.
- [ ] 86. If you're upgrading an game that people have played, proceed. If you're upgrading a new (*never played*) game, skip ahead to *Install Final Disk Drive Cables*.
- [ ] 87. Find the hard drive power Y-cable. Connect it to the free end of the hard drive power cable. The two cables are keyed. They only connect in one way.
- [ ] 88. Connect one branch of the power Y-cable to the kit hard drive. The hard drive and Y-cable have keyed connectors that only fit in one way.
- [ ] 89. Place the supplied mouse pad on top of the hard drive in the VGM.
- [ ] 90. Set the original hard drive on top of the supplied mouse pad. Be sure that the kit drive is steady.
- [ ] 91. Connect the free end of the power Y-cable to the kit hard drive.
- [ ] 92. Find the disk data cable in the kit. (Look for a standard, IDE ribbon cable with three connectors.) Orient a data cable connector over Ringo CPU Board plug P5. Align the connector's striped edge with Pin 1. Pin 1 is the pin nearest to the Voodoo III Video Board. (The stripe may be red, blue or another color.) Mate the connector halves. Seat contacts by pressing them firmly together.



- [ ] 93. Connect one end of the disk data cable to the kit hard drive. The stripe on the cable must face the power cable. The stripe may be red, blue or another color. (If you install the cable backwards, the drive will survive. Unfortunately, the disk won't work until you connect the cable properly.)
- [ ] 94. Connect another end of the data cable to the original hard drive. Again, the stripe on the cable must face the power cable.
- [ ] 95. Plug in the VGM and switch on power. Enter Diagnostic Mode by pressing TEST MODE (behind the coin door). The VGM displays the Self Test Menu. Scroll down to TOURNAMENT OPTIONS. If the VGM recognizes both drives, the first menu item is this: COPY PLAYER DATA FROM SLAVE DRIVE. Select this option by pressing ABORT. The screen briefly flashes a percentage-done bar. In a few seconds, the screen should display a green DONE, along with instructional text.
- [ ] 96. Before you power down the VGM, write down your coin settings and custom game adjustments. When you shut down the VGM after replacing the drive, the VGM loses these settings. But if you copy the settings, you can restore them by reprogramming the CMOS RAM.
- [ ] 97. Switch off VGM power. Disconnect the VGM power cord from the outlet.
- [ ] 98. Disconnect both hard drives from the power Y-cable and the data ribbon cable. Remove both Y-cables from the VGM.
- [ ] 99. Remove the original drive from the VGM. Store the this drive in the kit drive packaging.

## INSTALL FINAL DISK DRIVE CABLES

- [ ] 100. Connect the original power cable to the kit hard drive.
- [ ] 101. Use the original ribbon cable for this step. Connect one end of the disk data cable to the *Rush 2049 Tournament Edition* hard drive. The stripe on the cable must face the power cable. (If you install the cable backwards, the drive will survive. Unfortunately, the disk won't work until you connect the cable properly.)
- [ ] 102. Plug the free end of the disk data cable into connector P5 on the Ringo CPU Board. Pin 1 of the connector must face the Voodoo III Video Board.
- [ ] 103. Update the remaining games on the network. Afterward, reconnect the linking cables to the cabinet.

## POWER UP AND TEST THE VGM

- [ ] 104. Plug the power cord into the AC line and turn on the VGM. Circuit board indicators should illuminate.
- [ ] 105. The VGM system loads the program and begins self-diagnostics. If the system doesn't find any errors, the system automatically enters its Attract Mode. If problems occur, check wiring and troubleshoot the machine.
- [ ] 106. Press the gas, brake and clutch as the screen instructs you to do.
- [ ] 107. Unlock and open the coin door. Press and hold the TEST MODE button until the Menu System appears on the screen.

