

WARNINGS AND NOTICES

WARNING. Use of non-Midway parts or circuit modifications may cause serious injury or equipment damage!

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WARNING. Prevent shock hazard and assure proper game operation. 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.

CAUTION. A very small portion of the population has a condition which may cause epileptic seizures or 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.

CAUTION. Information in this manual is subject to change without notice. Midway reserves the right to make improvements in equipment function, design, or components as progress in engineering or manufacturing methods warrants.

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OCTOBER 2000

16-40091-101

THE
GRID



25" CABINET
DEDICATED
VIDEO GAME



Operations Manual Includes

Setup (cabinets and headers) • Service • System • Parts • Wiring • Troubleshooting

The manufacturer intends that this game is to be operated for amusement purposes only and not in contravention of any federal, state or local law or regulation of the United States or any foreign country governing gaming devices. All operators of this game are responsible for its operation in accordance with such laws and regulations. The manufacturer's factory settings for this game may require adjustment in order to comply with laws applicable in an operator's specific jurisdiction. It is the operator's responsibility to determine whether adjustments are necessary and, if they are, to make the appropriate adjustments prior to operating the amusement game.

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THE GRID



CHAPTER

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Setup



NOTICE: Information in this manual may change without notice. Midway Amusement Games, LLC reserves the right to make improvements in equipment function, design, or components as progress in engineering or manufacturing methods may warrant.

Safety Instructions

Read the safety instructions before preparing The Grid for play, performing maintenance, or beginning service procedures. These instructions apply to all operators and service personnel. Specific notes, cautions, and warnings appear in the manual where applicable.

DEFINITIONS OF SAFETY TERMS

- DANGER indicates an imminent hazard. If you fail to avoid this hazard, it WILL cause death or serious injury.
- WARNING indicates a potential hazard. If you fail to avoid this hazard, it COULD cause death or serious injury.
- CAUTION indicates a potential hazard. If you fail to avoid this hazard, it MAY cause minor or moderate injury. CAUTION also alerts you about unsafe practices.
- NOTICE indicates information of special importance.

	CAUTION: The hard disk drive must be packed in an anti-static bag and in an approved shipping container (P/N 08-8068) in order to be sent in for repair or replacement. Do not stack or drop hard disk drives during installation or removal.
	CAUTION. Transport machine securely, as it contains glass and fragile electronic devices. Avoid rough handling and never move cabinet while power is on.
	CAUTION. Verify switch on the power supply is set for 110VAC or 220VAC according to local line voltage. Verify fluorescent lamp is correct for local voltage.
	WARNING. Avoid electrical shocks. Do not plug in line cord until you have inspected and properly grounded the machine. Use only a fixed-location grounded 3-wire outlet. Do not use a "cheater" plug or cut off ground pin on line cord
	WARNING. This video game machine has no isolation transformer. There is no isolation between the internal cabinet AC system and the external AC line.
	WARNING. To avoid electrical shock, turn off power switch and disconnect from AC power source before removing or repairing any component. After servicing, ensure all ground wires are secure before restoring power.
	CAUTION. Ensure proper mating of all connectors. If a connector does not slip on easily, do not force. Reversed connectors may damage your machine and void the warranty. Connectors are keyed to fit specific pins on each board.
	WARNING. To avoid electrical shock, all replacement fuses must match the type, voltage rating, and current rating of the original fuse.
	WARNING. A dropped fluorescent tube or CRT can break and explode, shattering glass eight feet or more from the point of impact. Handle all glass parts carefully.



WARNING. HAZARD TO EPILEPTICS. A very small portion of the population has a condition that may cause them to experience epileptic seizures or have momentary loss of consciousness when viewing certain kinds of flashing lights or patterns 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.

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Product Specifications

Operating Requirements		
<i>Electrical Power</i> Domestic 120 VAC @ 60Hz 4.0 Amps Foreign 230 VAC @ 50Hz 2.0 Amps Japan 100 VAC @ 50Hz 4.0 Amps	<i>Temperature</i> 32 degrees F to 100 F (0C to 38C)	<i>Humidity</i> Not to exceed 95% relative
Cabinet Statistics		
<i>Shipping Dimensions (without header)</i> Width 36.0" (91.0 cm) Depth 46.0" (116.8 cm) Height 67.5" (171.3 cm)	<i>Shipping Weight</i> 372 lbs. (152 kgs.)	<i>Design Type</i> Stand-up dedicated video game with linking capability
Equipment Characteristics		
<i>Video Display Monitor</i> 25" (64 cm) CRT Medium Resolution RGB	<i>Audio System</i> 2 Upper speakers provide 2 Channel Audio 1 Lower Woofer provides 1 Channel Audio	<i>Currency Acceptors</i> 2 Coin Mechanisms, DBV ready. 1 Coin Counter.
Game Characteristics		
<i>Player Variables</i> 1 Player per cabinet. Up to 6 players with linking. Character selection, password/name memory.	<i>Operator Variables</i> Coinage, Play Mode, Difficulty, Volume, Audits, Statistics	<i>Diagnostics</i> Automatic Power-Up Self-Test. Manual Multi-Level Menu System.

Game Play

The Grid is a contest of athletic prowess, sophisticated weaponry, merciless sneak attacks, come-from-behind underdog victories, and revenge served piping hot. Best when played in a group of friends (or enemies), The Grid offers fast-action, first-person, arena-style fury and firepower.

Link up to 6 cabinets with a fast, easily configured, and reliable network. Linked cabinets automatically run multi-player games when several customers play. Unlinked cabinets—or cabinet arrays with only one customer—supply drones in an increasingly difficult moving-target challenge. Drone play difficulty is operator-adjustable (See “Game Difficulty” on page 36.), which can encourage players to hone their skills before facing human opponents.

Once credits are accepted and the Start button is pressed, gladiators may enter passwords to retrieve stored personalities. These names are held in memory on the CPU Board Assembly, along with accumulated scores, total kills, cash accumulated, total first-place wins, and other statistics. Anonymous play is also an option.

Contestants choose from a lineup of eight motley characters (and an alternate crew of secret characters earned after frequent play), each of whom boasts a unique special weapon or defense (i.e., super-stomp, karate kick, temporary invisibility), but generally operate on equal playing fields. Special moves take a few seconds to replenish after each time the player hits the button on the control panel.

As the battle begins, contestants are trapped in one of many spacious arenas with death lurking around every corner. They must grab from an unlimited supply of weapons and ammo packs strewn about. These goodies float above the ground awaiting the first gunner to retrieve one without getting maimed by an opponent. Some weapons deal a single killing blow; others wound slowly and require repeated shots. The deadliest weapons reload slowly and require more practice to aim well. Limited ammunition can leave a player suddenly unarmed. A daring weaponless player can judo-flip an enemy to the mat, but this is usually a last resort.

Armed players must run, shoot, jump, and use special moves to avoid being wounded, while eliminating others to accumulate points as well as piles of cash. Violence is adjustable (See “Game Blood Level” on page 38.). Scoring players can then retrieve a victim’s weapon, along with a health-replenishing first-aid kit and a pile of cash—if another player doesn’t scavenge them first. Expired players see a message revealing the killer, and the frenetic emcee frequently announces the high scorer, making special notes of winning streaks. Shortly after death, a player regenerates in the arena with a light weapon in hand—just enough for some self-defense while seeking better weapon.

Player health is tallied at the top of each monitor, cash at the bottom. Earning enough cash “supercharges” a player, increasing speed and fire rate. Even more cash endows the player with “da bomb,” which annihilates all players simultaneously. Games last two-and-a-half minutes (See page 37 for adjustment.), after which the announcer offers his sympathies to the losers and grants the winner a free game (See page 37 for adjustment.). In a first-place tie, the player who won the most cash that round wins.

Contestants whose scores fall too far behind the leader are granted easy-to-aim golden shotguns, which kill with a single shot. This assists weaker players and prevents stronger players from totally dominating every round. This is offset by the ability to collect cash and points to buy secret characters—an incentive to play frequently with the same personality.

Maintenance

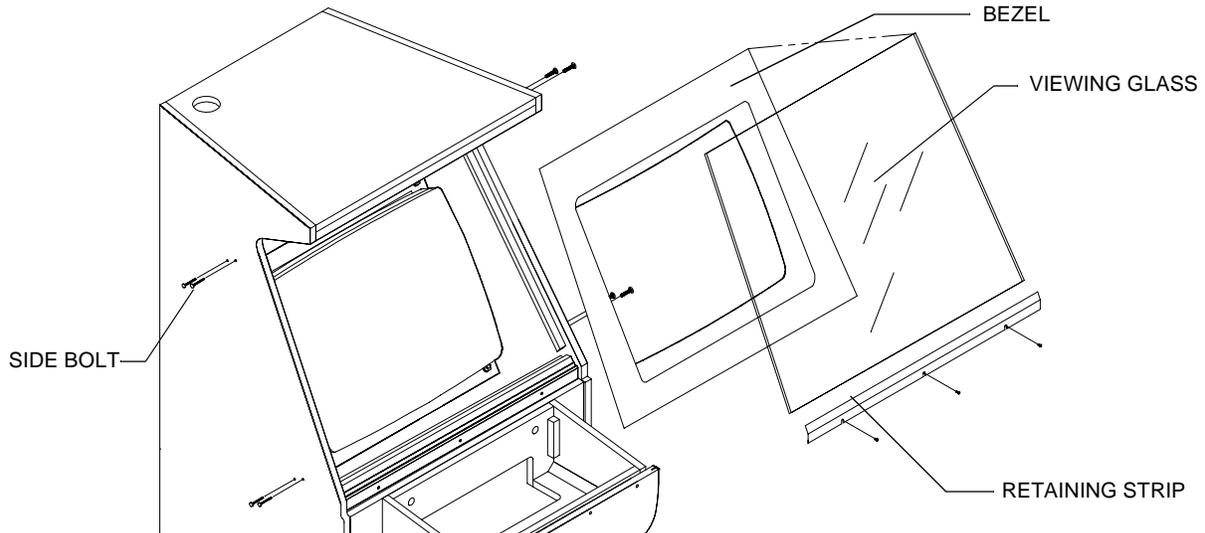
VIEWING GLASS. It is not necessary to switch off power to clean cabinet. Apply mild glass cleaner to a clean cloth or sponge. Use this to wipe viewing glass. Do not apply cleaner directly on glass. Liquid could drip into cabinet and cause erratic operation.

