

MX 5000

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CONVERSION KIT CONTENTS:

- **MAIN PRINTED CIRCUIT BOARD**
- **P.C.B. CAGE (FCC REQUIRED)**
- **CONNECTING WIRING HARNESS**
- **6 SETS — BUTTON ASSEMBLIES**
- **ONE 8-WAY JOYSTICK**
- **CLEAR MARQUEE (HEADER)**
  (1/8" acrylic sheet)
- **PRINTED STYRENE MARQUEE (4 color offset)**
- **ONE SET SIDE PANEL GRAPHICS (left & right)**
- **CONTROL PANEL OVERLAY**
- **CONTROL PANEL DECALS**
  instruction decals/button decals
- **MANUAL**
- **REGISTRATION CARD**

REPLACEMENT ACCESSORIES ARE AVAILABLE THROUGH YOUR DISTRIBUTOR.

MX5000 IS SUITABLE FOR UPRIGHT OR COCKTAIL TABLES.

MX5000: INTRODUCTION

KONAMI CONVERSION KITS are the most complete conversion kits available today. Every detail has been carefully considered, designed and packaged to provide you the means of easily producing a professional conversion.

These kits have all the accessories to easily convert your UPRIGHT video game.

We strongly urge you to FULLY STUDY this instruction manual BEFORE you begin your conversion. It contains step-by-step instructions, schematic diagrams and suggestions on how to install your Konami Conversion Kit and maximize your profits.

MX5000 can be installed in any vertical mounted rastar scan monitor game.

Everything you will need to construct your new game is provided in this kit. All accessory parts—wiring harness, joystick, etc. are custom made for MX5000 by top engineers experienced in the coin-op industry. Two 8-way joysticks (as provided) MUST be used.

The Player Instruction and Button Control decals are made of a non-destructible acrylic material specifically to keep the player from peeling them off.

★ ★ ★ IMPORTANT NOTICE ★ ★ ★

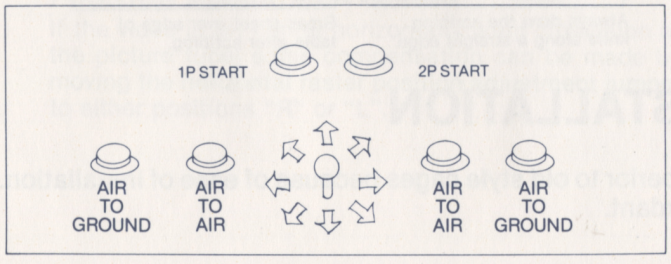
The Japanese Amusement Machine Manufacturers Association (JAMMA) has introduced a new standard in video game P.C.B.'s. It was decided that all new products from any JAMMA member will use the same pin print-out on the edge connector. The edge connector will have 56 pin outs, 28 per side.

Konami Inc. will offer a 56 to 36 pin adaptor P.C.B. available through your distributor. This new adaptor P.C.B. will enable the new 56 pin out to adapt to Konami's old standard 36 pin out.

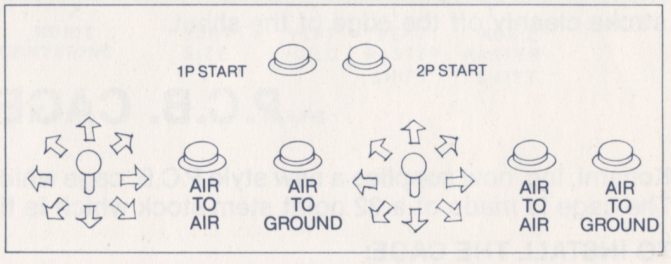
DUAL CONTROL

By moving SW#2 of dip switch bank #3 to the "on" position, you are now in the dual control upright mode. This allows you to set up an upright game with two sets of controls rather than one set. The first set of controls should be hooked up to the 1P set of wires; the second set to the 2P wires (see wiring diagrams). Each player still challenges the "computer-controlled" opponent (alternating play). This does not allow simultaneous interaction of players on the video screen.

