

MIDWAY

September 1997
16-40061-101
FINAL

MORTAL KOMBAT

4

OPERATION MANUAL
FOR
25" DEDICATED GAME

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

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

**If a dollar bill validator is desired, the Mars up-stacker
AE2411 is recommended.**

DECLARATION OF CONFORMITY

MIDWAY GAMES INC.

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

WE, HEREBY DECLARE UNDER SOLE RESPONSIBILITY THAT

**THE MODEL: "MORTAL KOMBAT 4" - 25" 40261,40361,40461,40761,
40961,41061, 41461,41861, 42061,42261,42361, 46561 (VIDEO)**

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

ELECTROMAGNETIC COMPATABILITY DIRECTIVE

(89/336/EEC AND AMENDMENTS 91/C162/08, 92/31/EEC,93/68/EEC

**ELECTRICAL EQUIPMENT DESIGNED FOR USE WITHIN
CERTAIN VOLTAGE LIMITS DIRECTIVE**

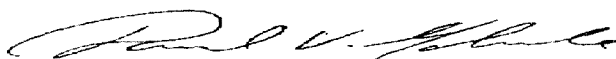
**(73/336/EEC AND AMENDMENTS 88/C168/02, 92/C210/01,
93/68/EEC,94/C199/03, 95/C214/02)**

AS IS VERIFIED BY COMPLIANCE WITH THE FOLLOWING STANDARDS:

EN55014: 1993	EN61000-4-2: 1995
IEC 801-3: 1984 (EN61000-4-3)	EN61000-4-4: 1995
EN61000-4-5: 1995	EN60065: 1993

Date issued:

AUGUST 7, 1997



DAN GALARDE

CORPORATE V.P. OF QUALITY

MORTAL KOMBAT

4

Dedicated 25" Game

**If a dollar bill validator is desired, the Mars up-stacker
AE2411 is recommended.**

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 game serial number. For your records, write the game 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.

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MORTAL KOMBAT

4

Dedicated 25" Game

**SECTION
ONE**

OPERATION

SAFETY NOTICES

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



HANDLING ELECTRONIC DEVICES: This product 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) 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.
- 2) Store the electronic assemblies in an anti-static area. Anti-static bags are to be used to store the CPU assembly.
- 3) DO NOT remove or connect any electronic assemblies when the cabinet power is turned on. Doing so will damage the electronic assemblies and void the warranty.

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

ISOLATION TRANSFORMER: This video game system does not utilize an isolation transformer. No isolation exists between the cabinet AC system and the external AC line.

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

DISCONNECT POWER DURING REPAIRS: To avoid electrical shock, disconnect the game from the AC power source before removing or repairing any part of the game.

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

DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

HANDLE FLUORESCENT TUBE AND CRT WITH CARE. If you drop a fluorescent tube or CRT and it breaks, it will implode! Shattered glass can fly eight feet or more from the implosion.

EPILEPSY WARNING

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

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

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

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.*

SETUP PROCEDURE

Game Location Requirements

<u>Power</u>	<u>Temperature</u>	<u>Humidity</u>
Domestic 120VAC @ 60Hz 3.0 Amps	32°F to 100°F	Not to exceed 95% relative
Foreign 230VAC @ 50Hz 2.0 Amps	(0°C to 38°C)	
Japan 100VAC @ 50Hz 3.0 Amps		

Cabinet Statistics

<u>Shipping Dimensions</u>	<u>Shipping Weight</u>
Width 27" - Depth 41" - Height 73"	Approx. 335 Lbs

INSTALLATION & INSPECTION

1. Remove all items from the shipping containers and set them aside. Inspect the exterior of the cabinet and the control panel for any damage.
2. The coin door keys are attached to one of the joysticks. Unlock and open the coin door and the cash box door. Remove the spare parts stored in the cash box.
3. The rear door keys are located on a key hook inside the cabinet, to the left of the coin door. Remove the screws holding the rear door then unlock and remove the door. Inspect the cabinet interior for any signs of damage. Check all major assemblies to assure that they are mounted securely.
4. Refer to the Cabinet Wiring Diagram (Section 3), and check to see that all cable connectors are correctly secured. *Do not force connectors.* Watch for damaged connectors and avoid making reversed connections.
5. Unscrew the Monitor Controls board from the inside left wall of the cabinet. Stick it onto the Velcro strip located on a wood beam under the front of the monitor.

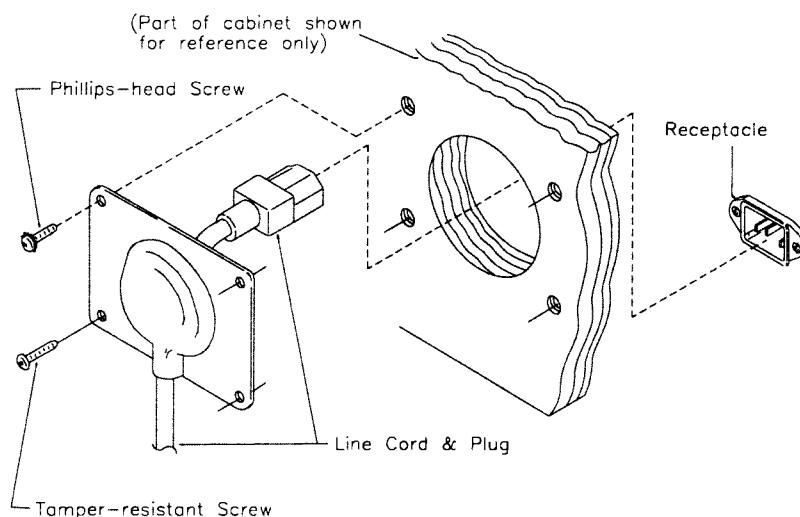
6. To secure the rear door with a padlock, remove the two nuts from inside the cabinet, above the rear door opening, leave the bolts in place. Remove the hasp from the spare parts bag. Slide the hasp on the bolts so that it protrudes from the hole in back of the cabinet. Replace the nuts.

Remove the two nuts and bolts from the back of the rear door, holding the lock plate in place. Turn the lock around so that the slot in the plate is below the door. Reinstall the two nuts and bolts.

7. Next, locate the four leg levelers among the spare parts in the cash box. There are four threaded holes on the bottom of the cabinet, one in each corner. Place one leg leveler (with its hex nut) in each of the threaded holes. Lower each leg leveler until the cabinet is stable and level.

WARNING!!
The cabinet is top heavy.

- To attach the line cord, remove the four Phillips-head screws that mount the line cord cover plate to the rear of the cabinet. Match the prongs on the plug with the holes in the receptacle and push the line cord securely into place. Be sure the cord aligns with the indentation of the plate, (indentation should point toward the bottom of the cabinet). Remount the line cord cover plate.



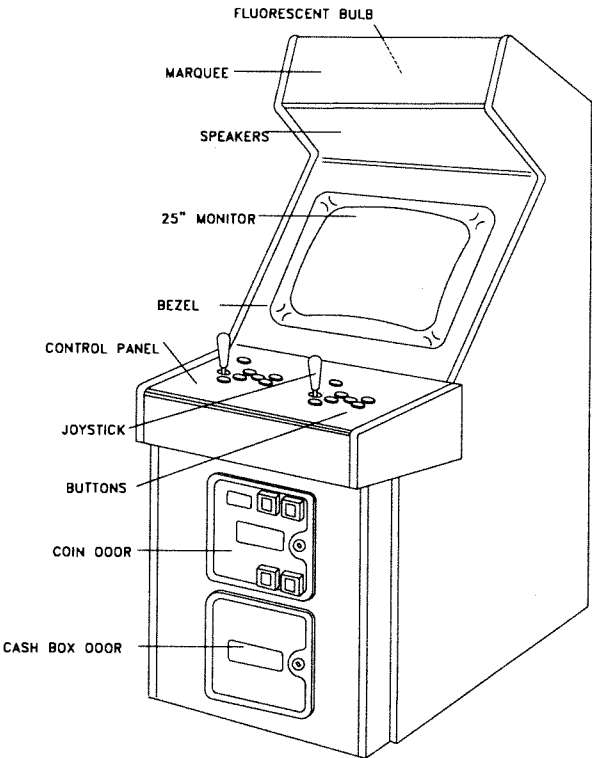
- Replace the rear door and fasten securely to the cabinet using the four HWH screws. Lock the rear door and remove the key.

IF TAMPER RESISTANT REAR DOOR SCREWS ARE DESIRED, tamper resistant screws and matching wrench is provided with the game. The tamper resistant screws and wrench are located in the spare parts bag. Replace the HWH screws with the tamper resistant screws and tighten the screws with the T20 Torx wrench provided.

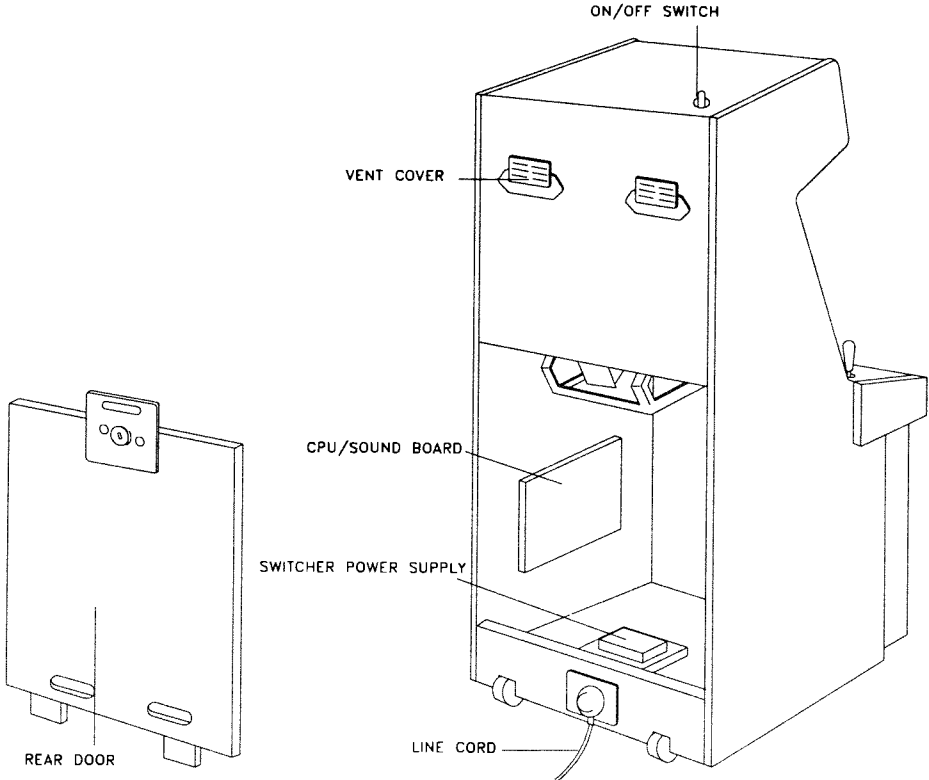
- Move the cabinet to the desired area. Be sure it is level. Verify that the AC line voltage matches the game requirements. Plug the game into a grounded (3-terminal) AC wall outlet. Switch ON the game, using the ON/OFF switch located on the upper left rear of the cabinet. The game should begin the Start-up tests and then enter the Attract mode.