CONTROLS AND CABINET. Use plastic-safe and non-abrasive cleaners to avoid damage. Apply cleaner to clean cloth or sponge. Use this to wipe controls or cabinet. Do not apply cleaner directly on controls or cabinet.

Installation

1. Remove all items from shipping container, set them aside, and inspect them for damage.
2. Remove key from joystick and insert into upper cash door. Turn 90 degrees clockwise and open door. Locate keys to rear door and lower cash door on hook inside upper cash chamber.
3. Reach up through upper cash chamber and unlock latches at far left and right to release control panel.
4. Use additional keys to open lower cash door. Remove cash box and empty contents.
5. Insert key into rear door. Turn keys 90 degrees clockwise. Lift door off cabinet and set aside.
6. Swing control panel open. Support viewing glass as you loosen, but do not remove, screws holding retaining strip on front of cabinet. Remove glass when strip is free. Set aside strip and glass.
7. Remove bezel and set aside.
8. Remove nuts and bolts from each side of cabinet *unless* side panel will not touch a neighboring cabinet. (Now is a good time to decide which cabinets will be on the ends.)
9. Repeat for each cabinet to be installed. For more details, see "MONITOR MOUNTING" on page 46.

REMOVAL OF VIEWING GLASS, BEZEL, SIDE BOLTS

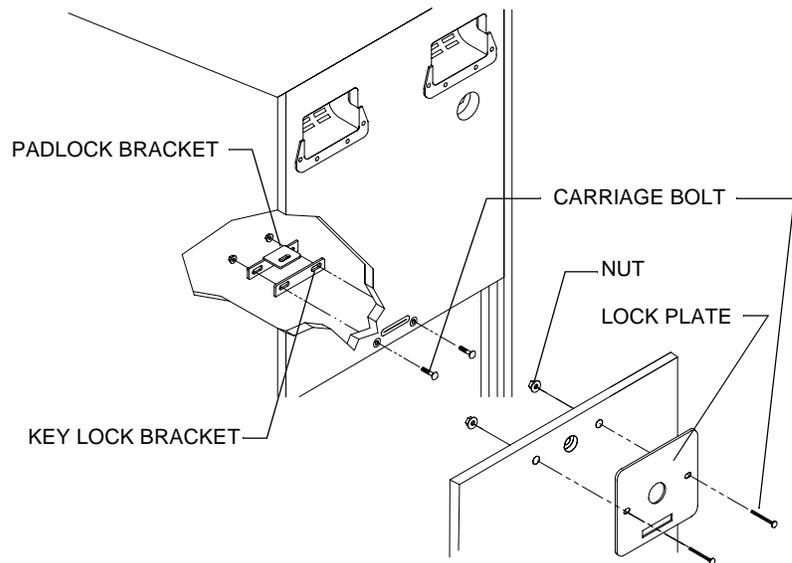


Relocate Cabinets

Move cabinet near final location. Note that up to 6 cabinets can be linked on a single network. Arrange cabinets facing outward in an arc. This leaves players enough space to play comfortably.

Modify Rear Door (Optional)

For additional security, install extra padlock to secure rear door. Locate hasp in spare parts bag. Remove two lock bracket nuts from inside cabinet above rear door opening. Slide hasp onto bolts so it protrudes from hole in back of cabinet, then reinstall nuts. Modify lock plate at top of rear door. Remove bolts and nuts from lock plate, then rotate plate so slot is above door. Reinstall bolts and nuts and tighten firmly. See "REAR DOOR LOCK ASSEMBLY" on page 48 for details.



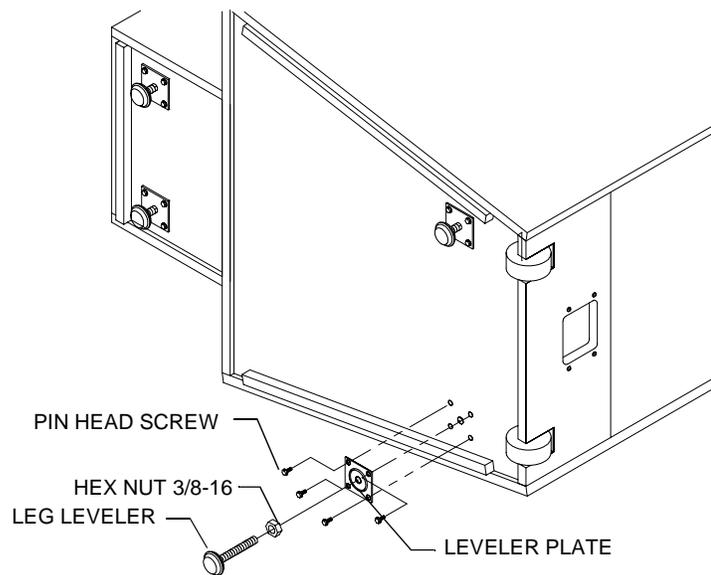
REAR DOOR ASSEMBLY

Install Leg Levelers

Install a nut onto each leg leveler. Tilt cabinet and install leveler into each of corner hole at bottom of cabinet. Do not tighten nuts. Repeat for each cabinet. See "LEVELERS" on page 49 for details.

Lock Cabinets Together

Adjust cabinets to eliminate space between neighboring panels. If necessary, adjust leg levelers so cabinet heights are equal. Insert bolts through holes in neighboring side panels. Once all bolts are in place, thread nuts and tighten. Replace bezels and viewing glass. Close and latch control panels.



LEG LEVELER INSTALLATION

Linking Cabinets

Locate all network cables in cash boxes. Remove three screws holding access panels of electronics cages on each cabinet. See "CABINET REAR VIEW" on page 47 for details. Set panels and screws aside.

Start at one end of cabinet array and plug one end of network cable into one network port on CPU Board. Plug remaining end of cable into available network port of neighboring cabinet. Plug second network cable into remaining network port of second cabinet, and plug the remaining end in a network port of third cabinet, and so on. Cabinet at each end of array should each have an empty port.

When last cabinet is connected, replace access panels and screws while routing cables through notches. Route cables through notches in center of rear door rests.

