

MIDWAY

September 1997
16-44061-101
FINAL

MORTAL KOMBAT

4

CONVERSION KIT MANUAL

This Manual Contains...

**Installation & Operation • Testing & Problem Diagnosis
Parts Information • Wiring Diagrams**

**MIDWAY GAMES INC. 3401 NORTH CALIFORNIA AVENUE
CHICAGO, ILLINOIS 60618**

MORTAL KOMBAT

4

CONVERSION KIT MANUAL

The information in this manual is current at time of its release.

Fill out and mail in the game Registration card. Be sure to include the kit serial number. For your records, write the serial in the manual.

Serial Number _____

MIDWAY Games Inc. reserves the rights to make modifications and improvements to its products. The specifications and parts identified in this manual are subject to change without notice.

TABLE OF CONTENTS

Section One - Operation and Troubleshooting

Safety Notices.....	1-2
Conversion Procedure.....	1-4
Inspection and Parts List.....	1-4
MORTAL KOMBAT 4 CPU/Sound Board.....	1-5
Converting a Typical Video Game Cabinet.....	1-6
Cabinet Modifications.....	1-6
Control Panel Modifications.....	1-7
Install the CPU board into a MORTAL KOMBAT 2 Game.....	1-9
Install the CPU board into a MORTAL KOMBAT 3 Game.....	1-9
Install the CPU board into a JAMMA Game Cabinet.....	1-10
Game Features.....	1-12
Starting-up.....	1-12
Player Controls.....	1-12
Control Panel Diagram.....	1-12
Menu System Operation.....	1-13
Operation.....	1-13
Main Menu.....	1-13
Diagnostic Tests.....	1-14
Switch Test.....	1-14
DIP Switch Table and Test.....	1-15
System Test and Sound Test.....	1-16
Monitor Patterns.....	1-17
Burn-in Test and Mechanical Counter Test.....	1-18
Coin Bookkeeping.....	1-19
Game Audits.....	1-20
Game Adjustments.....	1-21
Standard Pricing Table.....	1-22
Custom Pricing Table.....	1-23
Utilities.....	1-26
System Information.....	1-27
Volume Adjust.....	1-28

Section Two - Wiring

JAMMA Chart.....	2-2
Cabinet Wiring Diagram.....	2-3
Coin Switch and Meter Wiring.....	2-4

Section Three - Troubleshooting

Game Appears Completely Non-functional.....	3-2
Marquee Lamp is Non-functional.....	3-2
Monitor Appears Non-functional.....	3-2
Sound is Non-functional.....	3-2
Video Game Appears Non-functional.....	3-3
The Video Screen Exhibits Loss of Sync or Horizontal Tearing.....	3-3
The Audio Sounds Distorted, Muffled, or Missing Frequencies.....	3-3
The Game Enters Power-on Diagnostics, But Doesn't Enter Normal Game Play.....	3-4

THE LAST TWO PAGES OF THIS MANUAL ARE INDIVIDUAL PLAYER CONTROL PANEL TEMPLATES

MORTAL KOMBAT 4

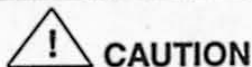
CONVERSION KIT MANUAL

**SECTION
ONE**

**INSTALLATION
&
OPERATION**

SAFETY NOTICES

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



THIS KIT IS TO BE INSTALLED BY AUTHORIZED SERVICE PERSON ONLY!

HANDLING ELECTRONIC DEVICES: This kit uses complex electronic components that are SENSITIVE to static electricity. The following precautions must be observed and followed prior to handling any of the electronics that make up this game.

- 1) Ensure that the A.C. power to the game is turned off prior to servicing the electronics.
- 2) Discharge any static electricity build up in your body by touching the safety ground stud of the power supply chassis. This is to be done PRIOR to touching or handling the electronic assemblies.
- 3) Store the electronic assemblies in an anti-static area. Anti-static bags are to be used to store the kit CPU assembly.
- 4) DO NOT remove or connect any electronic assemblies when the cabinet power is on. Doing so will damage the electronic assemblies and void the warranty.

SALVAGED PARTS. Parts salvaged from old games are required to complete your kit. These salvaged parts must operate perfectly: otherwise, the converted game cannot perform properly or safely. Always repair circuit board malfunctions and cabinet damage before conversion is attempted.

POWER SUPPLY. Be sure the power supply from your old game is capable of +5Vdc at 5A, -5Vdc at 1A, and +12Vdc at 2A. All power supply voltages are $\pm 5\%$. These operating voltages are necessary for the kit. Your power supply must be FCC approved.

MONITOR. This kit is not intended for use with X-Y monitor. Suitable monitors have horizontally mounted CRTs and raster electronics with inputs for red, green, and blue video, as well as COMPOSITE NEGATIVE SYNC inputs.

COIN MECHANISMS. Be sure to clean and lubricate your old coin mechanisms. Servicing them is crucial to your game's earning potential and operation.

COIN METERS. Coin meters are not provided with this kit. Wiring information is provided as a convenience to the operator.

DISCONNECT POWER DURING INSTALLATION OR REPAIRS. Always turn your game OFF and unplug it before attempting to service or install your kit. Installing or repairing PC boards with power ON will void warranty.

PROPERLY GROUND THE GAME. To avoid electrical shocks, do not plug in the game until it has been inspected and properly grounded. This game should only be plugged into a grounded 3-wire outlet.

NOTICE - FCC COMPLIANCE STICKER

- I. THIS KIT WAS TESTED IN A MIDWAY UNIVERSAL VIDEO CABINET (MODEL 40135) AND FOUND TO COMPLY WITH FCC PART 15 CLASS A REQUIREMENTS. IF INSTALLED IN A MIDWAY UNIVERSAL VIDEO CABINET (MODEL 40135), THE FCC COMPLIANCE STICKER (16-10139) SUPPLIED IS TO BE PLACED ON THE REAR OF THE CABINET.

- II. INSTALLATION OF THIS KIT INTO ANY OTHER PRODUCT DOES NOT GUARANTEE COMPLIANCE WITH FCC REQUIREMENTS. YOU ARE SOLELY RESPONSIBLE, AND MIDWAY WILL HAVE NO RESPONSIBILITY FOR FCC COMPLIANCE FOR INSTALLATIONS IN OTHER PRODUCTS. THE FCC COMPLIANCE STICKER SUPPLIED SHOULD NOT BE INSTALLED ON THE CONVERTED PRODUCT UNTIL FCC COMPLIANCE IS VERIFIED.

EPILEPSY WARNING

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

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

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

ATTENTION

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

CONVERSION PROCEDURE

INSPECTION

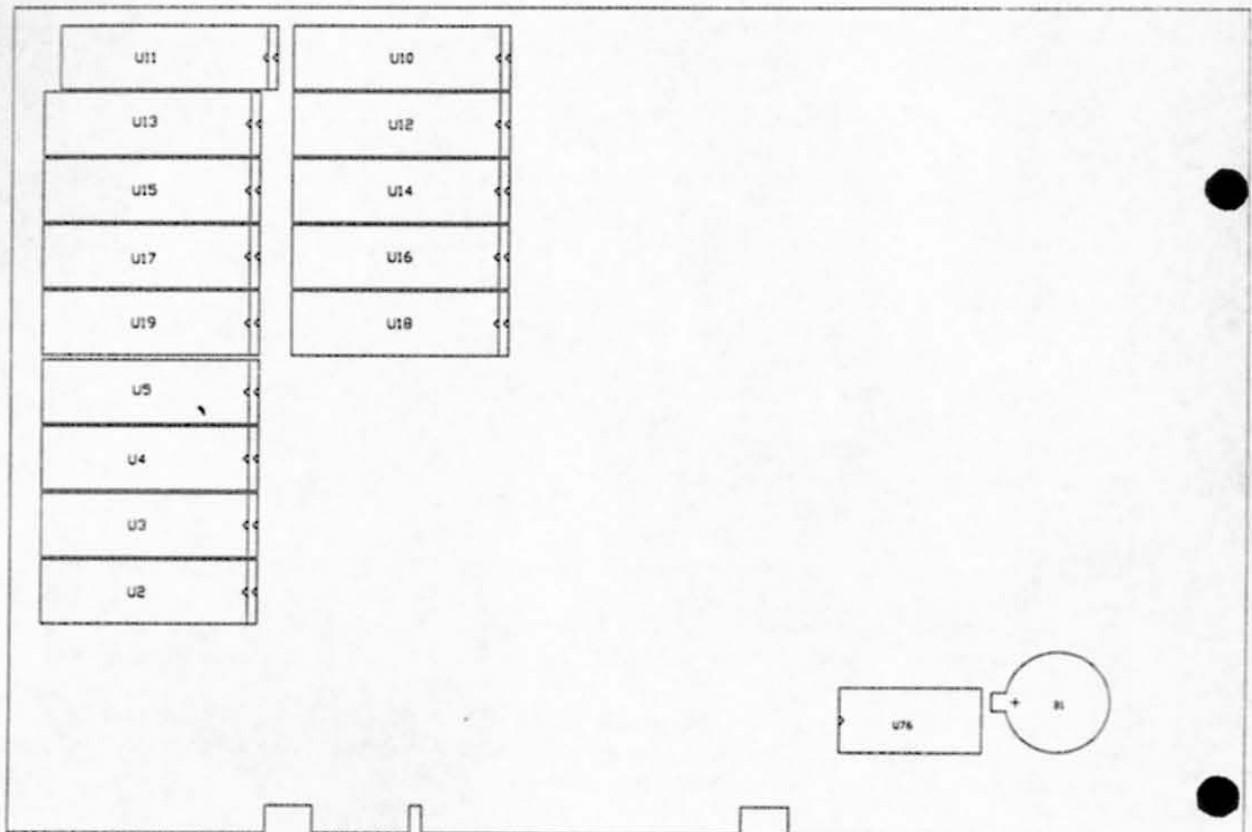
Unpack the materials from the carton and inspected for obvious signs of damage. Use this checklist to be sure the kit is complete.

Part Number	Item	Quantity
[] A-21113	MORTAL KOMBAT 4 CPU Board	1
[] H-17358	3-Player Kit Cable	1
[] 03-8338-1	1/4" PCB mounting spacers	8
[] 16-10411	Control Panel Template	1
[] 16-8587-825	FBI Warning Label	1
[] 16-9478.2	Registration Card	1
[] 16-9922.1	Epilepsy Warning Label	1
[] 16-10139	FCC Compliance Sticker	1
[] 20-9620	T-20 Tamper Resist Wrench	1
[] 20-9978-1	Red 8-way Joystick	2
[] 20-10209-1	Red Push Buttons	4
[] 20-10209-2	White Push Buttons	4
[] 20-10209-3	Blue Push Buttons	4
[] 20-10209-5	Yellow Push Buttons	2
[] 31-1789	Clear Overlay	1
[] 31-2850-3	Marquee Backlite	1
[] 31-2852	Bezel-Bottom Decal	1
[] 31-2855	OEM Decal	1
[] 31-2856	Side Panel Decal	2
[] 31-2857	Wallpaper Decal	1
[] 31-2858	Control Panel Add-on Decals	1
[] 4108-01193-10B	torx head tamper resistant screws	10 (to attach clear overlay to control panel)
[] 4308-01123-24B	8-32 x 1-1/2 bolts	8 (to attach joysticks to control panel)
[] 4408-01128-00	8-32 nuts	8 (to attach joysticks to control panel)
[] 5556-13956-00	Ferrite Bead (2-piece) 1/1/4"	1 (attach to video cable)

Use existing #6 sheet metal screws to attach the MORTAL KOMBAT 4 CPU board to the inside of the cabinet. **Only insert screws into the five spacers at the edges of the CPU board. Do not insert a screw into the spacer located in the center of the CPU board.**

MORTAL KOMBAT 4 CPU/SOUND BOARD A-21113

<u>Designation</u>	<u>Part Number</u>	<u>Description</u>			
U3	5341-15346-01	Masked Sound ROM	or	A-5343-40061-1	Sound EPROM
U4	5341-15346-02	Masked Sound ROM	or	A-5343-40061-2	Sound EPROM
U5	5341-15346-03	Masked Sound ROM	or	A-5343-40061-3	Sound EPROM
U12	5341-15346-04	Masked Image ROM	or	A-5343-40061-4	Image EPROM
U13	5341-15346-05	Masked Image ROM	or	A-5343-40061-5	Image EPROM
U14	5341-15346-06	Masked Image ROM	or	A-5343-40061-6	Image EPROM
U15	5341-15346-07	Masked Image ROM	or	A-5343-40061-7	Image EPROM
U2	A-5343-40061-10	Sound EPROM			
U10	A-5343-40061-11	Image EPROM			
U11	A-5343-40061-12	Image EPROM			
B1	5880-11056-00	*Lithium Battery, 3V			



*Dispose of the battery according to the manufacturer's instructions.

