SEGA®

SHINOBI

Installation/Owner's Manual

by:

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The Federal Communication Commission requires the verification of game kits. This game kit will meet these requirements when installed in accordance with the instructions in this Manual and using only components and materials supplied with this kit.

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Introduction

SEGA ENTERPRISES, LTD., supported by its high electronic technology of Large Scale Integration, microprocessors, etc. and a wealth of experience, has for more than 30 years been supplying various innovative and popular game machines to the world market. This OWNER'S AND KIT INSTALLATION manual is intended to provide detailed comments together with all the neccessary information covering the operation and installation of electronic assemblies, electromechanical assemblies, control assemblies, and spare or replacement parts for the SHINOBI coin operated game. This manual is intended for those who have knowledge of electricity and technical expertise in video games. Carefully read the enclosed information before starting the kit installation or troubleshooting procedures.

Handling and Installation Precautions

During installation:

1. Be sure to remove power plug when working on the machine.
2. Be sure all connections and harness routing are secure.
3. Make sure all grounding connections are secure and properly affixed.
4. Do not use any fuse that does not meet the specified rating.

Prevention of Counterfeiting and Conversion Labeling

To prevent counterfeit and unauthorized conversions, the following label is supplied with all authorized SEGA kit products. When handling such goods, be sure to locate and confirm the label. It is used to prevent illegal acts such as the unauthorized copying of the products and the printed circuit boards.

Precautions Concerning the Place of Installation

The SHINOBI KIT is intended to be installed in an indoor game cabinet. Absolutely do not install it outdoors. When installed indoors the following places mentioned below should be avoided to ensure proper operation and usage:

- Places subject to rain or water leakage, or condensation due to humidity
- In the proximity of an indoor swimming pool and/or shower
- Places subject to direct sunlight
- Places subject to heat sources from heating units, hot air, etc.
- Vicinity of highly flammable/volatile chemicals or hazardous materials
- Sloped surfaces
- Vicinity of anti-disaster facilities such as fire exits and fire extinguishers
- Places subject to any type of violent impact
- Dusty environment

System Requirements

Power Supply:

- Input voltage 90 VAC to 135 VAC 60 Hz
- +5 volts at 6 amps
- +12 volts at 2 amps
- Overvoltage protected at +5.8 volts
- Current limit set at 8 amps

RFI Line Filter:

1. If a switching power supply is used:
   - Current rating of 6 amps
   - Frequency attenuation of the following:

.15 MHz	40db
.5 MHz	65db
1.0 MHz	65db
5.0 MHz	55db
10.0 MHz	50db
30.0 MHz	50db

2. If a linear power supply is used:
   - Current rating of 5 amps
   - Frequency attenuation of the following:

.15 MHz	6db
.5 MHz	19db
1.0 MHz	28db
5.0 MHz	42db
10.0 MHz	45db
30.0 MHz	50db

Miscellaneous:

Line Fuse:	4 amp 120 VAC
Speaker:	8 ohms 10 watt
On/Off Switch:	6 amp 120 VAC
Isolation Transformer:	115 VAC primary, 115 VAC secondary, 100 watts
Coin Door:	Dual coin acceptors
Coin Meter:	+5 Volt DC
Power Cord:	Three conductor with ground
Color Monitor:	

- Video input 1 volt to 5 volt peak-to-peak positive polarity
- Sync TTL negative polarity separate horizontal and vertical
- Horizontal frequency 15.750 KHz
- Vertical frequency 60 Hz
- Video bandwidth 12MHz or greater
- Horizontal mounted
- Recommended size 19 inch

Tools Required

- Drill
- Hole cutter 1-3/16"
- Phillips screw driver
- Flat blade screw driver
- Small flat blade screw driver
- Scissors
- Sand paper
- Paint
- X-acto knife
- Wood patch

Cabinet Preparation

1. Remove old PCB, and all existing game harnesses.
2. Remove and disassemble the control panel.
3. Remove any side decals, monitor bezel, and marquee.
4. Using sandpaper and/or paint thinner, clean and smooth the cabinet for paint preparation. Use wood patch to fill any knicks or flaws in the cabinet.
5. Paint cabinet if required.
6. Wipe down and vacuum cabinet as necessary.

NOTE: You are building a new game, not just changing an old one. A nice, clean, and new looking conversion not only earns better, but lasts longer.

Kit Component Verification

Verify each component with the kit list provided to assure your kit is complete. If any part is missing after the inventory is taken, please contact your distributor, and provide to them the following information:

1. Kit serial number
2. Part number and description of missing item/s
3. Date received

Kit List

Part Number	Quantity	Description
0002-0000	2	#6 x 3/8 P/h Phil Tek
0002-0001	4	#6 x 3/4 P/H Phil "AB" SMS
0312-0000	4	1/4-20 x 1 3/4 Carr/Bolt Black
0502-0000	4	1/4-20 Hexnut
0612-0000	4	1/4 Split Lock Washer
0692-0000	4	1/4 Flat Washer 1/2 OD
2112-0000	2	Wire Nut #18 x 2
2521-0002	1	Monitor Bezel
4201-0002	1	Manual Shinobi
421-5801-66	1	License Seal Shinobi
4210-7120	1	Shinobi Switch Setting Sheet
4231-0005	1	Shinobi Marquee Plex
4231-0006	2	Shinobi Side Art
4231-0007	1	Shinobi Control Panel Overlay
4231-0008	1	Control Panel Clear Plex
4231-0010	1	Shinobi Label Sheet (See List) (1) Test, Service, Volume Sticker (1) Joy Stick Sticker (2) Jump Stickers (2) Attack Stickers (1) Play Inst Sticker (2) Ninja Magic Stickers (1) Start 1 Player Sticker (1) Start 2 Player Sticker (1) FCC Sticker (Kit)
4750-0049	1	Volume Control 100 Ohm 10 Watt
5090-5028	2	PB Spst Switch Momentary
5091-0001	1	Joy Stick 8 Way (Spring Type)
5091-0004-01	2	PB Spst Control Panel (Red)
5091-0004-02	2	PB Spst Control Panel (White)
5091-0004-03	4	PB Spst Control Panel (Blue)
6002-0001	1	16B Kit Harness
6010-0043	1	Knob
834-4696	1	Shinobi Game PCB
9992-0000	6	4" Tie Wrap
KRO-1721-KT	1	Service Switch Bracket

Installation Procedure

Monitor Bezel

1. Locate MONITOR BEZEL (2521-0002). Measure the size of existing monitor bezel or the required size to fit and cut cardboard monitor bezel to size.(see figure 1)

License Seal

2. Locate SHINOBI LICENSE SEAL (421-5801-66) and place seal as shown of in figure 1. Install Monitor Bezel on game cabinet. **Note:** Verify that the License Seal will be visible when the bezel is installed on game cabinet.

Side Decal

3. Locate SHINOBI SIDE ART (4231-0006). Install on the left and right side panels of the cabinet (see figure 1). **Note:** A mixture of slightly soapy water can be used on the cabinet to position the artwork as desired. A squeegy may be used to remove any wrinkles in the artwork if soapy water is used.

Marquee Plex

4. Locate SHINOBI MARQUEE PLEX (4231-0005). Measure the size of existing marquee plex or required size to fit and trim the Shinobi marquee plex to size. Install on cabinet. (see figure 1)

Control Panel

5. Locate SHINOBI CONTROL PANEL OVERLAY (4231-0007). Measure the size required and cut the control panel overlay to fit the existing control panel.

6. Define the location of the player push buttons and joystick on the control panel. (see figure 2)

7. Cut holes in control panel to locate buttons and joysticks. See template for button and joystick. (see figure 3)

8. Install the "ONE PLAYER START" label and the "TWO PLAYER START" label on the control panel overlay. (see figure 2)

9. Install player control button labels, ATTACK, JUMP, and NINJA MAGIC on the control panel overlay. (see figure 2)

10. Install the JOYSTICK label on the control panel overlay. (see figure 2)

11. Locate the CONTROL PANEL CLEAR PLEX (4231-0008) and cut holes into the plex to match the holes cut into the control panel. Then trim as required to protect the control panel overlay and labels. **Note:** this clear plex overlay can be used to protect unused holes in the control panel from player punctures. (see figure 2)

12. Install RED buttons (5091-0004-01) in ATTACK locations. (see figure 2)

13. Install BLUE buttons (5091-0004-03) in JUMP and NINJA MAGIC locations. (see figure 2)

14. Install WHITE buttons (5091-0004-02) in 1 PLAYER START and 2 PLAYER START locations. (see figure 2)

NOTE: When buttons are securely placed and tightened in the control panel assembly, a small amount of clear RTV Silicone may be placed on two or three areas of the lock-nut to keep the switches from being unscrewed from the top of the panel. (see figure 3)

15. Locate the JOYSTICK (5091-0001). This package consists of the following six components.

a. Preassembled joystick base assembly with microswitches
b. E-ring
c. Black knob & shaft
d. 2" Dia. washer
e. Actuator plastic
f. Pivot cone

The final assembly of the joystick must be performed after the joystick base assembly is mounted on the control panel. Locate the following:

a. 1/4-20 X 1 3/4 Carr/Bolt Black (0312-0000)	(4 ea)
b. 1/4-20 Hexnut (0502-0000)	(4 ea)
c. 1/4 Flat Washer 1/2" OD (0692-0000)	(4 ea)
d. 1/4 Split Lock Washer (0612-0000)	(4 ea)

Use the above components to secure the Joystick base assembly to the control panel. (see figure 2)

The final assembly of the joystick is performed by:

a. Placing the 2" Dia. washer over the Black knob & shaft.
b. Install the Pivot cone on the shaft, note proper orientation.
c. Install the Black knob & shaft assembly through the joystick base assembly on the control panel.
d. Install the Actuator micro/switch on the shaft, note proper orientation.
e. Install the E-ring on the shaft to secure the assembly.