- [ ] 108. Select MONITOR TESTS at the Self-Test Menu. Confirm proper video display operation and adjust the monitor as necessary.
- [ ] 109. Select DISK TESTS at the Self-Test Menu. Verify correct drive operation by running the File System Check. Let the test perform two passes. *(This step will take about 15 minutes.)*
- [ ] 110. Select CONTROLS TEST at the Self-Test Menu. Check control switches and potentiometers to be sure that they work.
- [ ] 111. Select DIP-SWITCH TEST at the Self-Test Menu. Verify that all switches are set to optimum positions for this VGM.
- [ ] 112. Select SOUND TESTS at the Self-Test Menu. Verify operation of audio system components.
- [ ] 113. Select EXIT TO GAME at the Self-Test Menu. The system should enter Attract Mode.
- [ ] 114. Use the Menu System to adjust these parameters as desired: Cabinet number, game and Attract Mode volume, game adjustments and coin settings. Also recalibrate player controls. Please see your VGM manual for complete instructions.
- [ ] 115. Open the coin door and press the SERVICE CREDITS button to allow game play. Press the ABORT button to begin play. Register with the PIN that you created earlier. Verify that player data transferred from the old hard drive to the new one.
- [ ] 116. During game play, listen to game audio. Note sound irregularities (phase problems, no low frequencies, mono audio from stereo speakers, etc.). Check the wiring harness for internal shorts or strapped connections.
- [ ] 117. When you're satisfied with VGM operation, close the card cage door and bolt it shut. Replace the rear cabinet door.

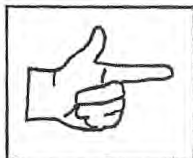
## ACTIVATE THE DIAL-UP FEATURE

- [ ] 118. After the Midway® office enables your serial number, you can proceed with enrollment: Turn on the VGM. Now you'll activate tournament play by commanding the VGM to phone the Midway® key server. The call is toll-free.
- [ ] 119. Enter Diagnostic Mode by pressing the TEST MODE button behind the coin door. In response, the VGM displays the Self-Test Menu.
- [ ] 120. Use the VIEW #2 and VIEW #3 buttons to highlight the Set Clock Menu. Press ABORT to select the menu.
- [ ] 121. Repeatedly press VIEW #1 or MUSIC until you highlight the Date Field. Toggle through the weekday and month name fields by pressing VIEW #2 and VIEW #3. (VIEW #2 decrements and VIEW #3 increments the field value.)
- [ ] 122. At the keypad, enter the current day number, year and time.





- [ ] 123. Repeatedly press VIEW #1 or MUSIC until you highlight the Time Zone Field. Toggle through the time zone name fields by pressing VIEW #2 and VIEW #3. (VIEW #2 decrements and VIEW #3 increments the field value.)



**NOTICE:** Be sure that you set the Time Zone Field in the Set Clock Menu. Otherwise, your VGM won't be able to access the Midway server.

- [ ] 124. Repeatedly press VIEW #1 or MUSIC until you highlight the first Daylight Savings Time Field. As necessary, toggle between YES and NO with VIEW #2 and VIEW #3. (VIEW #2 decrements and VIEW #3 increments the field value.)

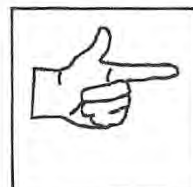
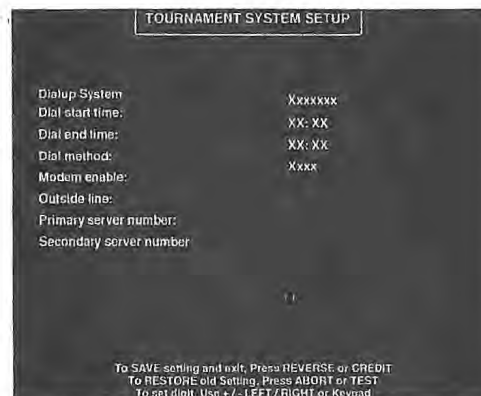
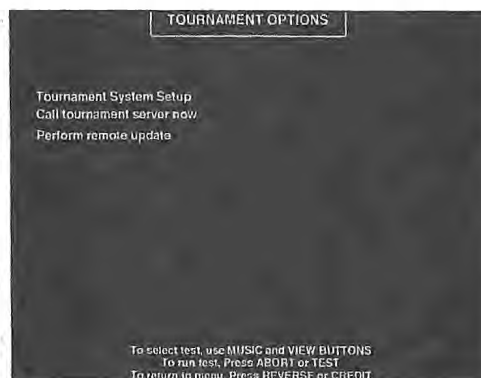
- [ ] 125. Repeatedly press VIEW #1 or MUSIC until you highlight the second Daylight Savings Time Field. As necessary, toggle between YES and NO with VIEW #2 and VIEW #3. (VIEW #2 decrements and VIEW #3 increments the field value.)