CONVERTING A TYPICAL VIDEO GAME CABINET

Recommended tools and supplies

- | | |
|--|--|
| <input type="checkbox"/> black semi-gloss paint | <input type="checkbox"/> black electrical tape |
| <input type="checkbox"/> electric drill | <input type="checkbox"/> surplus assorted screws |
| <input type="checkbox"/> electric screwdriver | <input type="checkbox"/> wire cutters |
| <input type="checkbox"/> grease pencil or marker | <input type="checkbox"/> soldering iron and solder |
| <input type="checkbox"/> hex driver | <input type="checkbox"/> razor knife |
| <input type="checkbox"/> 180 grit sandpaper or electric sander | |

CABINET MODIFICATIONS

1. Repaint the cabinet with black semi-gloss paint (games with wood grain sides: remove the old decal and artwork, and clean the glue residue before painting). Allow the paint to dry completely.
2. Pencil a line roughly at the top of the old graphic. Lightly moisten the cabinet with soapy water. Remove the masking, and apply the decal starting at the top and working down. After the decal is in place, smooth it down, taking care to squeeze out air bubbles. If you miss an air bubble, pop it with a razor knife or a pin and smooth it down. Allow 12 hours for the adhesive in the decal to set.
3. Check the kit for an FCC sticker. If this kit is installed in a MIDWAY universal video cabinet (model 40135), the FCC compliance sticker (p/n 16-10139) supplied is placed on the rear of the cabinet. Installation of this kit into any other product does not guarantee compliance with FCC requirements. The FCC compliance sticker supplied should not be installed on the converted product until FCC Compliance is verified.

NOTICE - FCC COMPLIANCE STICKER

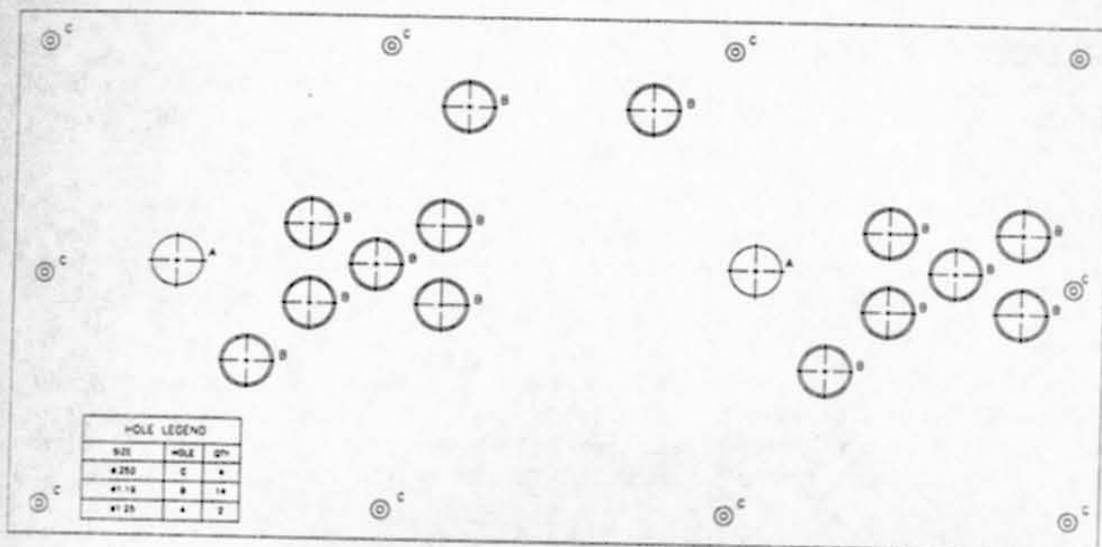
- I. THIS KIT WAS TESTED IN A MIDWAY UNIVERSAL VIDEO CABINET (MODEL 40135) AND FOUND TO COMPLY WITH FCC PART 15 CLASS A REQUIREMENTS. IF INSTALLED IN A MIDWAY UNIVERSAL VIDEO CABINET (MODEL 40135), THE FCC COMPLIANCE STICKER (16-10139) SUPPLIED IS TO BE PLACED ON THE REAR OF THE CABINET.
- II. INSTALLATION OF THIS KIT INTO ANY OTHER PRODUCT DOES NOT GUARANTEE COMPLIANCE WITH FCC REQUIREMENTS. YOU ARE SOLELY RESPONSIBLE, AND MIDWAY WILL HAVE NO RESPONSIBILITY FOR FCC COMPLIANCE FOR INSTALLATIONS IN OTHER PRODUCTS. THE FCC COMPLIANCE STICKER SUPPLIED SHOULD NOT BE INSTALLED ON THE CONVERTED PRODUCT UNTIL FCC COMPLIANCE IS VERIFIED.

4. Remove the marquee from the game cabinet and install the **MORTAL KOMBAT 4** marquee in its place.
5. Remove the viewing glass and apply the player moves and the game play instruction decals to the bottom front of the monitor bezel. Be sure the decals do not obstruct the CRT.
6. Place the Epilepsy Warning label on the top front of the monitor bezel. Be sure that it does not obstruct the CRT screen.

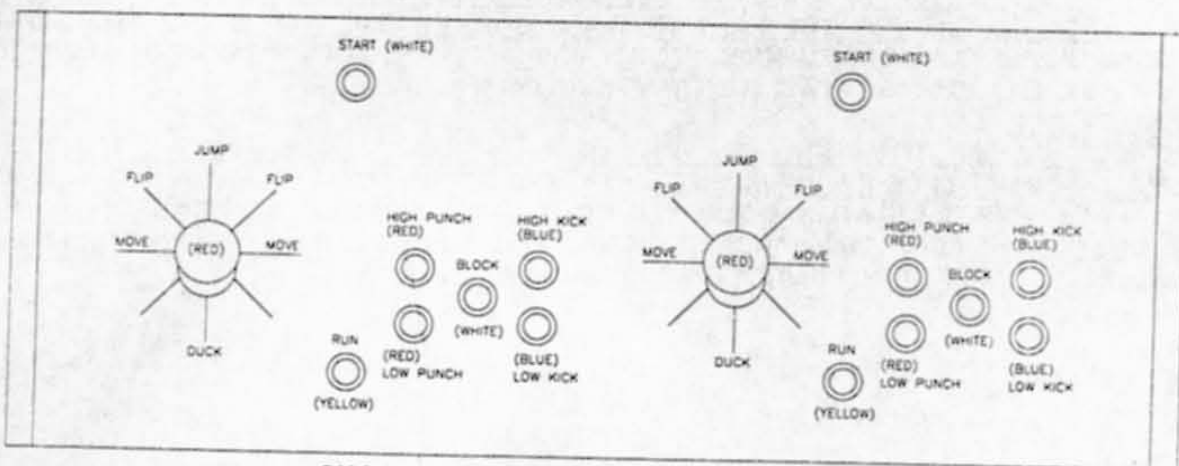
CONTROL PANEL MODIFICATIONS

If you are converting a MORTAL KOMBAT 2 or a MORTAL KOMBAT 3 to a MORTAL KOMBAT 4 do not need to drill holes for the joysticks or the buttons. Instead use the existing joystick and button locations.

1. Remove the control panel buttons and joysticks and remove the old vinyl covering and artwork.
2. Use the full control panel template to help you design the control panel. For your convenience, individual player templates are located at the end of this manual.



SUGGESTED CONTROL PANEL TEMPLATE LAYOUT



**SUGGESTED CONTROL PANEL LAYOUT
AND
BUTTON COLOR GUIDE**

3. Plug existing holes with wood blocks, putty, cardboard, or epoxy. Drill new holes, as needed, for the joysticks and the control panel buttons. File the new holes smooth.
4. Carefully remove the backing on the vinyl control panel overlay. Place the overlay on the top of the control panel. Prevent air bubbles from getting under the overlay.

5. After the overlay is secure, use a razor knife to trim excess and to cut holes for the control panel buttons and joysticks. Position the add-on decals next to the appropriate hole locations.
6. Install the new buttons as follows: Remove the switch from the push-button by pulling the large prong away from the switch, then pull the switch off of the housing. Unscrew the nut from the housing. Open the control panel. Slide the pushbuttons through the control panel from the front. Screw the nut onto the switch housing from the back of the panel. Snap the switch back onto the housing.
7. To install the joysticks, first remove the "E"-ring and slide the shaft and the plastic ring (2" washer), off the joystick base. Be sure that the bushings remain in the base. Use the 8-32 bolts and the 8-32 nuts to attach the base to the underside of the control panel. Slide the plastic ring around the shaft so that the rough side is next to the shaft knob handle. Slide the shaft through the control panel and base. Replace the "E"-ring.

INSTALL THE CPU BOARD INTO A MORTAL KOMBAT 2 GAME

Turn off and unplug the game cabinet BEFORE attempting to install this kit.

1. The MORTAL KOMBAT 4 sound is generated from the CPU board. It doesn't use a separate Sound board. Remove the MORTAL KOMBAT 2 cage, and the CPU and Sound boards from the cabinet. Use the 1/4" PCB mounting spacers included in this kit and existing #6 sheet metal screws to secure the MORTAL KOMBAT 4 CPU board to the inside of the cabinet. Only insert screws into the five spacers at the edges of the CPU board. Do not insert a screw into the spacer located in the center of the CPU board.

CAUTION

Properly insulate any unused wires, within the JAMMA cable, especially the red, yellow, and orange wires. This is a fully wired JAMMA cable. Many of the wires will not be used for this kit. These wires have been installed so that you can use this cable for future kits.

2. The operator must provide a JAMMA cable, or use the JAMMA cable from the existing game. Connect the JAMMA cable to the CPU board. This cable contains the wires for the Player 1 and Player 2, High Kick, High Punch, and Block switches, and the joysticks, the speakers, the coin door switches, and the power supply.
3. Connect the 3-Player cable to J19 of the CPU board. This cable contains wires for the Player 1 and Player 2, Low Kick, Low Punch, and Run switches. Use the connector/pin layout on the next page for reference and connect these wires.
4. Place the FBI Warning Label next to the CPU board. Be sure the label is completely visible.
5. Close and lock the coin door. Replace the rear cabinet door. Plug the game in and turn it on.

INSTALL THE CPU BOARD INTO A MORTAL KOMBAT 3 GAME

Turn off and unplug the game cabinet BEFORE attempting to install this kit.