Service Switch Assembly

16. Locate SERVICE SWITCH BRACKET (KR0-1721-KT) and install two PUSH BUTTON SPST SWITCH MOMENTARY (5090-5028) into bracket as shown in figure 4.

17. Locate VOLUME CONTROL 100 OHM 10 WATT (4750-0049) and install into service switch bracket as shown in figure 4.

18. Locate TEST, SERVICE, VOLUME STICKER and place on the service switch bracket as shown in figure 4.

19. Locate KNOB 1/8" SHAFT (6010-0043) and install on shaft of volume control 100 ohm 10 watt as shown in figure 4.

20. Install the Service Switch Assembly using 2 ea #6 x 3/8 P/H PHIL TEK screws (0002-0000) in the cabinet at either of the following locations (see figure 5):

- On top of the steel enclosure for the Cash Box, inside the coin door. **Note:** The TEK screws have a drill point and will drill through the steel enclosure.
- Inside to the left of the coin door, mounted to the wood cabinet.

Harness Installation

21. Locate 16B KIT HARNESS (6002-0001) and install as shown in figure 5. Use the provided (6 ea) 4" TIE WRAP (9992-0000) to secure the harness.

22. Connect the harness to the POWER SUPPLY as follows: (see figure 6)

a. Twisted ORANGE wires to +5 volt source.
b. Twisted PINK wires to +12 volt source.
c. Twisted BLACK wires to GND source.

23. Connect the harness to the COIN DOOR as follows: (see figure 7.)

a. Connect the GRAY wire's faston to coin chute 2 acceptor microswitch COMMON terminal.
b. Connect the BROWN wire's faston to coin chute 1 acceptor microswitch COMMON terminal.
c. Connect a BLACK wire's faston to coin chute 2 acceptor microswitch NORMALLY OPEN terminal. Use the faston that is nearest the harness break out.
d. Connect the next BLACK wire's faston to coin chute 1 coin acceptor microswitch NORMALLY OPEN terminal.
e. Connect the other two BLACK wire's faston to the two lamps on the coin door.
f. Connect the two ORANGE wire's faston to the two lamps on the coin door. The orange wires supply +5 volts to the lamps and the black wires supply the return.

24. Connect the harness to the COIN METER by using two WIRE NUTS (2112-0000). (see figure 8) **Note:** Some coin meters have an internal diode. Connect the ORANGE wire to the "+" terminal of the meter and the WHITE wire to the "–" terminal.

25. Connect the harness to the SERVICE SWITCH ASSEMBLY as follows: (see figure 4.)

a. Connect the two BLACK wire's fastons to a terminal of each PUSH BUTTON.
b. Connect the GREEN wire's faston to the SERVICE SWITCH.
c. Connect the BROWN wire's faston to the TEST SWITCH.
d. Connect the WHITE wire's faston to the terminal of the VOLUME CONTROL that is nearest the center of the bracket.
e. Connect the YELLOW wire's faston that goes to the speaker to the center terminal of the VOLUME CONTROL.
f. Connect the GRAY wire's faston that is routed to the 56 pin connector to the outer most terminal of the VOLUME CONTROL.

26. Connect the harness to the CONTROL PANEL as follows:

    a. Route and connect the daisy chained BLACK wire to the terminal of the PLAYER PUSH BUTTONS and JOYSTICK as shown in figure 9.
    b. Connect the "shortest" BLUE and RED wires to the PLAYER START SWITCHES as shown in figure 10.
    c. Connect the WHITE wire to the NINJA MAGIC player push buttons as shown in figure 10.
    d. Connect the GRAY wire to the JUMP player push buttons as shown in figure 10.
    e. Connect the BROWN wire to the ATTACK player push buttons as shown in figure 10.
    f. Connect the "longest" BLUE, "longest" RED, YELLOW and GREEN wires to the JOYSTICK MICROSWITCHES as shown in figure 10.
    g. Route the harness wires securely to prevent any binding or damage to harness.

27. Connect the two connectors for sync and video to the MONITOR as shown in figure 11.

28. Connect the routed speaker wires, YELLOW and GRAY, to the speaker. Check the routing for security.

Cabinet 115 VAC System Grounding

29. Locate the GROUND lead (green) of the 115 volt input power Line (see figure 12). This must be connected to all components of the game system. This is a safety requirement for the players' protection. This AC GROUND must be of #18 AWG wire or larger. (see figure 12 for the proper routing of the wire)

Cabinet System Checkout

30. Apply power to cabinet system and check for the following voltages. If any voltage is incorrect, remove power and correct problem before proceeding any further.

    a. +5 Volts on pins 3,4,C, and D of the 56 pin PCB connector.
    b. +12 Volts on pins 5 and E of the 56 pin PCB connector.
    c. No voltage present on any other pins of the 56 pin PCB connector.

31. Check that the monitor has power. This can be accomplished by observing the glow of the filament inside the neck of the picture tube.

32. Check that the Marquee lamp has power.

33. Check that the system ON/OFF switch functions properly.

WARNING: PROCEED ONLY IF THE ABOVE CHECKS ARE CORRECT

Shinobi Printed Circuit Board Installation

34. Locate the SHINOBI GAME PCB (834-4696) and install the logic PCB inside the cabinet (see figure 5). Use (4 ea) #6 x 3/4 P/H PHIL "AB" SMS (0002-0001) to secure the PCB through its' mounting feet.

35. Locate the SHINOBI SWITCH SETTING SHEET. Place this sheet on the inside of the game so that it is visible when the back door is removed or opened. This will allow the DIP SWITCH OPTIONS to be handy when service or changes in options is required.

36. Connect the 56 pin connector to the PCB with the label on the same side as the components on the PCB. The 56 pin connector is marked with "COMPONENT SIDE".

NOTE: The proper orientation of the connector (see figure 13). If not connected properly, the system will not function and damage can occur to the PCB.

Logic Board and Complete System Checkout

37. Apply power to the system and observe that the logic PCB functions. If a video picture is not present proceed to "IN CASE OF DIFFICULTY" portion of this manual. When corrected, return to this point and continue.

38. Press the TEST BUTTON on the service switch assembly to enter the test mode and to go to the next test. The test functions and explanations are listed below:

- Bookkeeping:
  Shows all credits, game times, high & low scores etc.
- Input & Sound test:
  Test all inputs and DIP switch settings as well as stepping through the various sounds as each input is exercised.
- CRT test:
  Displays color bar and grid size so monitor adjustment can be made for color, focus, size, brightness, etc.
- Fix video RAM test:
  Allows the testing of video and other RAM located on the PCB. To perform these tests follow the instructions on the video screen.
- Color RAM test:
  This test allows the testing of the color look up table RAM, follow the instructions listed on the video screen.
- Scratch RAM test:
  Performing the scratch RAM test erases all bookkeeping information. To test follow the instructions listed on the video screen.

39. Set up game options as shown in figure 14.

    a. DIP SWITCH 1 on PCB sets up the number of coins per credit
    b. DIP SWITCH 2 on PCB sets up the following:

Game type	- Set to UPRIGHT	- 1 on
Advertise sound	- Set to ON	- 2 on
Number of Players	- Set to 3	- 3 off,4 off
Game Difficulty	- Set to Normal	- 5 off,6 off
Enemy's Bullet	- Set to Slow	- 7 off
Display	- Set to English	- 8 on

40. Functionally test the game by:

    a. VERIFY that coin drops register proper credit/s and the COIN METER OPERATES.
    b. VERIFY that the proper number of lives is given for each CREDIT.
    c. VERIFY that the JOYSTICK MOVES the player left, right, up, and down.
    d. VERIFY that the ATTACK BUTTON causes player to throw knives and/or punch or kick nearby enemies.
    e. VERIFY that the JUMP BUTTON causes the player to jump up on the screen.
    f. VERIFY that the NINJA MAGIC BUTTON causes multiple players to appear causing all enemies on the screen to be eliminated. (**Note:** Functions only once per level.)