- [ ] 126. Exit the Set Clock Menu by pressing REVERSE. The Self-Test Menu reappears.

- [ ] 127. Use the VIEW #2 and VIEW #3 buttons to highlight the Tournament Options Menu. Press ABORT to select the menu.

- [ ] 128. Use VIEW #2 and VIEW #3 to highlight TOURNAMENT SYSTEM SETUP. Press ABORT to select the menu. You'll notice that the default value on this menu is DISABLED. Press VIEW #2, which changes this value to ENABLED. After you enable tournament system setup, more options appear on the menu.

- [ ] 129. Decide when you want the VGM to call the Midway® Tournament Network (MTN). Choose a time period when the VGM is idle, but still powered up. (We suggest two hours after closing, until two hours before opening.) If several VGMs share the same line, stagger the call times by five minutes. That way, your VGMs won't need to compete for server access.

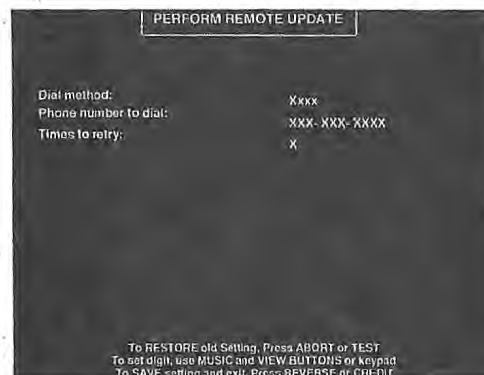


**NOTICE:** If you choose an overnight call time, the VGMs must remain on after closing time. Otherwise, make sure that the call time occurs when the VGMs are on. For example: The location turns VGMs on at 9am and opens at 10am. In this case, you can set the call time to between 9am and 10 am. Notify the location that the VGMs use the phone lines during this period.

- [ ] 130. Repeatedly press VIEW #1 or MUSIC until you highlight DIAL START TIME. At the keypad, enter the time to begin the call to MTN. (Or toggle through the numbers by pressing VIEW #2 and VIEW #3. VIEW #2 decrements and VIEW #3 increments the number.)

- [ ] 131. Repeatedly press VIEW #1 or MUSIC until you highlight DIAL END TIME. At the keypad, enter the time to complete the call to MTN. (You must specify an end time. The VGM might need to redial a few times. You don't want it to keep trying indefinitely, because it needs to earn a profit! During update procedures, the VGM doesn't permit game play.)