CABINET ASSEMBLY

Front View



Rear View



SERVICING

◆ Removal of the Marquee

Switch off power to the game. Remove the hex-head screws from the black marquee retaining strip located on top of the header. Remove the strip and carefully lift the marquee and the marquee glass from the top of the header. Store the marquee carefully to prevent damage.

◆ Removal of the Fluorescent Light Assembly

Switch off power to the game. Remove the marquee glass and the marquee. The fluorescent bulb is now accessible for replacement. Remove the plastic lamp locks. Grasp the bulb, give it a quarter turn, and remove it from its socket. Carefully, place a new bulb into the socket, and turn to reinstall.

To remove the entire light fixture, disconnect the fluorescent light assembly from its power cable. Remove the screws that hold the assembly to the cabinet then lift out the assembly.

WARNING!!

If you drop a fluorescent tube and it breaks, it will implode! Use care in handling.

◆ Removal of the Speakers

Switch off power to the game. Remove the marquee and the marquee glass. The speakers come out from the front of the cabinet. Be sure to disconnect the cabling and remove the nuts on the mounting screws before attempting to remove the speakers from the enclosure. Carefully, reinstall the seals upon completing any task in the speaker enclosure.

◆ Servicing the Control Panel

Switch off power to the game and open the coin door. The control panel is held in place by two latches (located inside the cabinet) which provide constant pressure on the strikes. To release the latches, reach through the coin door opening toward the right and left sides of the cabinet. Lift the latch handle and unhook the wire fasteners. Grip the joysticks and carefully tilt the control panel back on its hinge.

To return the control panel to its normal position, carefully lean it forward until it rests on the cabinet. Be careful not to let the control panel slam down onto the cabinet, or to pinch any wires. Always re-clasp the latches.

◆ Removal of the Viewing Glass

Switch off power to the game and open the control panel. Loosen the three Phillips head screws and slide the black metal strip from the bottom of the viewing glass. Carefully slide the glass from the side grooves and lift it clear of the cabinet.

◆ Removal of the Monitor Bezel

Switch off power to the game. Open the control panel and remove the viewing glass. Lift the bezel off of the monitor.

◆ Monitor Replacement

We recommend that you read the SAFETY NOTICES section thoroughly before beginning this procedure.

Switch off power to the game. Remove the viewing glass and the monitor bezel. Completely disconnect the monitor from all of its cabling. Remove the four flange nuts securing the monitor's mounting flanges to its mounting panel. Pull the monitor carefully from the cabinet.



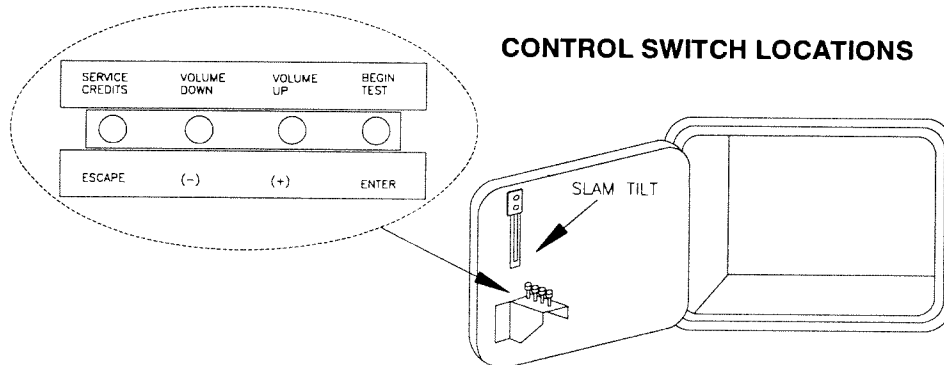
CAUTION

The monitor does not require an isolation transformer. However, when servicing the monitor on a test bench, YOU MUST ISOLATE THE MONITOR FROM LINE VOLTAGE WITH AN ISOLATION TRANSFORMER.

THE MONITOR IS HEAVY. BE SURE IT IS FIRMLY SUPPORTED IF IT MUST BE REMOVED FROM THE CABINET.

◆ Volume Control, Begin Test Switch, and Service Credit Switch

Open the coin door. The game's volume control and diagnostic push-button switches are located on a small bracket on the coin door. The two center buttons controls the volume. Press the Volume Up or the Volume Down button until the desired sound level is reached. The Begin Test switch, on the right, activates the game's menu system. The Service Credit switch, on the left, allows credits to be allotted for service testing without affecting the game's bookkeeping total.



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

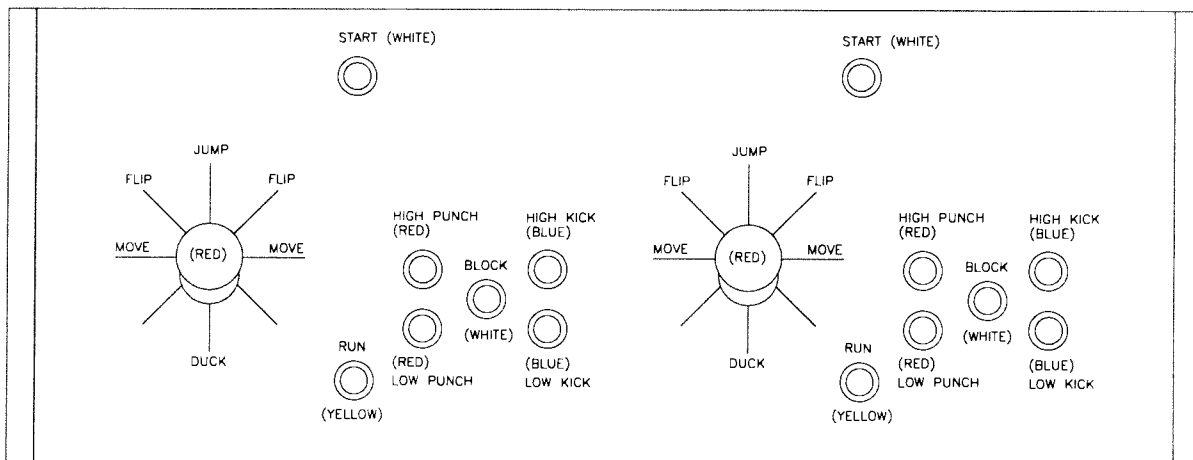
When an error is detected during the Start-up tests, game start-up does not progress, and an error message appears on the screen.

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

GAME OPERATION

The **MORTAL KOMBAT 4** Control switches are located on a bracket, inside the coin door.

CONTROL SWITCHES

◆ **Slam Tilt Switch**

The **Slam Tilt** switch prevents pounding for free games. The coin switches are ignored for five seconds after the Slam Tilt switch is closed.

◆ **Volume Down/Volume Up Buttons**

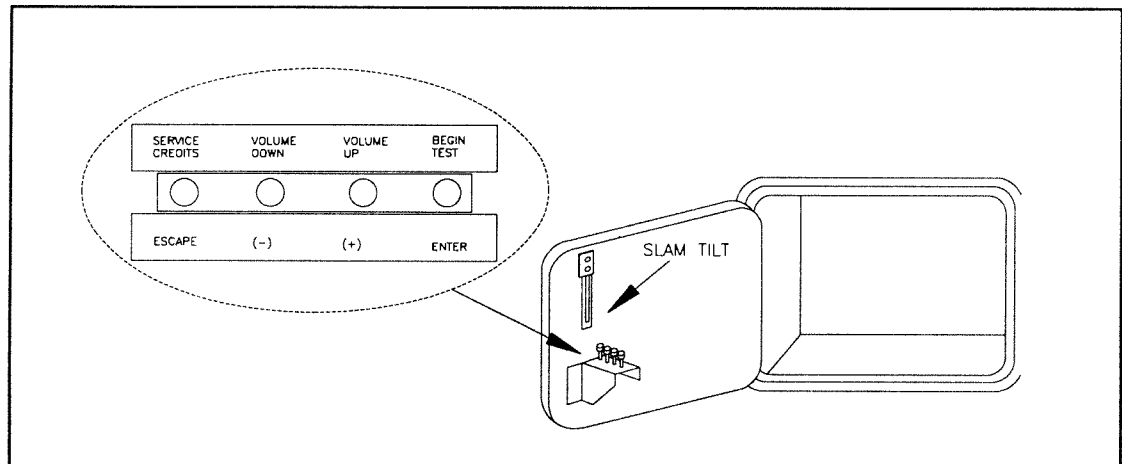
The **Volume Down** and **Volume Up** push-button switches increase or decrease the volume level of the music and speech. The volume level can be adjusted during the Attract Mode or during menu system operation. For greater profits, set your game's volume level at a nice loud setting.

◆ **Begin Test Button**

The **Begin Test** push-button switch enters the game's menu system. Press the Begin Test switch to access any of the menu system functions.

◆ **Service Credit Button**

The **Service Credit** push-button switch is a special feature switch that allots credit without affecting the game's bookkeeping total.



Control Panel Switch Locations

MENU SYSTEM OPERATION

OPERATION

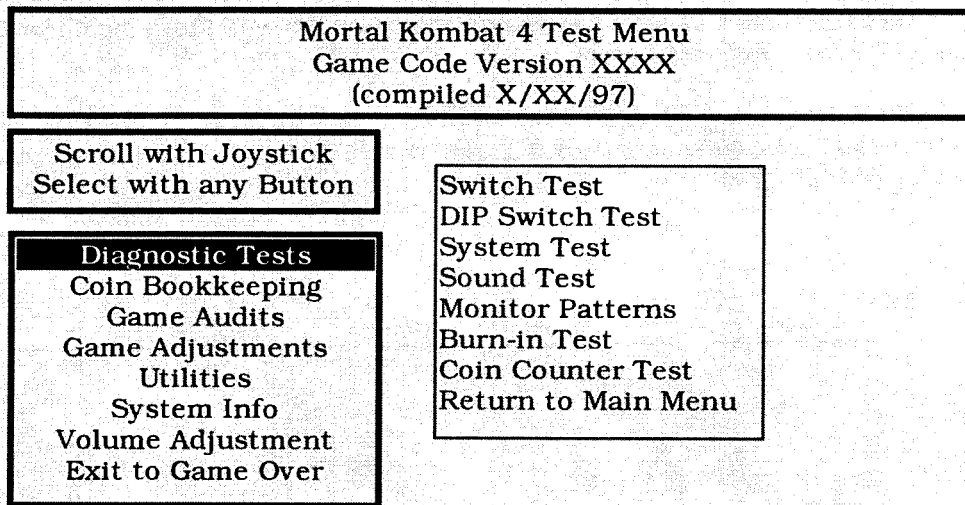
All of the game audits, adjustments, and diagnostics are options of the Main Menu. Each option, in turn has its own menu that lists several choices that you may act upon as desired.

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.