41. Locate the Kit SERIAL NUMBER STICKER and FCC STICKER. Install these stickers on the rear of the game cabinet. (see figure 1)

In Case of Difficulty

–Check A.C. line cord
–Check line fuse
–Check monitor brightness
–Check power switch and/or interlock switch
–Check all solder connections on line filter and transformer
–Check for proper orientation of the 56 pin PCB connector

–Check all PCB to monitor connections
–Check power supply voltage on PCB

–Check monitor brightness
–Check all PCB to monitor connections

–Monitor needs degaussing
–Check for proper wiring between PCB and monitor
–Check monitor adjustment and adjust if necessary

–Check monitor ground is properly connected to monitor
–Be certain sync inputs are properly connected to monitor
–Check horizontal hold adjustment

–Check horizontal and/or vertical hold adjustments
–Check for proper wiring of sync from PCB to monitor

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–Check volume control potentiometer adjustment
–Check for +12 volts on edge connector of PCB
–Check wiring from PCB to speaker
–Check speaker for low resistance between the "+" and "–" tabs

–Check wiring to speaker for bad solder connections.
–Check sound with another speaker

–Check ground connection to switch/es
–Check wiring between PCB and switch/es for proper connection
–Check switch/es with an ohmeter to verify proper operation

–Check wiring between PCB and switches for proper orientation
–Check wiring for shorts between switch inputs

–Check wiring to coin meter
–Check that +5 volts is on "+" side of meter
–Verify a +5 volt meter is used

–Verify that a meter with a diode is used
–If no diode is built in meter a 1N4004 can be used across the meter.
Cathode to "+" side of meter and anode to "–" side of meter

Harness Interconnection List

Signal Name	From	To	Wire Color
+5V	56P 3	Power Supply +5V	Orange
+5V	56P 4	Power Supply +5V	Orange
+5V	56P C	Power Supply +5V	Orange
+5V	56P D	Power Supply +5V	Orange
GND	56P 1	Power Supply Ground	Black
GND	56P 2	Power Supply Ground	Black
GND	56P A	Power Supply Ground	Black
GND	56P B	Power Supply Ground	Black
+12V	56P 5	Power Supply +12V	Pink
+12V	56 P E	Power Supply +12V	Pink
+5V	Coin Door Lamp1	Power Supply +5V	Orange
+5V	Coin Door Lamp1	Coin Door Lamp2	Orange
+5V	Coin Meter +5V	Power Supply +5V	Orange
Test	56 P 22	Sw Brkt Test Button	Brown
Service	56P 23	Sw Brkt Serv Button	Green
GND	56P 27	Sw Brkt Test Button	Black
GND	Sw Brkt Serv Button	Sw Brkt Test Button	Black
Meter	56P 6	Coinmeter	White
Meter	56P 6	56P F	White
Video Red	56P 25	Monitor 6P 1	Red
Video Green	56P c	Monitor 6P 2	Green
Video Blue	56P 26	Monitor 6P 3	Blue
Video Sync	56P d	Monitor 3P 3	Yellow
Video Sync	Monitor 3P 2	Monitor 3P 3	Yellow
Video Sync GND	56P e	Monitor 3P 1	Black
Sound (+)	56P 24	Sw Brkt Volume	White
Sound (−)	56P b	Sw Brkt Volume	Gray
Sound (−)	Speaker	Sw Brkt Volume	Gray
Sound (+)	Speaker	Sw Brkt Volume	Yellow
1P Start	56P X	Cont'l Pnl 1P Start	Red
2P Start	56P Y	Cont'l Pnl 2P Start	Blue
GND	56P 28	Cont'l Pnl 1P Start	Black
GND	Cont'l Pnl 2P Start	Cont'l Pnl 1P Start	Black
GND	Cont'l Pnl 2P Start	Cont'l Pnl Joy Right	Black
GND	Cont'l Pnl Joy Left	Cont'l Pnl Joy Right	Black
GND	Cont'l Pnl Joy Left	Cont'l Pnl Joy Up	Black
GND	Cont'l Pnl Joy Down	Cont'l Pnl Joy Up	Black
GND	Cont'l Pnl Joy Down	Cont'l Pnl Attack	Black
GND	Cont'l Pnl Jump	Cont'l Pnl Attack	Black
GND	Cont'l Pnl Jump	Cont'l Pnl Magic	Black
GND	Cont'l Pnl Attack	Cont'l Pnl Magic	Black
GND	Cont'l Pnl Attack	Cont'l Pnl Jump	Black
GND	Cont'l Pnl Magic	Cont'l Pnl Jump	Black
Joystick Right	56P 14	Cont'l Pnl Joy Right	Red
Joystick Left	56P 15	Cont'l Pnl Joy Left	Blue
Joystick Up	56P 13	Cont'l Pnl Joy Up	Green
Joystick Down	56P 12	Cont'l Pnl Joy Down	Yellow
Attack Button	56P 9	Cont'l Pnl Attack	Brown
Attack Button	Cont'l Pnl Attack	Cont'l Pnl Attack	Brown
Jump Button	56P 10	Cont'l Pnl Jump	Gray
Jump Button	Cont'l Pnl Jump	Cont'l Pnl Jump	Gray
Magic Button	56P 8	Cont'l Pnl Magic	White
Magic Button	Cont'l Pnl Magic	Cont'l Pnl Magic	White

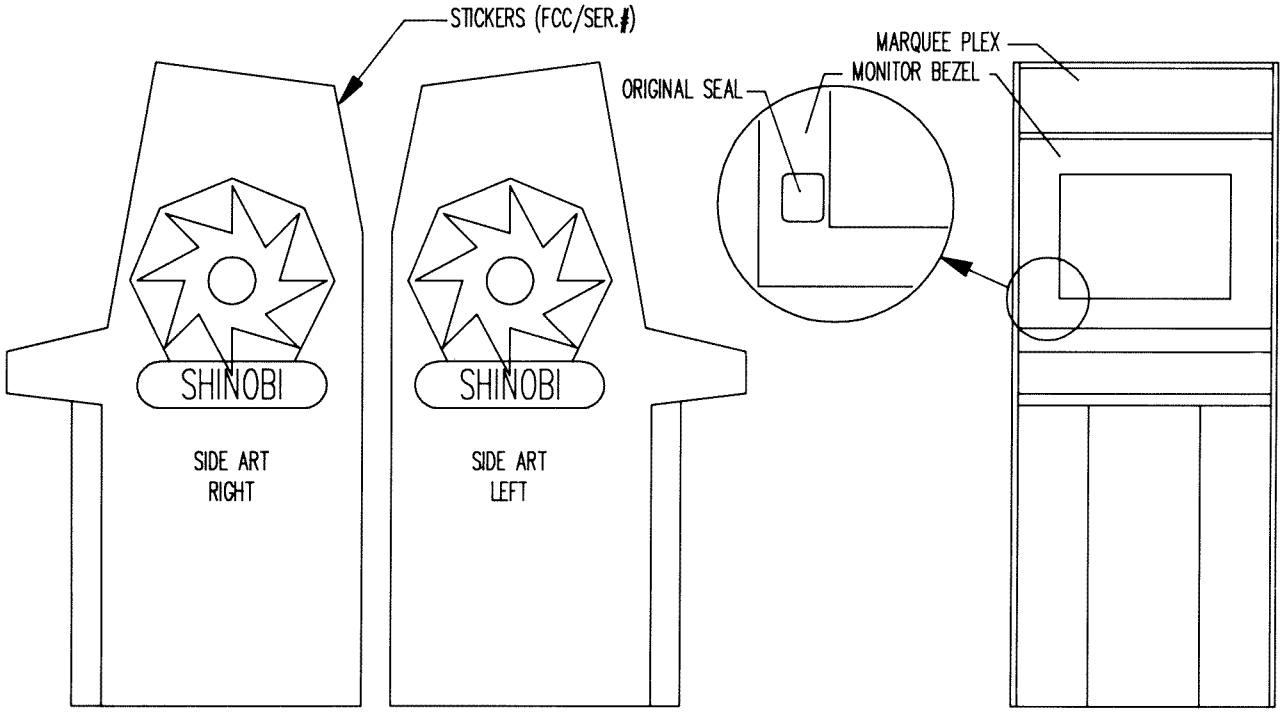
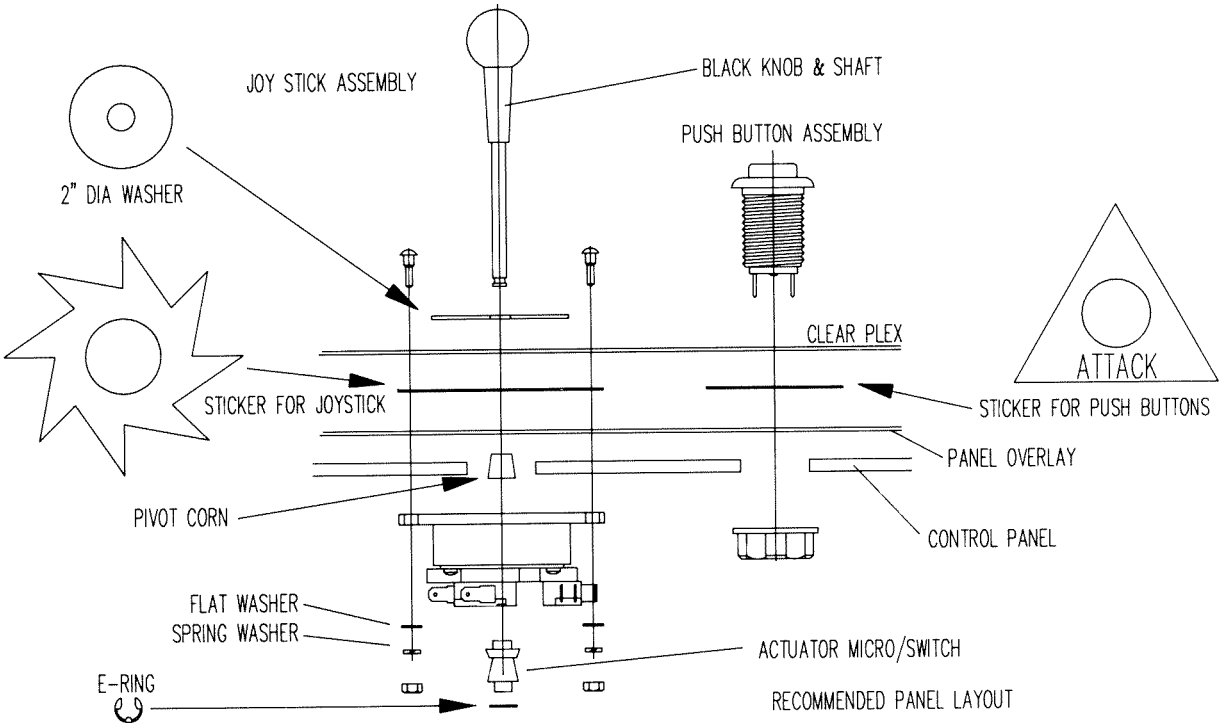
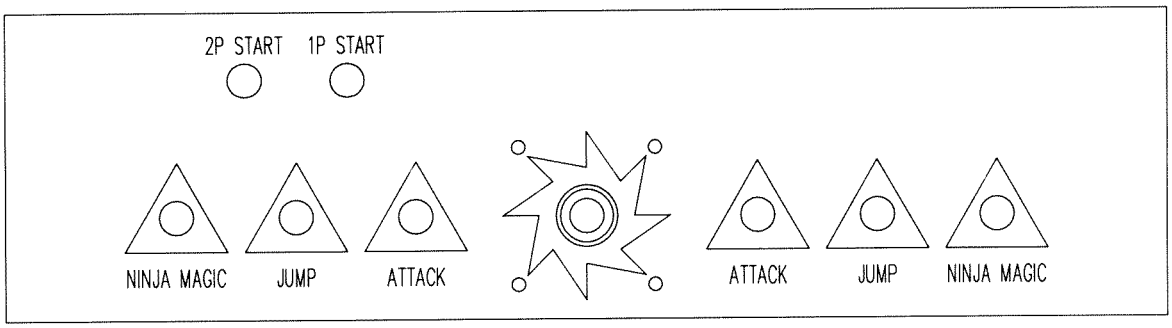
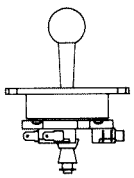