***SINGLE CONTROL LAYOUT**



DUAL CONTROL LAYOUT



*RECOMMENDED LAYOUT

PUTTING YOUR BEST GAME FORWARD

PREPARATION:
For best results, all old graphics should be removed completely from the cabinet. "Stick-on" graphics can be removed by using a hairdryer or hot air device. The heat from the dryer will loosen the adhesive, allowing you to easily peel them off — any adhesive residue can be cleaned off with acetone and a soft dry cloth. (DO NOT USE ACETONE ON SURFACES PAINTED WITH FLAT PAINT.)

TOOLS YOU NEED:
1. Foaming Aerosol (such as "Windex").
2. Soft Squeegee.
3. X-Acto Knife.

SIDE PANEL DECALS
1. Spray area of cabinet where Side Panel decals are to be applied with foaming aerosol or a mild soap solution.
2. Remove protective backing from decals.
3. Position decals into place.
4. With a soft squeegee, beginning from the center of the decal, slowly and evenly press out excess foam until you achieve a smooth finish.
5. Allow to set approximately 2 to 3 hours before handling. Maximum adherence is achieved in 48 to 72 hours.
6. Trim side decal to fit your cabinet.

CONTROL PANEL OVERLAY:
1. Refer to Recommended Control Panel Layout on page 1.
2. Drill any new holes needed.
3. Plug any holes that will not be used. (A permanent epoxy filler works well for this step.)
4. Pre-position the overlay prior to removing the backing.
5. Slowly apply the overlay — inch by inch on the control panel, removing the backing as you apply it.
6. Once it's in place, by using an X-Acto knife, cut around the button and joystick placements.

INSTRUCTION/BUTTON DECALS:
Apply the Player Instruction, Button and 1 Player/2 Player decals in their respective positions. Apply pressure liberally. Allow to set as long as possible before putting game on location.

NOTE: Maximum adherence is achieved in 48 to 72 hours.

FCC WARNING LABEL:
FCC Warning Label must be applied to the outside of the cabinet near the line cord entry.

MARQUEE

(WEAR PROTECTIVE GLASSES WHILE TRIMMING MARQUEE)

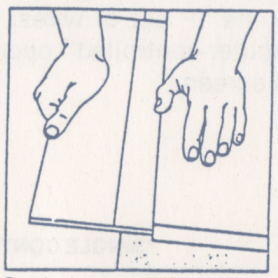
1/8" Acrylic Marquee should be cut to fit your game. DO NOT remove protective mask until this is done.

One way of cutting your Marquee is as follows: (Be sure to protect painted side of Marquee from any surface which may scratch or mar finish).

CUTTING WITH A KNIFE OR SCRIBER
Acrylic sheet up to 3/16" thick may be cut by a method similar to that used for cutting window glass. Use a scriber of some kind — a scribing knife such as the one pictured, a metal scriber, an awl, or even a sturdy craft knife — to score the sheet. Draw the scriber several times (7 or 8 times for a 3/16" thick piece) along a straight edge held firmly in place. It is best not to remove the protective masking. Make the cuts carefully using firm, even pressure. For best results make each stroke cleanly off the edge of the sheet.

Then clamp the acrylic sheet or hold it rigidly under a straight edge with the scribe mark hanging just over the edge of a table. Protect your hands with a cloth, and apply a sharp downward pressure to the other side of the sheet. It will break along the scratch. Scrape the edges to smooth any sharp corners. This method is not recommended for long breaks or thick material.


Always draw the scribing knife along a straight edge.


Break sheet over edge of table after scribing.

P.C.B. CAGE INSTALLATION

Konami, Inc. now supplies a new style P.C.B. cage which is superior to old style cages because of ease of installation. The cage is made of a 32 point stem-stock which is fire retardant.

TO INSTALL THE CAGE:
1. Open cage bottom and secure to desired P.C.B. position.
2. Install printed circuit board inside cage using wood screws, screwed through the cage bottom into cabinet side.
3. Close the cage over printed circuit board and secure with latch on cage.

MX5000: MONITOR INFORMATION (WG4951)

SERVICE INSTRUCTIONS

NOTE: All monitors are equipped with automatic degaussing coils (L701) which demagnetize the picture tube every time the monitor is turned on after being off for a minimum of 5 minutes. Should any part of the chassis become magnetized it will be necessary to degauss the affected area with a manual degaussing coil. Move the coil slowly around the CRT face and all surrounding metal parts. Then slowly withdraw for a distance of 6 feet before turning off.