1. Remove the MORTAL KOMBAT 3 CPU/Sound board from the cabinet. Use the 1/4" PCB mounting spacers included in this kit and existing #6 sheet metal screws to secure the MORTAL KOMBAT 4 CPU board to the inside of the cabinet. Only insert screws into the five spacers at the edges of the CPU board. Do not insert a screw into the spacer located in the center of the CPU board.

CAUTION

Properly insulate any unused wires, within the JAMMA cable, especially the red, yellow, and orange wires. This is a fully wired JAMMA cable. Many of the wires will not be used for this kit. These wires have been installed so that you can use this cable for future kits.

2. The operator must provide a JAMMA cable, or use the JAMMA cable from the existing game. Connect the JAMMA cable to the CPU board. This cable contains the wires for the Player 1 and Player 2, High Kick, High Punch, and Block switches, and the joysticks, the speakers, the coin door switches, and the power supply.
3. Connect the 3-Player cable to J19 of the CPU board. This cable contains wires for the Player 1 and Player 2, Low Kick, Low Punch, and Run switches. Use the connector/pin layout on the next page for reference and connect these wires.
4. Place the FBI Warning Label next to the CPU board. Be sure the label is completely visible.
5. Close and lock the coin door. Replace the rear cabinet door. Plug the game in and turn it on.

The charts below follow the connector/pin layout of the PC boards.

MORTAL KOMBAT 2 CPU BOARD, p/n A-17266-40029,		
P5-15	N/C	
P5-14	Not Used	BLU-VIO
P5-13	Not Used	BLU
P5-12	2 Low Kick	BLU-GRN
P5-11	2 Low Punch	BLU-YEL
P5-10	Not Used	BLU-ORG
P5-9	Not Used	BLU-RED
P5-8	1 Low Kick	BLU-BRN
P5-7	1 Low Punch	BLU-BLK
P5-6	Not Used	BLU-WHT
P5-5	N/C	
P5-4	N/C	
P5-3	N/C	
P5-2	N/C	
P5-1	N/C	
P4-5	N/C	
P4-4	+5V	RED
P4-3	Key	
P4-2	N/C	
P4-1	N/C	
P3-9	Ground	BLK
P3-8	+5V	RED
P3-7	Ground	BLK
P3-6	-5V	YEL
P3-5	Key	
P3-4	+12V	ORG
P3-3	+12	ORG
P3-2	-Speaker	BRN-GRY
P3-1	+speaker	RED-GRY
P17-6	Coin 4	BLK-YEL
P17-5	Key	
P17-4	+12V	ORG
P17-3	+5V	RED
P17-2	Coin 3	BLK-ORG
P17-1	Ground	BLK
P16-10	N/C	
P16-9	N/C	
P16-8	Key	
P16-7	N/C	
P16-6	N/C	
P16-5	N/C	
P16-4	N/C	
P16-3	+Volume	ORG-GRN
P16-2	-Volume	ORG-RED
P16-1	N/C	
P6-15	N/C	
P6-14	Not Used	GRY-VIO
P6-13	Not Used	GRY-BLU
P6-12	Not Used	GRY-GRN
P6-11	Not Used	GRY-YEL
P6-10	Not Used	GRY-ORG
P6-9	Not Used	GRY-RED
P6-8	Not Used	GRY-BRN
P6-7	Not Used	GRY-BLK
P6-6	Not Used	GRY-WHT
P6-5	N/C	
P6-4	N/C	
P6-3	N/C	
P6-2	N/C	
P6-1	N/C	

MORTAL KOMBAT 3 CPU BOARD, p/n A-18968-40039		
P3-5	Ground	Not Used
P3-4	+5V	Not Used
P3-3	Key	
P3-2	+5V	Not Used
P3-1	Ground	Not Used
P9-7	Bill In	BLK-WHT
P9-6	Coin 4	BLK-YEL
P9-5	Key	
P9-4	+12V	ORG
P9-3	+5V	RED
P9-2	Coin 3	BLK-ORG
P9-1	Ground	BLK
P10-10	N/C	
P10-9	Key	
P10-8	N/C	
P10-7	N/C	
P10-6	N/C	
P10-5	N/C	
P10-4	Interlock	BLK-GRY
P10-3	+Volume	ORG-GRN
P10-2	-Volume	ORG-RED
P10-1	N/C	
P11-15	N/C	
P11-14	Not Used	GRY-VIO
P11-13	Not Used	GRY-BLU
P11-12	Not Used	GRY-GRN
P11-11	Not Used	GRY-YEL
P11-10	Not Used	GRY-ORG
P11-9	Not Used	GRY-RED
P11-8	Not Used	GRY-BRN
P11-7	Not Used	GRY0BLK
P11-6	Not Used	GRY-WHT
P11-5	N/C	
P11-4	N/C	
P11-3	N/C	
P11-2	N/C	
P11-1	N/C	
P12-15	N/C	
P12-14	Not Used	BLU-VIO
P12-13	2 Speed	BLU
P12-12	2 Low Kick	BLU-GRN
P12-11	2 Low Punch	BLU-YEL
P12-10	Not Used	BLU-ORG
P12-9	1 Speed	BLU-RED
P12-8	1 Low Kick	BLU-BRN
P12-7	1 Low Punch	BLU-BLK
P12-6	N/C	BLU-WHT
P12-5	N/C	
P12-4	N/C	
P12-3	N/C	
P12-2	N/C	
P12-1	N/C	

MORTAL KOMBAT 4 CPU BOARD, p/n A-21113		
P19-15	N/C	
P19-14	Not Used	BLU-VIO
P19-13	2 Run	BLU
P19-12	2 Low Kick	BLU-GRN
P19-11	2 Low Punch	BLU-YEL
P19-10	Not Used	BLU-ORG
P19-9	1 Run	BLU-RED
P19-8	1Low Kick	BLU-BRN
P19-7	1 Low Punch	BLU-BLK
P19-6	Not Used	BLU-WHT
P19-5	N/C	
P19-4	N/C	
P19-3	N/C	
P19-2	N/C	
P19-1	Ground	BLK
P20-15	N/C	
P20-14	Not Used	GRY-VIO
P20-13	Not Used	GRY-BLU
P20-12	Not Used	GRY-GRN
P20-11	Not Used	GRY-YEL
P20-10	Not Used	GRY-ORG
P20-9	Not Used	GRY-RED
P20-8	Not Used	GRY-BRN
P20-7	Not Used	GRY-BLK
P20-6	Not Used	GRY-WHT
P20-5	N/C	
P20-4	N/C	
P20-3	N/C	
P20-2	N/C	
P20-1	Ground	BLK
P21-11	N/C	
P21-10	N/C	
P21-9	+Volume	ORG-GRN
P21-8	-Volume	ORG-RED
P21-7	Dollar In	BLK-WHT
P21-6	Coin 4	BLK-YEL
P21-5	Key	
P21-4	+12V	ORG
P21-3	+5V	RED
P21-2	Coin 3	BLK-ORG
P21-1	Ground	BLK

INSTALL THE CPU BOARD INTO A JAMMA GAME CABINET

Turn off and unplug the game cabinet **BEFORE** attempting to install this kit.

1. The MORTAL KOMBAT 4 sound is generated from the CPU board. It doesn't use a separate Sound board. Replace the existing CPU and Sound boards with the MORTAL KOMBAT 4 CPU board. Use the 1/4" PCB mounting spacers included in this kit and existing #6 sheet metal screws to secure the CPU board to the inside of the cabinet. Only insert screws into the five spacers at the edges of the CPU board. Do not insert a screw into the spacer located in the center of the CPU board.

CAUTION

Properly insulate any unused wires, within the JAMMA cable, especially the red, yellow, and orange wires. This is a fully wired JAMMA cable. Many of the wires will not be used for this kit. These wires have been installed so that you can use this cable for future kits.

2. The operator must provide a JAMMA cable, or use the JAMMA cable from the existing game. See the JAMMA Chart in Section 2 to be sure that your cable is compatible with this kit's CPU board.

Connect the JAMMA cable to the CPU board. This cable contains the wires for the Player 1 and Player 2, High Kick, High Punch, and Block switches, and the joysticks, the speakers, the coin door switches, and the power supply. Use the Cabinet Wiring Diagram, found in Section Two, for reference and solder the correct JAMMA cable wires to the speaker. Then, connect the wires to the coin door, and the power supply. Last, connect the wires to the control panel. Player 1 has white-'color stripe' wires, except for the Start 1 which has a solid white wire. Player 2 has violet-'color stripe' wires.

3. Connect the Control Panel cable to J19 of the CPU board. This cable contains wires for the Player 1 and Player 2, Low Kick, Low Punch, and Run switches. Use the Cabinet Wiring Diagram in Section Two, (or the charts on the previous page) for reference to connect these wires.
4. Place the FBI Warning Label next to the CPU board. Be sure the label is completely visible.
5. Close and lock the coin door. Replace the rear cabinet door. Plug the game in and turn it on.

GAME FEATURES

STARTING UP

Switch on the power and the game begins the Start-up tests. Several colors scroll across the screen, after which the System test begins and a "tone", indicating that the sound circuits are operating, plays. After the Start-up tests have been successfully completed, the game enters the Attract mode.

Insert the desired amount of coins, bills or tokens. Select which player receives the credit by pressing the appropriate Start button. Use the joysticks to select an on-screen character, and any control panel button to confirm your choice. Game play starts automatically once the on-screen characters are chosen.

NOTE

When an error is detected during the Start-up tests, game start-up does not progress, and an error message appears on the screen.

PLAYER CONTROLS

◆ Start Button

Each player has a Start button. The Start buttons allow one or two players to begin or continue play.

◆ Joysticks

Each player has a joystick, which he uses to control an on-screen character. The player can make the on-screen character move, jump or duck.

◆ High Kick/High Punch Buttons

These buttons allow the on-screen character to kick or punch an opponent in the upper body.

◆ Low Kick/Low Punch Buttons

These buttons allow the on-screen character to kick or punch an opponent in the lower body.

◆ Block Buttons

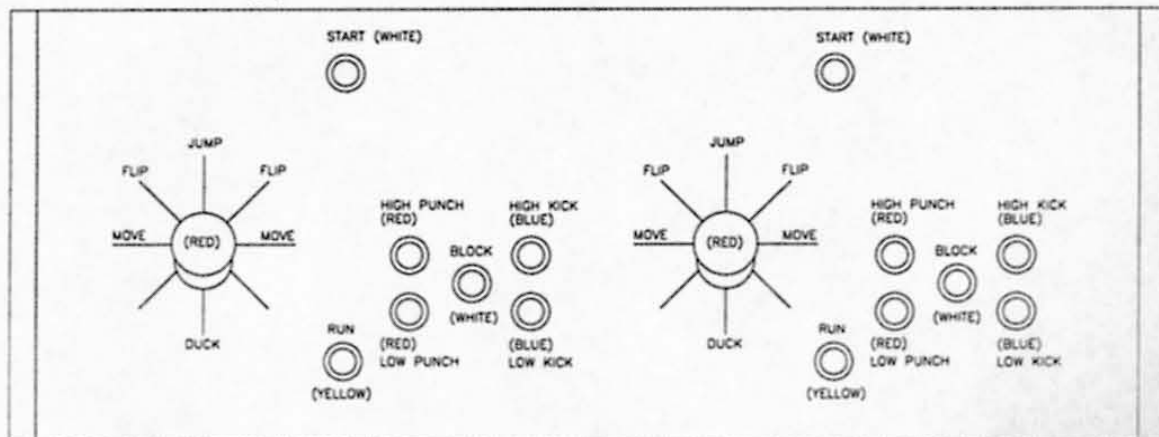
These buttons allow the on-screen character to block an opponent's punch, kick, or special move.

◆ Run Buttons

These buttons speed up the on-screen character.