STICKERS (FCC/SER.#)
MARQUEE PLEX
MONITOR BEZEL
ORIGINAL SEAL
SHINOBI
SHINOBI
SIDE ART
RIGHT
SIDE ART
LEFT

Figure 1







1 EA JOY STICK ASSEMBLY

PUSH BUTTON SWITCH

4 EA BLUE (FOR NINJA MAGIC & JUMP)
2 EA RED (FOR ATTACK)
2 EA WHITE (FOR 1P/2P START SWITCH)

4 EA CRG BOLT 1/4 x1-1/2

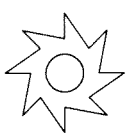
4 EA FLT WASHER 1/4

4 EA SPRING WASHER 1/4

4 EA HEX NUT 1/4

STICKER FOR PUSH BUTTON

2 EA ATTACK, JUMP, NINJA MAGIC
1 EA 1P START, 2P START



1 EA STICKER FOR JOY STICK

1 EA CLEAR PLEX
1 EA PANEL OVERLAY

Figure 2

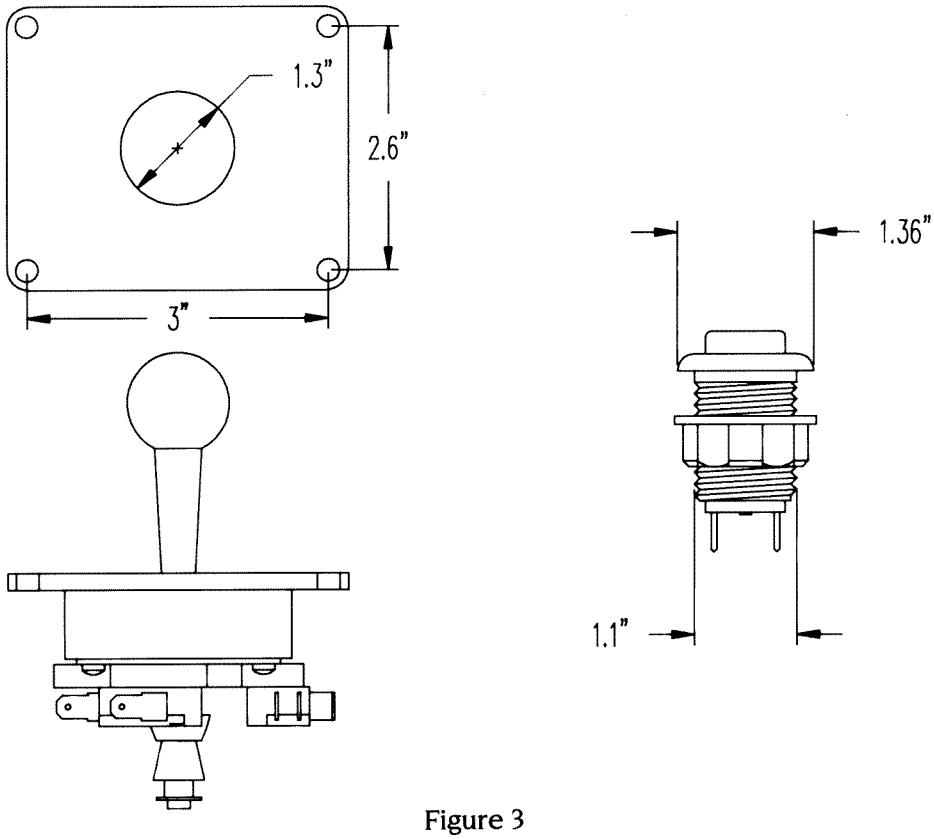
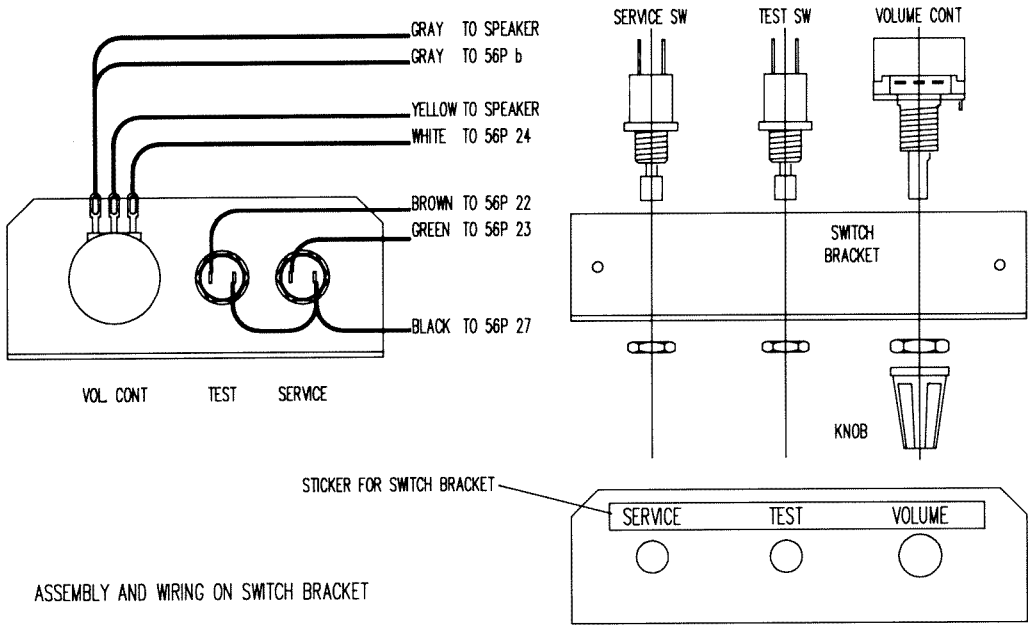