1.0 BLACK LEVEL CONTROL ADJUSTMENT

This control has been set at the factory and should not need further attention, however, when the game is connected a slight adjustment of VR201 may be necessary to obtain the proper black level (the black portion of the picture just extinguished).

2.0 VERTICAL SIZE (HEIGHT)

Location of this control is shown in Fig. 1. This control must be adjusted slowly, if necessary, until the picture or test pattern attains the correct vertical proportions.

3.0 CIRCUIT PROTECTION

A 4.0A pigtail fuse, mounted on the Main Board has been provided to protect the Power Output Circuit.

4.0 FOCUS

Adjust the focus control, located on the HV unit (T352), for maximum over-all defination and fine picture detail.

5.0 HORIZONTAL HOLD CONTROL ADJUSTMENT, VR351 (See Fig. 1)

A warm-up period of at least five minutes should be allowed before alignment is carried out. With the monitor being driven from the game signal, short TP601 to TP31. Adjust VR351 until the picture stops sliding horizontally. Remove the short.

6.0 HORIZONTAL VIDEO POSITION

If the video is off center on the raster some compensation can be made by adjusting this control.

7.0 VERTICAL RASTER POSITION ADJUSTMENT

If the video is off center vertically, (short dimension of picture tube) some compensation can be made by moving the vertical raster position adjustment jumper to either positions "U" or "D".

8.0 HORIZONTAL RASTER POSITION ADJUSTMENT

If the video is off center horizontally (long dimension of the picture tube) some compensation can be made by moving the horizontal raster position adjustment jumper to either positions "R" or "L".

9.0 HORIZONTAL WIDTH ADJUSTMENT

The horizontal width coil is a hexagonal tuning tool adjustment. This control must be adjusted slowly, if necessary, until the picture or test pattern attains the correct horizontal proportions.

* KONAMI GAMES ARE ALL NEGATIVE COMPOSIT SYNC. USE THE THREE PIN CONNECTOR ON THE MONITOR.

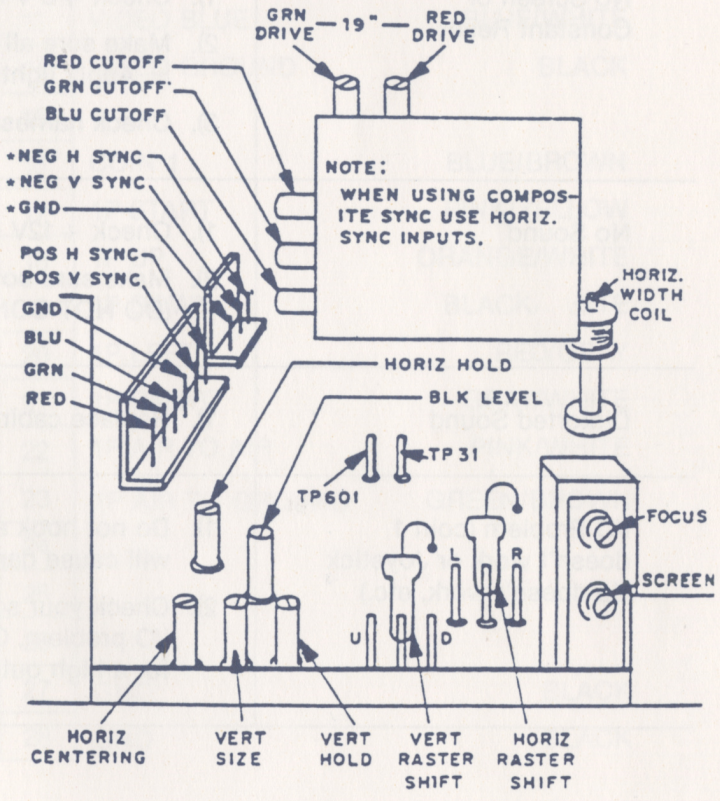


FIGURE 1

MX5000: TROUBLE SHOOTING GUIDE

IS THE HORIZONTAL SCAN ON YOUR MONITOR TOO SMALL?

Most of the Wells-Gardner monitors in the field are set for an active video signal of 50 micro seconds. Konami's MX5000 active video signal is 40 micro seconds. Therefore if the horizontal scan is too small, an adjustment of the monitor is recommended. This may be solved simply and inexpensively. (Refer to your Wells-Gardner schematic.)