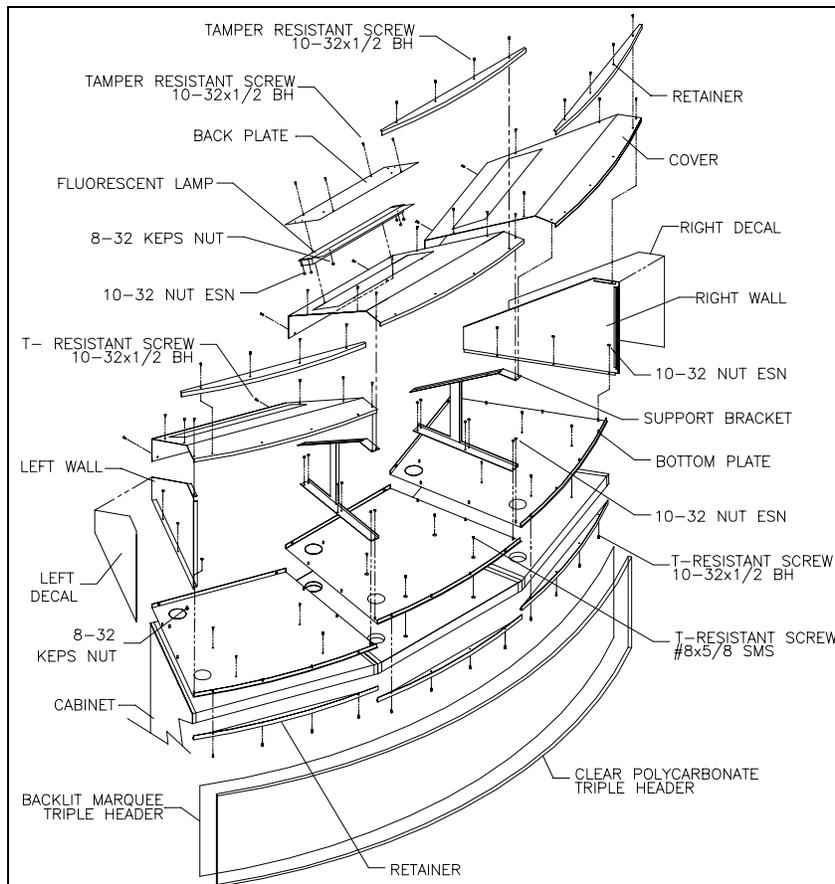
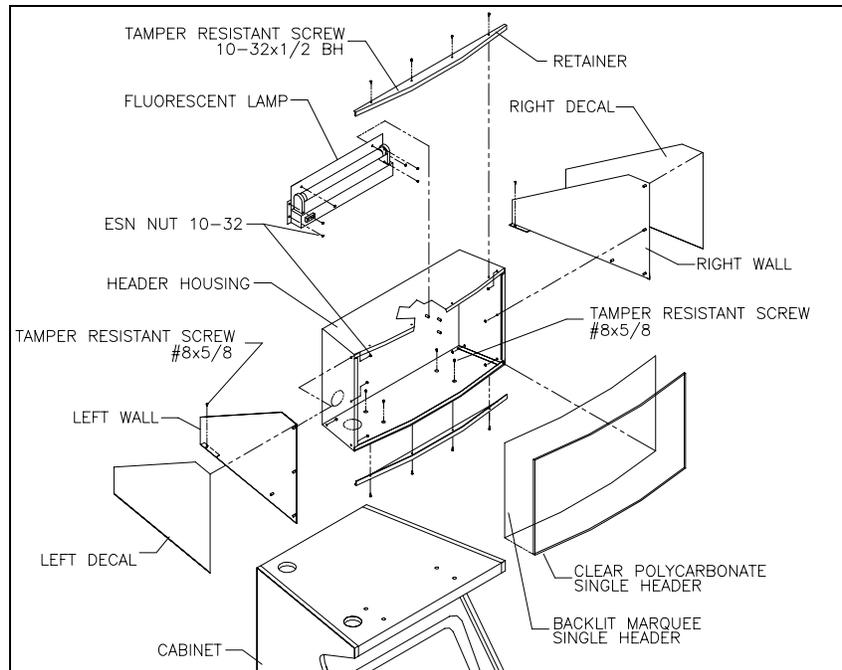
Header Installation

Before installing any header, all cabinets must be stable and level and in their final location.

Turn off AC power and unplug line cords. Lay out all header components before installation to ensure you know what each part is. Seek assistance when lifting headers atop cabinets. Observe grounding precautions.

As an alternative to the instructions on the following pages, you may wish to assemble the header on top of the cabinet to avoid lifting after assembly.

SINGLE HEADER ASSEMBLY

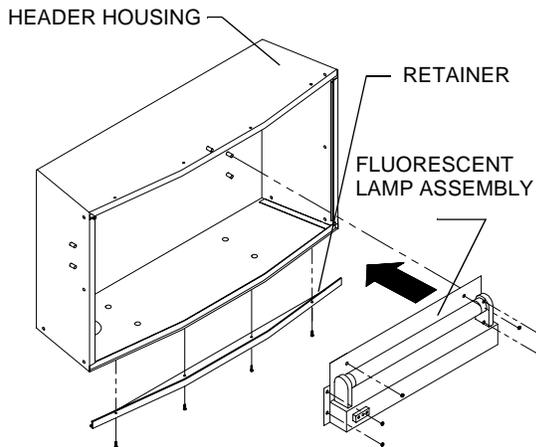


TRIPLE HEADER ASSEMBLY

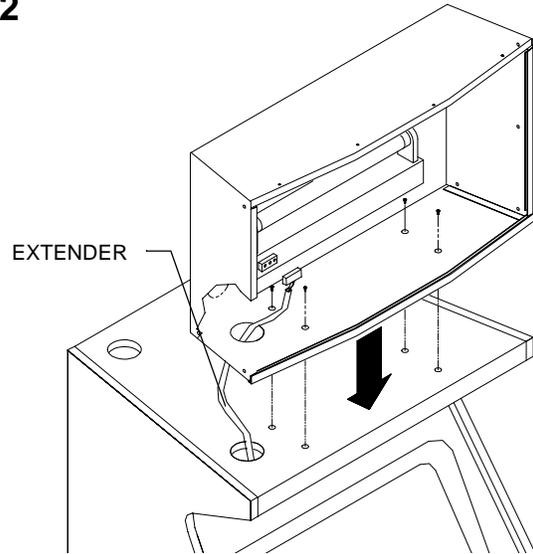
Single Header Installation

1

Remove all items from carton. Inspect for damage. Align Retainer holes with holes in at bottom of Header Housing. Fasten with tamper proof screws. Align Fluorescent Lamp Assembly with posts in rear of Header Housing. Fasten with ESN nuts.



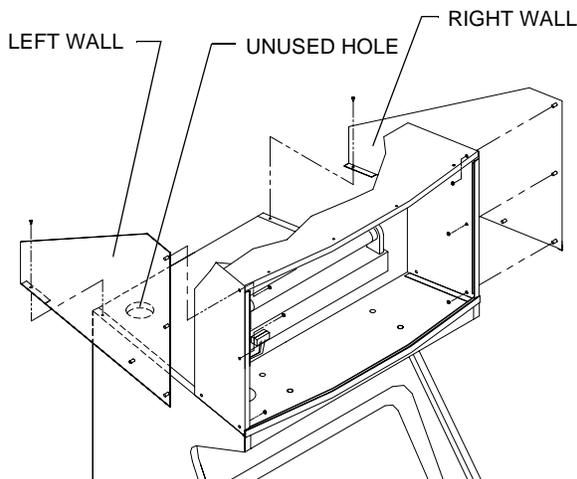
2



Run Extender Cable through hole in bottom of Header Housing and attach to Lamp Assembly. Rest Header Housing atop cabinet. Align with holes on top of cabinet and fasten with tamper resistant screws.

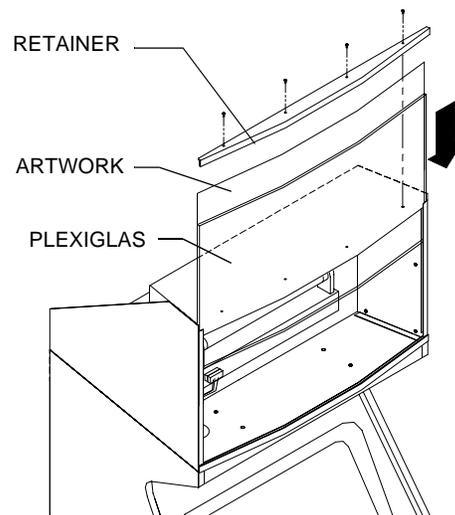
3

Fasten left and right Walls to sides of Header Housing using tamper resistant screws. Fasten Walls to top of cabinet with tamper resistant screws. Remove backing from decals and carefully place on Walls. Smooth out from center. Smooth or pop out any bubbles with knife or pin.



4

Bend artwork and Plexiglas to conform to shape of Header Housing. Slide into Housing. Align top Retainer with top panel of Header Housing and fasten with tamper resistant screws.



Triple Header Installation

1

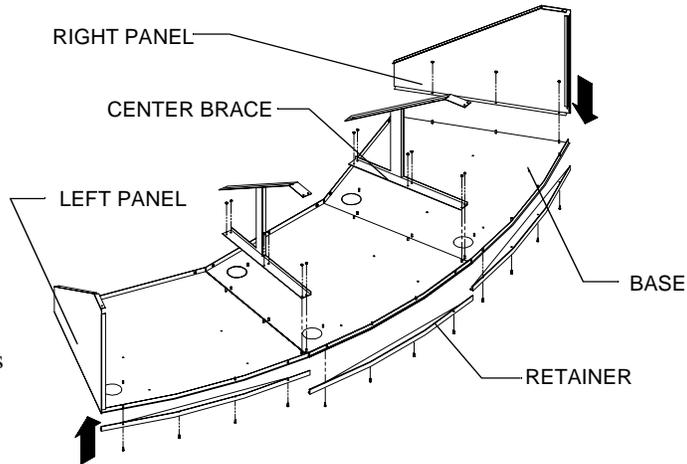
Remove all items from cartons and inspect for damage.

Note that you may wish to install this directly on top of the cabinets, rather than lifting the assembly in step 2.

Otherwise, align Bases on flat surface.

Align Retainer holes with holes in front of Bases. Fasten with Torx screws from beneath.

Align Center Braces on Base posts where Bases meet. Align Side Panels on far ends of Bases. Fasten with nylon inserted nuts.



2

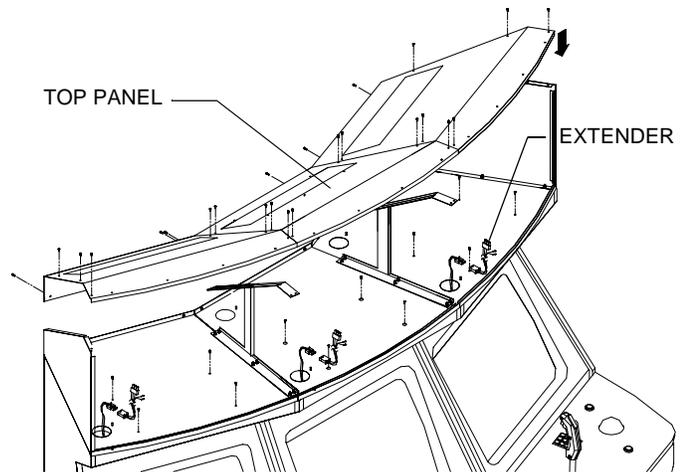
Align Top Panel holes over Side Panels and Center Braces. Fasten with Torx screws from above.