NOTE

Use joystick and button combinations to discover secret moves.



Control Panel

MENU SYSTEM OPERATION

OPERATION

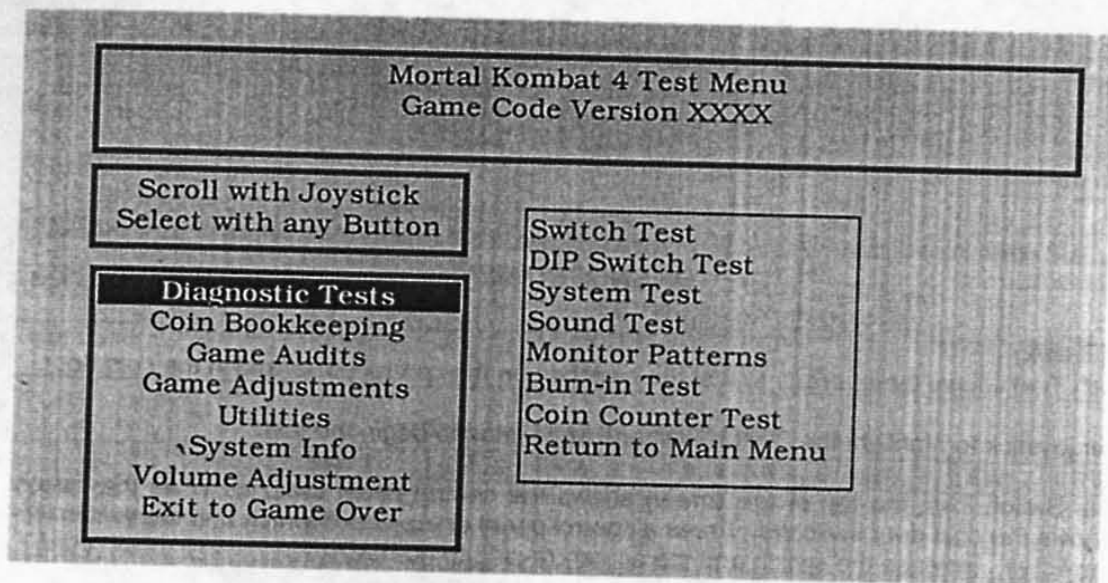
All of the game audits, adjustments, and diagnostics are options of the Main Menu. Each option, in turn has its own menu that lists several choices that you may act upon as desired.

Press the Begin Test switch on the coin door to open the Main Menu (shown below). Game adjustments, bookkeeping and diagnostics are all accessible from this menu.

Use either joystick to move the cursor up and down the menu screen. Notice that the options are highlighted in sequence. Press any button on the control panel to open a highlighted option.

NOTE

Only highlighted options can be opened.



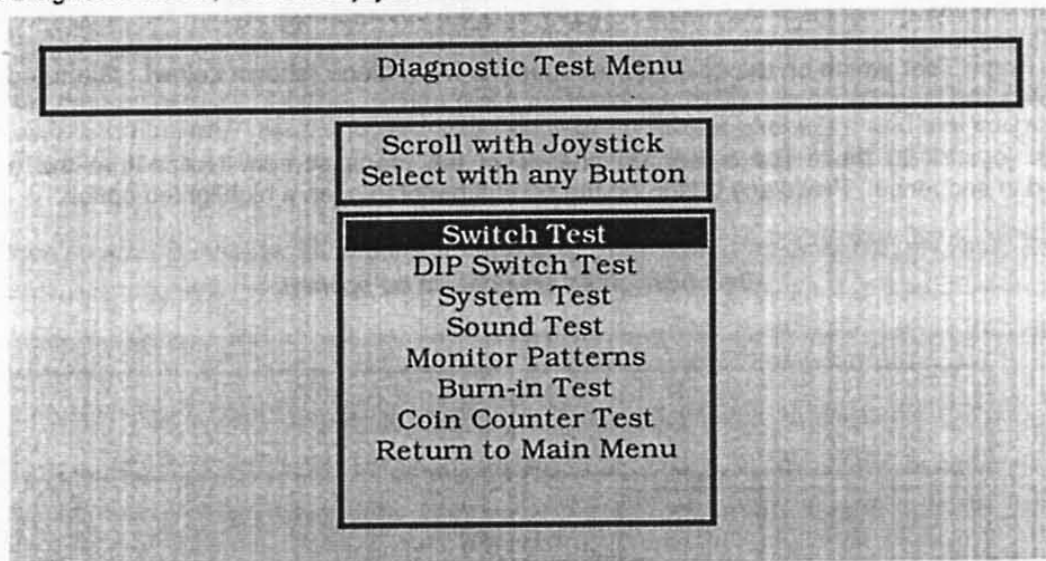
MAIN MENU SCREEN

To exit the Main Menu and return to the Attract mode, use either joystick to select EXIT TO GAME OVER and press any button.

DIAGNOSTIC TESTS

Use either joystick to select the Diagnostic Menu and any button to open it. Then, use either joystick to move the cursor up and down the menu and any button to open a highlighted option.

To exit the Diagnostic Menu, use either joystick to select RETURN TO MAIN MENU and press any button.



DIAGNOSTIC MENU

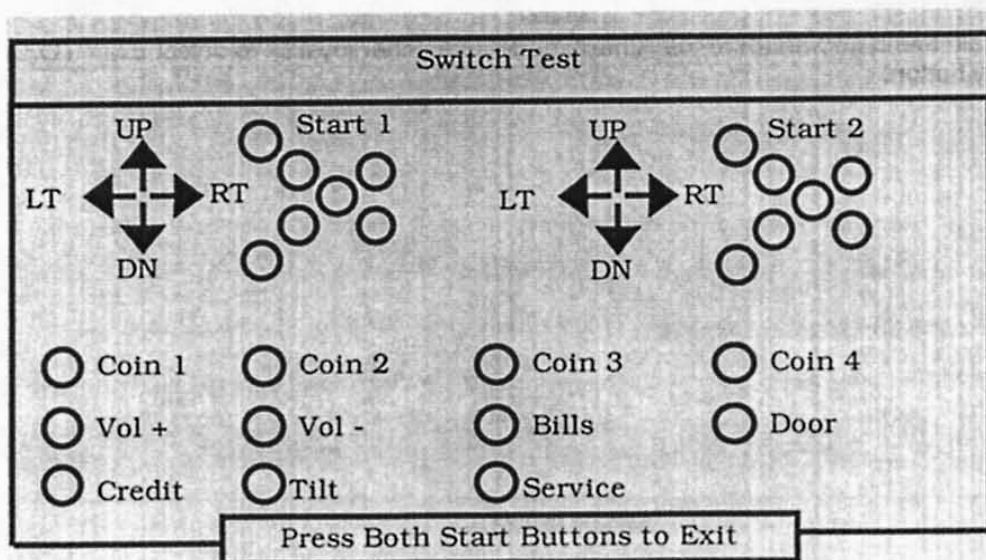
Switch Test

The Switch Test allows the operator to test the switches on the control panel and in the coin door.

Use either joystick to highlight the Switch Test and any button to begin the test.

During the Switch Test the top of the screen shows the control panel switches while the bottom of the screen shows the coin door switches. Press a control panel or coin door switch and the switch location on the screen lights. Release the switch and the screen reverts to normal.

To exit the Switch Test, press both Start buttons together.



DIP Switch Test

The DIP Switch Test allows the operator to check or change the position of the DIP Switches on the CPU Board.

Use either joystick to select the DIP Switch Test. Press any button to access the DIP Switch Setting Tables. The screen displays the current settings. To change a setting, slide the switch to the desired position. Check the screen to verify the new setting. *In some cases, setting a function to OFF actually enables the function. For example, setting DIP Switch Coinage to Off enables DIP Switch Coinage.*

Press any button to return to the Diagnostic Menu.

DIP Switch 1 Setting Table

	SW. 1	SW. 2	SW. 3	SW. 4	SW. 5	SW. 6	SW. 7	SW. 8
Fatalities	Off*							
No Fatalities	On							
Blood		Off*						
No Blood		On						
Not Used			Off*					
			On					
Not Used				Off*				
				On				
Not Used					Off*			
					On			
Not Used						Off*		
						On		
Not Used							Off*	
							On	
Not Used								Off*
								On

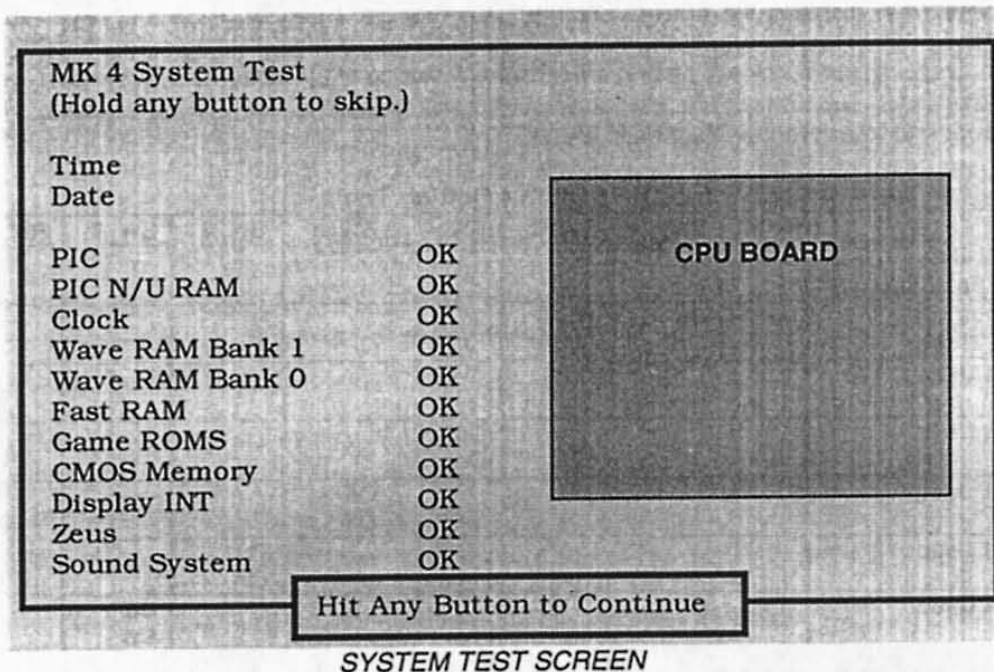
DIP Switch 2 Setting Table

	SW. 1	SW. 2	SW. 3	SW. 4	SW. 5	SW. 6	SW. 7	SW. 8
Coinage								
DIP Switch	Off*							
CMOS	On							
Coin Settings								
USA 1	Ger. 1	Fr. 1	Off*	Off*	Off*			
USA 2	Ger. 2	Fr. 2	On	Off	Off			
USA 3	Ger. 3	Fr. 3	Off	On	Off			
USA 4	Ger. 4	Fr. 4	On	On	Off			
USA ECA	Ger. ECA	Fr. ECA	Off	Off	On			
USA 9	N/U	N/U	On	Off	On			
USA 11	N/U	N/U	Off	On	On			
Free Play	Free Play	Free Play	On	On	On			
Country								
USA					Off*	Off*		
Germany					On	Off		
France					Off	On		
Not Used					On	On		
Not Used							Off*	
							On	
Test Switch								
Game Mode								Off*
Test Mode								On

* Indicates factory setting.