Figure 3



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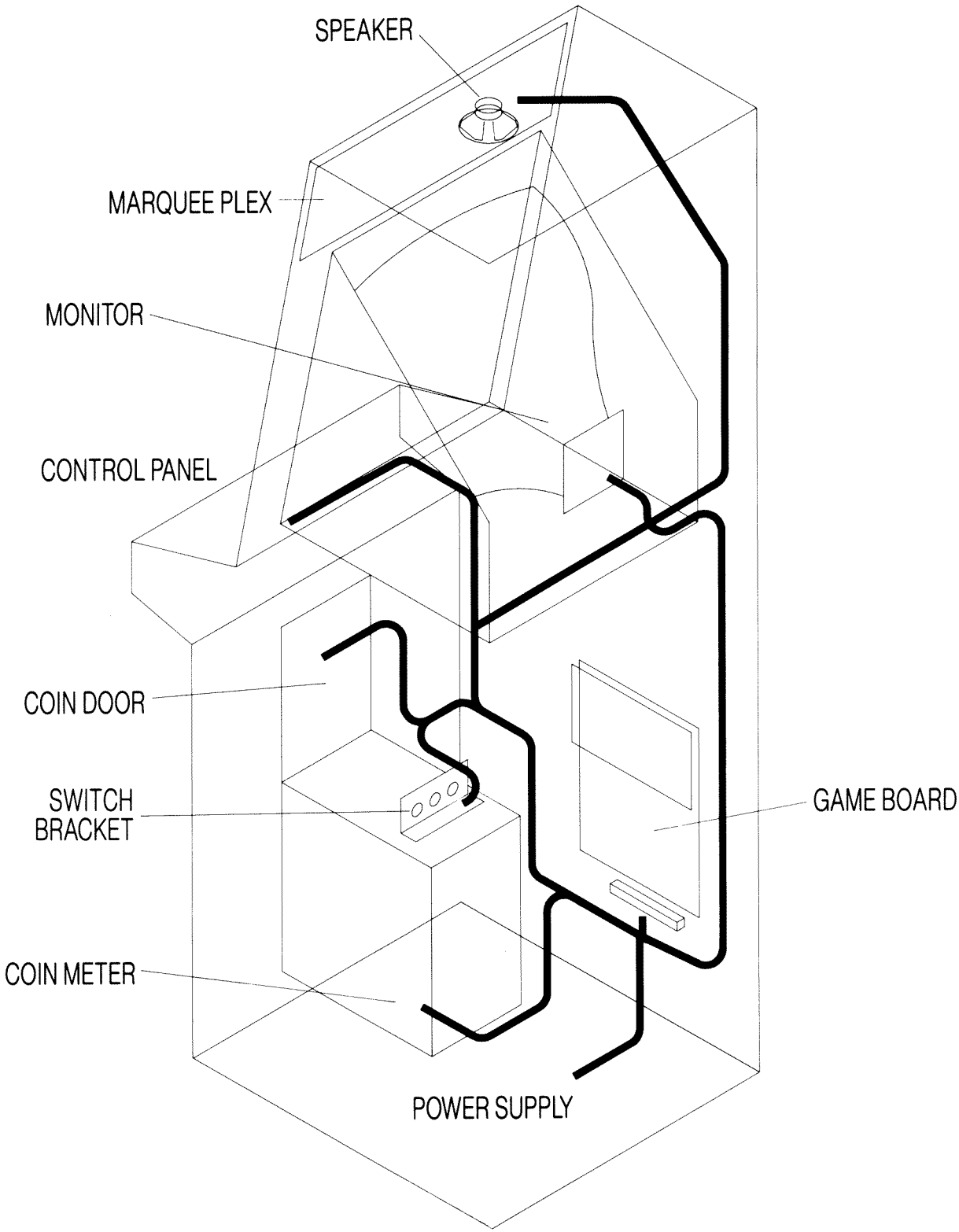