Lift assembled header atop aligned cabinets with open side facing front.

Align lower retainer to cabinet front.

Attach Base to cabinet with wood screws.

Connect Lamp Cable Extenders to AC cable through holes in front tops of cabinets.



3

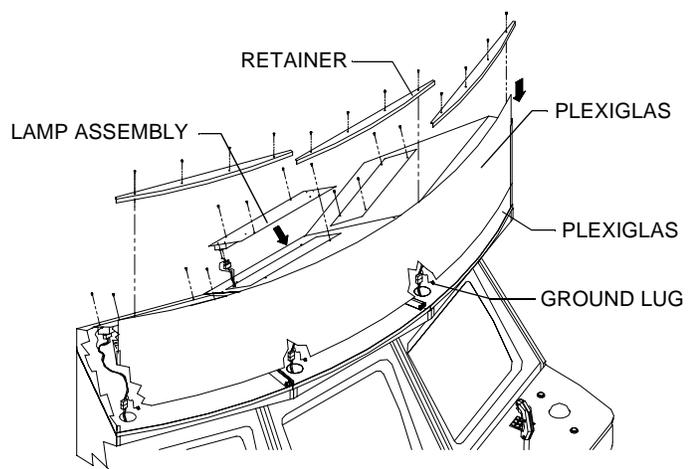
Bend artwork and Plexiglas slightly to conform to shape of header. Slide into front of assembly. Align Retainer holes with Top Panel holes and fasten with Torx screws from above.

Smooth out artwork from behind.

Hold Fluorescent Lamp Assemblies in position above headers to attach Extenders to Lamp connectors.

Place ground lugs over studs on Light Boxes and Base panels. Fasten with KEPS nuts.

Place Fluorescent Lamp Assemblies on Top Panels with bulbs inside header assembly. Fasten with Torx screws.



Startup and Testing

Refer to "Cabinet Wiring Diagram" on page 64 to ensure all cable connectors are securely connected. Do not force connectors. Avoid reversing connections. Replace and lock rear door.

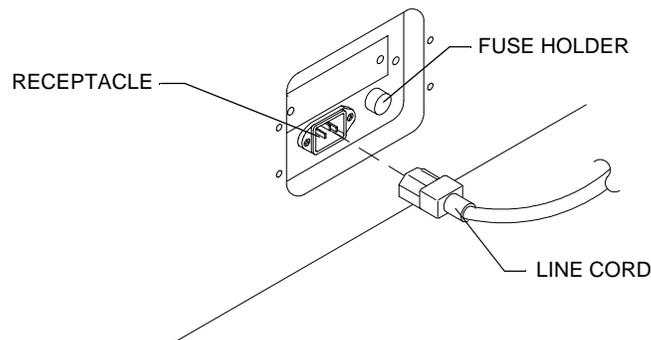
Line cord is with spare parts. Plug line cord into receptacle at bottom of cabinet rear. Plug line cord into grounded AC wall outlet. See "AC POWER PLUG WITH BRACKET ASSEMBLY (A-23089)" on page 50 for more details. Turn AC power on at on/off switch in upper rear of cabinet.

Each cabinet will run through a series of self-diagnostic tests, after which they will look through the network to see what other cabinets are available for multiple-player games.

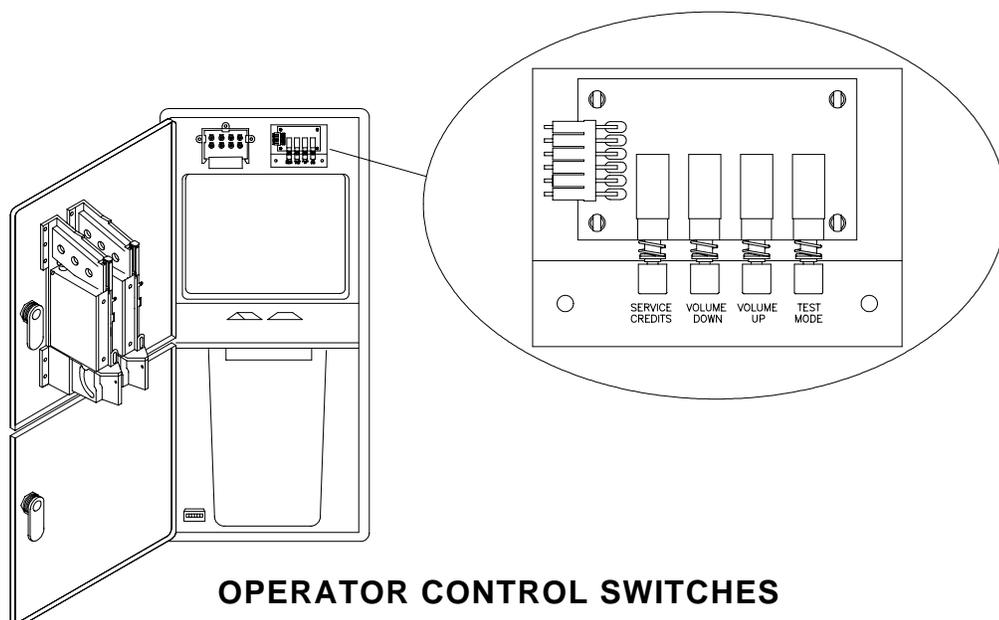
Open upper coin door and press TEST switchbutton, the furthest right of the four buttons. In Menu System, use joystick to access Switch Tests. Verify operation of all switches and controls. Set custom pricing, game variables, volume, etc.

Play games, insert coins and bills into mechanisms to test.

Close and lock rear door. The Grid is ready for customers.



LINE CORD AND POWER RECEPTACLE



OPERATOR CONTROL SWITCHES

THE GRID



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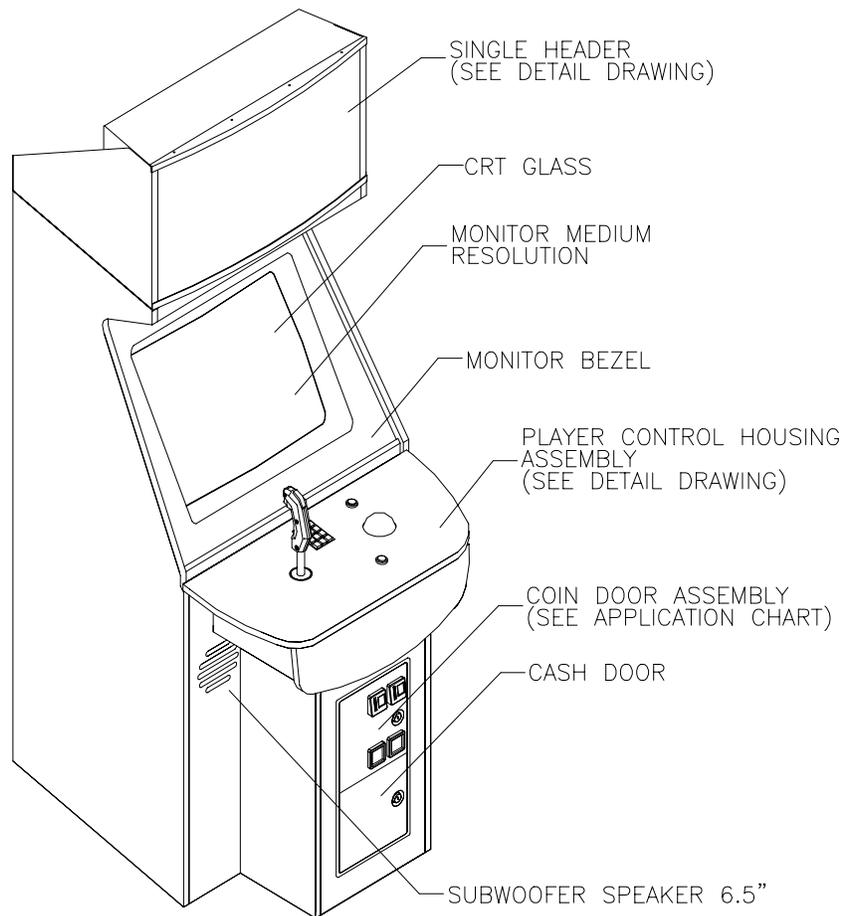
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Service



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Servicing Cabinet



Marquee and Marquee Artwork

Remove four screws on marquee retaining strip. Remove Plexiglas and artwork.

Header

Turn off AC power and unplug line cords on cabinets whose headers need repair. Remove Torx screws from Light Box. Slowly pull Light Box off Top Panel until AC connector is accessible. Detach connector from fluorescent light and set Light Box aside. Repeat for double and triple headers.

Reaching through hole in Top Panel, remove wood screws that hold Base or Bases to cabinet. After removing all screws, seek assistance when lowering header assembly off cabinets.