System Test

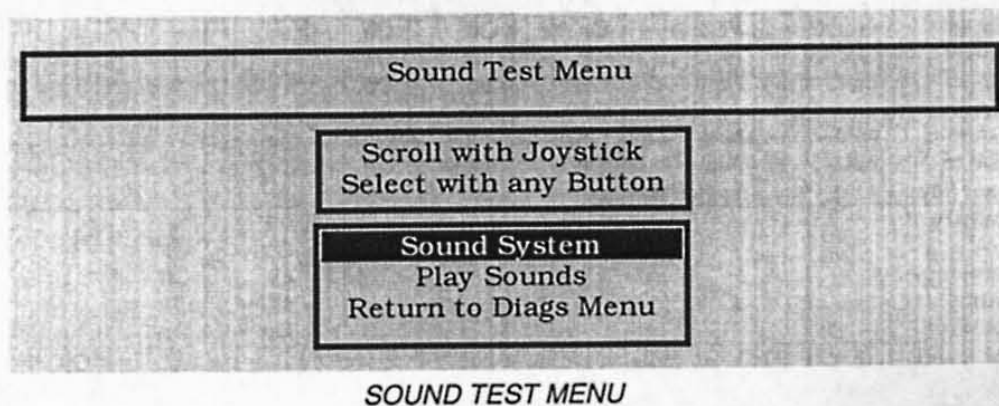
The System Test allows the operator to monitor the functions of the CPU board. Select this test with any joystick. Press any button to start the test. Several colors scroll across the screen, a "tone" is heard to confirm that the sound system is working, and the following screen is displayed.



Sound Test

This test allows the operator to listen to some of the sounds this game is capable of producing.

Use either joystick to select the test, then press any button to open the menu. The screen displays two test options. Use either joystick to select an option and any button to begin the test.

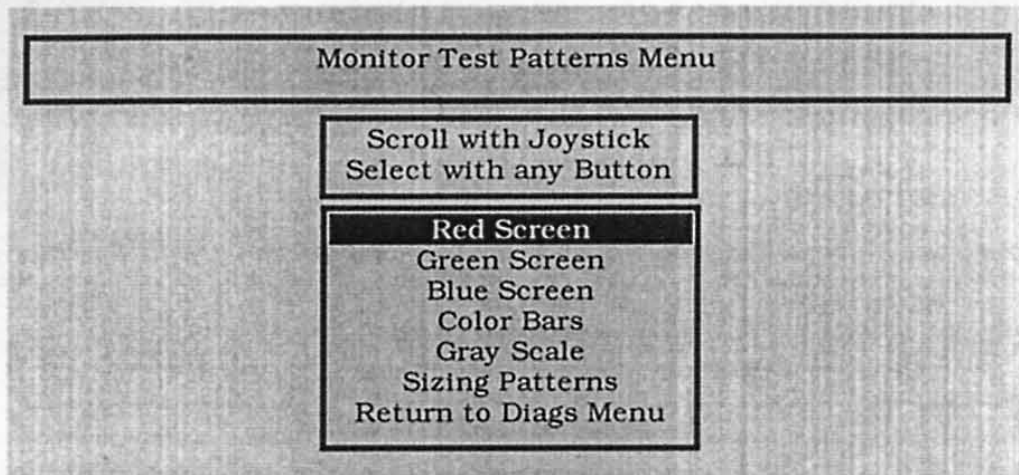


Once the test is completed, select RETURN TO DIAGNOSTIC MENU and press any button.

Monitor Patterns

The Monitor Patterns Test provides a menu for testing the monitor.

Select the test with either joystick. Press any button to open the test menu. Once the menu is open, use either joystick to select an option, and any button to begin it. Press any button again to return to the Monitor Patterns Menu. If any of the tests show a need for adjustment, use the proper knobs on the Monitor Controls board. The Monitor Controls board is located just inside the control panel opening, beneath the monitor.



MONITOR PATTERNS MENU

The **RED, GREEN** and **BLUE SCREEN** tests fill the screen with red, green or blue. Press any button to return to the Monitor Patterns Menu.

The **COLOR BARS** test fills the screen with 31 shades of colors to help with red, green and blue level adjustments. Each color should appear sharp and clear. Press any button to return to the Monitor Patterns Menu.

The **GRAY SCALE** fills the screen with several shades of gray. Each shade should appear sharp and clear. Press any button to return to the Monitors Patterns Menu.

The **SIZING PATTERNS** test fills the screen with a grid and a series of dots. The grid and the dots should be clear. The dots should be round. Press any button to return to the Monitor Patterns Menu.

To exit this test, use either joystick to select **RETURN TO DIAGNOSTIC MENU**, and then press any button.

Burn-in Test

The Burn-in Test will continuously exercise the appropriate sections of the game CPU.

Use any joystick to select the test, then press any action button to activate it. When the Burn-in Test detects an error, a message is displayed on the screen.

Burn-in Test (Press and hold any button to exit.) Total Cycles Completed: 1			
<u>Description</u>	<u>Status</u>	<u>Pass</u>	<u>Fail</u>
PIC	OK	1	0
PIC N/U RAM	OK	1	0
Clock	OK	1	0
Fast RAM	OK	1	0
CMOS Memory	OK	1	0
Display INT	OK	1	0
Zeus	OK	1	0
Sound System	OK	1	0
Wave RAM 0	OK	1	0
Wave RAM 1	OK	1	0

BURN-IN TEST SCREEN

Once the test list is completed, the game begins the Sound and Monitor Patterns tests. The sequence repeats and is registered as a PASS or FAIL in the test list.

Mechanical Counter Test

The Coin Counter Test checks the function of the coin counters.

Use any joystick to select the test, then press any action button to activate it.

Mechanical Coin Counter Test			
Joystick left/right selects meter. Press any button to click selected meter. Hit START to exit.			
METER 1	METER 2	METER 3	METER 4

MECHANICAL COUNTER TEST MENU

COIN BOOKKEEPING

The Coin Bookkeeping Table records the coin box totals and the game play counters.

Use either joystick to select the Coin Bookkeeping Menu, then press any button to open it.

Coin Bookkeeping	
Left Slot Coins.....	0
Right Slot Coins.....	0
Center Slot Coins.....	0
Fourth Slot Coins.....	0
Bill Validator Counts.....	0
Paid Credits.....	0
Service Credits.....	0
Total Plays.....	0
Total Collections.....	\$00.00

Hit Any Button to Continue

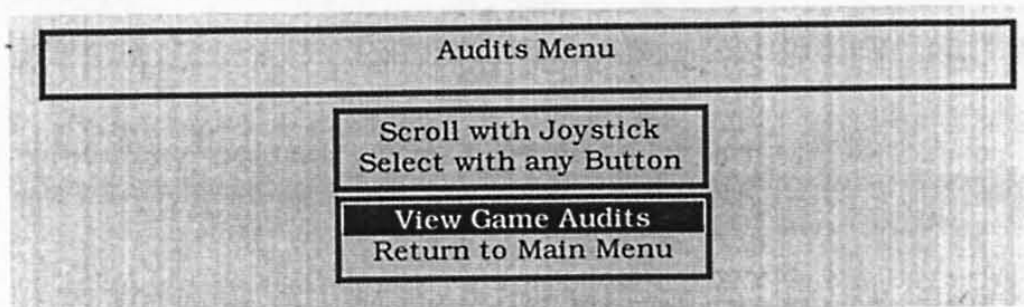
COIN BOOKKEEPING

To exit Coin Bookkeeping simply, press any button.

GAME AUDITS

Use any joystick to select the Audits Menu, then press any action button to open it. Page through the available audits by selecting NEXT PAGE or PREVIOUS PAGE.

Game audits cannot be set. They can only be cleared.



AUDITS MENU SCREEN

A screenshot of the first page of the audit table. The title "Display Audit Data" is at the top. Below it is a list of characters and their corresponding counts, all of which are 0. At the bottom, there is a button labeled "Next Page" and "Return to Menu".

Display Audit Data	
Scorpion Chosen	0
Raiden Chosen	0
Sonya Chosen	0
Liu Kang Chosen	0
Subzero Chosen	0
Windgod Chosen	0
Shinnok Chosen	0
Jarek Chosen	0
Quan Chi Chosen	0
Tanya Chosen	0
Maki Chosen	0
Reptile Chosen	0

PAGE 1 OF AUDIT TABLE

A screenshot of the second page of the audit table. The title "Display Audit Data" is at the top. Below it is a list of game statistics and their corresponding counts, all of which are 0. At the bottom, there is a button labeled "Previous Page" and "Return to Menu".

Display Audit Data	
Hours Game Was On	0
Hours Played With 1 Player	0
Hours Played With 2 Players	0
Total Plays	0
1 Player Continues	0
2 Player Continues	0
Burn-in Loops Successfully Completed	0

PAGE 2 OF AUDIT TABLE

GAME ADJUSTMENTS

The Game Adjustments allow the operator to customize the game.

Use either joystick to select the Game Adjustments Menu. Press any button to open the menu.

The Game Adjustments Menu offers several options. Each option has several choices. Use either joystick to select an option, then press any button to open the option. The next menu screen provides a setting value. Use either joystick to change the setting value and press any button to lock it in.

To exit the Adjustments Menu, use either joystick to select RETURN TO MAIN MENU, and press any button.

NOTE

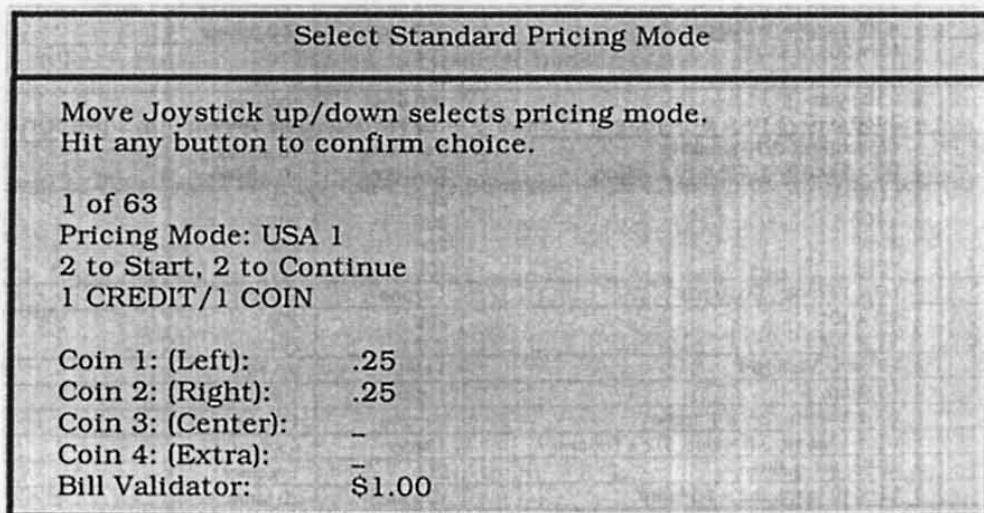
Adjustment values set by DIP SWITCH, override adjustment values set by the menu system.



ADJUSTMENTS MENU SCREEN

Standard Pricing

Standard pricing allows the operator to choose any of the "standard" selections from the Standard Pricing Table.