1. Change capacitor C365 on the monitor to .15 mf 200V polypropolene.
2. Add an 820 P.F. 1500V polypropolene capacitor across the horizontal output transistor Q352 from the collector to the emitter.
3. Cut the horizontal centering wire #30. (Usually yellow in color.)

These instructions are for Wells Gardner 4900 Series monitors.

PROBLEM	POSSIBLE SOLUTION
No Screen or Constant Reset	1). Check +5 V line at the P.C.B. 2). Make sure all socketed eproms and custom IC's are seated securely. Apply light pressure to secure. 3). Check harness to be sure it is not on backwards.
No Sound	1). Check +12V line at the P.C.B. 2). Make sure both speaker out wires are connected to the speakers. (DO NOT CONNECT A GROUND.)
Distorted Sound	1). Replace cabinet speaker.
I/O Problem (coin 1 doesn't work or Joystick Up doesn't work, etc.)	1). Do not hook a coin counter to the coin 1 or coin 2 outputs. This will cause damage. 2). Check your schematic for the 74LS253 IC that corresponds to your I/O problem. Check the appropriate pin with a scope or multimeter for a high output (5V), if output is low replace the 74LS253.

CAUTION

DO NOT WIRE COIN COUNTERS TO THE COIN 1 OR COIN 2 OUTPUTS. THIS WILL CAUSE DAMAGE TO THE I/O MICROCHIP 74LS253. COIN COUNTERS CAN ONLY BE WIRED TO COIN COUNTER OUTPUTS.