Fluorescent Lamp

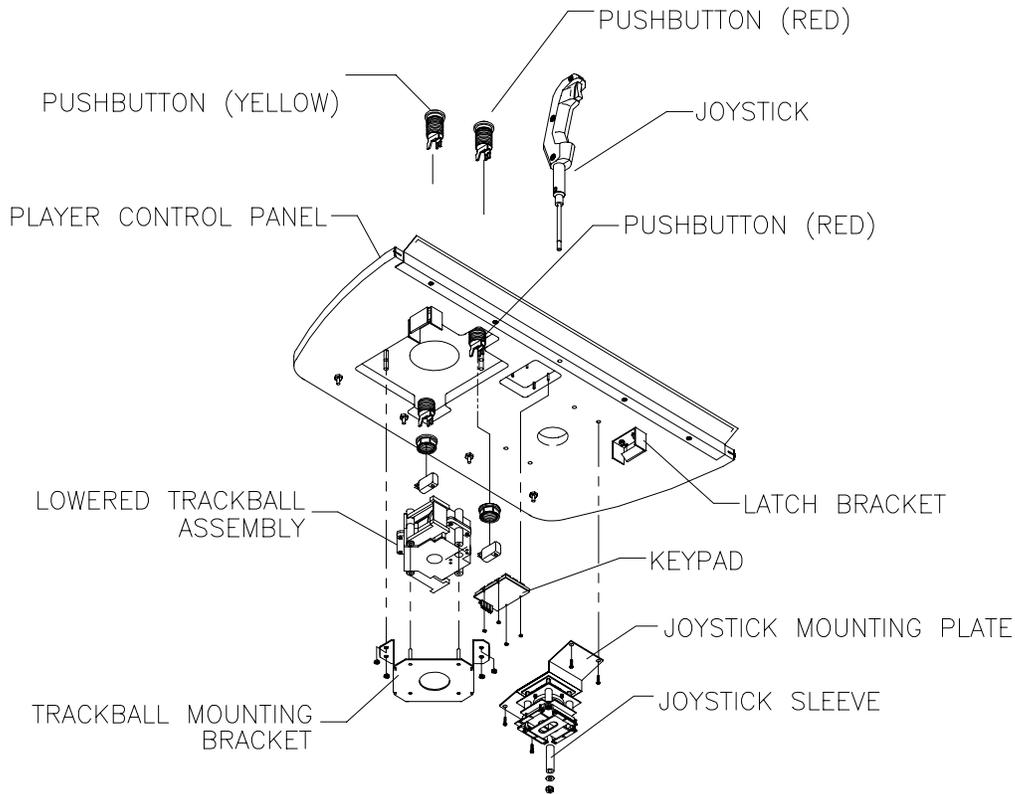
Turn off AC power and unplug line cord. Remove bolts holding back plate onto header. Pull backplate slightly away from header. Reach in and disconnect lamp assembly from AC harness.

Remove retaining clips at either end of fluorescent tube. Grasp tube firmly and twist it a quarter turn to remove from sockets. Carefully place new tube into sockets and rotate a quarter turn to reinstall. Reinstall retaining clips so as to restrain the tube during future moves. Clean tube to remove fingerprints and dust.

Control Panel

Reach in coin door and release latch on either side of control panel. Pull joystick to swing panel forward.

Controls



BUTTONS. Pry tab on bottom of button assembly to release switch. Unscrew plastic nut beneath control panel and remove button housing through top of control panel.

JOYSTICK. Disconnect wiring to joystick. Remove nut at bottom center of joystick bottom. Remove joystick sleeve and electronics beneath mounting plate. Pull joystick out through top of control panel. When replacing, apply Loctite to hex standoffs before screws are secure. See “JOYSTICK ASSEMBLY (20-10684.1)” on page 53 for details.

KEYPAD. Remove connector from bottom of keypad. Remove four small nuts and pull keypad out through bottom of control panel.

TRACKBALL. Remove nut to release two ground lugs and disconnect wiring to trackball. Remove four nuts holding mounting bracket to underside of control panel. Lift trackball off mounting bracket studs.

Speakers

LOWER WOOFER. Turn off AC power and remove rear door. Remove connectors and ground lug, noting function of each wire for reinstallation. Remove nuts holding speaker on studs. Pull speaker out and replace with identically rated speaker.

UPPER SPEAKERS. Remove eight wood screws holding grille. Remove grille and set aside. Unscrew two screws holding speaker to cabinet. Pull speaker gently forward and remove connectors. Replace with identical rated speaker.

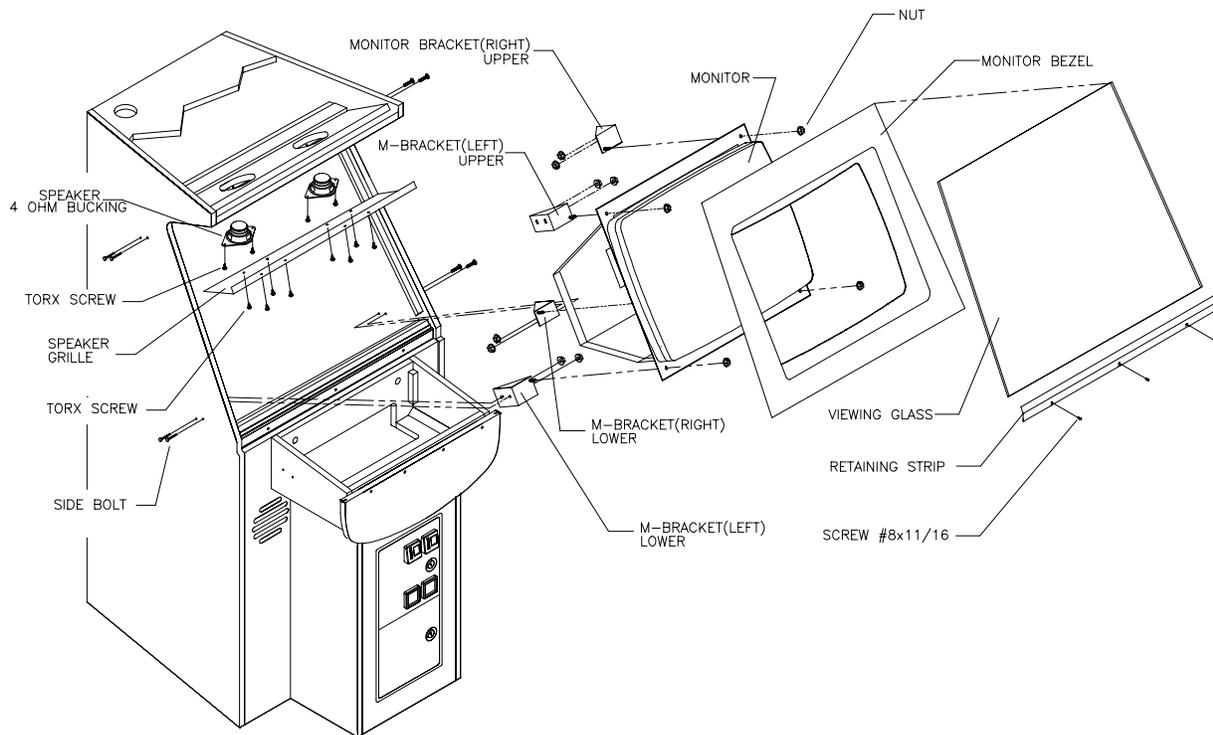
Viewing Glass

Open control panel. Loosen three screws holding retaining strip. Support glass while removing retaining strip. Slide glass down and off cabinet.

Bezel

Remove viewing glass. Pull bezel forward off cabinet.

Monitor



Remove viewing glass and bezel. Remove nuts holding monitor to brackets. Perform anode discharge.

ANODE DISCHARGE. Connect a well-insulated ground strap to metal chassis. Slide free end of ground strap under CRT anode cap until you make contact with anode. Wait two minutes for charge recovery. Repeat this process a second time.

Disconnect monitor board from power supply. Lift monitor out front of cabinet.