STANDARD PRICING SCREEN

STANDARD PRICING TABLE

Name	Setting - Coin/Credit	Coin 1	Coin 2	Coin 3	Coin 4	Bills
USA 1	1/25c, (2 to Start, 2 to Continue)	25c	25c			\$1.00
USA 2	1/25c, (2 to Start, 1 to Continue)	25c	25c			\$1.00
USA 3	1/25c, (1 to Start, 1 to Continue)	25c	25c			\$1.00
USA 4	1/50c, 3/\$1.00 (1 to Start, 1 to Continue)	25c	25c			\$1.00
USA 5	1/50c, 4/\$1.00 (2 to Start, 1 to Continue)	25c	25c			\$1.00
USA 6	1/50c, 12/\$5.00 (1 to Start, 1 to Continue)	25c	25c			\$1.00
USA 7	1/50c, 3/\$1.00 (1 to Start, 1 to Continue)	25c	25c			\$1.00
USA 8	1/50c, 4/\$1.00 (1 to Start, 1 to Continue)	25c	25c			\$1.00
USA 9	1/25c, (3 to Start, 2 to Continue)	25c	25c			\$1.00
USA 10	1/25c, (3 to Start, 3 to Continue)	25c	25c			\$1.00
USA 11	1/25c, 24/\$5.00 (4 to Start, 4 to Continue)	25c	25c			\$1.00
USA 12	1/25c, 24/\$5.00 (4 to Start, 3 to Continue)	25c	25c			\$1.00
USA ECA	1/25c, 4/\$1.00, (2 to Start, 2 to Continue) 24/\$5.00	\$1.00	25c	10c	5c	\$1.00
German 1	1/1DM, 6/5DM	1DM	5DM	2DM		
German 2	1/1DM, 7/5DM	1DM	5DM	2DM		
German 3	1/1DM, 8/5DM	1DM	5DM	2DM		
German 4	1/1DM, 5/5DM	1DM	5DM	2DM		
German 5	1/1DM, 6/5DM	1DM	5DM	2DM		
German ECA	1/1DM, 2/2DM, 6/5DM	5DM	2DM			
France 1	2/5F, 5/10F	5F	10F			
France 2	2/5F, 4/10F	5F	10F			
France 3	1/5F, 3/10F	5F	10F			
France 4	1/5F, 2/10F	5F	10F			
France 5	2/5F, 5/10F, 11/2 x 10F	5F	10F			
France 6	2/5F, 4/10F, 9/2 x 10F	5F	10F			
France 7	1/5F, 3/10F, 7/2 x 10F	5F	10F			
France 8	1/5F, 2/10F, 5/2 x 10F	5F	10F			
France 9	1/3 x 1F, 2/5F	1F	5F			
France 10	1/2 x 1F, 3/5F	1F	5F			
France 11	1/3 x 1F, 2/5F, 5/2 x 5F	1F	5F			
France 12	1/2 x 1F, 3/5F, 7/2 x 5F	1F	5F			
France ECA	1/3 x 1F, 2/5F, 5/2 x 5F		5F	10F	20F	
Canada	1/2 x 25c, 3/\$1.00	25c	\$1.00			\$1.00
Swiss 1	1/1F, 6/5F	1F	5F			
Swiss 2	1/1F, 7/5F	1F	5F			
Swiss 3	1/1F, 8/5F	1F	5F			
Italy	1/500 lire	500 lire	500 lire			
UK 1 ECA	1/50P, 3/£1.00	£1.00	50P	20P	10P	
UK 2 ECA	1/50P, 2/£1.00	£1.00	50P	20P	10P	
UK 3 ECA	1/30P, 2/50P, 5/£1.00	£1.00	50P	20P	10P	
UK 4	1/50P, 3/£1.00	£1.00	50P			
UK 5	1/50P, 2/£1.00	£1.00	50P			
UK 6 ECA	1/30P, 2/50P, 4/£1.00	£1.00	50P	20P	10P	
UK 7 ECA	3/£1.00	£1.00	50P	20P	10P	
Spain 1	1/100 peseta, 6/500 peseta	100 peseta	500 peseta			
Spain 2	1/100 peseta, 5/500 peseta	100 peseta	500 peseta			
Australia 1	1/3 x 20c, 2/\$1.00	20c	\$1.00			
Australia 2	1/5 x 20c, 1/\$1.00	20c	\$1.00			
Japan 1	1/100 yen	100 yen	100 yen			
Japan 2	2/100 yen	100 yen	100 yen			
Austria 1	1/5 schilling, 2/10 schilling	5 schilling	10 schilling			
Austria 2	1/2 x 5 schilling, 3/2 x 10 schilling	5 schilling	10 schilling			
Belgium 1	1/20F	20F	20F			
Belgium 2	3/20F	20F	20F			
Belgium 3	2/20F	20F	20F			
Belgium ECA	1/20F	50F	20F	5F		
Sweden	1/3 x 1 krona, 2/5 krona	1 krona	5 krona			
New Zealand 1	1/3 x 20c	20c	20c			
New Zealand 2	1/2 x 20c	20c	20c			
Netherlands	1/1 HFI, 3/2.5 HFI	1 HFI	2.5 HFI			
Finland	1/1 markka	1 markka	1 markka			
Norway	1/2 x 1 krone, 3/5 x 1 krone	1 krone	1 krone			
Denmark	1/2 x 1 krone, 3/5 krone, 7/2 x 5 krone	1 krone	5 krone			
Antilles	1/25c, 4/1 guilder	25c	1 guilder			
Hungary	1/2 x 10 forint, 3/2 x 20 forint	10 forint	20 forint			

Custom Pricing

Custom pricing allows the operator to install pricing other than that of the Standard Pricing Table. Custom pricing also allows the operator to select the maximum amount of credits per game, the amount of credits required to start a game, and the amount of credits required to continue a game. To use Custom Pricing, the Coinage DIP Switch must be set to ON (CMOS).

Custom Pricing Settings		
Move joystick up/down to change value. Hit any button to accept.		
Left Units	1	Left Units 01
Right Units	1	
Center Units	0	
Extra Units (coin 4)	0	
Bill Validator Units	4	
Units per Credit	1	
Units per Bonus	No Bonus	
Minimum Units	No Minimum	
Credits to Start	2	
Credits to Continue	2	
Maximum Credits	30	
Coins per Bill	4	
Return to Menu		

CUSTOM PRICING SCREEN

Left, Right, Center, and Extra Units; Coins inserted accumulate units. This adjustment specifies the number of units given for each coin in the fourth chute (see "Units per Credit").

Bill Validator Units; Coins inserted accumulate units. This adjustment specifies the number of units given for each bill validated (see "Units per Credits").

Units per Credit; This is the number of coin units required to buy one credit.

Units per Bonus; There is one bonus credit awarded after this many coin units have accumulated.

Minimum Units; This is the minimum number of units required before any credits are given.

Credits to Start; Each player needs this many credits to begin a game.

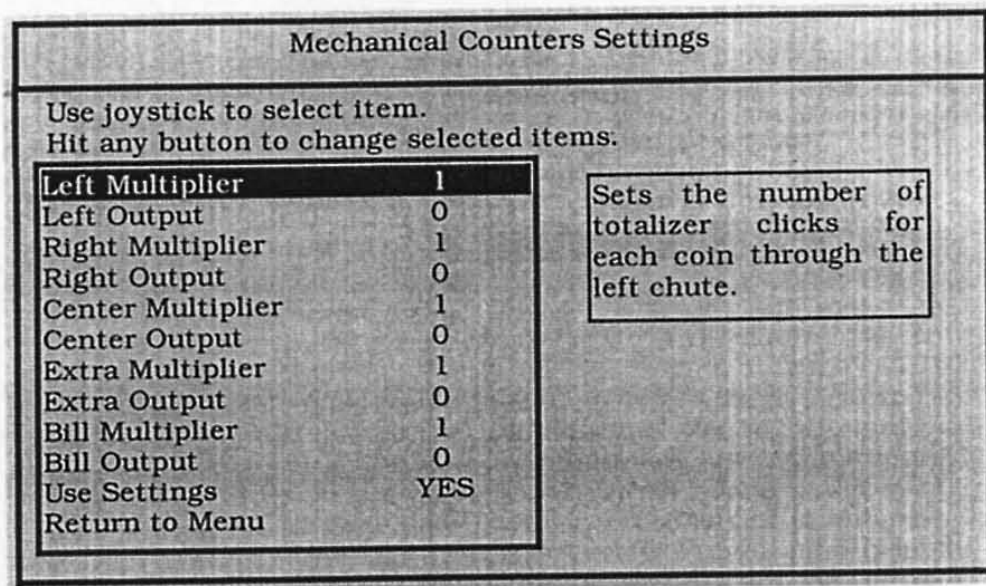
Credits to Continue; Each player needs this many credits to continue a game.

Maximum Credits; This is the limit for the credit counter. Additional coins inserted will be lost (factory setting: 50).

Coins per Bill; Total collections are based on this many coins per bill. Set to zero to disable the total collection display.

Mechanical Counters

The "Mechanical Counters" adjustment lets the operator adjust the multiplier and counter output for each slot.



MECHANICAL COUNTERS SCREEN

There are five coin slots: the LEFT coin slot, the RIGHT coin slot, the CENTER coin slot, the EXTRA coin slot, and the BILL VALIDATOR.

The multiplier for each of these slots determines how many times the mechanical counter is strobed for each coin or bill through the slot.

There are two mechanical counter outputs to choose from; mechanical counter output 0 (left side) and mechanical counter output 1 (right side).

The default, most commonly used setting is referred to as the "totalizer mode", and assigns all five slots to counter output 0.

Bill Validator

This option determines whether or not the game recognizes that a bill validator is installed. The setting choices for this adjustment are:

- No
- Yes
- Factory Setting: No

Free Play

This option selects free play. The setting choices for this adjustment are:

- On
- Off
- Factory Setting: Off

Game Difficulty

This option determines how tough the computer opponents are. The setting choices for this adjustment are:

- (1) Extra Easy
- (2) Easy
- (3) Medium
- (4) Hard
- (5) Extra Hard
- Factory Setting: Medium

Attract Mode Sounds

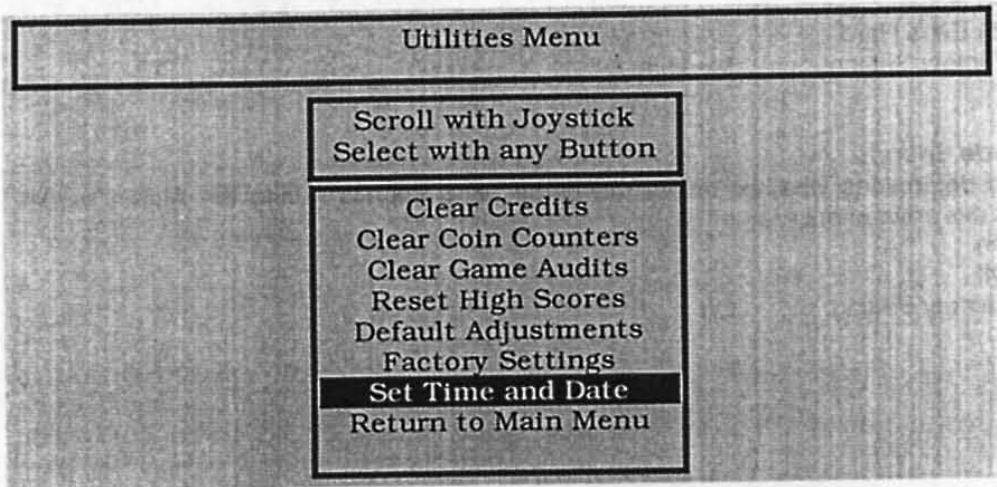
This option determines whether or not the game plays sounds during the Attract mode. The setting choices for this adjustment are:

- On
- Off
- Factory Setting: Off

UTILITIES

The Utilities Menu allows the operator to clear the game's bookkeeping memory.

Use any joystick to select the Utilities Menu, then press any action button. Use any joystick to select a utility. Press any action button to activate the selection.



UTILITIES MENU SCREEN

Once the selection is made, a dialogue box appears, and the operator can choose to reset the utility.