SUGGESTED HARNESS ROUTING

Figure 5

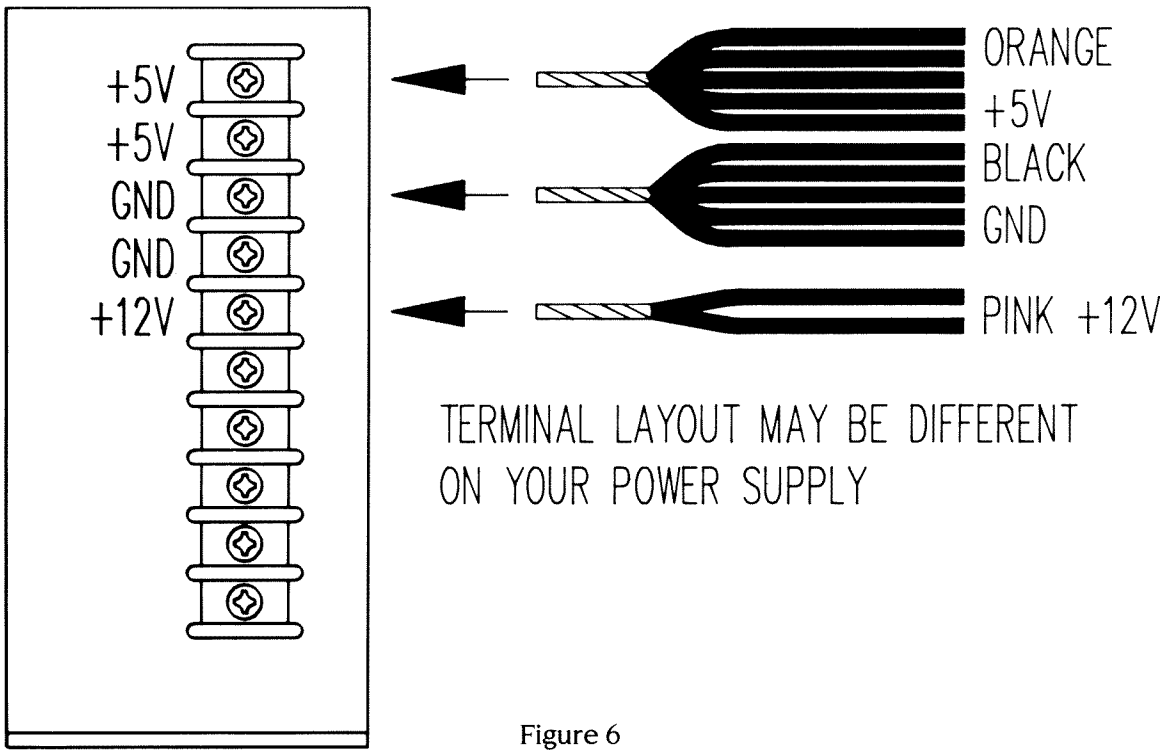


Figure 6

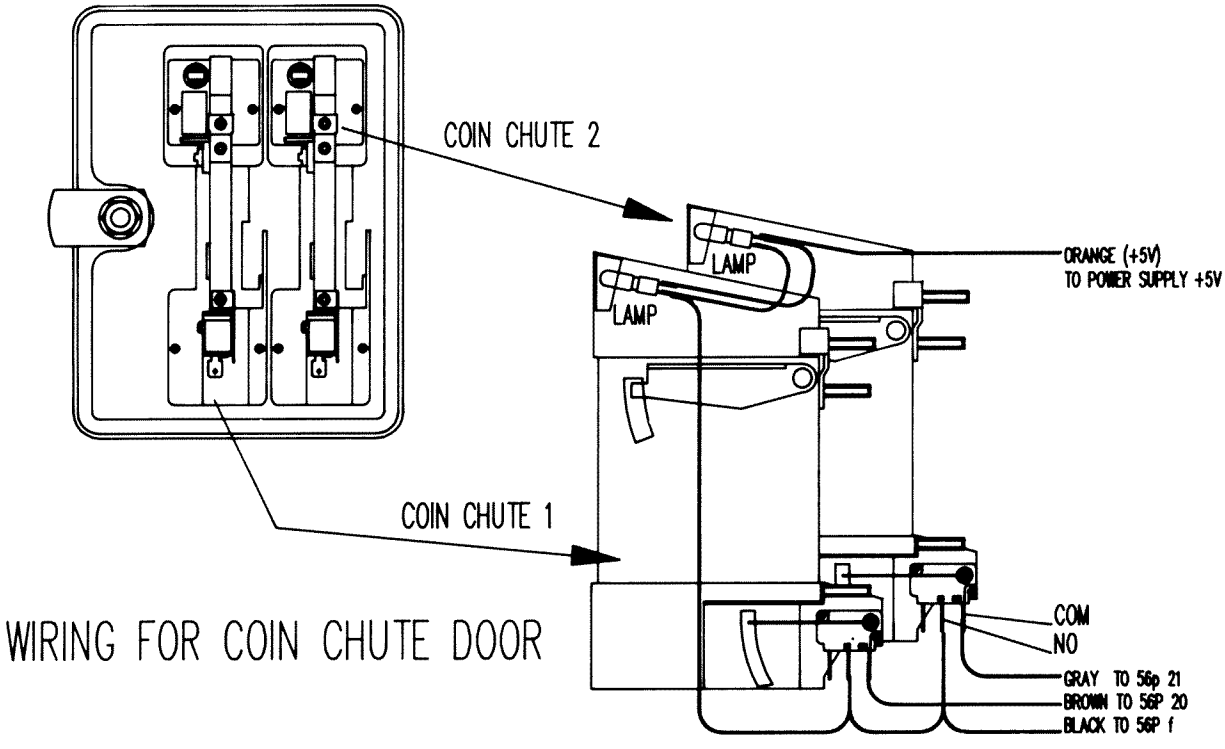


Figure 7

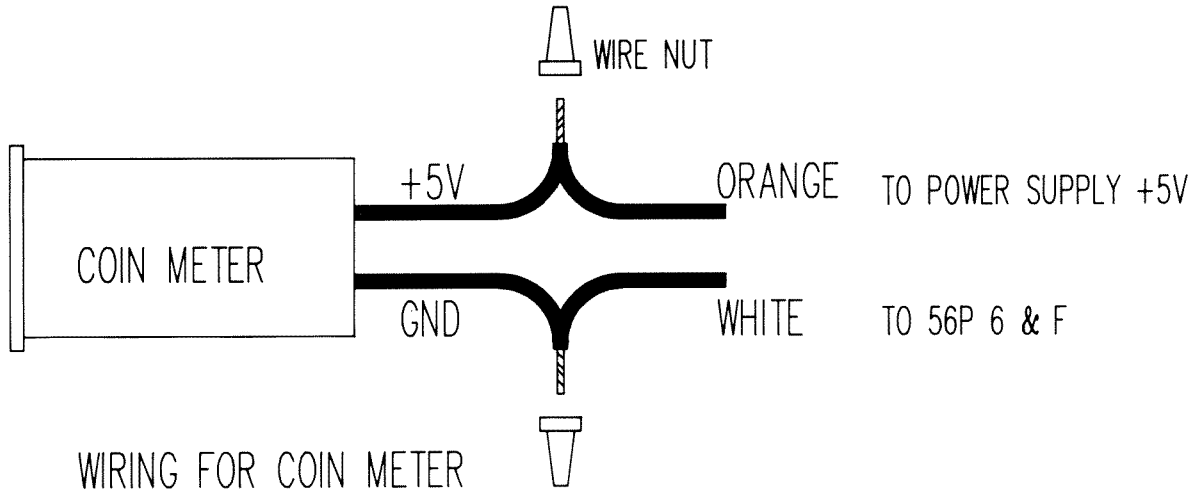


Figure 8

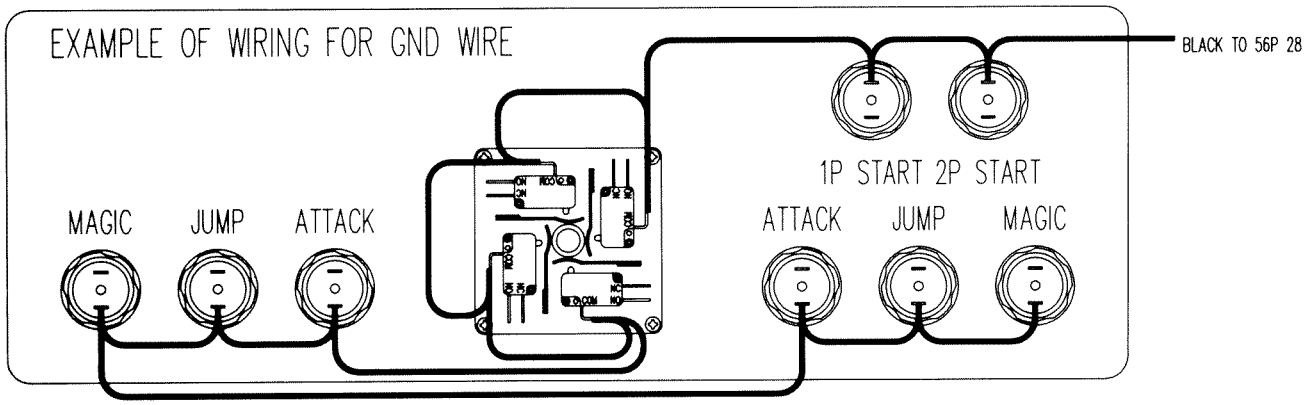


Figure 9

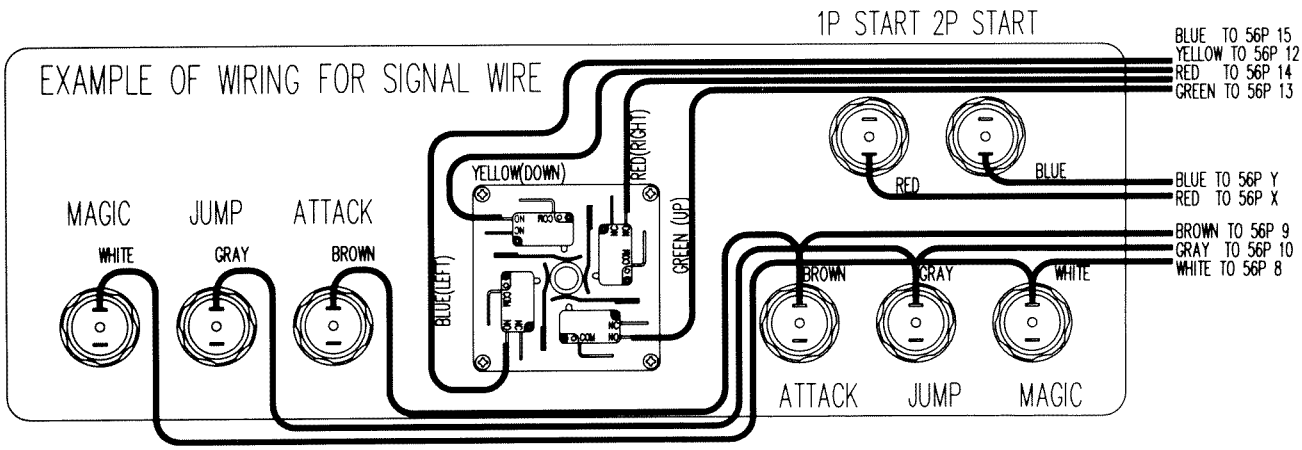


Figure 10

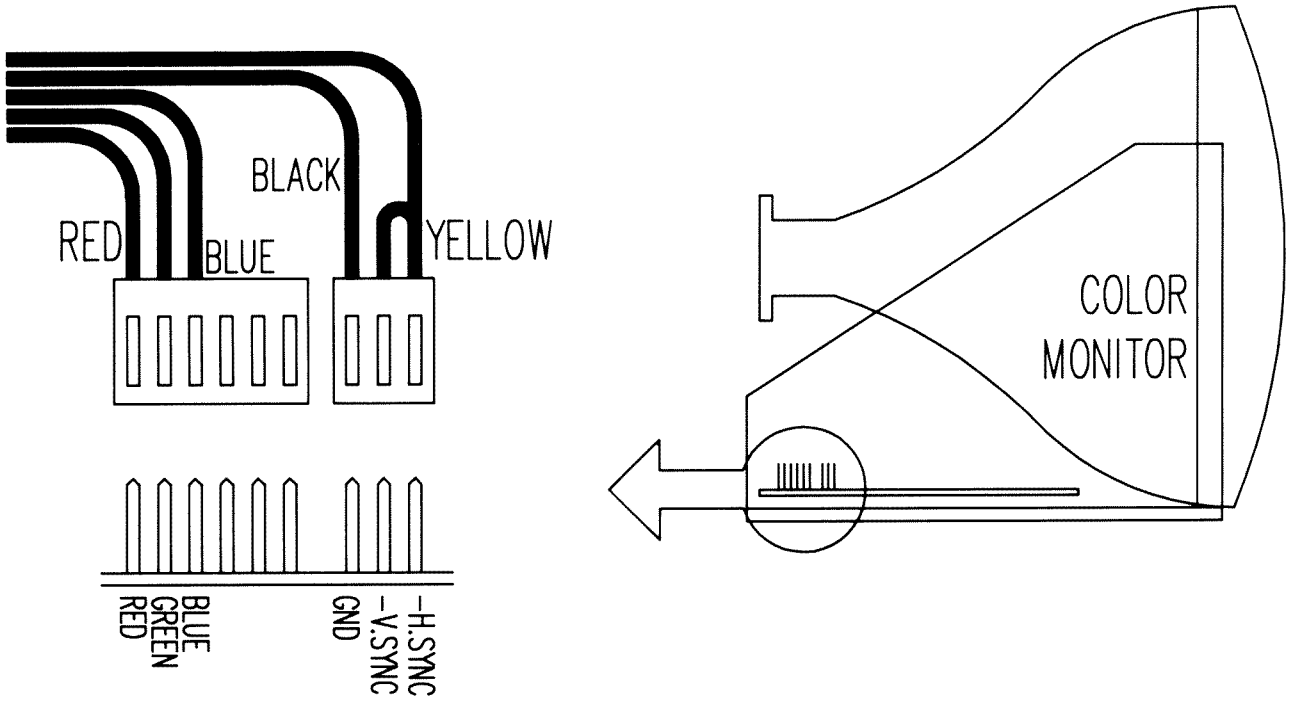


Figure 11

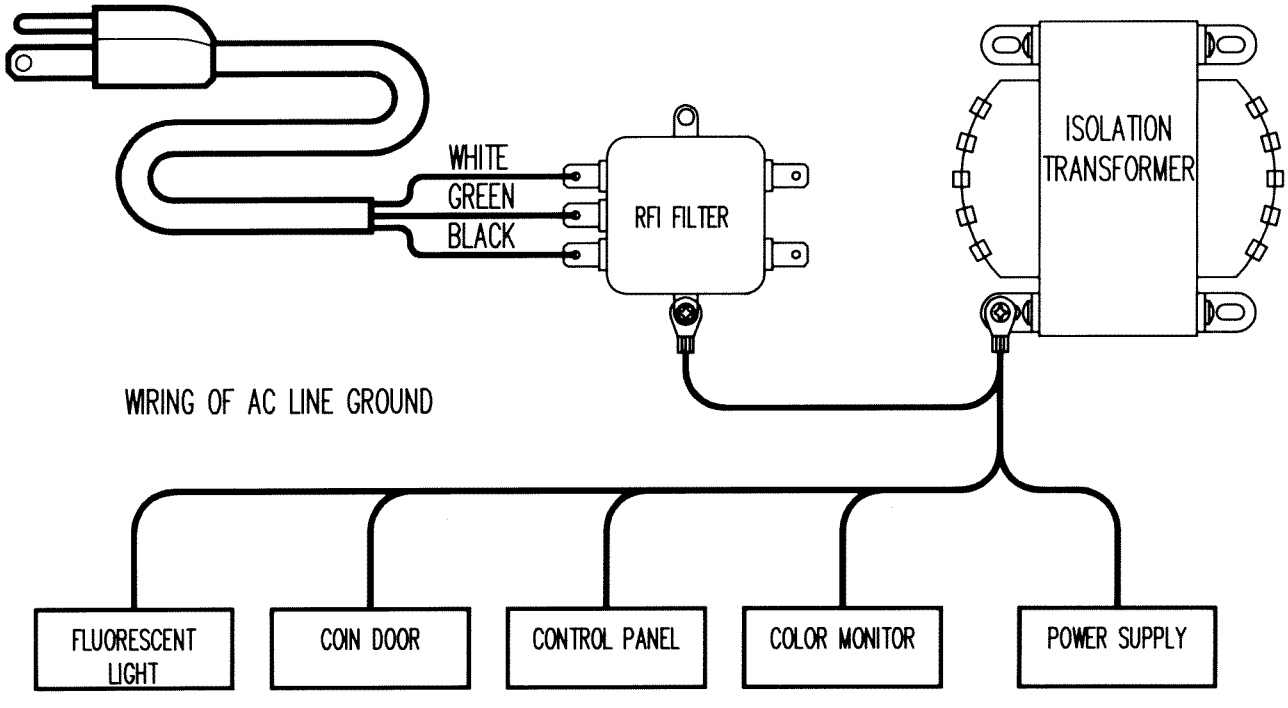


Figure 12

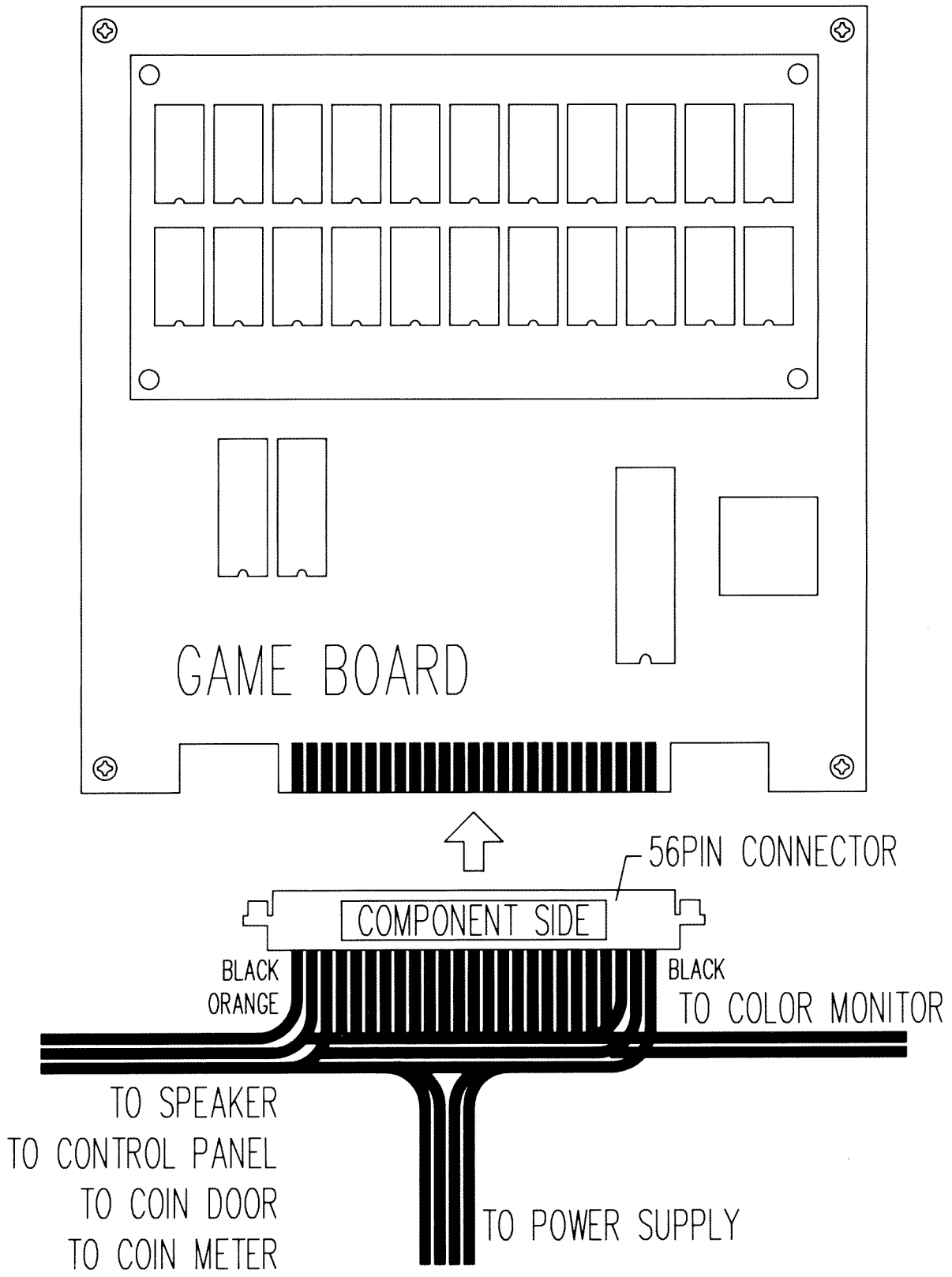
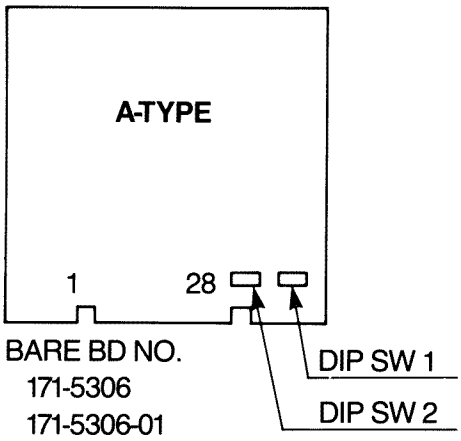
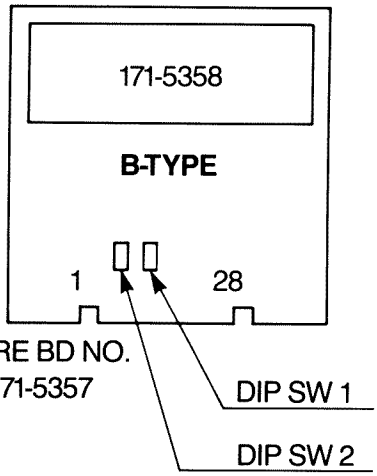

GAME BOARD
56PIN CONNECTOR
COMPONENT SIDE
BLACK
ORANGE
BLACK
TO COLOR MONITOR
TO SPEAKER
TO CONTROL PANEL
TO COIN DOOR
TO COIN METER
TO POWER SUPPLY

Figure 13



MONITOR
(∃ ⊐)
HORIZONTAL



COIN/CREDIT OPTION SWITCH SETTING — DIP SW #1

OPTION		1	2	3	4	5	6	7	8
1 COIN	1 CREDIT	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1 COIN	2 CREDITS	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
1 COIN	3 CREDITS	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