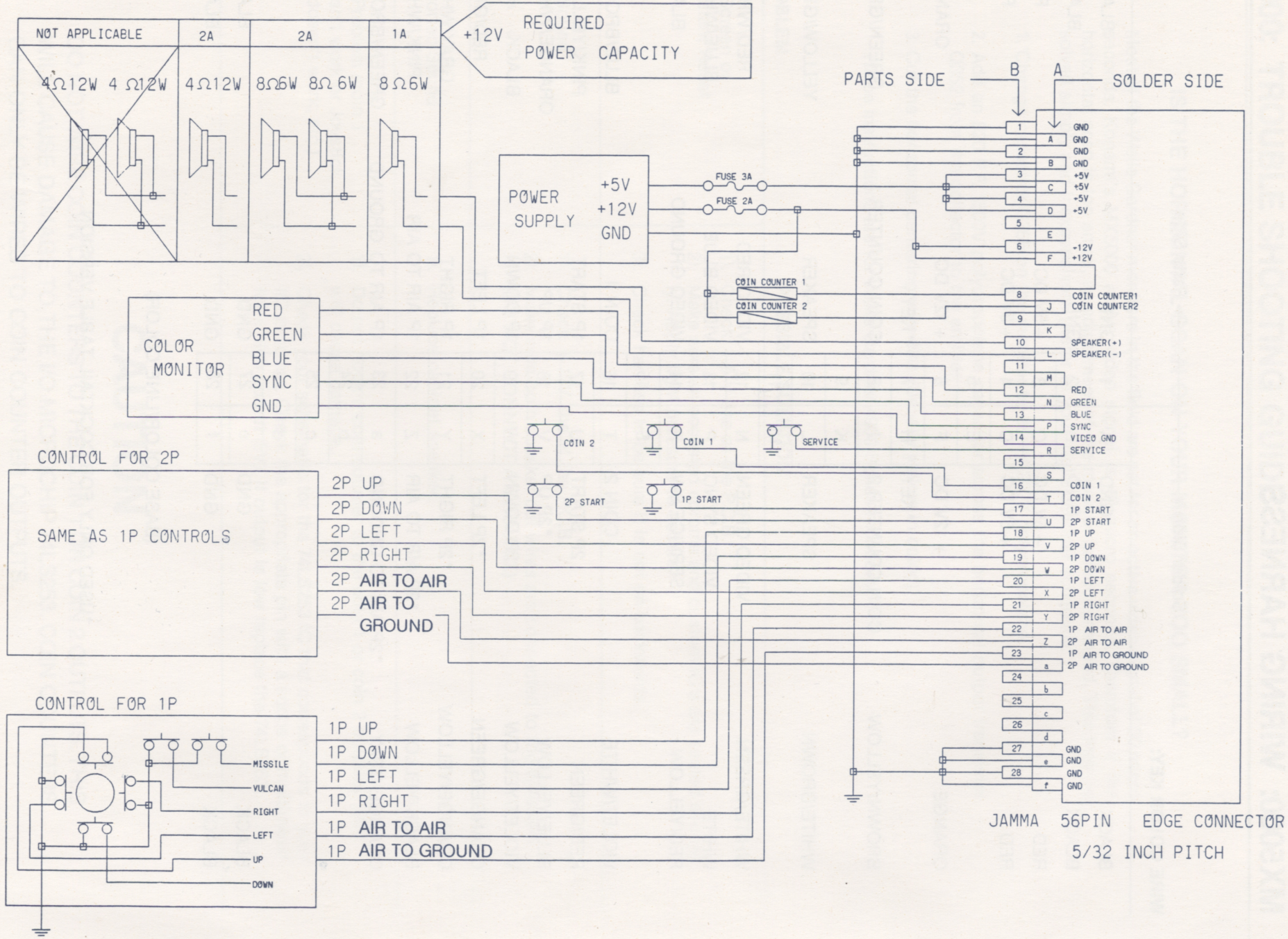
MX5000: WIRING HARNESS

WIRE COLOR KEY:	Solder Side ←			→ Parts Side	
BLACK	GND	A	1	GND	BLACK
BLACK	GND	B	2	GND	BLACK
RED	+5V DC	C	3	+5V DC	RED
RED	+5V DC	D	4	+5V DC	RED
		E	5		
ORANGE	+12V DC	F	6	+12V DC	ORANGE
	*KEY	H	7	*KEY	
BROWN/YELLOW	COIN COUNTER 2	J	8	COIN COUNTER 1	GREEN/GRAY
		K	9		
WHITE/BROWN	SPEAKER	L	10	SPEAKER	YELLOW/GRAY
		M	11		
WHITE/GREEN	VIDEO GREEN	N	12	VIDEO RED	RED/WHITE
WHITE	VIDEO SYNC	P	13	VIDEO BLUE	BLUE/WHITE
RED/YELLOW	SERVICE SW	R	14	VIDEO GROUND	BLACK
		S	15		
VIOLET/WHITE	COIN 2	T	16	COIN 1	BLUE/BROWN
RED/GREEN	2P START	U	17	1P START	PINK/YELLOW
BLUE/YELLOW	*2P UP	V	18	1P UP	ORANGE/WHITE
VIOLET/YELLOW	*2P DOWN	W	19	1P DOWN	BLACK/WHITE
ORANGE/GREEN	*2P LEFT	X	20	1P LEFT	RED/GRAY
ORANGE/YELLOW	*2P RIGHT	Y	21	1P RIGHT	GRAY/WHITE
BLACK/YELLOW	*2P AIR TO AIR	Z	22	1P AIR TO AIR	PINK/WHITE
ORANGE/GRAY	*2P AIR TO GROUND	a	23	1P AIR TO GROUND	GREEN/BROWN
		b	24		
		c	25		
		d	26		
BLACK	GND	e	27	GND	BLACK
BLACK	GND	f	28	GND	BLACK

(BASE COLOR/LINE COLOR)

*USED ONLY FOR COCKTAIL TABLE VERSION

MX5000: WIRING DIAGRAM



MX5000: TECHNICAL INFORMATION

(1) Required Power Capacity

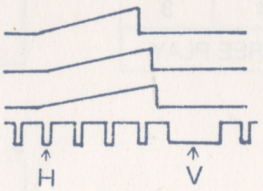
+5V DC 3A or more.

+12V DC See Figure 1 below.

Figure 1:

SPEAKER	8Ω 6W	8Ω6W 8Ω6W	4Ω12W	4Ω12W 4Ω12W
Required Power Capacity	12V 1A	12V 2A	12V 2A	Not Applicable

(2) Signal output to monitor
R(red) analog, positive
G(green) analog, positive
B(blue) analog, positive
Sync. H-V composite negative



SELF TEST

Before putting MX5000 into your location, take a minute to check that everything is working properly.

