VIDEO GAME OPERATOR:

Don't Get Involved In A Federal Crime. Don't Buy Or Operate Copy Or Unauthorized Boards In Your Games.

Warning

Every operator who buys or operates a counterfeit or unauthorized board (imported or domestic) is contributing to the end of our industry and committing a FEDERAL CRIME. New criminal laws have recently been enacted that provide for maximum penalties of $250,000 or five years in prison or both, per offense. EACH GAME IS A SEPARATE OFFENSE.

FBI WARNING

If you have any information about any unauthorized games in the United States, contact your local FBI or American Amusement Machine Association
205 The Strand
Suite 3
Alexandria, Virginia 22314
(703) 548-8044
All information will be treated in confidence.
SAFETY

The following topics should be carefully studied to insure maximum reliability and safety for both serviceman and customer. Shock Hazard: The high voltage present on the monitor may be very dangerous. Extreme caution must be used when working with or around the monitors. Be certain that the grounding strap is attached to the monitor frame. The picture tube in the monitor is also a hazard and should be handled with care. Do not strike, scratch, or subject the tube to more than moderate pressure as it may implode causing serious injury from flying glass. Be certain that the control panel, power supply monitor, and coin door are all properly grounded to the ground wire inside the line cord. Do not remove ground prong off plug end.

PARTS LIST

1 - Plex Marquee
1 - Control Panel Overlay
1 - FCC Cage
1 - Graphic Sheet
2 - Side Graphics
1 - Manual
6 - Buttons
1 - JAMMA Cable
1 - Marquee Art
1 - RAIDEN PCB
2 - 8 Way Joysticks & Hardware

FABTEK®
8335 154th Avenue NE
Redmond, WA 98052
(206) 882-1093

FOR SERVICE CONTACT:

Your authorized Fabtek® Distributor
or
SUMMIT SERVICE
2274 University Avenue
St. Paul, MN 55114
(612) 645-9077
RAIDEN® is protected by federal copyright laws and is the property of Fabtek®. Any unauthorized versions of this game are illegal by federal law. AAMA protected stickers must be attached to the PCB. Please notify Fabtek of any boards not having the AAMA seal.

IMPORTANT F.C.C. WARNING

THIS EQUIPMENT GENERATES AND CAN RADIATE RADIO FREQUENCY ENERGY; IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, IT MAY CAUSE INTERFERENCE WITH RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION, IT HAS NOT BEEN TESTED FOR COMPLIANCE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER, AT HIS OWN EXPENSE, WILL BE REQUIRED TO TAKE WHATEVER MEASURES NECESSARY TO CORRECT THE INTERFERENCE.

DANGER

An isolation transformer must be used with the monitor and power supply.

This game must be equipped with a three wire 110 volt plug for safety. Under no circumstance remove the ground plug.

DANGER

This game is designed with a JAMMA 56 pin connector. This plug is one of the finest operator friendly features in our industry today. What this means to you is that:

1) 1, 2, A, B, 27, 28, e and f are grounded
2) 3, 4, C and D are +5 volts
3) 5 and E are -5 volts
4) 6 and F are +12 volts

Also, all video and joystick functions are always in the same place. Once a cabinet is wired for JAMMA, it is easily changed from game to game.

Many older games such as Pac Man®, etc., have the power supply on the board. This will not work!!! Only a JAMMA connector with proper voltage will work. Fabtek recommends using an 11 amp switching power supply with RAIDEN.

MONITORS

RAIDEN is designed to be operated with a vertical raster scan monitor with negative sync (RGB). This means RAIDEN will not work with any X-Y (Tempest, Space Dual, Star Trek), etc. An isolation transformer must be used in conjunction with the monitor. This is for your safety. The monitor also utilizes extremely high voltages. The monitor may also retain a charge for and extended period of time. Safety goggles must be worn while removing or replacing the monitor.

It is highly recommended that the monitor is verified good before the new RAIDEN kit is installed in your new and or rebuilt cabinet.
**Power Up Items**

**INSTALLATION OF KIT IN USED CABINET**

To Disassemble:

1. Open back door and remove old board set and power supply, if you are using a new switching power supply.
2. Remove marquee glass and monitor glass.
3. Remove control panel and set aside.
4. Remove old wire harness, leaving 110 volt wiring intact. Also, leave the grounding straps to the monitor, coin door, control panel, and power supply intact.

Installation:

1. Mount the board set on the side panel of the cabinet as close to the middle of the game as possible (approximately 10-12" off bottom).

   NOTE: Do not mount board directly below control or any vents or cracks so that liquids may seep on to the board. Do not forget about coins that may drop on to the board. Also, mount the board with edge connector facing up.