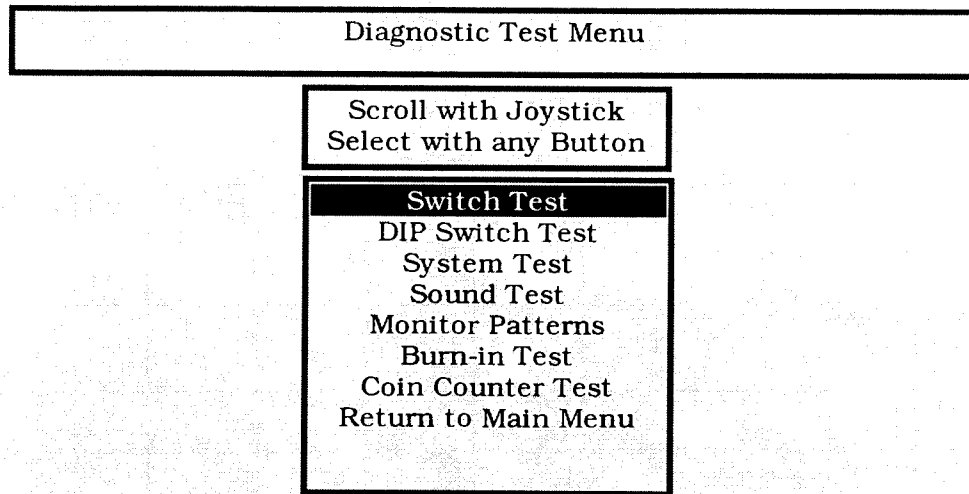
MAIN MENU SCREEN

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

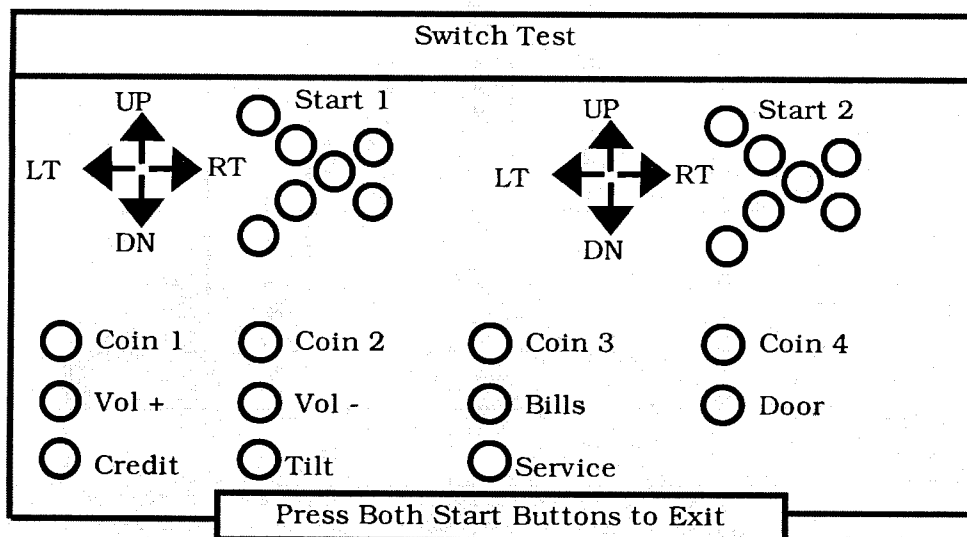
Switch Test

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 Don't Show Show	Off* On							
Blood In Game Don't Show Show		Off* 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

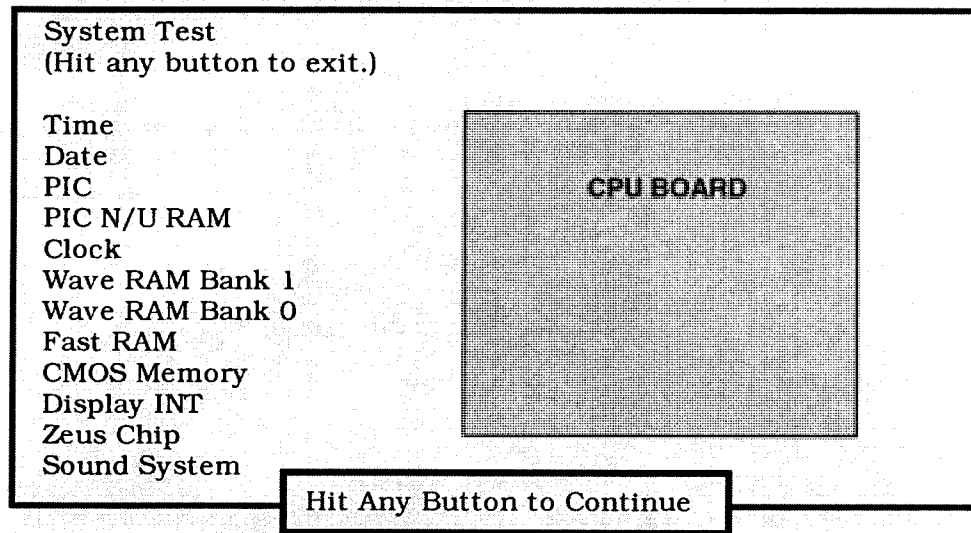
DIP Switch 2 Setting Table

	SW. 1	SW. 2	SW. 3	SW. 4	SW. 5	SW. 6	SW. 7	SW. 8
Coinage DIP Switch CMOS	Off* 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.

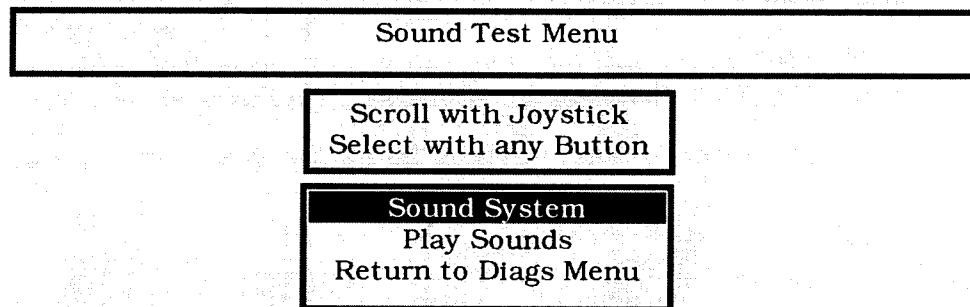


SYSTEM TEST MENU

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.



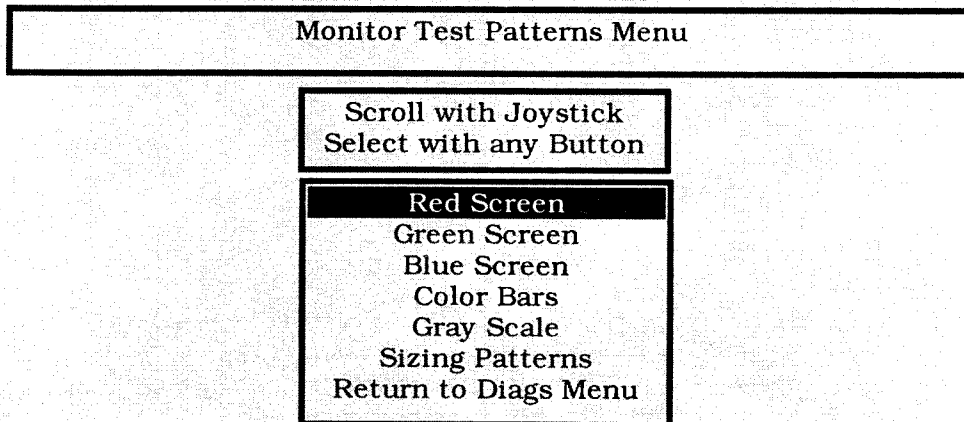
SOUND TEST MENU

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 Chip	OK	1	0
Sound System	OK	1	0
Wave RAM	OK	1	0

BURN-IN TEST SCREEN

Once the test list is completed, the game begins playing sounds while the screen scrolls through several colors. Then the game displays the monitor tests: the color bars, the color screens and the sizing patterns. After completing the monitor portion, the test returns to the list display and the sequence starts over again.

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

Scroll with Joystick
Select with any Button

View Game Audits
Return to Main Menu

AUDITS MENU SCREEN

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
Noob Sailbot Chosen	0
Quan Chi Chosen	0
Tanya Chosen	0
Maki Chosen	0
Reptile Chosen	0

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Previous Page

PAGE 1 OF AUDIT TABLE

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 Taken	0
2 Player Continues Taken	0
Burn-in Loops Successfully Completed	0

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PAGE 2 OF AUDIT TABLE

GAME ADJUSTMENTS

The Game Adjustments allow the operator to customize the game.

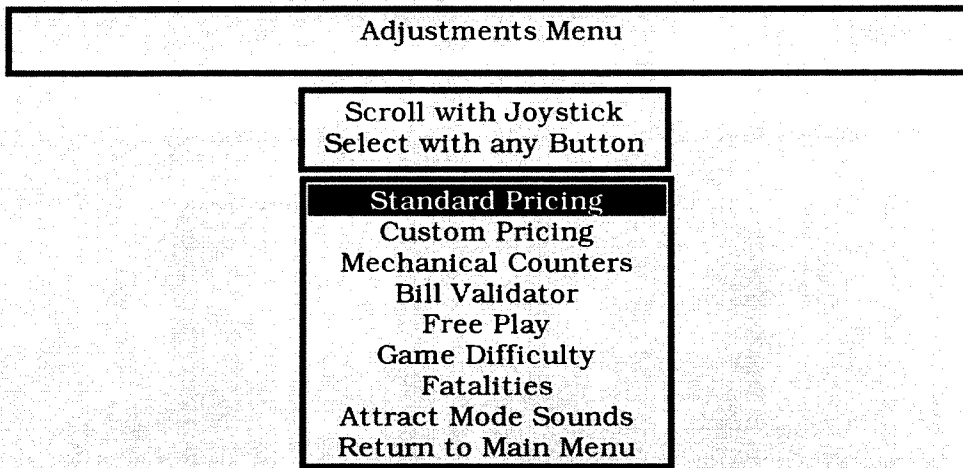
Use either joystick to select the Game Adjustments Menu. Press any button to open the menu.

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

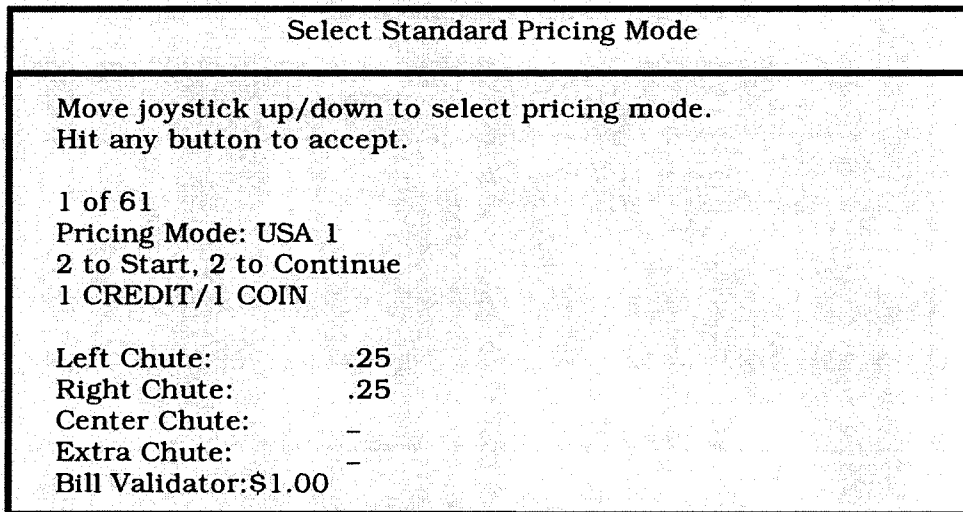
Adjustment values set by DIP SWITCH, override adjustment values set by the menu system.