For example:



SET TIME & DATE SCREEN

SYSTEM INFORMATION

The System Information screen gives the operator pertinent information concerning the individual game

System Information	
Game Serial Number:	XXXXX
Game Type:	XXXXX
Date of Manufacture:	XX/XX/XX
Game Code Version:	XXXXX
Game code Compiled:	XX/XX/XX
Diagnostic Code Version:	XXXXX
Disk ASIC U11 Version:	XXXXX
System Date:	XXXXX
System Time:	XXXXX

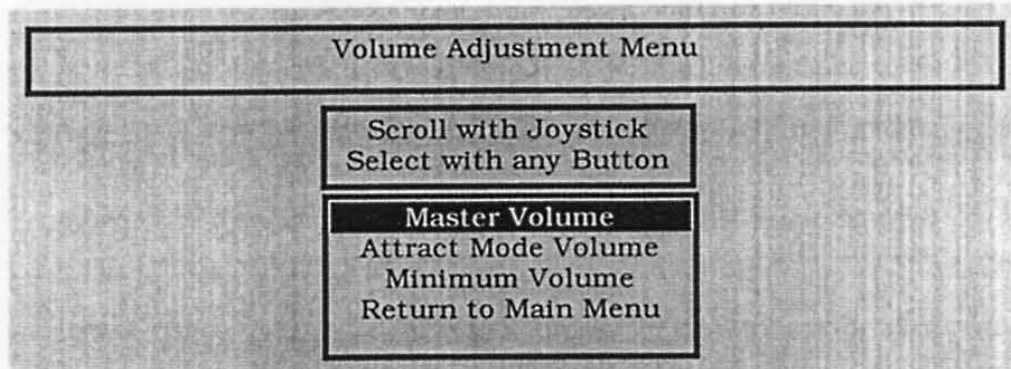
Hit Any Button to Continue

SYSTEM INFORMATION SCREEN

VOLUME ADJUSTMENT

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

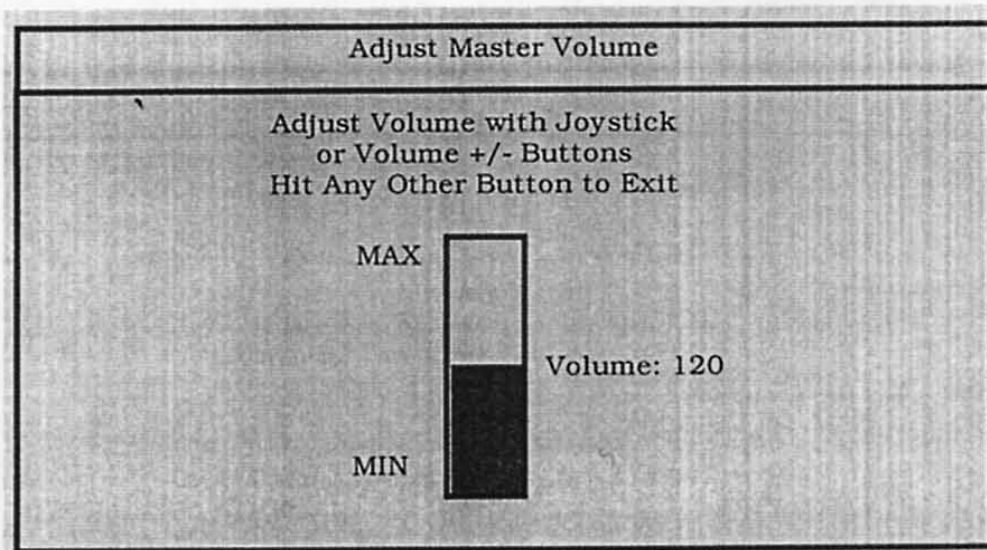
The volume level can be adjusted from either the Attract Mode or the Menu System. Press the Volume Up button to raise the volume level and the Volume Down button to lower the volume level. Any joystick can also be used to raise or lower the volume level.



VOLUME ADJUSTMENT MENU SCREEN

The current volume level is shown with a red bar.

For example:



MASTER VOLUME SCREEN

MORTAL KOMBAT 4

CONVERSION KIT MANUAL

SECTION
TWO



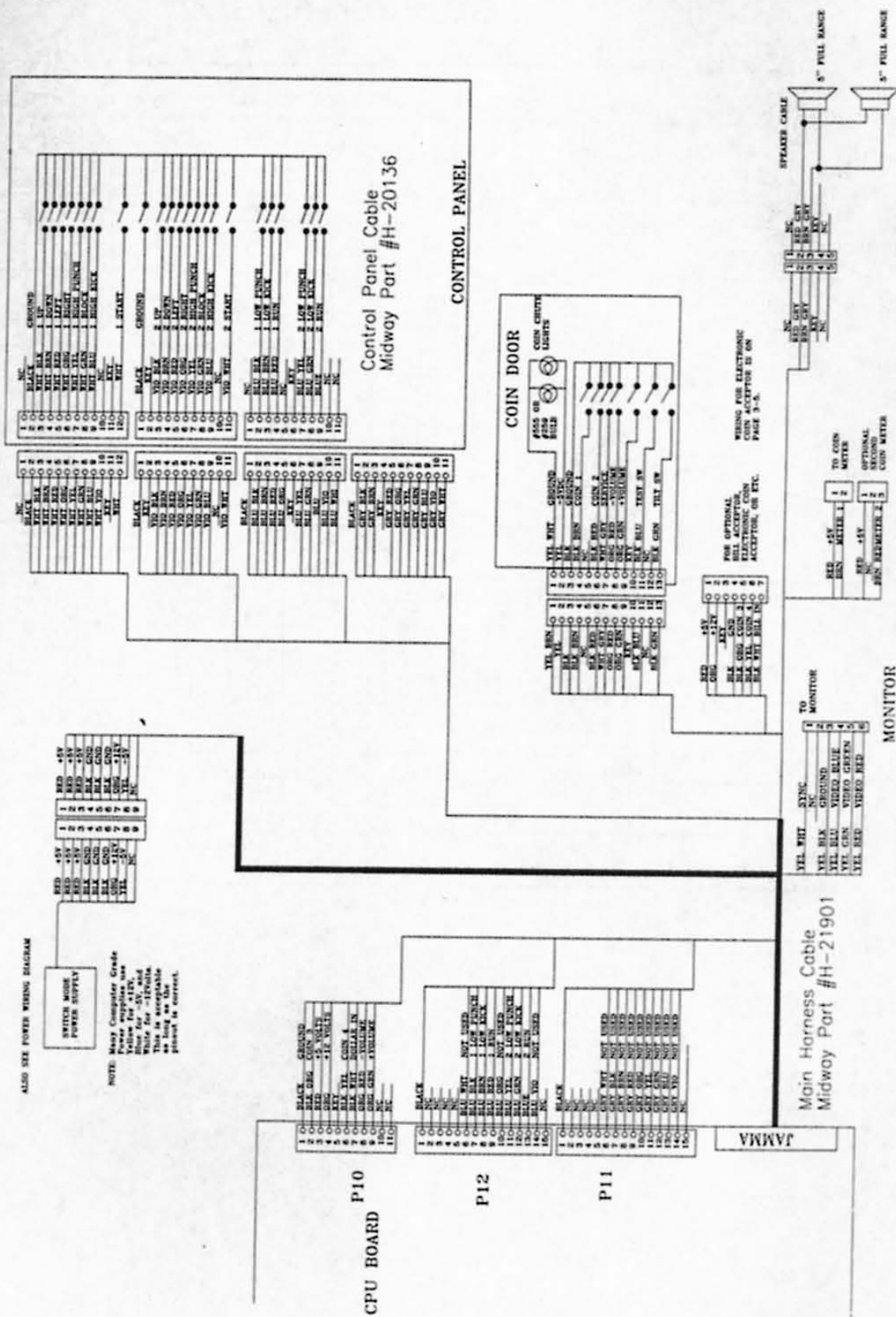
WIRING

NOTE
PRINTED CIRCUIT BOARD ASSEMBLY SCHEMATICS ARE NO LONGER AVAILABLE.

JAMMA Chart

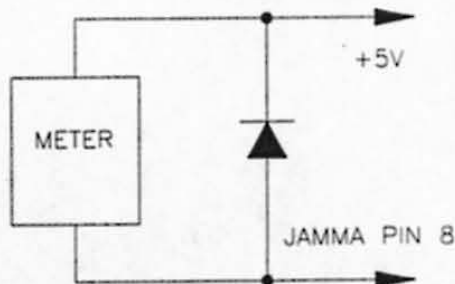
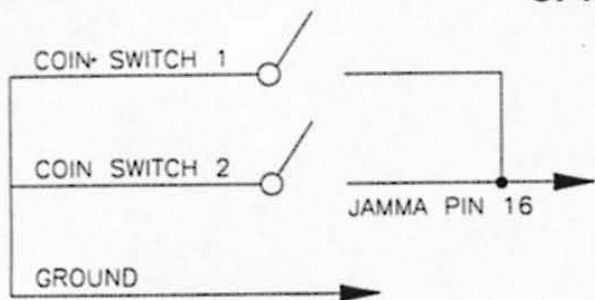
FUNCTION	WIRE COLOR	PIN	PIN	WIRE COLOR	FUNCTION
Ground	Black	A	1	Black	Ground
Ground	Black	B	2	Black	Ground
+5VDC	Red	C	3	Red	+5VDC
+5VDC	Red	D	4	Red	+5VDC
-5VDC	Yellow	E	5	Yellow	-5VDC
+12VDC	Orange	F	6	Orange	+12VDC
	Key	H	7	Key	
Coin Counter 2	Brown-Red	J	8	Brown	Coin Counter 1
	N/C	K	9	N/C	
Speaker-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

CABINET WIRING DIAGRAM

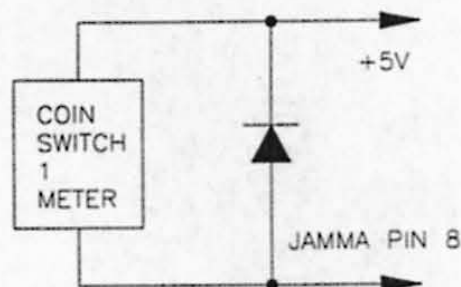
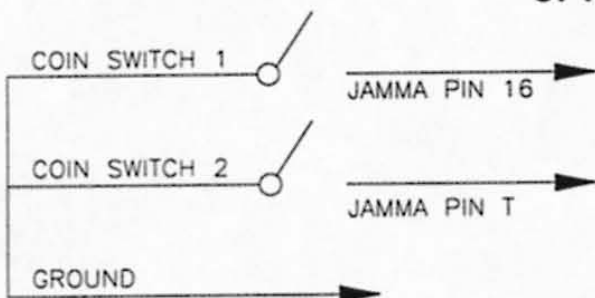


COIN SWITCH AND METER WIRING

OPTION 1

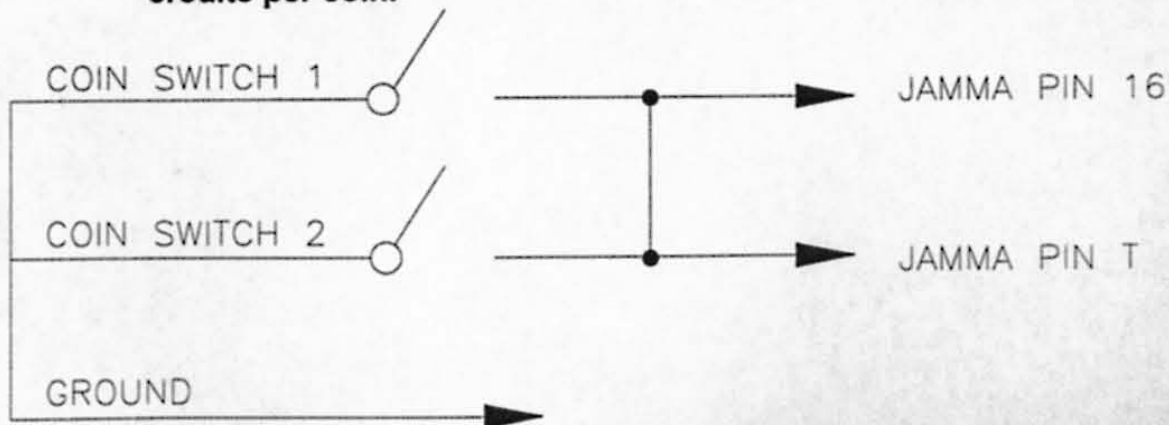


OPTION 2



!! WRONG WAY !!