2. Mount the power supply on the bottom of the cabinet with connectors facing the rear of the cabinet. An optional mounting might be on the side panel just below the board set, connector to rear.

3. If the game does not have an isolation transformer, you must protect your customers and your game. Install one between the 110 volt line and your monitor/power supply.

4. Place the provided JAMMA wiring harness on the board. Connect the +5, +12, -5, and ground wires to the corresponding lugs on the power supply, connecting all the wires. If you don't, you will probably burn the board connector.

5. Run a wire from -5 volts to the coin door lights. Run a wire from +12 volts to the coin counters. This completes the power requirements.

6. Connect the Audio (+) and Audio (-) to the speaker.

7. Connect the video red, green, blue, ground, and sync to the corresponding wires on the monitor. If the monitor is not a negative composite sync, see sync modifications chart.

8. Cut the marquee to size. Replace the marquee lamp, if needed. Install the marquee panel.

9. Connect the coin 1 and coin 2 wires to the coin switches. Connect the coin counter 1 and coin counter 2 wires to the coin counters.
NOTE: If you only have one coin counter, see coin counter diagram. It will not matter if the coin counters are only rated at 6 volts, as the pulse is not long enough to burn out the counter.

10. Disassemble the control panel of all the hardware. Do not remove the old panel overlay. Determine where to place the new joystick and buttons if they must be repositioned. Then, cut new holes.

NOTE: If you are going to use plexiglass over the control panel, we suggest that you use a good 1/4" polycarbonate with a scratch resistant coating. We recommend GENERAL ELECTRIC LEXAN MR5 with margard or TUFFAK CM-2. These do not crack or break with abuse.

Cut and drill plex as needed. Remove the old control panel overlay carefully and apply the new overlay on top of the old glue. Use an Exacto knife to cut out any button or bolt holes. Apply necessary decals over appropriate buttons. Now assemble the control panel.

11. Bolt the control panel to the cabinet. Now connect the appropriate wires to the correct switches. Connect the 1 player and 2 player start wires.

12. Be sure to install the FCC cage to avoid unnecessary radio frequency interference.

13. Power up the game. Look over your installation for errors, and then apply power, listening for unusual sounds. Check for smoke or sparks. If everything is okay, wire tie all wires to form a nice, neat wiring harness. Clean the cabinet inside and out. Measure the +5 volts on the furthest point from the edge connector and adjust 5 volts to 5.05 volts. Use a tinted plex over the monitor if there are burns in the screen. We suggest bronze or grey tinted plex. Touch up the cabinet with fresh paint, and then repair all cabinet dents or chips, using an auto body product called Duraglass. This is similar to bondo. You can consult your local auto body shop or auto parts supplier for this product, as well as advice on how to use it.

RAIDEN

Fabtek recommends installing your new RAIDEN kit in only a new or refurbished cabinet. Installing RAIDEN in an older cabinet will result in lower earnings. The cabinet should be as follows:

1. vertical monitor
2. 11 amp or larger power supply
3. monitor not laying down flat.
**SUPER JOYSTICK**

Featuring:
- Nylon and solid steel construction
- Micro or leaf switches individually replaceable
- Unique handle design
- Spring return to center
- Rugged actuator for long life
- Change actuation to 4-way or 8-way simply by flipping actuator over

**Happ Controls, Inc.**

106 Garlisch
Elk Grove, Illinois 60007
Phone: (312) 593-6130
Fax: (312) 593-6137
Tele: 297249 CONTROLS UR

**Parts List:**
- 96-1400-00: Chrome shaft & knob
- 96-1401-00: Hub for microswitch joystick
- 96-1015-00: Washer
- 96-1320-00: Pivot cone
- 96-1403-00: Blade holder
- 96-1405-00: Hub for leaf switch joystick

**Super Joystick**

Price per ea.

| 50-0084-00 Super joystick 4-way 8-way microswitch | 15.95 | 13.95 |
| 50-0085-00 Super joystick 4-way 8-way leafswitch | 15.95 | 13.95 |
Star Tech Tips

We are grateful to Star Tech Journal for allowing us to publish excerpts from their journal.

Monitor Sync:

If your monitor does not have dual polarity positions for sync, you may use one of the following methods to get your game going.

CURE 1: Install a simple one I.C. Circuit on your logic board. This I.C. may be “piggledy back” on to another 7404 series chip for power by bending up all but the two power pins so that they are parallel to the top surface of the new I.C. and then connecting the power pins only to the existing chip. (See Fig. 1) Next connect the sync wires as shown in Fig. 2. (Note: Figure 2 shows a hookup for either composite or separate syncs.)