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	1/25¢, 24/\$5.00 (2 to Start, 2 to Continue)	25¢	25¢			\$1.00
USA 2	1/25¢, 24/\$5.00 (2 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 3	1/25¢, 24/\$5.00 (1 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 4	1/50¢, 3/\$1.00 (1 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 5	1/50¢, 4/\$1.00 (2 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 6	1/50¢, 12/\$5.00 (1 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 7	1/50¢, 3/\$1.00 (1 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 8	1/50¢, 4/\$1.00 (1 to Start, 1 to Continue)	25¢	25¢			\$1.00
USA 9	1/25¢, 24/\$5.00 (3 to Start, 2 to Continue)	25¢	25¢			\$1.00
USA 10	1/25¢, 24/\$5.00 (3 to Start, 3 to Continue)	25¢	25¢			\$1.00
USA 11	1/25¢, 24/\$5.00 (4 to Start, 4 to Continue)	25¢	25¢			\$1.00
USA 12	1/25¢, 24/\$5.00 (4 to Start, 3 to Continue)	25¢	25¢			\$1.00
USA ECA	1/25¢, 4/\$1.00, 24/\$5.00 (2 to Start, 2 to Continue)	\$1.00	25¢	10¢	5¢	\$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	1DM		
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 25¢, 3/\$1.00	25¢	\$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 20¢, 2/\$1.00	20¢	\$1.00			
Australia 2	1/5 x 20¢, 1/\$1.00	20¢	\$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 20¢	20¢	20¢			
New Zealand 2	1/2 x 20¢	20¢	20¢			
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	1/25¢, 4/1 guilder	25¢	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
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
Show Credit Fractions	NO
Return to Menu	

Left Units
01

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.

Show Credit Fractions; Whether or not to show fractional credits on the credit screen.

Mechanical Counters

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

Mechanical Counters Settings	
Use joystick to select item. Hit any button to change selected items.	
Left Multiplier	1
Left Output	0
Right Multiplier	1
Right Output	0
Center Multiplier	1
Center Output	0
Extra Multiplier	1
Extra Output	0
Bill Multiplier	1
Bill Output	0
Use Settings	YES
Return to Menu	

Sets the number of totalizer clicks for each coin through the left chute.

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

Fatalities

This option determines whether or not fatalities are shown during the game. The setting choices for this adjustment are:

- Don't Show
- Show
- Factory Setting: Don't Show

Attract Mode Sounds

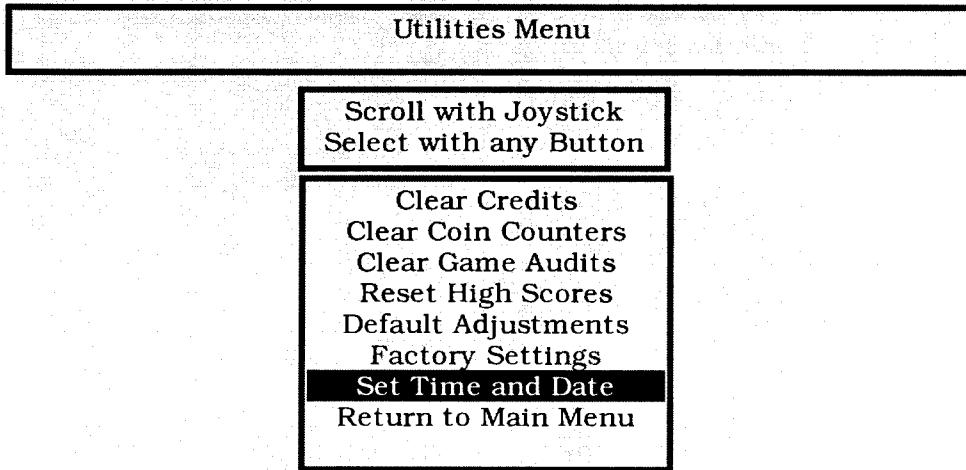
This option determines whether or not the game plays sounds during the Attract mode. The setting choices for this adjustment are:

- On
- Off
- Factory Setting: Off

UTILITIES

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

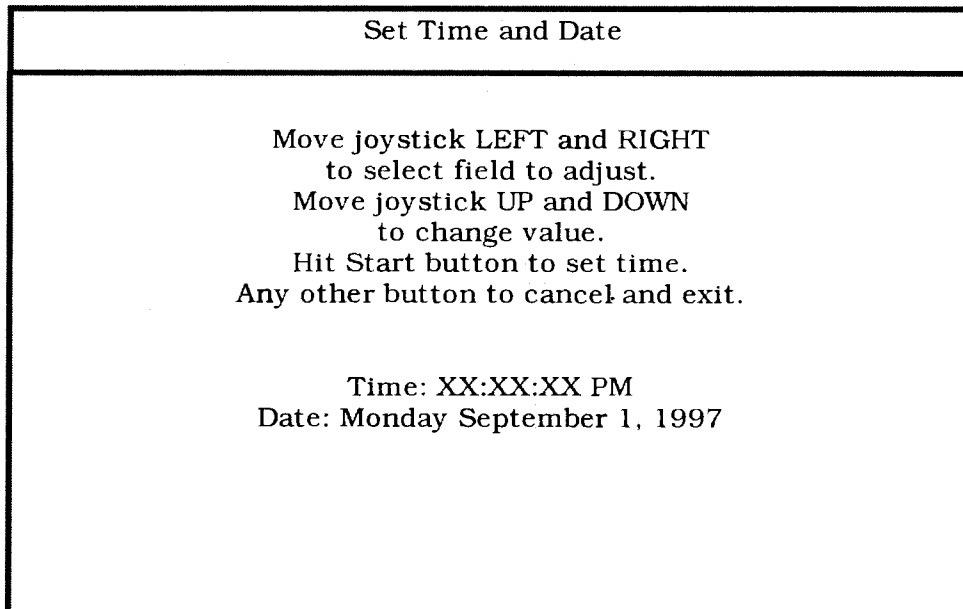
Use any joystick to select the Utilities Menu, then press any action button. Use any joystick to select a utility. Press any action button to activate the selection.



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 Error	xxxxx
System Time Error	xxxxx

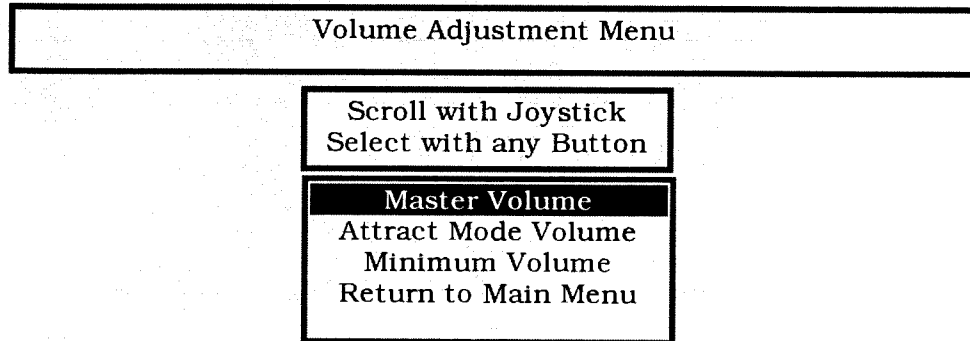
Hit Any Button to Continue

SYSTEM INFORMATION SCREEN

VOLUME ADJUSTMENT

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

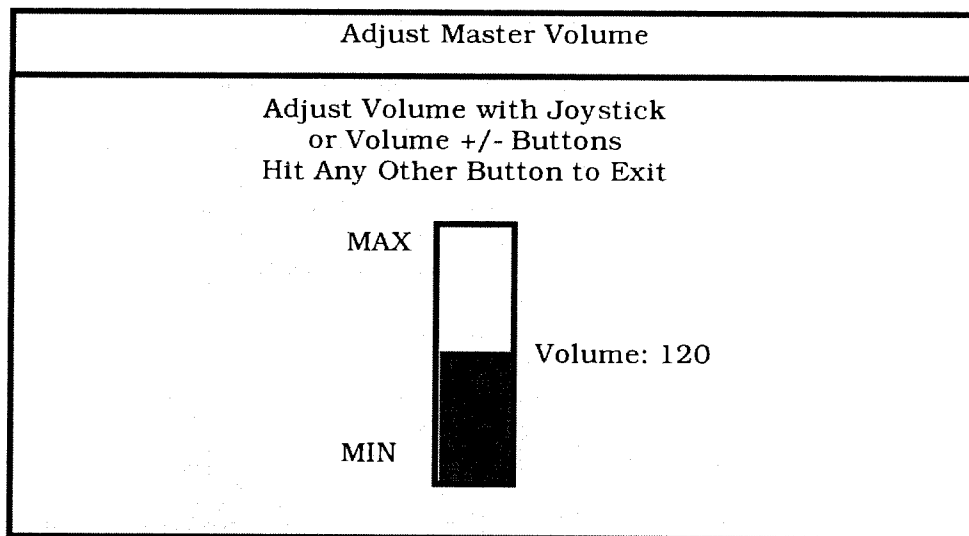
The volume level can be adjusted from either the Attract Mode or the Menu System. Press the Volume Up button to raise the volume level and the Volume Down button to lower the volume level. Any joystick can also be used to raise or lower the volume level.



VOLUME ADJUSTMENT MENU SCREEN

The current volume level is shown with a red bar.

For example:



MASTER VOLUME SCREEN

MORTAL KOMBAT

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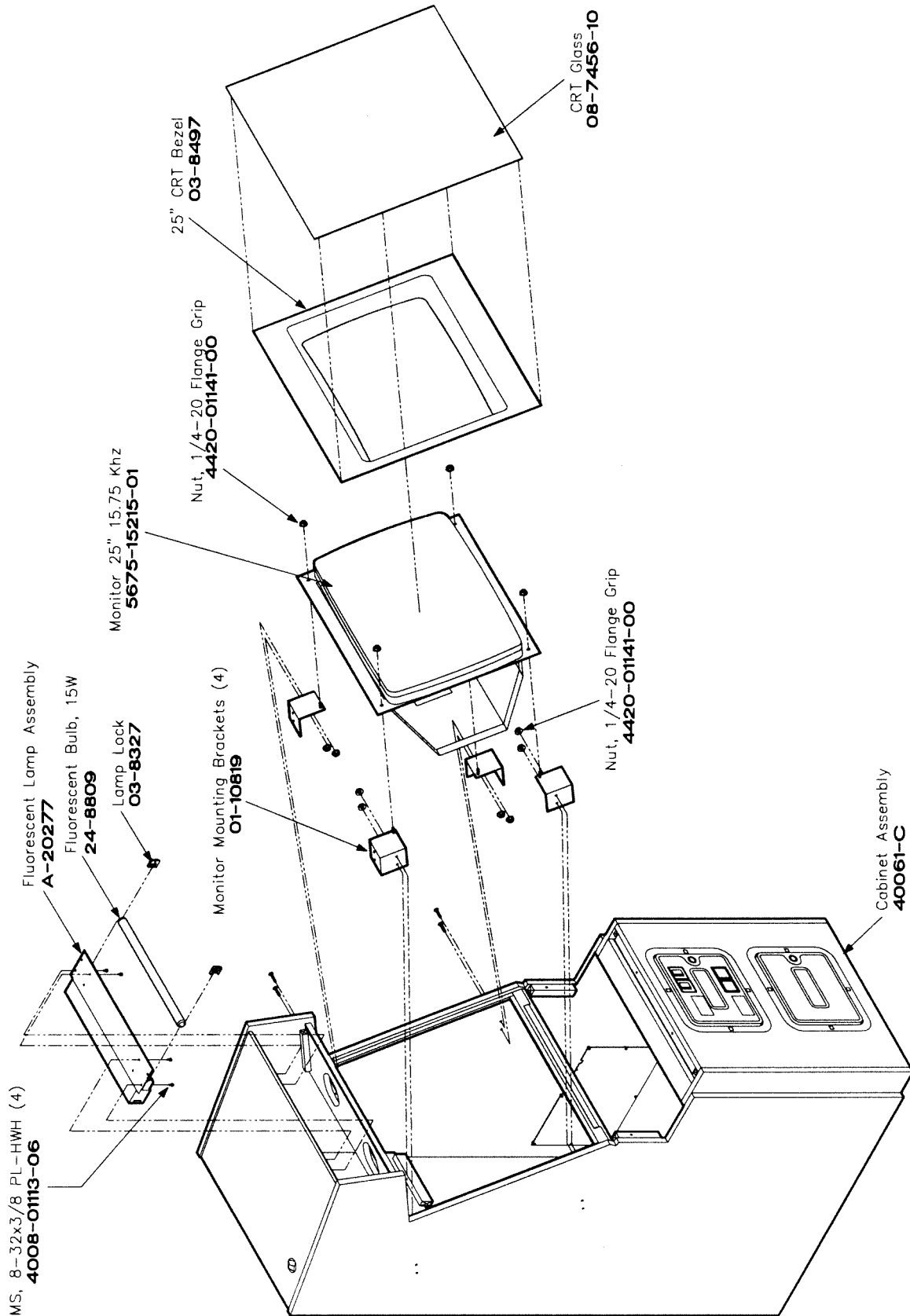
Dedicated 25" Game