1 COIN	4 CREDITS	ON	ON	OFF	OFF	ON	ON	OFF	OFF
1 COIN	5 CREDITS	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
1 COIN	6 CREDITS	ON	OFF	ON	OFF	ON	OFF	ON	OFF
2 COINS	1 CREDIT	OFF	ON	ON	OFF	OFF	ON	ON	OFF
3 COINS	1 CREDIT	ON	ON	ON	OFF	ON	ON	ON	OFF
4 COINS	1 CREDIT	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
2 COINS	3 CREDITS	ON	OFF	OFF	ON	ON	OFF	OFF	ON
2 COINS	1 CREDIT								
4 COINS	2 CREDITS	OFF	ON	OFF	ON	OFF	ON	OFF	ON
5 COINS	3 CREDITS								
6 COINS	4 CREDITS								
2 COINS	1 CREDIT	ON	ON	OFF	ON	ON	ON	OFF	ON
4 COINS	3 CREDITS								
1 COIN	1 CREDIT								
2 COINS	2 CREDITS								
3 COINS	3 CREDITS	OFF	OFF	ON	ON	OFF	OFF	ON	ON
4 COINS	4 CREDITS								
5 COINS	6 CREDITS								
1 COIN	1 CREDIT								
2 COINS	2 CREDITS								
3 COINS	3 CREDITS	ON	OFF	ON	ON	ON	OFF	ON	ON
4 COINS	5 CREDITS								
1 COIN	1 CREDIT	OFF	ON	ON	ON	OFF	ON	ON	ON
2 COINS	3 CREDITS								
FREE PLAY		ON	ON	ON	ON	ON	ON	ON	ON
		COIN SW #1				COIN SW #2			