- [ ] 132. Repeatedly press VIEW #1 or MUSIC until you highlight DIAL METHOD. Press VIEW #2 to select either tone or pulse.
- [ ] 133. Repeatedly press VIEW #1 or MUSIC until you highlight MODEM ENABLE. At the keypad, enter special characters that the modem must dial to function on your phone system. (For example: Enter ""70" to allow for call waiting.) You may need to enter non-keyboard characters. In that case, VIEW #2 and VIEW #3 function as an alternate keypad. These buttons allow you to toggle through all the characters. (For example: You can enter "," to add a two-second delay between digits. You can also add "1" to flash the hookswitch.) After you select a character, press MUSIC to move to the next character position. If you need to go back, press VIEW #1.
- [ ] 134. Repeatedly press VIEW #1 or MUSIC until you highlight OUTSIDE LINE. At the keypad, enter the characters that the modem must dial to connect to the outside line. (For example: Many phone systems require dialing "9" before a phone can connect to an outside line. Some phone systems also require a "1" prefix before an area code.)
- [ ] 135. Repeatedly press VIEW #1 or MUSIC until you highlight PRIMARY SERVER NUMBER. Make sure that one of the default numbers appears on the screen: Either 877-MPN-2WIN, or 877-676-2946. (This is actually the same number.)
- [ ] 136. Repeatedly press VIEW #1 or MUSIC until you highlight SECONDARY SERVER NUMBER. If Midway® support requests your secondary number, enter it from the VGM keypad.
- [ ] 137. Exit the Tournament System Setup Menu by pressing REVERSE. The Tournament Options Menu appears.
- [ ] 138. Use VIEW #2 and VIEW #3 to highlight PERFORM REMOTE UPDATE. Select the option by pressing ABORT. The VGM dials a toll-free number to reach the Midway® key server. The VGM system then downloads the latest software updates from the server. Afterward, the VGM returns to the Tournament Options Menu.
- [ ] 139. Use VIEW #2 and VIEW #3 to highlight CALL TOURNAMENT SYSTEM NOW. Select the option by pressing ABORT. The VGM dials a toll-free number to reach the Midway® key server. The VGM system then updates your data on the server. After call completion, the message TOURNAMENT INITIALIZATION COMPLETE appears. Afterward, the VGM returns to the Tournament Options Menu.
- [ ] 140. Exit the Tournament Initialization Menu by pressing REVERSE. The Tournament Options Menu appears.
- [ ] 141. Exit the Tournament Options Menu by pressing REVERSE. The Self-Test Menu appears. Use VIEW #2 and VIEW #3 to highlight EXIT TO GAME. Press ABORT to exit.
- [ ] 142. Press VIEW #1. Check the monitor to see if you can access tournaments. You should find a pink screen with the legend TOURNAMENTS RUNNING NOW!!! If you don't see this screen, troubleshoot your tournament setup. Otherwise, proceed... From now on, game play occurs as before the conversion. At some random time within the update period, the VGM reboots and dials out. The VGM passes high score data to the Midway® Tournament Network (MTN), and again reboots. The reboot returns the VGM to Game Mode. The call out occurs on a daily basis. The VGM repeats its update call daily, for 10 days. After the tenth call, the network key server provides a local phone



number. This local number establishes the VGM as an MTN member. After this network induction, the VGM can participate in tournaments and other official data exchanges.

[ ] 143. Close and lock the coin door.

[ ] 144. Keep this manual for future reference.



**NOTICE:** If you need assistance with this kit, please call Midway Technical Service at (847) 785-3164.

# LED Display Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
<ul style="list-style-type: none"> <li>No updated tournament information on LED display.</li> </ul>	Faulty or disconnected cables to game electronics	<ol style="list-style-type: none"> <li>Assure that data cable connector seats firmly at display.</li> <li>Assure that data cable connector seats firmly at both ends of RJ-11 connector.</li> <li>Check for broken or shorted wires. (Most common breaks occur near connectors.)</li> <li>If cable has no obvious breaks, but may still be bad, substitute another cable. (<i>Don't use a standard phone cable. Data cable looks like phone cable, but isn't one.</i>)</li> <li>If substitute cable remedies problem, replace cable.</li> </ol>
	Faulty RJ-11 adapter	<ol style="list-style-type: none"> <li>Replace RJ-11 adapter.</li> <li>Connect to the MTN office.</li> <li>Attempt to update display data.</li> </ol>
	Faulty Denver I/O Board	<ol style="list-style-type: none"> <li>Check Denver I/O Board by substitution.</li> <li>If substitute board remedies problem, replace Denver I/O Board.</li> </ol>
<ul style="list-style-type: none"> <li>Dead display characters.</li> </ul>	Faulty character driver	<ol style="list-style-type: none"> <li>Check driver operation by connecting display in question to working VGM (<i>video game machine</i>).</li> <li>If problem persists and impedes game play, replace display. (Display drivers aren't user-serviceable.)</li> </ol>
	Faulty or disconnected cables	Turn off VGM power. Assure that wiring harness connectors attach and fully seat onto mating board connectors.
<ul style="list-style-type: none"> <li>Dead display rows.</li> </ul>	Bad row-drive circuitry	<ol style="list-style-type: none"> <li>Check driver operation by connecting display in question to working VGM.</li> <li>If problem persists and impedes game play, replace display. (Display drivers aren't user-serviceable.)</li> </ol>
<ul style="list-style-type: none"> <li>Missing display dots.</li> </ul>	Failure of one or more LEDs.	<ol style="list-style-type: none"> <li>Perform Light LED's Orange Test. This test simultaneously tests both colors of each LED.</li> <li>Check display for improper colors. Any LED that doesn't appear orange is faulty.</li> <li>Unfortunately, you can't replace individual display dots (LEDs). If problem impedes game play, replace display.</li> </ol>