**SECTION
TWO**

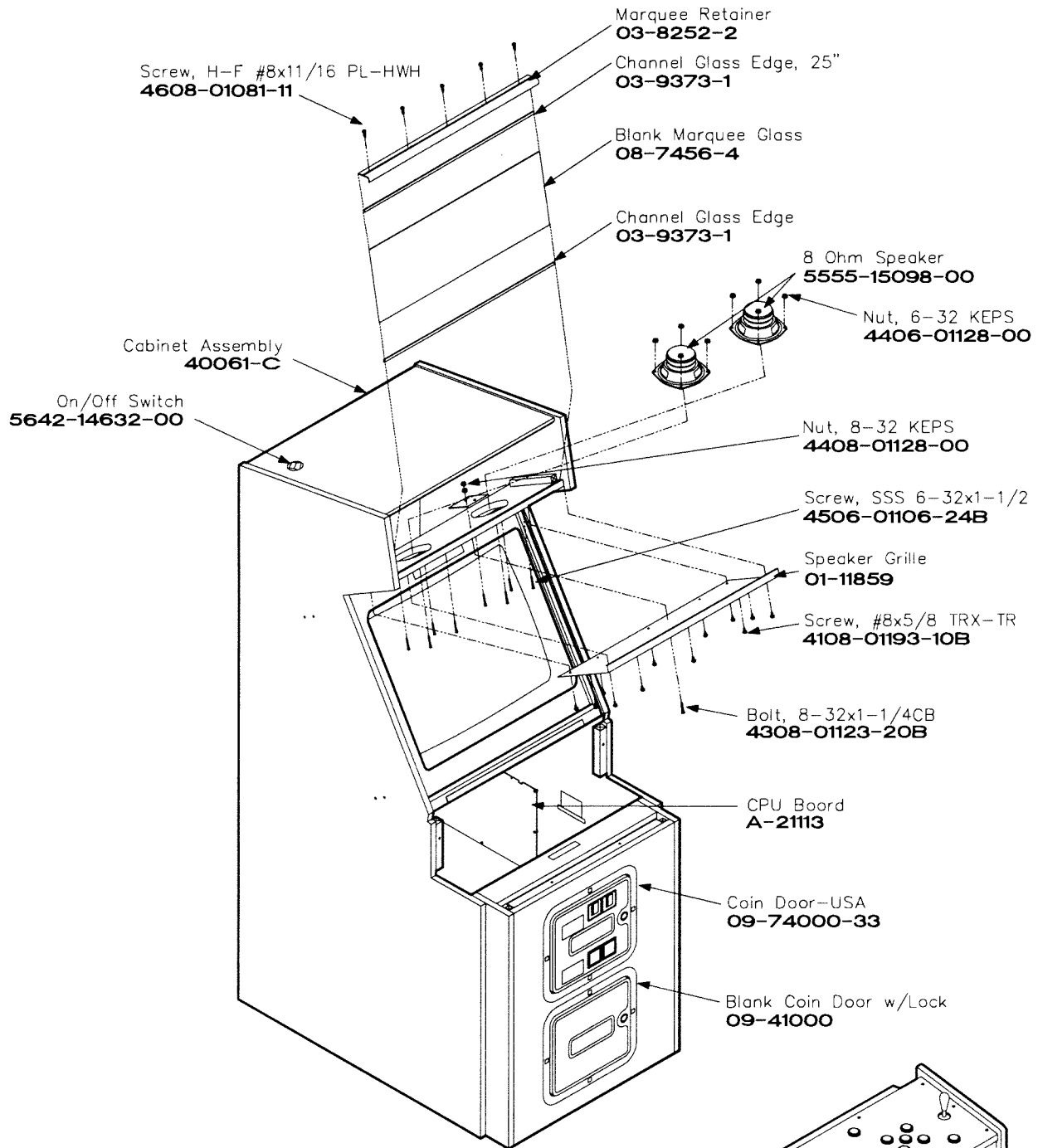
PARTS

CABINET FRONT - VIEW 1

40061-C Complete Cabinet Assembly

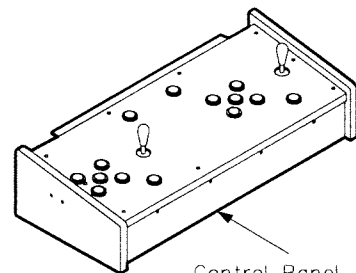


CABINET FRONT – VIEW 2



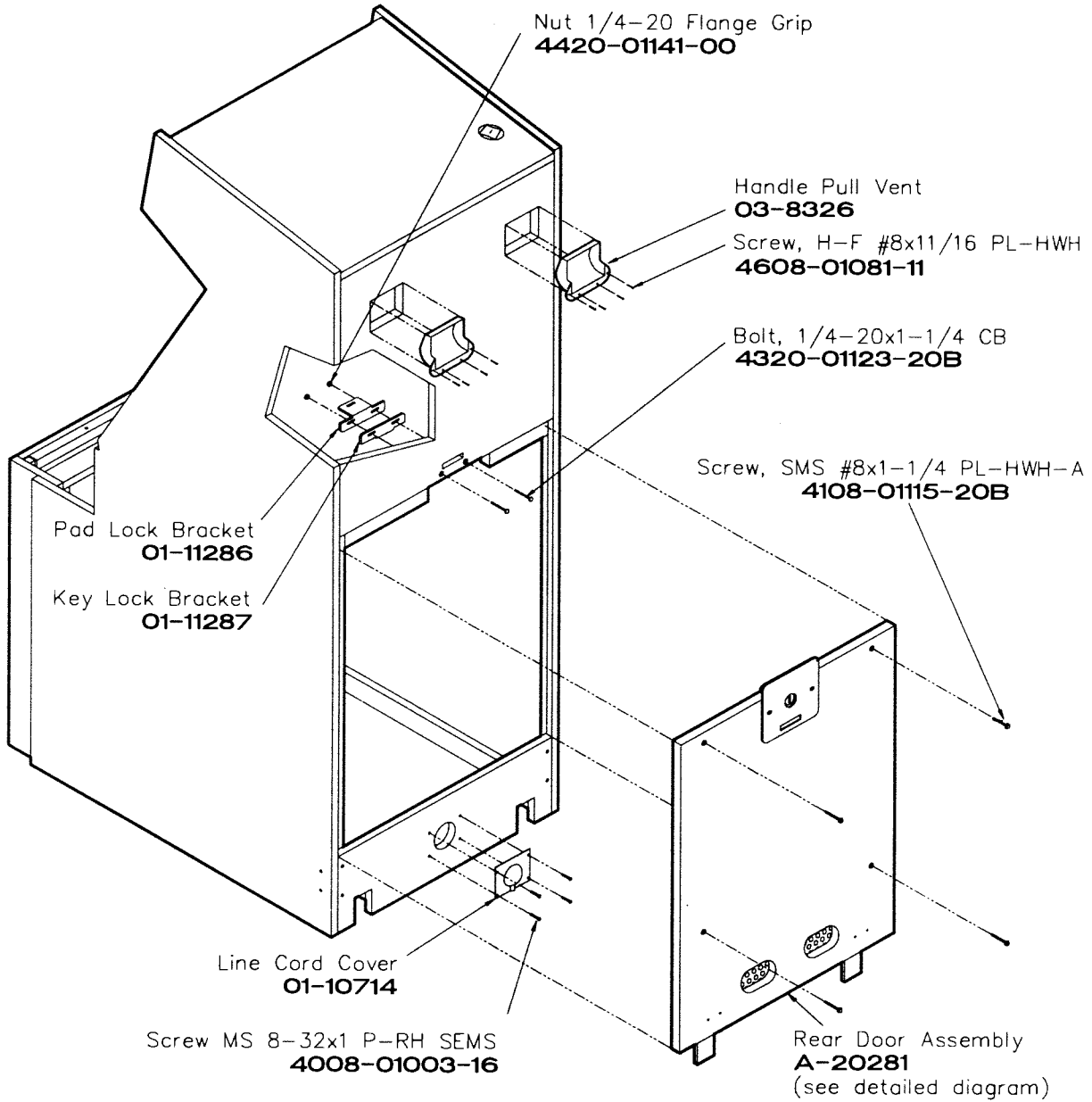
Associated Parts Not Shown:

Glass Retainer Brkt.	01-13943
Leg Adjuster	08-7377
Registration Card	16-9478.2
DBV Installation Inst.	16-9637
Manual	16-40061-101
Key, T-20 Long Arm	20-9620
Screened Marquee	31-2850-1
Glass Retain Brkt Screws	4008-01105-32