CURE 2: Used for Wells-Gardner Video-Sync boards with positive sync connections only. (Vertical mount board 85x14 OB.)

Cut the traces on the solder side of the board between input pins 5 & 6 to the unbanded (anode) ends of diodes X201 & X202. Add MPSA56 transistor as follows:

- Collector to anode leads of diodes X201 & X202. Base pins 5 & 6 of the video input connector. Emitter to cathode (banded) lead of zener diode ZD201.
- Insert a 1N4148 diode - cathode to the emitter of the MPSA56 and anode to the base. (See Fig. 3)

2. Horizontal Tearing

CAUSE: The negative sync signal of most logic sets are slightly different than the GO7-CBO monitor negative sync inputs. The result of this mismatch is a horizontal “wave” or “curl”.

CURE 1: On the monitor deflection board, replace C303 with a 10uf 25V radial lead capacitor with the positive lead towards the collector of X305. (CAUTION: be sure to check this step as the original cap is not polarized.) Then replace C301 with the cap removed from the C303 location.

CURE 2: Connect 1N4148 fast switching diodes across both the positive and negative sync inputs to the monitor. (See Fig. 4) NOTE: Both diodes must be installed or you will not have vertical stability.

CURE 3: Join negative sync inputs J2 and J3 together with a jumper. Locate W102 and install a jumper from W102 to either J2 or J3.

CURE 3: For Wells-Gardner K4600 series monitors.
Replace C356 (4 7uf 25V) on the Horizontal/vertical board (vertically mounted board nearest the flyback transformer) and center the horizontal hold pot. Turn L351 for the best horizontal stability and fine-tune with the horizontal width pot.

STAR TECH JOURNAL
P.O. Box 1065
18 N. Centre Street
Merchantville, J.J. 08109
609-662-1080

COIN COUNTER DIAGRAM

If only one coin counter is to be used install two diodes in the following manner:

![Coin Counter Diagram](image)
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COIN COUNTER DIAGRAM
If only one coin counter is to be used install two diodes in the following manner:

1N4001
100Ω
1N4001
### Super Joystick

**Featuring:**
- Nylon and solid steel construction
- Micro or leaf switches individually replaceable
- Unique handle design
- Spring return to center
- Rugged actuator for long life
- Change actuation to 4-way or 8-way simply by flipping actuator over

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Elk Grove, Illinois 60007
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Telex: 297249 CONTROLS UR

---

**Parts List:**
- 96-1400-00 Chrome shaft & knob
- 96-1140-00 Hub for microswitch joystick
- 96-1141-00 Hub for leaf switch joystick
- 96-1150-00 Washer
- 96-1151-00 Pivot cone
- 96-1142-00 Blade holder
- 96-1143-00 Hub for leaf switch joystick
- 96-1144-00 4-way 8-way actuator joystick

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**Super Joystick - Price per ea.**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<td>50-6064-00 Super joystick 4-way 8-way microswitch</td>
<td>15.95</td>
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<tr>
<td>50-6065-00 Super joystick 4-way 8-way leafswitch</td>
<td>15.95</td>
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</table>

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**NOTE:** Listings shown here & 2 star button, if you power-on you will have the correct dummy panel and Dolphin switch settings. To test the rear screen, power-on without button/dummy panel and front buttons.
NOTE: If you only have one coin counter, see coin counter diagram. It will not matter if the coin counters are only rated at 6 volts, as the pulse is not long enough to burn out the counter.

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Power Up Items

INSTALLATION OF KIT IN USED CABINET

To Disassemble:
1. Open back door and remove old board set and power supply, if you are using a new switching power supply.
2. Remove marquee glass and monitor glass.
3. Remove control panel and set aside.
4. Remove old wire harness, leaving 110 volt wiring intact. Also, leave the grounding straps to the monitor, coin door, control panel, and power supply intact.

Installation:
1. Mount the board set on the side panel of the cabinet as close to the middle of the game as possible (approximately 10-12" off bottom).
   
   NOTE: Do not mount board directly below control or any vents or cracks so that liquids may seep on to the board. Do not forget about coins that may drop on to the board. Also, mount the board with edge connector facing up.

2. Mount the power supply on the bottom of the cabinet with connectors facing the rear of the cabinet. An optional mounting might be on the side panel just below the board set, connector to rear.

3. If the game does not have an isolation transformer, you must protect your customers and your game. Install one between the 110 volt line and your monitor/power supply.