Fuses

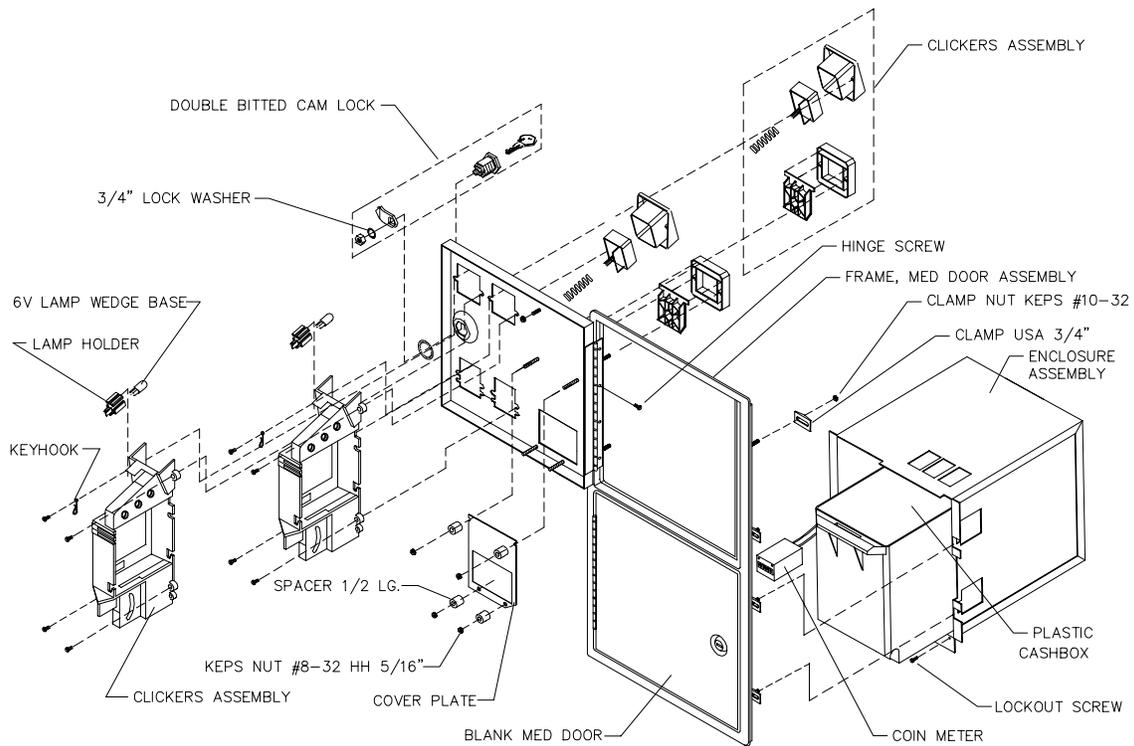
	CAUTION. Use proper fuse. To avoid electrical shock, all replacement fuses must match the type, voltage, rating, and current rating of original fuse.
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Extra fuses are located in the spare parts bag. There are two fuses on the CPU board, two on the right side panel and one inside the power inlet. (USA-4A, otherwise 2A)

Coin Meter

Open lower cash door. Unlock cash door and swing it open. Remove cash tub. Meter is on a plate at the bottom of the lower cash chamber. Remove screws and lift plate just enough to disconnect meter wires from harness. Record meter count before testing or replacing.

Coin mechanism



Turn off AC power. Unlock coin door and swing open. Unlatch and remove each coin mechanism separately to clean or replace with different type. Ensure mechanism seats fully in holder upon reinstallation. Close and lock release latch, then close door. Turn on game and change mechanism setup. Test known good and bad coins to verify operation.

CPU Board Assembly



CAUTION. Discharge static electricity buildup in your body by touching power supply chassis *before* touching any electronic assembly. Do not remove or connect any electronic assemblies when AC power is on. Doing so will damage assemblies and void warranty.

Turn off AC power. Unlock and remove rear door. Remove JAMMA connector and other connectors to CPU Board Assembly. Remove 30 screws holding cover to groundplane. Remove cover and set aside.



CAUTION. Store electronic assemblies in an anti-static area. Use anti-static bags to store or transport all electronics.

Remove screws holding CPU Board Assembly to groundplane. Retrieve the spacers behind the board for later use.

Alternately, you may only need to remove the three screws holding the electronics assembly access panel, if you wish to access only the portion visible directly beneath the panel.

Power Supply

Turn off AC power and unplug line cord. Remove rear door. Unplug DC connector from power supply. Unscrew bolts that hold power supply onto side brackets. Remove power supply from cabinet and replace with identically rated power supply.

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System

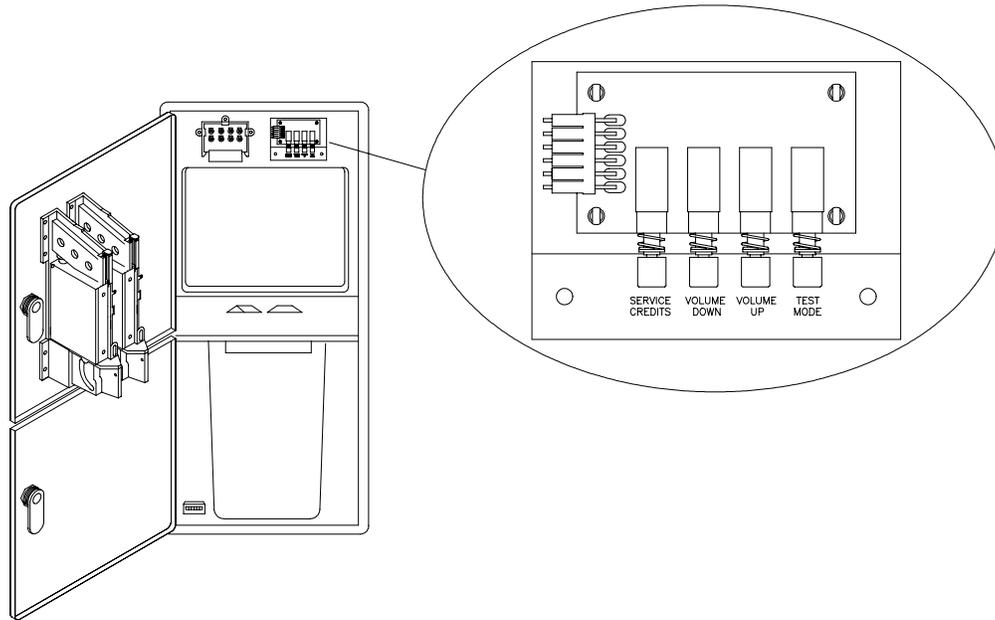


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Menu System

Activating the Menu System

Unlock and open the upper cash door. Press the Test Mode pushbutton.