Do not connect the coin switches in this manner. This circuit is INCORRECT, and will cause twice as many credits per coin.



MORTAL KOMBAT 4

CONVERSION KIT MANUAL

SECTION THREE

TROUBLESHOOTING

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

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

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

1 - Game appears completely non-functional.

- A) Verify that the game power switch located on the top left rear of the game cabinet is turned on.
- B) Verify that I.E.C. line cord connector is firmly and correctly seated into I.E.C. power entry module of A.C. power chassis. If not, then gently but firmly insert the I.E.C. power cable completely into the mating receptacle of the A.C. power chassis.
- C) Check and verify A.C. line fuse of A.C. power chassis is not blown. If the fuse is blown, replace it with an identical fuse of the proper voltage and current rating. Note that a spare fuse is provided with the spare parts bag located in the cash box.
- D) Check and verify that the correct A.C. line voltage is present at the outlet.
- E) Ensure that cabinet A.C. cable 4 pin and 9-pin connectors are firmly and correctly mated with the corresponding connectors of the A.C. power chassis.

2 - Marquee lamp is non-functional.

- A) Check and verify that the fluorescent lamp is properly inserted into the lamp holders.
- B) Check and verify that the lamp pins are making good contact with the mating pins of the lamp holders.
- C) Check and verify that the proper A.C. voltage is present at the power connector of the lamp assembly. If no A.C. power is present, then check the cabinet A.C. wiring from the A.C. power chassis up to the fluorescent lamp itself.
- D) Check and verify that the starter and lamp are functional by replacing them with known working units.
- E) Check and verify that the fluorescent lamp ballast is correct for the local A.C. line voltage and frequency.

3 - Monitor appears non-functional

- A) Check and verify that the cabinet A.C. line voltage cable is firmly and properly connected to mating A.C. connector on monitor.
- B) Check and verify that the cabinet video signal cable connector is firmly and properly connected to the mating video signal input connector of the monitor.
- C) Check and verify that the monitor remote adjustment board is properly installed and connected to the monitor chassis.
- D) Verify monitor is operating correctly by replacing with a known good unit.

4 - Sound is non-functional

- A) Check and verify the cabinet wiring is correct. Ensure that the speakers are properly connected to the audio out wires from the JAMMA connector. Refer to the cabinet wiring diagram for specific wiring information.
- B) Check and verify that the power supply is providing:

+5V	+/- 0.25V
+12V	+/- 0.5V
-5V	+/- 0.25V

Sound is non-functional continued...

- C) Check and verify that the above listed D.C. voltages are present at the correct JAMMA connector pins. Refer to the cabinet wiring diagram for specific wiring information.
- D) Check and verify that the game volume has been turned up.
- E) Verify proper operation of game PCB assembly by replacing it with a known good game PCB assembly.

5 - Video game appears non-functional

- A) Check and verify that the JAMMA wire harness connector is firmly and properly seated to the mating JAMMA PCB edge connector.

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

- B) Check and verify that the D.C. power supply voltages at the game CPU assembly are set as follows:

+5V	+/- 0.25V
+12V	+/- 0.5V
-5V	+/- 0.25V

The above voltages should be set when the game CPU assembly is connected and the game is powered on.

- C) Check and verify that the non-JAMMA connectors (Player 3/4 connectors, extra input/output connectors, etc.) are attached at the proper location and are firmly seated.
- D) Verify that the game CPU assembly completes the power on self-test sequence. Note any errors and/or failures during power on self-test. The game CPU assembly should complete the power on diagnostics without error.
- E) Check and verify that the game CPU DIP Switches are set properly. See page 1-15 for DIP Switch settings.
- F) Enter the detailed game CPU diagnostics by pressing the Test button during the power on self-test sequence. Check and verify the different functions of the game CPU by executing the individual CPU diagnostics.

6 - The video screen exhibits complete loss of SYNC or consistent horizontal tearing.

This game uses a LOW Resolution, 16Khz-scan rate monitor. Ensure that the monitor used is compatible with this requirement. Use of a video game MEDIUM resolution monitor will result in what appears to be horizontal tearing or complete loss of sync.

7 - The audio sounds distorted, muffled, or is missing frequencies.

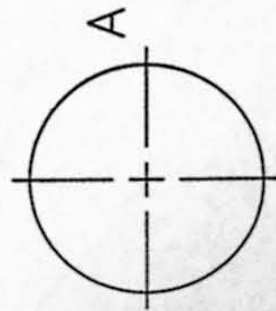
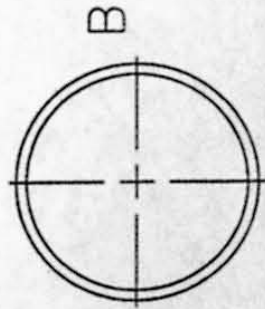
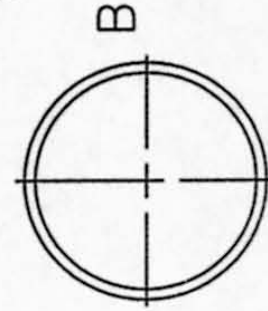
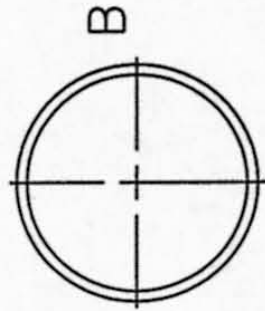
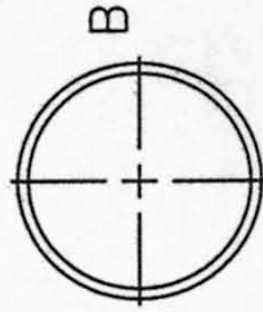
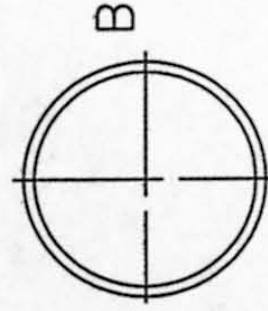
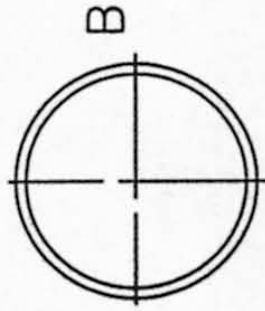
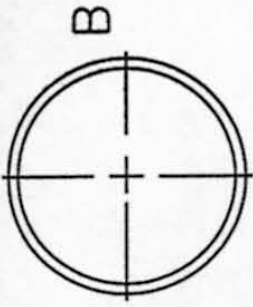
- A) The game uses mono sound, with a separate audio amplifier for right and left speakers. The audio outputs from the video PCB assembly is run directly from the JAMMA connector up to the separate speakers. Ensure that the cabinet wiring provides separate wiring (and not a common return) for each speaker.

The audio sounds distorted, muffled, or is missing frequencies continued...

- B) The audio amplifiers are designed to drive full range speakers, and not discrete woofer and tweeter speakers. Ensure that the speakers are FULL RANGE response (100 to 10,000 Hz) and are rated at a minimum of 25 Watts.
- 8: The game enters the power-on diagnostics, but not normal game play.**
- A) Check and verify that the D.C. power supply voltages are within specification. Use the 2-Volt A.C. setting on a digital V.O.M. and verify that the supply voltages are stable and do not contain any ripple or noise.
 - B) Check and verify that the video CPU assembly is correct for the game.

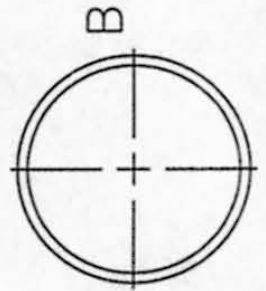
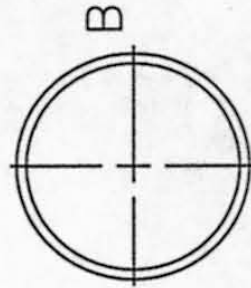
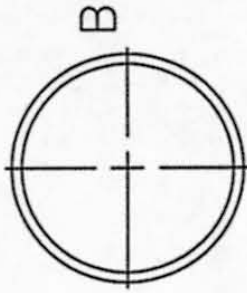
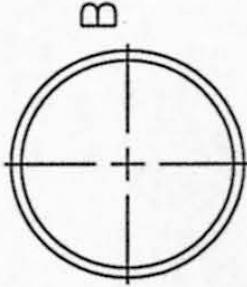
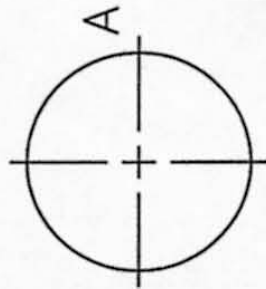
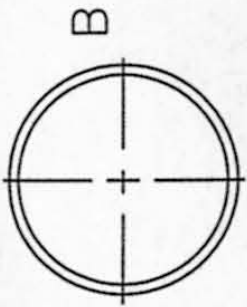
LEFT PLAYER TEMPLATE

HOLE LEGEND		
SIZE	HOLE	QTY
φ.250	C	4
φ1.19	B	14
φ1.25	A	2



RIGHT PLAYER TEMPLATE

HOLE LEGEND		
SIZE	HOLE	QTY
φ.250	C	4
φ1.19	B	14
φ1.25	A	2



Control Panel Wire Color List

<u>PLAYER ONE</u>		<u>PLAYER TWO</u>	
<u>FUNCTION</u>	<u>WIRE COLOR</u>	<u>FUNCTION</u>	<u>WIRE COLOR</u>
Start	White	Start	Violet-White
Up	White-Black	Up	Violet-Black
Down	White-Brown	Down	Violet-Brown
Left	White-Red	Left	Violet-Red
Right	White-Orange	Right	Violet-Orange
High Punch	White-Yellow	High Punch	Violet-Yellow
Block	White-Green	Block	Violet-Green
High Kick	White-Blue	High Kick	Violet-Blue
Low Punch	Blue-Black	Low Punch	Blue-Yellow
Low Kick	Blue-Brown	Low Kick	Blue-Green
Run	Blue-Red	Run	Blue

WARNINGS & NOTICES

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 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

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

NOTICE

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

NOTICE

No part of this publication may be reproduced by any mechanical, photographic, or electronic process, or in the form of a phonographic recording, nor may be transmitted, or otherwise copied for public or private use, without permission from the publisher.

Entire contents of this manual copyright © 1997 MIDWAY GAMES INC. All Rights Reserved.

FOR SERVICE:

CALL YOUR AUTHORIZED MIDWAY DISTRIBUTOR.

MORTAL KOMBAT 4

Manual Amendment

The part number for the joysticks used on Mortal Kombat 4 have changed. This change affects the following manuals:

16-44061-101

Mortal Kombat 4 Conversion Kit Manual Page 1-4

16-40061-101

25" Mortal Kombat 4 Dedicated Manual Pages 2-6 and Page 2-7

16-40074-101

39" Mortal Kombat 4 Dedicated Manual Page 2-5

The Old Part Number was 20-9978-1.

The New Part Number is 20-10410-1.