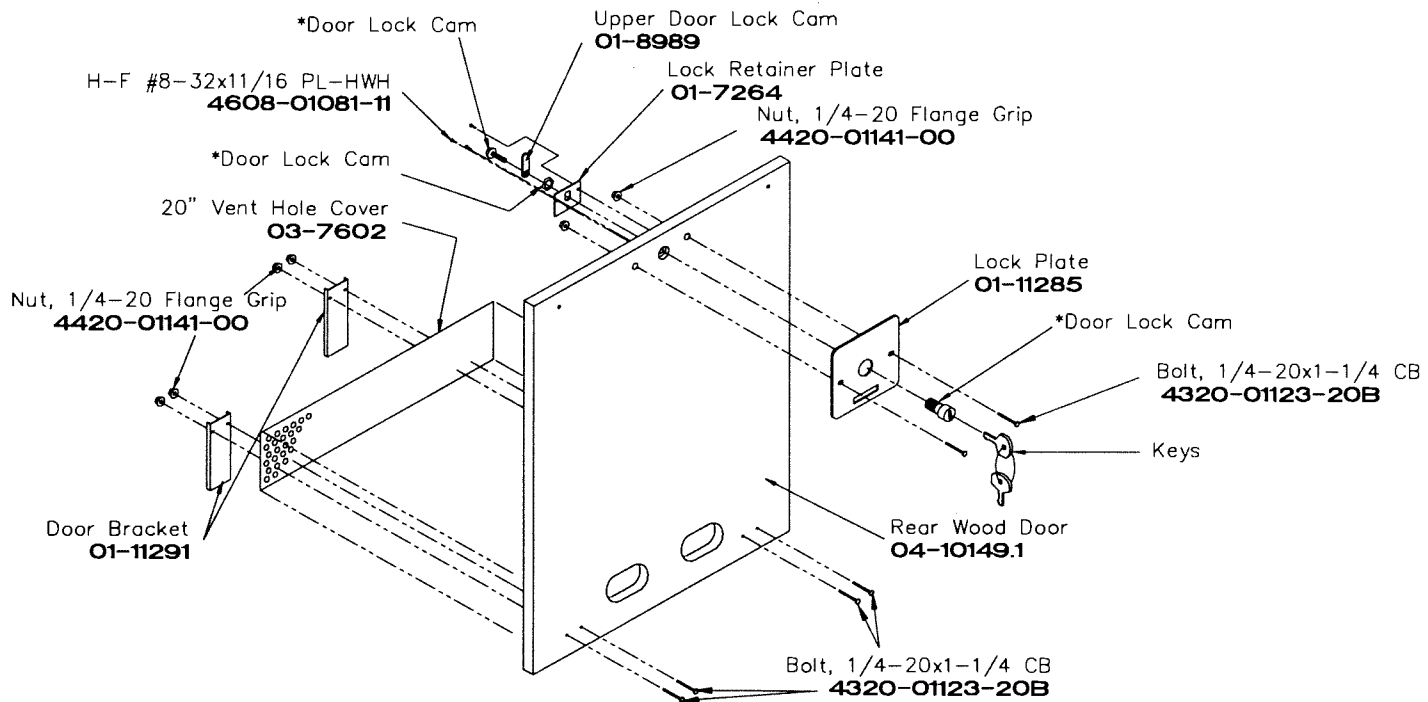
Control Panel
A-21862
 (see detailed diagram)

CABINET REAR VIEW



REAR DOOR PARTS

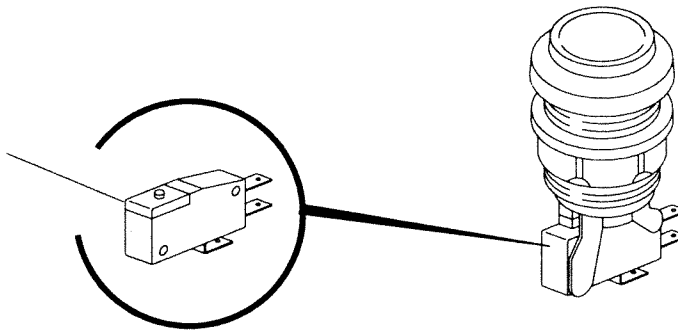
A-20281 Complete Rear Door Assembly



*Primary Door Cam Lock
20-10350

PUSHBUTTON

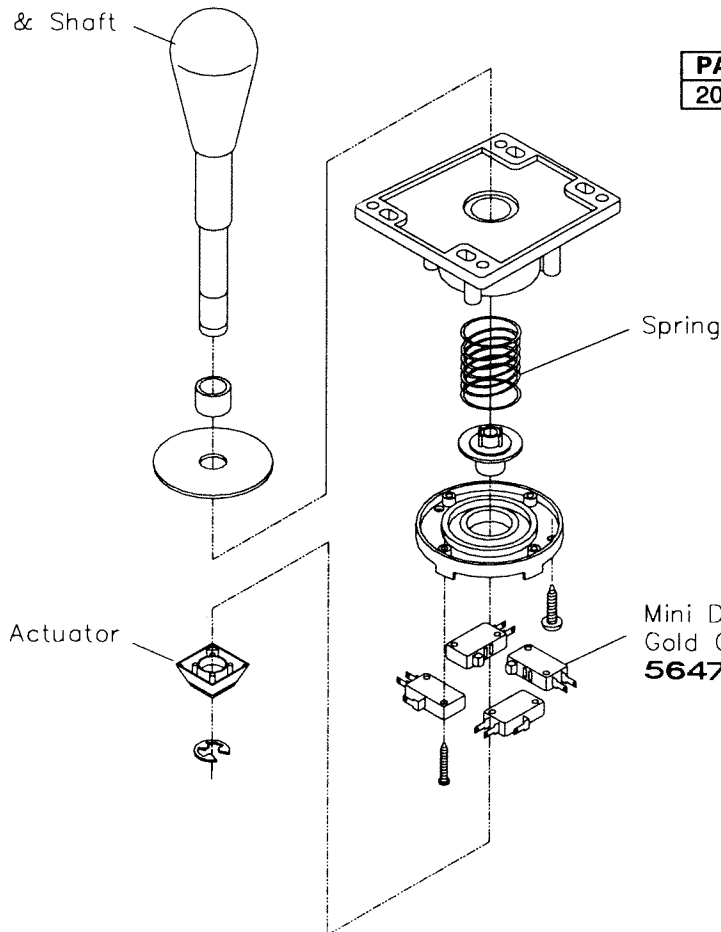
Mini D41 Replacement
Gold Contacts
5647-12133-00