PIN ASSIGNMENT

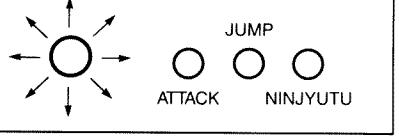
COMPONENT SIDE			SOLDER SIDE
GND	1	A	GND
GND	2	B	GND
+5V	3	C	+5V
+5V	4	D	+5V
+12V	5	E	+12V
COIN METER 1	6	F	COIN METER 2
(NOT USED)	7	H	(NOT USED)
1P NINJYUTU	8	J	2P NINJYUTU
1P ATTACK	9	K	2P ATTACK
1P JUMP	10	L	2P JUMP
(NOT USED)	11	M	(NOT USED)
1P DOWN	12	N	2P DOWN
1P UP	13	P	2P UP
1P RIGHT	14	R	2P RIGHT
1P LEFT	15	S	2P LEFT
(NOT USED)	16	T	(NOT USED)
(NOT USED)	17	U	(NOT USED)
(NOT USED)	18	V	(NOT USED)
(NOT USED)	19	W	(NOT USED)
COIN 1	20	X	1P START
COIN 2	21	Y	2P START
TEST	22	Z	(NOT USED)
SERVICE	23	a	(NOT USED)
SPEAKER (+)	24	b	SPEAKER (−)
RED	25	c	GREEN
BLUE	26	d	CMP. SYNC
GND	27	e	GND
GND	28	f	GND

56P P:3.96 mm

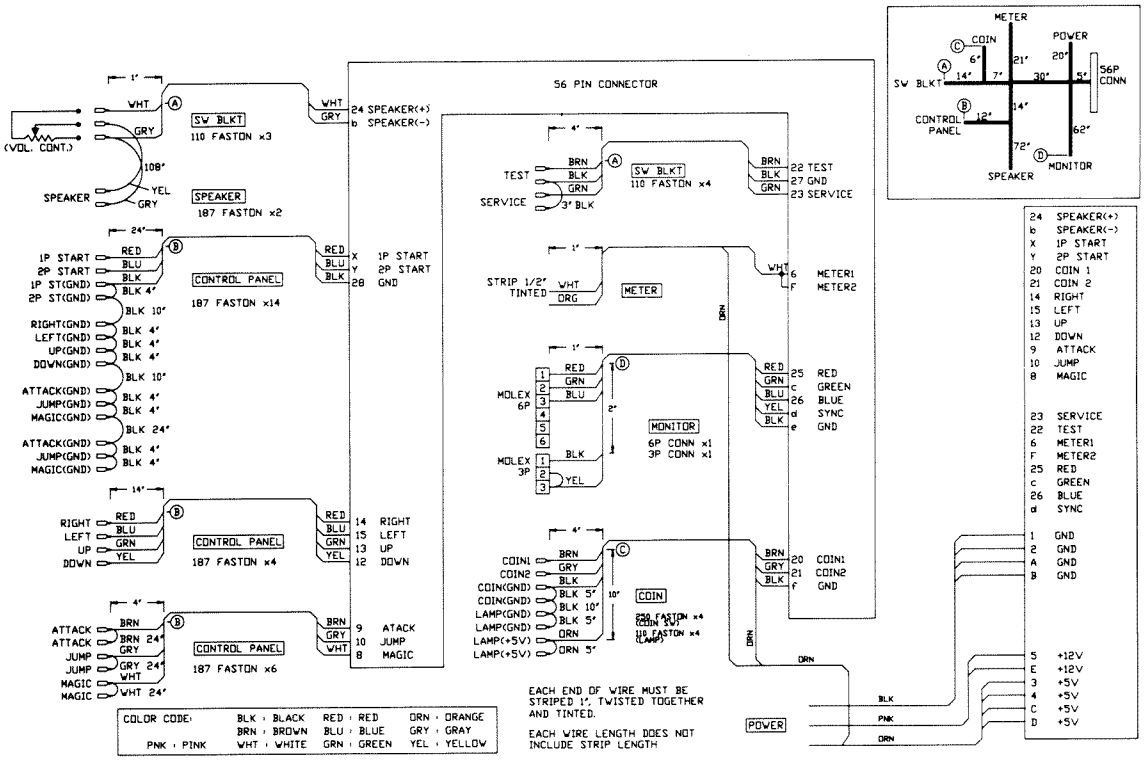
OPTION SWITCH SETTING — DIP SW #2

OPTIONS		1	2	3	4	5	6	7	8
TYPE	TABLE	OFF							
	U/R	ON							
ADVERTISE SOUND	OFF		OFF						
	ON		ON						
NUMBER OF PLAYERS	3			OFF	OFF				
	2			ON	OFF				
	5			OFF	ON				
	FREE			ON	ON				
GAME DIFFICULTY	NORMAL					OFF	OFF		
	EASY					ON	OFF		
	HARD					OFF	ON		
	HARDEST					ON	ON		
ENEMY'S BULLET	SLOW							OFF	
	FAST							ON	
DISPLAY	JAPANESE								OFF
	ENGLISH								ON

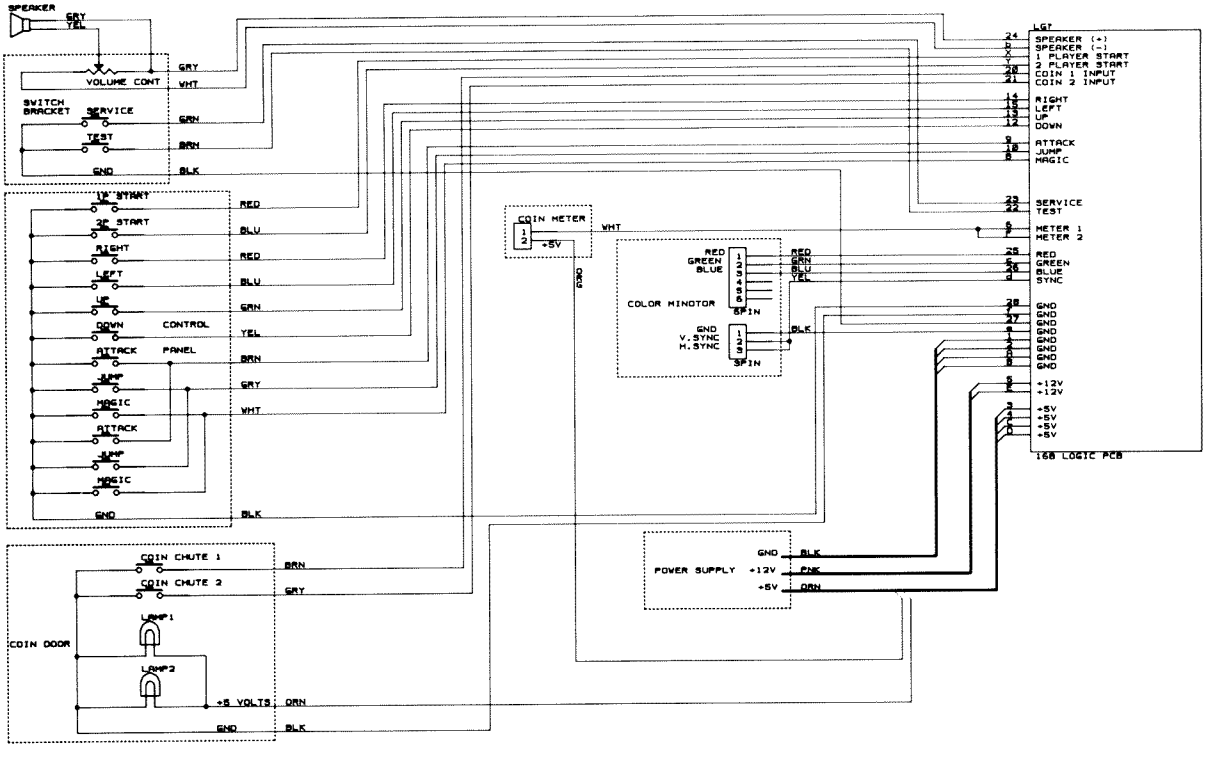
JOYSTICK CONTROL DIRECTIONS



Switch Setting Sheet



Harness Diagram



Schematic Diagram

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