## LED Display Troubleshooting Table, *continued*

SYMPTOM	CAUSE	REQUIRED ACTION
<ul style="list-style-type: none"> <li>• Display is completely black.</li> </ul>	Faulty or unplugged display power brick	<ol style="list-style-type: none"> <li>1. Turn off VGM power. Assure that wiring harness connectors attach and fully seat onto mating connectors.</li> <li>2. Retest display. If it still doesn't work, replace cable.</li> </ol>
	Faulty electronics	<ol style="list-style-type: none"> <li>1. Check driver operation by connecting display in question to working VGM.</li> <li>2. If problem persists, replace display. (Display electronics aren't user-serviceable.)</li> </ol>
<ul style="list-style-type: none"> <li>• Wrong or missing display characters.</li> </ul>	Faulty wiring	<ol style="list-style-type: none"> <li>1. Assure that data cable connector seats firmly at display.</li> <li>2. Check for broken or shorted wires. (Most common breaks occur near connectors.)</li> <li>3. If display data cable is bad, replace it.</li> </ol>
	Faulty communications electronics	<ol style="list-style-type: none"> <li>1. Check communications electronics by connecting display in question to working VGM.</li> <li>2. If problem persists, replace display. (Display electronics aren't user-serviceable.)</li> <li>3. If problem clears up, check Denver I/O Board by substitution.</li> </ol>
<ul style="list-style-type: none"> <li>• Weak display.</li> </ul>	Faulty display power wiring	<ol style="list-style-type: none"> <li>1. Assure that cable power connector seats firmly at display.</li> <li>2. Check for broken or shorted wires. (Most common breaks occur near connectors.)</li> <li>3. If display power cable is bad, replace it.</li> </ol>
	Faulty display power brick	<ol style="list-style-type: none"> <li>1. Check power brick operation by connecting brick to working VGM.</li> <li>2. If problem persists, replace power brick.</li> <li>3. If problem clears up, check power cables.</li> </ol>

# Modem Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
<ul style="list-style-type: none"> <li>• Any of these conditions...</li> <li>• No communication.</li> <li>• Slow communication.</li> <li>• Too many redials.</li> <li>• No calls out.</li> </ul>	<p>Poor phone line conditions</p>	<ol style="list-style-type: none"> <li>1. Substitute different line to wall phone jack.</li> <li>2. Retest modem. If problem persists, proceed.</li> <li>3. Connect modem to different phone line.</li> <li>4. Retest modem. If problem persists, check modem.</li> </ol>
	<p>Faulty Modem</p>	<ol style="list-style-type: none"> <li>1. Check modem operation by performing UART 0 Loop Test. Begin by providing loop-back jumper: Use pin jumper with 1" center. Short pins 3 and 5 of Modem Board Connector P2.</li> <li>2. Turn on DIP Switch 2.</li> <li>3. Turn off VGM (<i>video game machine</i>) and wait 30 seconds. Then turn VGM on again.</li> <li>4. VGM boots up in SA Diagnostics. Move down menu and select UART 2 (MIPSMPS) TEST.</li> <li>5. Allow test to run for few minutes and note errors (red numbers). Good board usually won't produce any errors. (Yet some working boards produce errors.)</li> <li>6. Move down menu and select UART 3 DIAL. From this option, you must call another modem.</li> <li>7. Enter remote modem number. VGM modem dials number. Remote and local modems should exchange test packets.</li> <li>8. After testing, turn off DIP Switch 2.</li> <li>9. Turn off VGM and wait 30 seconds. Then turn VGM on again.</li> <li>10. VGM boots up in normal Attract Mode.</li> <li>11. If modem fails tests or problem persists, replace Modem Board.</li> </ol>