PART NUMBER	BUTTON COLOR
20-10209-1	RED
20-10209-2	WHITE
20-10209-3	BLUE
20-10209-5	YELLOW

JOYSTICK DETAIL

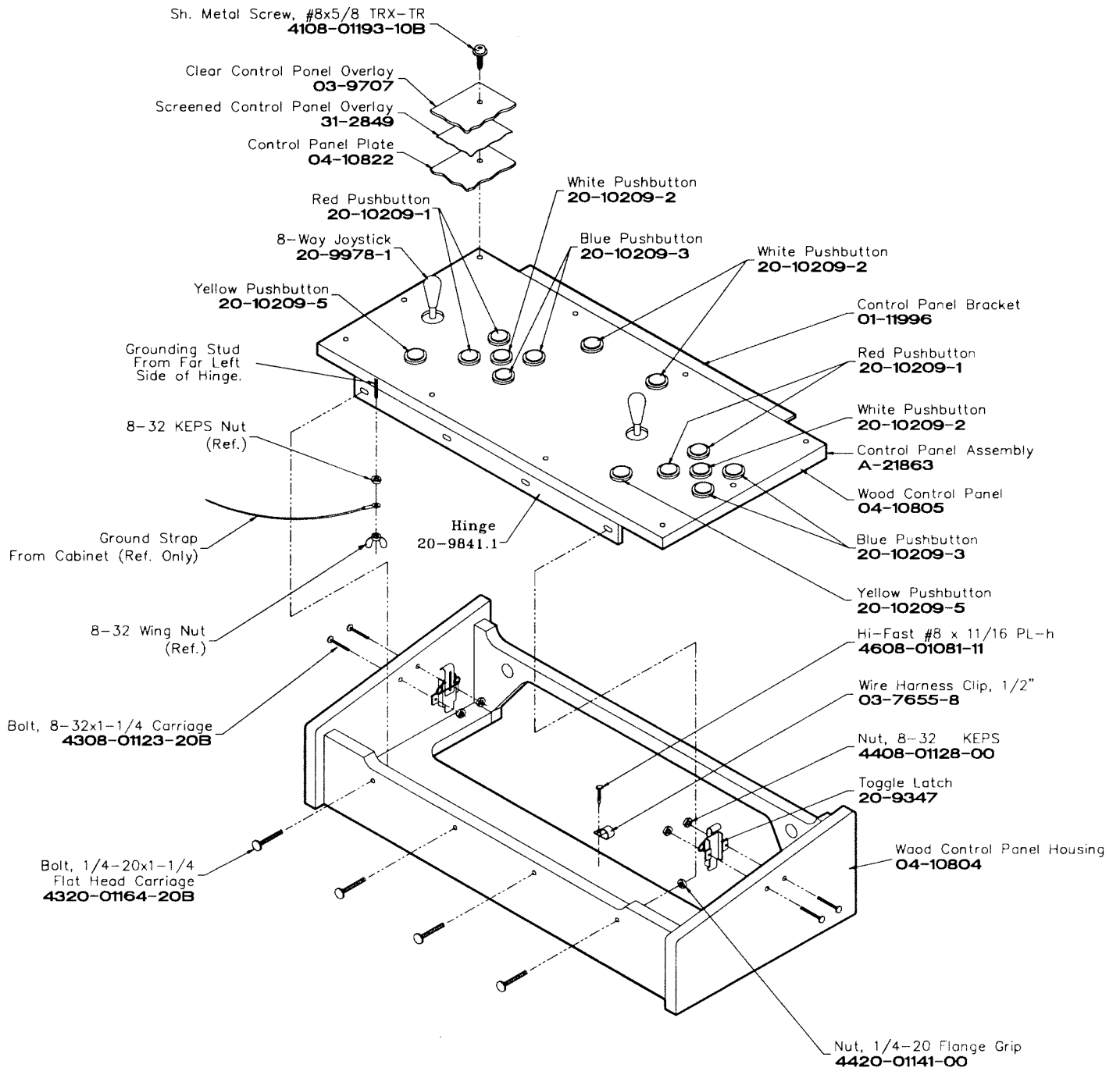
Knob & Shaft



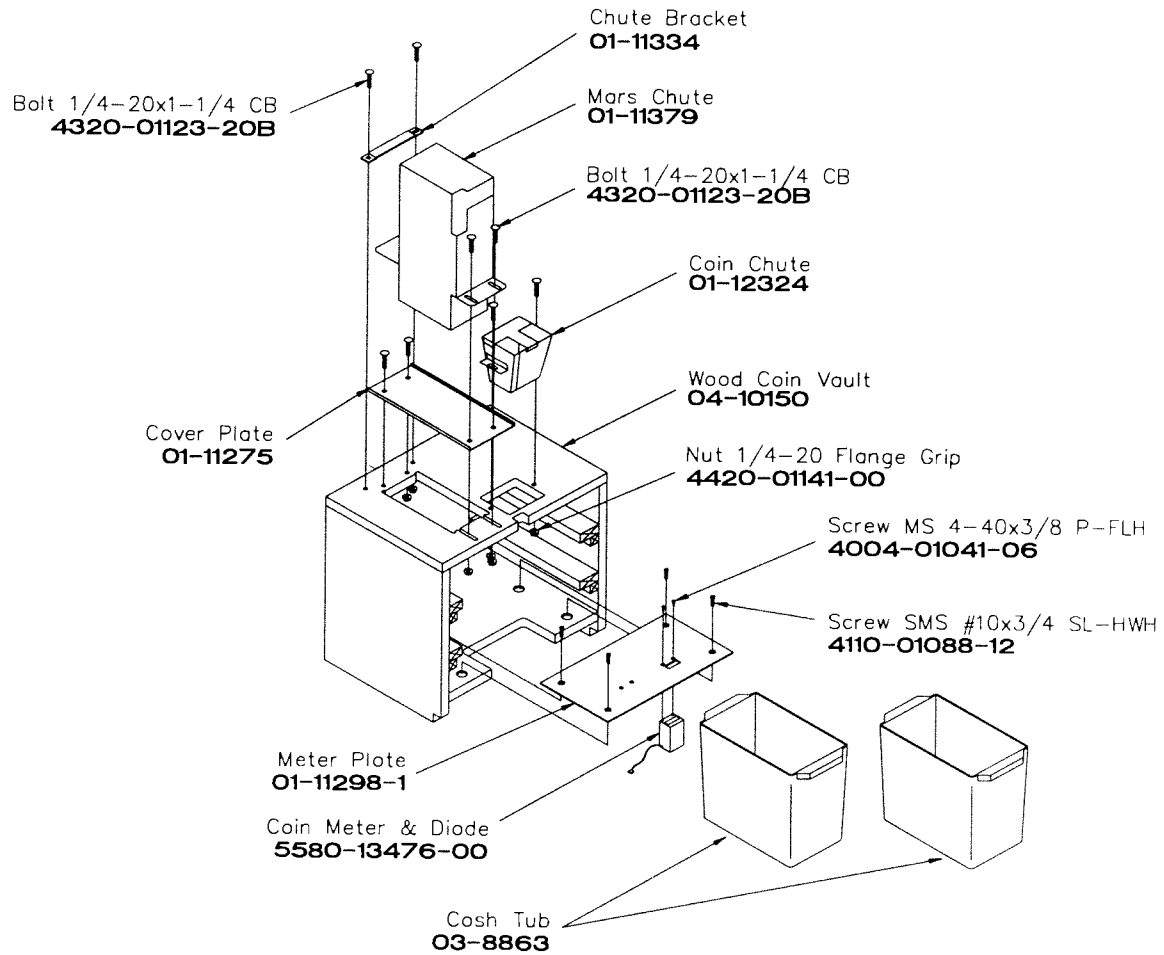
PART NUMBER	BUTTON COLOR
20-9978-1	RED

CONTROL PANEL & HOUSING PARTS

A-21862 Complete Control Panel & Housing Assembly

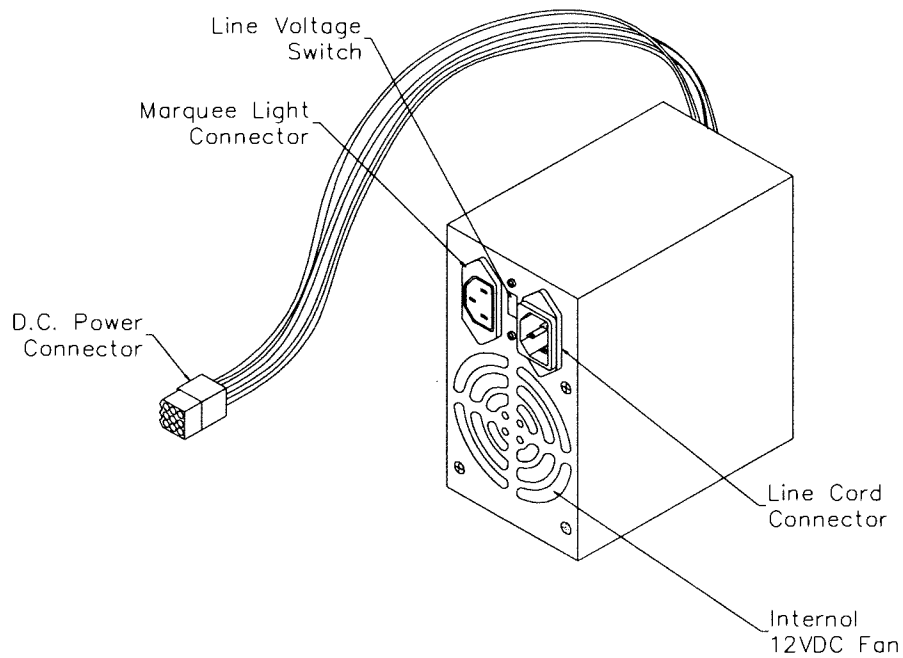


COIN DOOR PARTS



POWER SUPPLY

20-10167 Power Supply



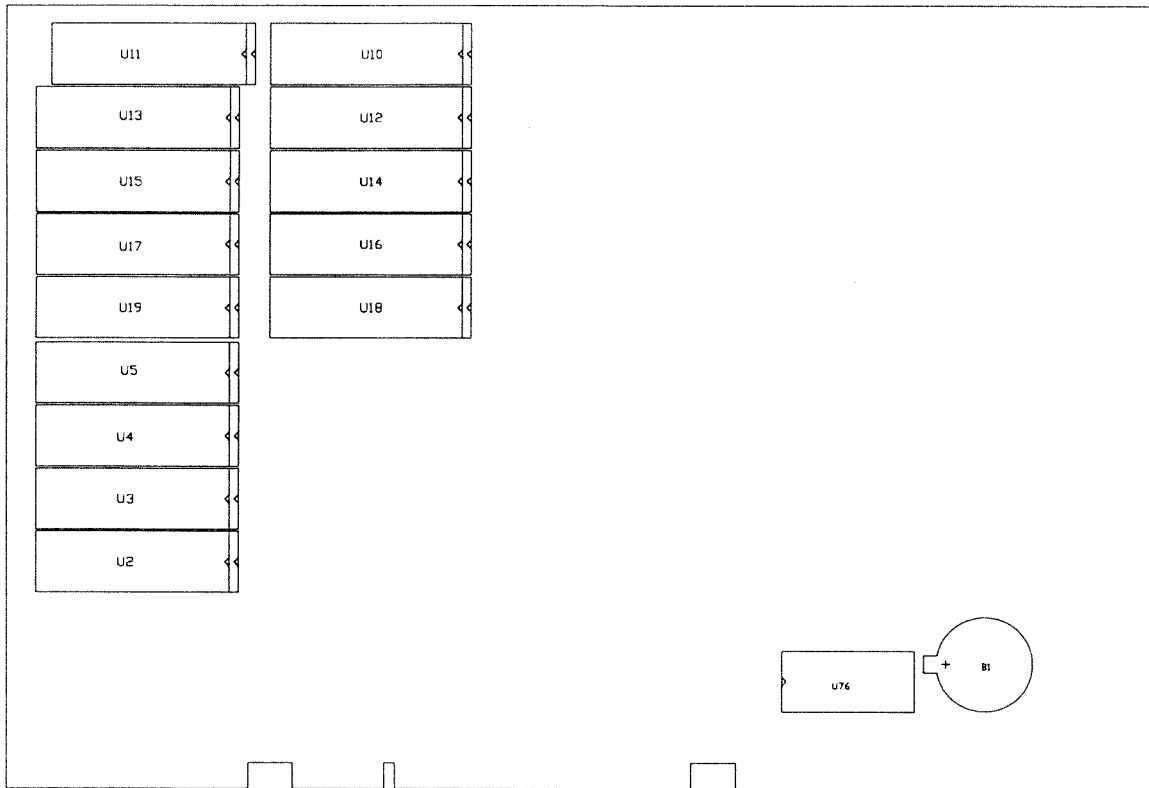
D.C. MAIN POWER CONNECTOR

Connector Pin #	Pin Function	Designation Wire Color
1, 2, 3	+5VDC	Red
4, 5, 6	Ground	Black
7	-5VDC	Yellow*
8	+12VDC	Orange*
9	-12VDC	Blue*

***Note:** Many computer grade power supplies use yellow for +12V, blue for -5V, and white for -12V. This is acceptable as long as the pinout is correct.

PRINTED CIRCUIT BOARD

A-21113 CPU Board Assembly



Part Number	Designator	Description
A-5343-40061-1	U3	EPROM Assembly
A-5343-40061-2	U4	EPROM Assembly
A-5343-40061-3	U5	EPROM Assembly
A-5343-40061-4	U12	EPROM Assembly
A-5343-40061-5	U13	EPROM Assembly
A-5343-40061-6	U14	EPROM Assembly
A-5343-40061-7	U15	EPROM Assembly
A-5343-40061-8	U16	EPROM Assembly
A-5343-40061-9	U17	EPROM Assembly
A-5343-40061-10	U2	EPROM Assembly
A-5343-40061-11	U10	EPROM Assembly
A-5343-40061-12	U11	EPROM Assembly
A-21854	U76	PIC Assembly
5880-11056-00	B1	Lithium Battery 3V

OTHER PARTS NECESSARY

Power & Protection

A.C. Distribution Assembly	A-20278
A.C. Distribution Cable	H-20279
A.C. Distribution Chassis	04-10103.1
Switcher Power Supply	20-10167
MS, 4-40 x 3/8 P-FLH	4004-01041-06
MS, 6-32 x 3/8 P-PH-S	4006-01003-06
Nut, 6-32 KEPS	4406-01128-00
Nut, 8-32 KEPS	4408-01128-00
Line Filter, 6A, 250V	5102-14240-00
Fuse, 3A, 250V, SB	5731-10356-00
Fuse Holder Panel	5733-12869-00

Cables

Line Voltage Cable	A-20331
Dixie-Narco Cable	H-17019
AC Distribution Cable	H-20279
Main Harness Cable	H-21901
Cabinet Speaker Cable	H-19599
A.C. IDC Cable	H-20353
Control Panel Cable	H-20136

LINE CORD APPLICATION CHART

Part Number \ Country	5850-13271-00	5850-13272-00	5850-13273-00	5850-13275-00	5850-13276-00	5850-13277-00	5850-13278-00
USA	√						
England			√				
Italy				√			
Japan							√
New Zealand						√	
Germany		√					
Spain		√					
Switzerland					√		
Hungary		√					
Canada	√						
Austria		√					
France		√					
Australia						√	
Belgium		√					

COIN DOOR CHART

Part Number \ Country	09-72000-2	09-72000-3	09-72000-6	09-74000-7	09-72000-14	09-72000-15	09-72000-17	09-72000-20	09-72000-22	09-72000-23	09-72000-25	09-74000-33	09-80000-10	09-96000-4
USA												√		
England													√	
Italy					√									
Japan						√								
New Zealand							√							
Germany	√										√			
Spain								√						
Switzerland									√					
Hungary										√				
Canada														
Austria		√												
France														√
Australia			√											
Belgium				√										