4. Place the provided JAMMA wiring harness on the board. Connect the +5, +12, -5, and ground wires to the corresponding lugs on the power supply, connecting all the wires. If you don't, you will probably burn the board connector.

5. Run a wire from -5 volts to the coin door lights. Run a wire from +12 volts to the coin counters. This completes the power requirements.

6. Connect the Audio (+) and Audio (-) to the speaker.

7. Connect the video red, green, blue, ground, and sync to the corresponding wires on the monitor. If the monitor is not a negative composite sync, see sync modifications chart.

8. Cut the marquee to size. Replace the marquee lamp, if needed. Install the marquee panel.

9. Connect the coin 1 and coin 2 wires to the coin switches. Connect the coin counter 1 and coin counter 2 wires to the coin counters.
RAIDEN® is protected by federal copyright laws and is the property of Fabtek®. Any unauthorized versions of this game are illegal by federal law. AAMA protected stickers must be attached to the PCB. Please notify Fabtek of any boards not having the AAMA seal.

IMPORTANT F.C.C. WARNING

THIS EQUIPMENT GENERATES AND CAN RADIATE RADIO FREQUENCY ENERGY; IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, IT MAY CAUSE INTERFERENCE WITH RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION, IT HAS NOT BEEN TESTED FOR COMPLIANCE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER, AT HIS OWN EXPENSE, WILL BE REQUIRED TO TAKE WHATSOEVER MEASURES NECESSARY TO CORRECT THE INTERFERENCE.

DANGER

An isolation transformer must be used with the monitor and power supply.

This game must be equipped with a three wire 110 volt plug for safety. Under no circumstance remove the ground plug.

DANGER

This game is designed with a JAMMA 56 pin connector. This plug is one of the finest operator friendly features in our industry today. What this means to you is that:

1) 1, 2, A, B, 27, 28, e and f are grounded
2) 3, 4, C and D are +5 volts
3) 5 and E are -5 volts
4) 6 and F are +12 volts

Also, all video and joystick functions are always in the same place. Once a cabinet is wired for JAMMA, it is easily changed from game to game.

Many older games such as Pac Man®, etc., have the power supply on the board. This will not work!!! Only a JAMMA connector with proper voltage will work. Fabtek recommends using an 11 amp switching power supply with RAIDEN.

MONITORS

RAIDEN is designed to be operated with a vertical raster scan monitor with negative sync (RGB). This means RAIDEN will not work with any X-Y (Tempest, Space Dual, Star Trec), etc. An isolation transformer must be used in conjunction with the monitor. This is for your safety. The monitor also utilizes extremely high voltages. The monitor may also retain a charge for and extended period of time. Safety goggles must be worn while removing or replacing the monitor.

It is highly recommended that the monitor be verified good before the new RAIDEN kit is installed in your new and or rebuilt cabinet.
SAFETY

The following topics should be carefully studied to insure maximum reliability and safety for both serviceman and customer. Shock Hazard: The high voltage present on the monitor may be very dangerous. Extreme caution must be used when working with or around the monitors. Be certain that the grounding strap is attached to the monitor frame. The picture tube in the monitor is also a hazard and should be handled with care. Do not strike, scratch, or subject the tube to more than moderate pressure as it may implode causing serious injury from flying glass. Be certain that the control panel, power supply monitor, and coin door are all properly grounded to the ground wire inside the line cord. Do not remove ground prong off plug end.

PARTS LIST

1 - Plex Marquee
1 - Control Panel Overlay
1 - FCC Cage
1 - Graphic Sheet
2 - Side Graphics
1 - Manual
6 - Buttons
1 - JAMMA Cable
1 - Marquee Art
1 - RAIDEN PCB
2 - 8 Way Joysticks & Hardware

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(206) 882-1093

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Your authorized Fabtek® Distributor
or
SUMMIT SERVICE
2274 University Avenue
St. Paul, MN 55114
(612) 645-9077
VIDEO GAME OPERATOR:

Don’t Get Involved In A Federal Crime. Don’t Buy Or Operate Copy Or Unauthorized Boards In Your Games.

Warning

Every operator who buys or operates a counterfeit or unauthorized board (imported or domestic) is contributing to the end of our industry and committing a FEDERAL CRIME. New criminal laws have recently been enacted that provide for maximum penalties of $250,000 or five years in prison or both, per offense. EACH GAME IS A SEPARATE OFFENSE.

FBI WARNING

If you have any information about any unauthorized games in the United States, contact your local FBI or American Amusement Machine Association

205 The Strand
Suite 3
Alexandria, Virginia 22314
(703) 548-8044

All information will be treated in confidence.