OPERATOR CONTROL SWITCHES

Common Operator Adjustments

DIFFICULTY. See page 36

DURATION. See page 37

PRICING. See page 32

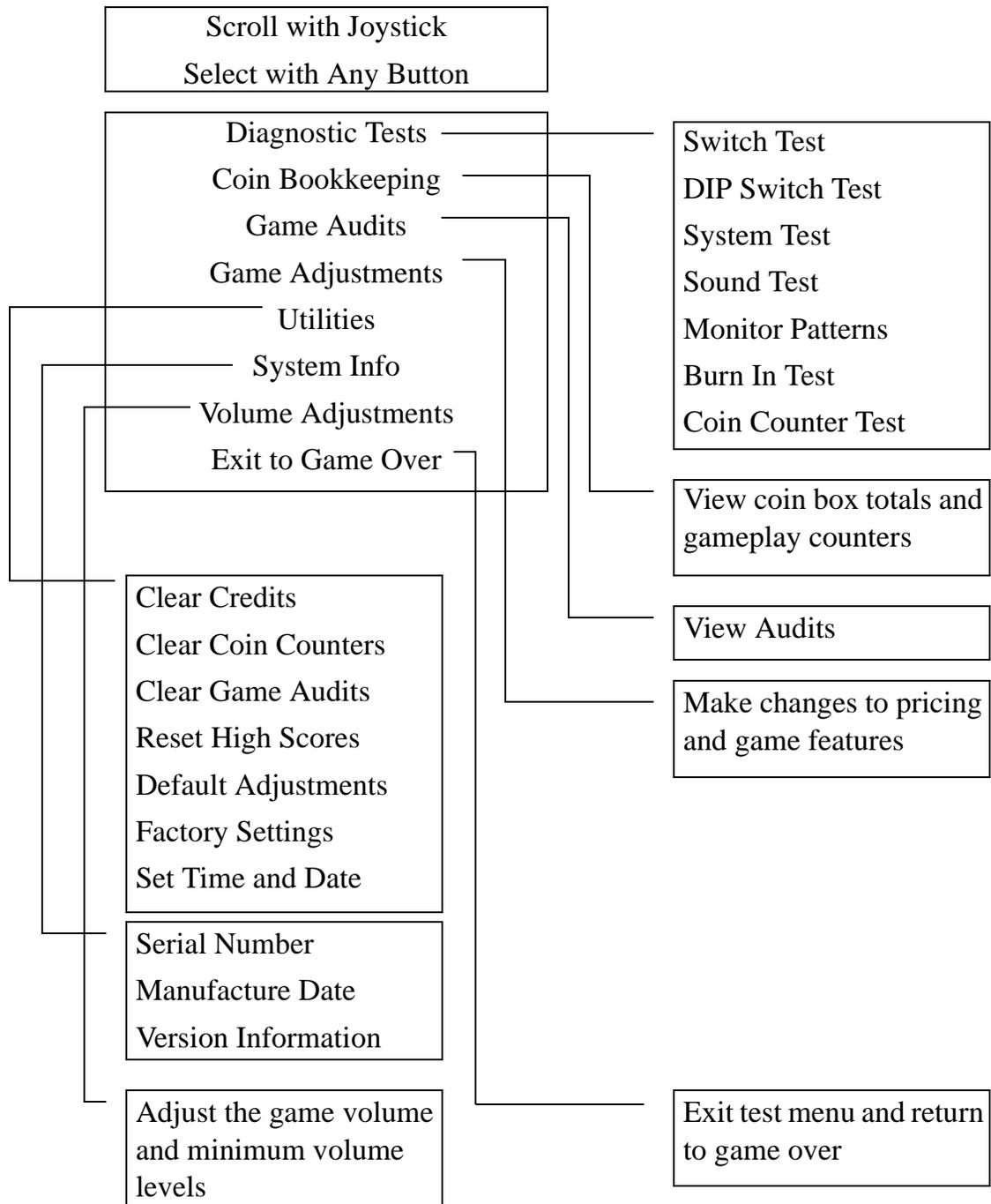
VOLUME. See page 41

VIOLENCE. See page 23

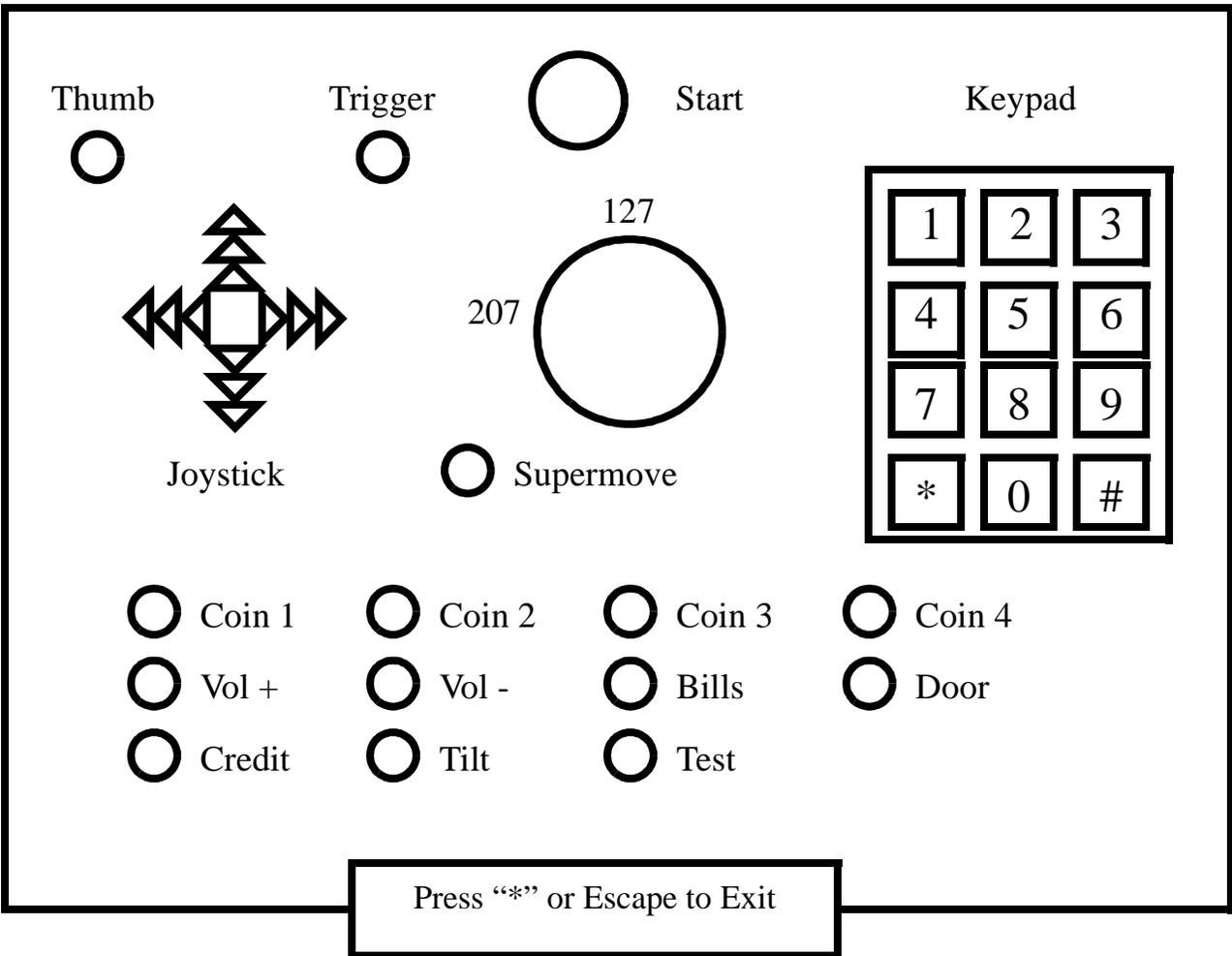
Main Menu

The Grid Test Menu

Game Code Version



Main Menu
Diagnostic Tests
Switch Test



Main Menu
Diagnostic Tests
DIP Switch Test

DIP Switch Test

Switch 1

1	OFF	Show Blood
2	OFF	Not Used
3	OFF	Not Used
4	OFF	Not Used
5	OFF	Not Used
6	OFF	Not Used
7	OFF	Not Used
8	OFF	Not Used

Switch 2

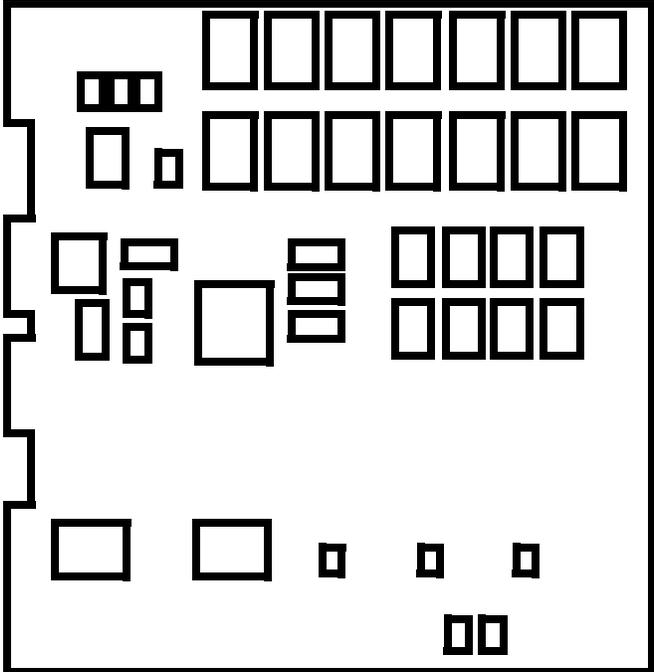
1	OFF	DIP Switch Coinage
2	OFF	Sets Coin Mode (See Manual)
3	OFF	Sets Coin Mode (See Manual)
4	OFF	Sets Coin Mode (See Manual)
5	OFF	Sets Country (See Manual)
6	OFF	Sets Country (See Manual)
7	OFF	Not Used
8	OFF	Game Mode

Hit any Button to Continue

Main Menu
Diagnostic Tests
System Test

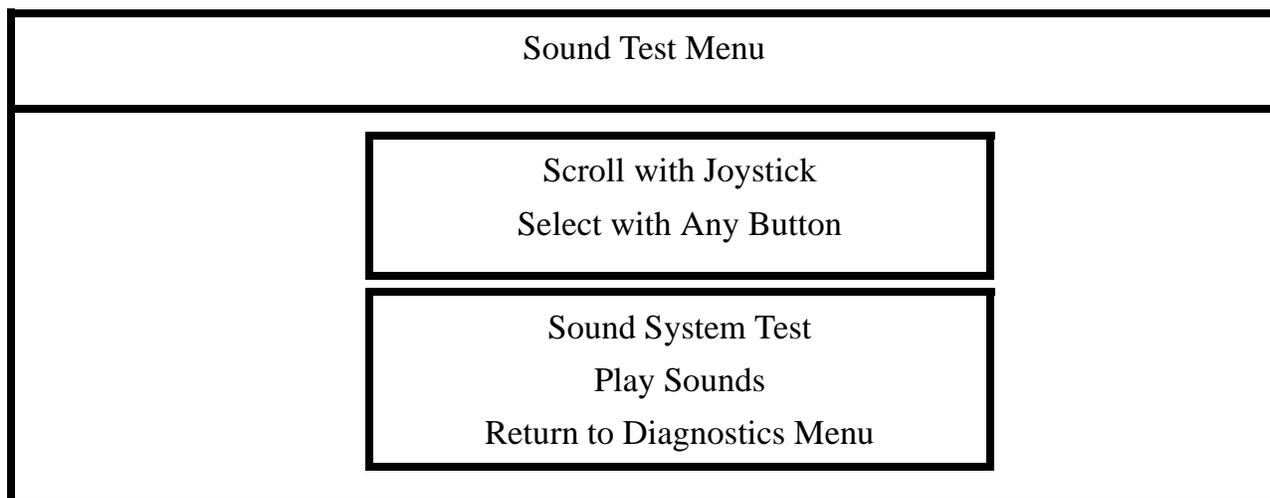
The Grid System Test
(Hold any button to Skip)

PIC	OK
Clock	OK
Wave RAM Bank 1	OK
Wave RAM Bank 0	OK
FAST RAM	OK
U10 Checksum	OK
U11 Checksum	OK
U12 Checksum	OK
U13 Checksum	OK
U14 Checksum	OK
U15 Checksum	OK
U16 Checksum	OK
U17 Checksum	OK
U18 Checksum	OK
U19 Checksum	OK
U20 Checksum	OK
U21 Checksum	OK
U22 Checksum	OK
U23 Checksum	OK
CMOS Memory	OK
Display INT	OK
ZEUS Chip	OK
Sound System	OK