MORTAL KOMBAT

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Dedicated 25" Game

SECTION
THREE



CABINET WIRING

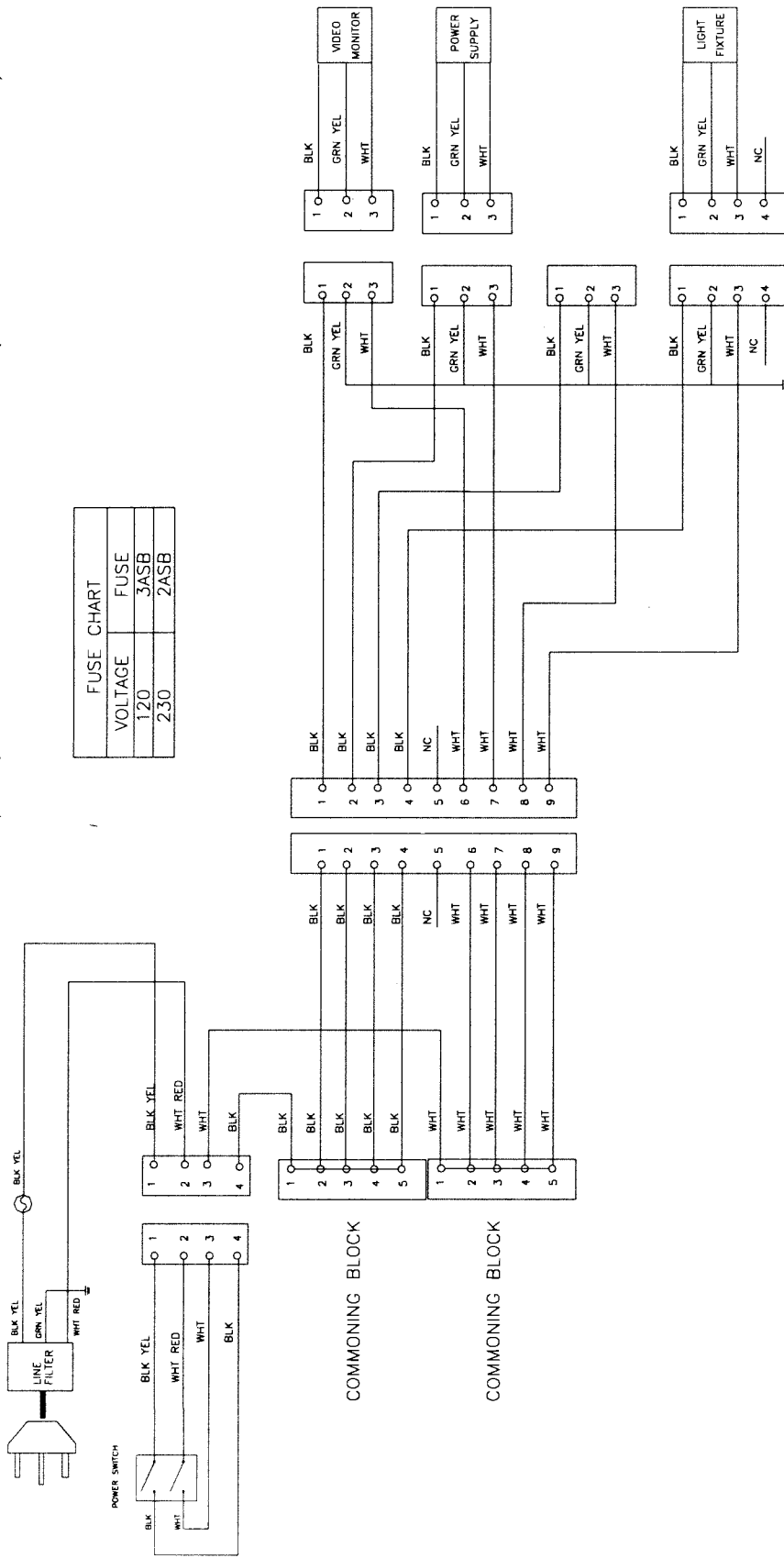
NOTE
PRINTED CIRCUIT BOARD ASSEMBLY SCHEMATICS ARE NO LONGER AVAILABLE.

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		

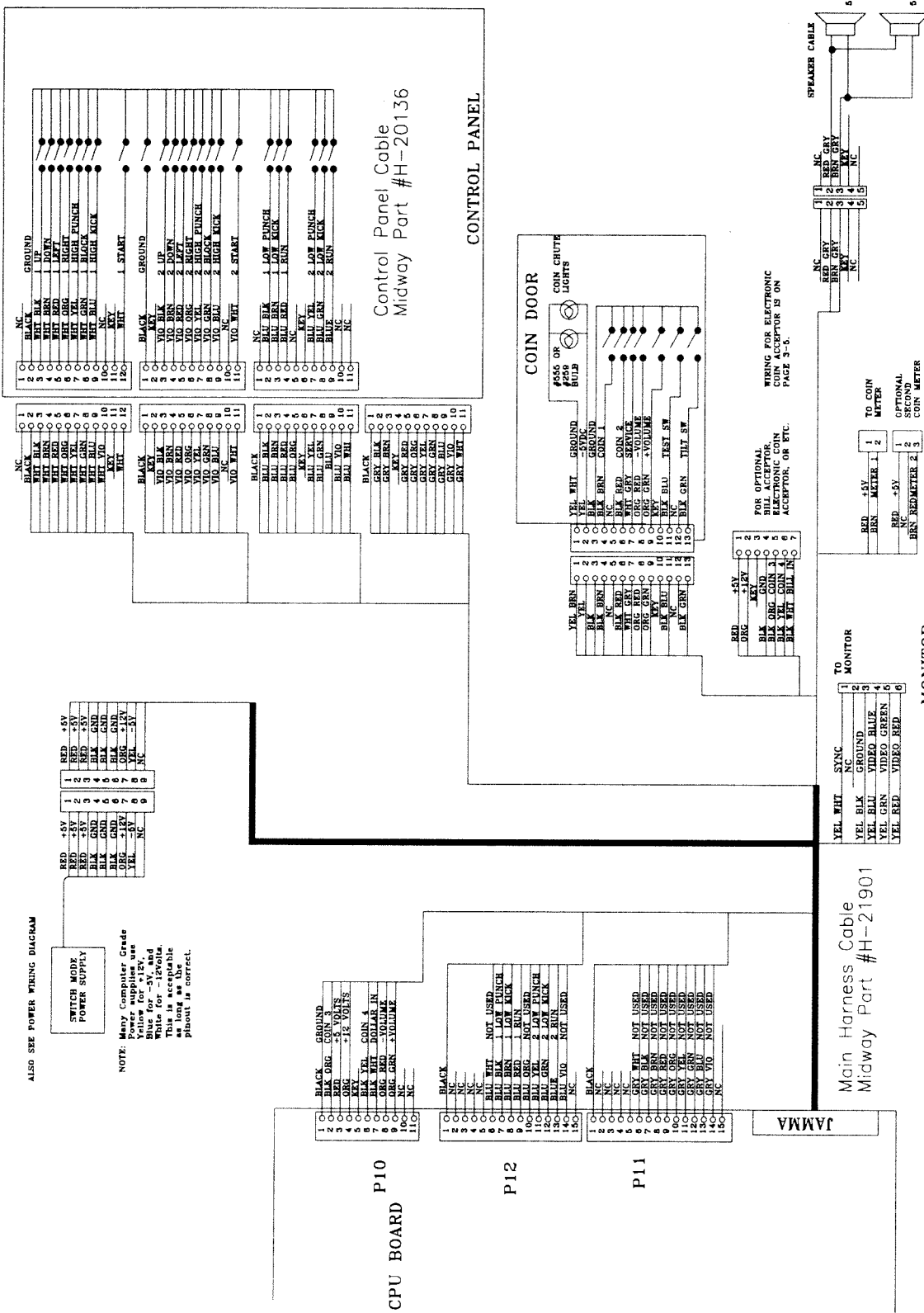
POWER WIRING DIAGRAM

NOTE: FOR 220V OPERATION CHECK FUSE VALUE AND 120/220 SWITCH ON SWITCHING POWER SUPPLY
 ALSO VERIFY THE CORRECT FAN (120/220V), AND THE CORRECT FLUORESCENT LAMP (120V 60HZ OR 220V 50HZ).

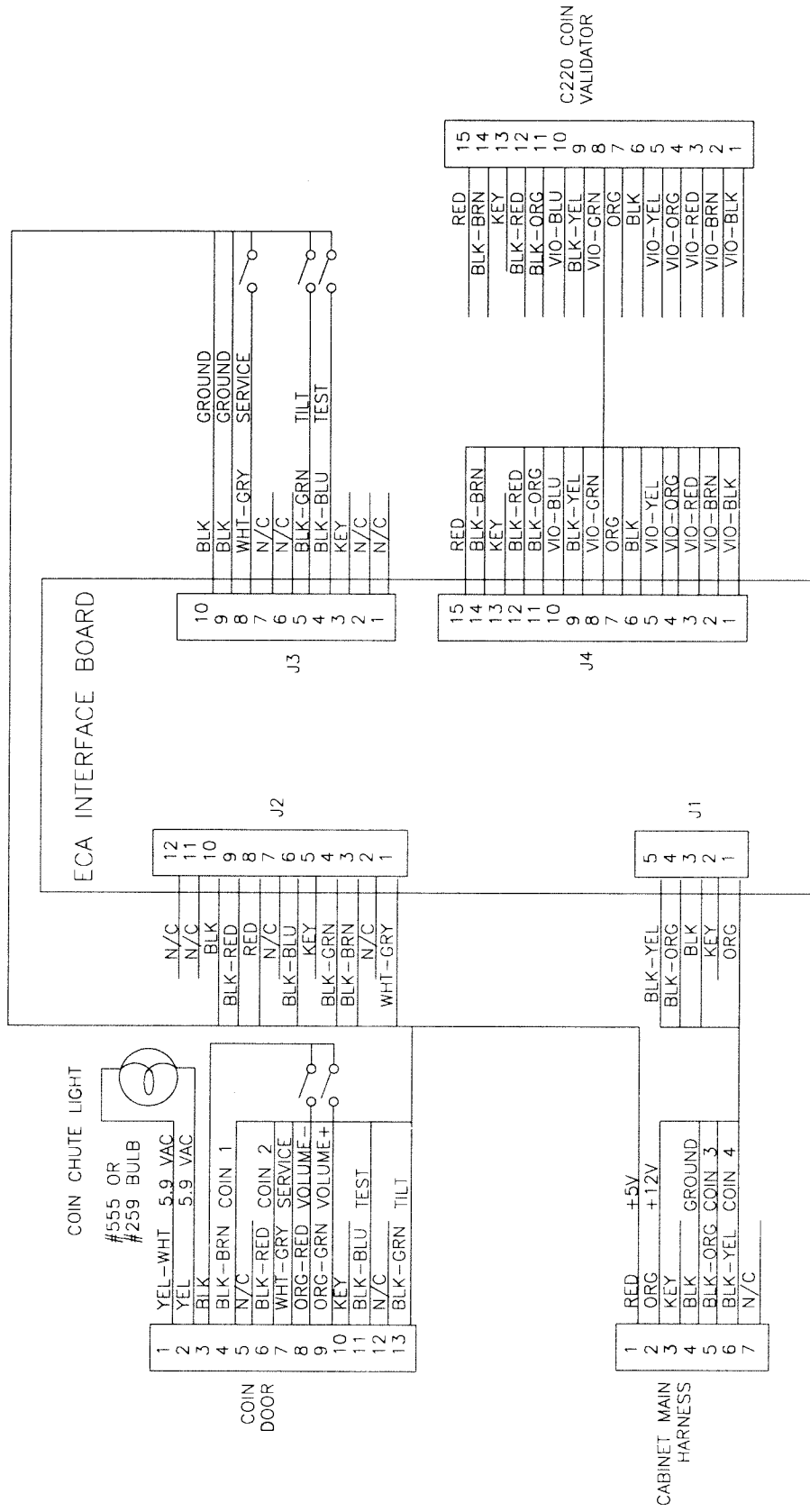


FUSE CHART	
VOLTAGE	FUSE
120	3ASB
230	2ASB

CABINET WIRING DIAGRAM



**COIN DOOR WIRING DIAGRAM
FOR ELECTRONIC COIN ACCEPTOR SYSTEMS (C220) ONLY!
NOTE: DRAWING DEPICTS ONE CABLE**



MORTAL KOMBAT

4

Dedicated 25" Game

SECTION FOUR

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 1-12 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.

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

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 contain a FCC sticker, call MIDWAY immediately.

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