1. With power OFF, turn switch 3 of Dip Switch number 3 to the ON position.
2. Turn power ON.

TEST ITEMS

A. Cross Hatch
B. Color Test
C. I/O Test
D. Coin Counter
E. Dip Switch
F. Sound Test

*To change items, push 1 player start button.

DIP SWITCH SETTINGS

DIP SWITCH NO. 1 SETTINGS

SW	1	2	3	4	COIN	PLAY
•	OFF	OFF	OFF	OFF	1	1
	ON	OFF			1	2
	OFF	ON			1	3
	ON	ON			1	4
	OFF	OFF	ON	OFF	1	5
	ON	OFF			1	6
	OFF	ON			1	7
	ON	ON			2	1
	OFF	OFF	OFF	ON	2	3
	ON	OFF			2	5
	OFF	ON			3	1
	ON	ON			3	2
	OFF	OFF	ON	ON	3	4
	ON	OFF			4	1
	OFF	ON			4	3
	ON	ON			FREE PLAY	

DIP SWITCH NO. 2 SETTINGS

SW	5	6	7	8	COIN	PLAY
•	OFF	OFF	OFF	OFF	1	1
	ON	OFF			1	2
	OFF	ON			1	3
	ON	ON			1	4
	OFF	OFF	ON	OFF	1	5
	ON	OFF			1	6
	OFF	ON			1	7
	ON	ON			2	1
	OFF	OFF	OFF	ON	2	3
	ON	OFF			2	5
	OFF	ON			3	1
	ON	ON			3	2
	OFF	OFF	ON	ON	3	4
	ON	OFF			4	1
	OFF	ON			4	3
	ON	ON			INVALIDITY	

DIP SWITCH NO. 2 SETTINGS

1. THE NUMBER OF PLAYER'S LIFE

SW	1	2	NUMBER
	OFF	OFF	1
	ON	OFF	2
•	OFF	ON	3
	ON	ON	5

2. CHANGE OF TABLE OR UPRIGHT

SW	3		TYPE
	OFF		TABLE
•	ON		UPRIGHT

3. BONUS LIFE

SW	4	5	BONUS LIFE
•	OFF	OFF	At 30,000 and every 70,000
	ON	ON	At 40,000 and every 80,000
	OFF	ON	At 30,000 only
	ON	OFF	At 40,000 only

4. DIFFICULTY OF THE GAME

SW	6	7	DIFFICULTY
	OFF	OFF	EASY
	ON	OFF	NORMAL
•	OFF	ON	DIFFICULT
	ON	ON	VERY DIFFICULT

5. SOUND IN ATTRACTIVE MODE

SW	8	SOUND
	OFF	OFF
•	ON	ON

DIP SWITCH NO. 3 SETTINGS

SW4: NOT USED

1. VIDEO SCREEN FLIP

SW	1	VIDEO SCREEN (MONITOR)
•	OFF	NORMAL
	ON	UPSIDE DOWN

2. SINGLE/DUAL UPRIGHT CONTROL

SW	2	TYPE
•	OFF	SINGLE UPRIGHT CONTROL
	ON	DUAL UPRIGHT CONTROL

3. CHANGE OF MODE

SW	3	MODE
•	OFF	GAME
	ON	CHECK

• SHOWS RECOMMENDED SETTINGS

USER INFORMATION

WARNING

F.C.C. REGULATION COMPLIANCE

THIS KIT IS INTENDED FOR USE ONLY ON COIN-OPERATED VIDEO GAMES MANUFACTURED AFTER OCTOBER 1, 1983 WHICH HAVE BEEN VERIFIED FOR COMPLIANCE WITH REQUIREMENTS IN PART 15 OF F.C.C. RULES FOR A CLASS A COMPUTING DEVICE.

IMPROPER CONNECTION OF THIS KIT OR CONNECTION TO ANY OTHER GAME NOT SO MANUFACTURED OR VERIFIED FOR COMPLIANCE MAY CAUSE UNACCEPTABLE INTERFERENCE TO RADIO AND T.V. RECEPTION, REQUIRING THE OPERATOR TO TAKE WHATEVER STEPS ARE NECESSARY TO CORRECT THE INTERFERENCE.

THE P.C. BOARD CAGE SUPPLIED WITH THIS CONVERSION KIT MUST BE UTILIZED AND TERMINATED TO GROUND AT THE TIME OF INSTALLATION.



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