**NOTICE: TO TEST DISK DRIVES...**

**A.** On the Denver I/O Board, turn on DIP Switch U13, SW-2. **B.** Reset the VGM by turning it off, waiting, and turning the VGM on again. **C.** Enter Diagnostic Mode by pressing TEST MODE. **D.** From the Self-Test Menu, select EPROM Diagnostics. **E.** After the diagnostic routine runs, return to the Self-Test Menu. **F.** Select the Disk Tests Menu. Choose either DRIVE READ TEST or FILESYSTEM CHECK. (*Either option can test either drive.*) **G.** You can only test one drive at a time. Select "0" for the master disk. The VGM tests your master disk drive. **H.** After the diagnostic routine runs, select "1" for the slave disk. The VGM tests your master disk drive. **I.** After the diagnostic routine runs, restore the DIP Switch to Game Mode: On the Denver I/O Board, turn off DIP Switch U13, SW-2. **J.** Reset the VGM by turning it off, waiting, and turning the VGM on again. The VGM reboots in Game Mode.

## Tournament Mode Troubleshooting Table

SYMPTOM	CAUSE	REQUIRED ACTION
<ul style="list-style-type: none"> <li>VGM (<i>Video Game Machine</i>) displays error message: "Failed to connect to ppp server NO DIAL TONE"</li> </ul>	Modem isn't receiving a dial tone	<ol style="list-style-type: none"> <li>Verify that phone line connects to jack.</li> <li>Verify that phone line connects to MIPSMPs Modem Board inside VGM.</li> <li>Verify that MIPSMPs Modem Board seats properly in connector on Denver I/O Board.</li> </ol>
<ul style="list-style-type: none"> <li>VGM displays error message: "Failed to connect to ppp server"</li> </ul>	Server error	Repeat your attempt to connect. (Error is at server, not local cabinet.)
<ul style="list-style-type: none"> <li>VGM displays error message: "Failed to connect to ppp server NO CARRIER"</li> </ul>	Server didn't answer	Repeat your attempt to connect. (Error is at server, not local cabinet.)
<ul style="list-style-type: none"> <li>VGM displays error message: "Failed to connect to ppp server BUSY"</li> </ul>	Busy signal at server end	Repeat your attempt to connect. (Error is at server, not local cabinet.)
<ul style="list-style-type: none"> <li>VGM displays error message: "Unable to connect to tournament server"</li> </ul>	Server error, or line problem after connection	Repeat your attempt to connect. (Call went through, but server isn't responding, or can't respond.)

## WARNINGS & NOTICES

### WARNING

- Use of non-Midway parts or circuit modifications may cause serious injury or equipment damage!
- Use only Midway authorized components and parts. Failure to do so will void your warranty and may result in incorrect or unsafe operation. Substitute parts or modifications may void the EMC directive or FCC type acceptance.
- Federal copyright, trademark and patent laws protect this game. Unauthorized modifications may be illegal under Federal law. The modification ban also applies to Midway game 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. Plug this game into a properly grounded outlet. Don't use a cheater plug to defeat the power cord's grounding pin. Don't cut off the ground pin.

### WARNING

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

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

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

### NOTICE

This video game machine was tested. It complies with limits for a Class A digital device, under FCC Rules, Part 15. These limits provide reasonable protection against harmful interference when the equipment operates in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used according to the instruction manual, this equipment may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. If interference occurs, the user must correct it at his own expense.

### NOTICE

When Midway ships a game, it complies with FCC regulations. Your FCC label is proof of compliance. Legal repercussions to the owner or distributor may result if the label is missing or damaged. If your game does not contain an FCC compliance label, call Midway immediately.

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