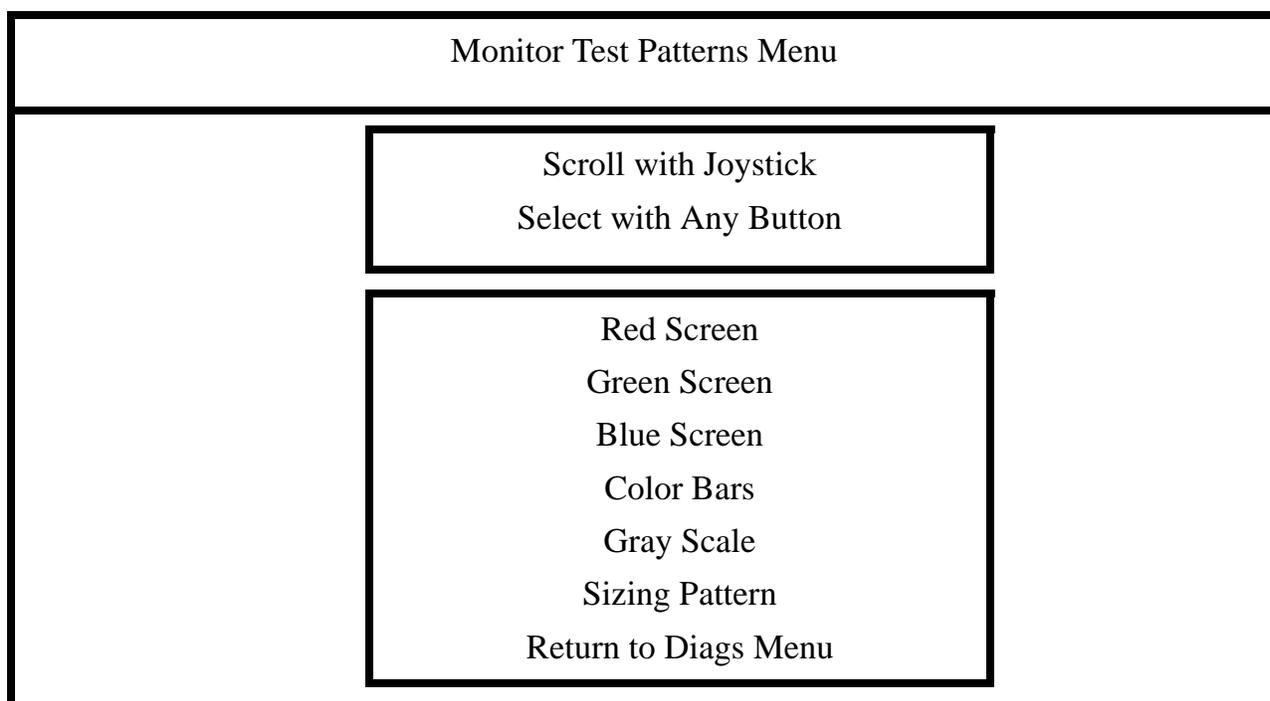


Hit any Button to Continue

Main Menu
Diagnostic Tests
Sound Test



Main Menu
Diagnostic Tests
Monitor Patterns



Main Menu
Diagnostic Tests
Burn In Test

Burn In Test

(Press and hold any button to exit)

Total Cycles Completed: 0

<u>Description</u>	<u>Status</u>	<u>Pass</u>	<u>Fail</u>
PIC	OK	1	0
Clock	OK	1	0
Fast RAM	OK	1	0
CMOS Memory	OK	1	0
Display INT	OK	1	0
ZEUS	OK	1	0

Main Menu
Diagnostic Tests
Coin Counter Test

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

Main Menu
Coin Bookkeeping

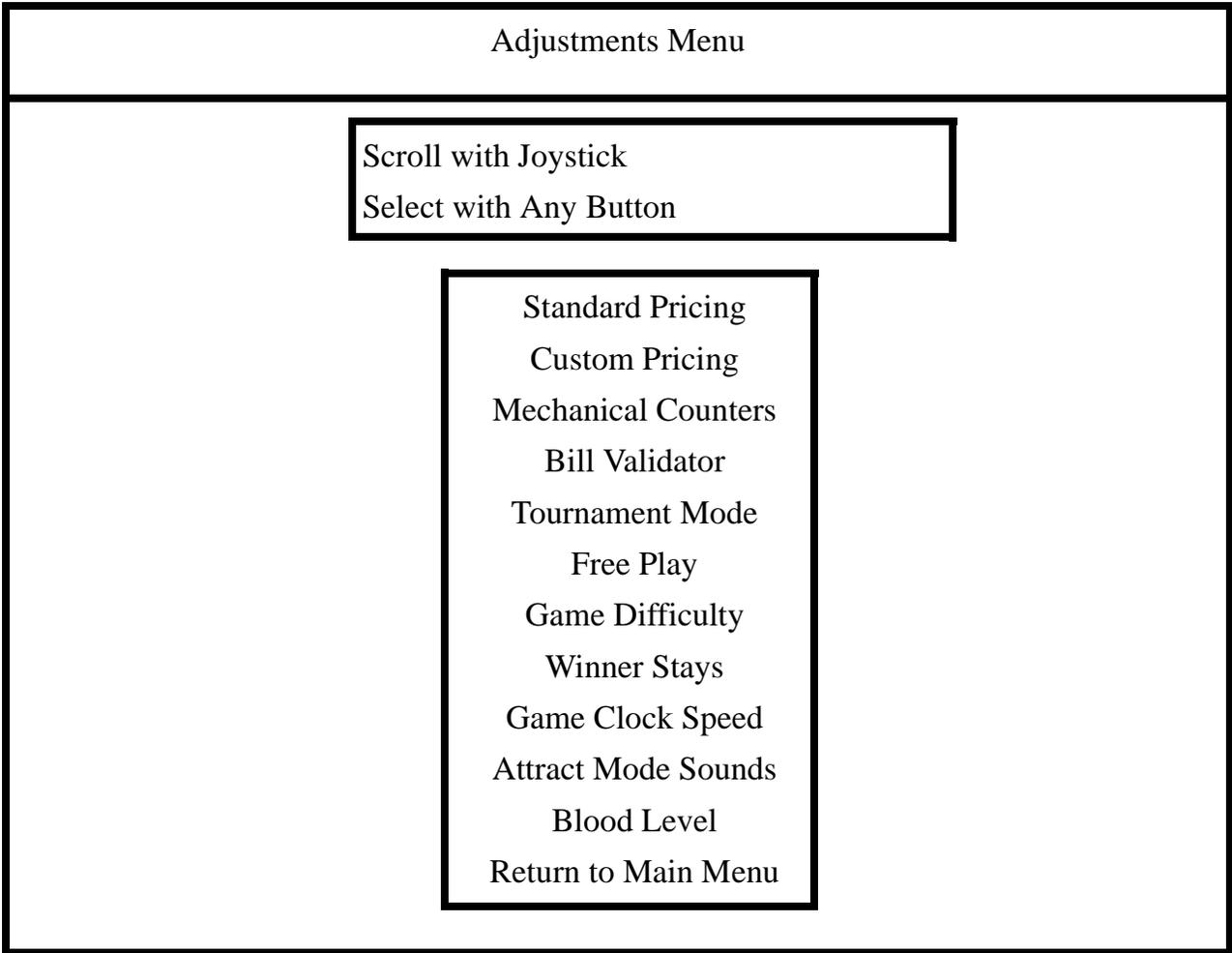
Coin Bookkeeping	
Left slot coins	
Right slot coins	
Center slot coins	
Fourth slot coins	
Bill Validator Count.	
Paid Credits	
Service Credits.	
Total Plays	
Total Collection	

Hit any Button to Continue

Main Menu
Game Audits
View Game Audits

Display Audit Data	
Hours game was on	(Next page) Kristy Chosen
Hours game was in play	Darla Chosen
Total Plays	Host Chosen
Single Player Buyin	Cameraman Chosen
Player Buyin	Scorpion Chosen
1 Player Count	Subzero Chosen
2 Player Count	Gridman Chosen
3 Player Count	Dogs
4 Player Count	Loffs
5 Player Count	
6 Player Count	
Wes Chosen	
Cyrus Chosen	
April Chosen	
Flint Chosen	
Ike Chosen	
Karasu Chosen	
Trixi Chosen	
Chiller Chosen	
Cleo Chosen	

Main Menu
Adjustments Menu



Pricing Table

Use the Pricing Table below as a guide to select and/or verify the desired coin credit setting(s)

NAME	START	CONTINUE	CREDITS/COIN	COIN 1	COIN 2	COIN 3	COIN4	BILL
ANTILLES	2	2	1/25¢, 4/1G	.25¢	1G			
AUSTRALIA 1	2	2	1/3X20¢, 2/\$1.00	.20¢	\$1.00			
AUSTRALIA 2	1	1	1/5X20¢, 1/\$1.00	.20¢	\$1.00			
AUSTRIA 1	2	2	1/5Sch, 2/10Sch	5 Sch	10 Sch			
AUSTRIA 2	2	2	1/2X5Sch, 3/2X10Sch	5 Sch	10 Sch			
BELGIUM 1	2	2	1/20BF	20BF	20BF			
BELGIUM 2	2	2	3/20BF	20BF	20BF			
BELGIUM 3	2	2	2/20BF	20BF	20BF			
BELGIUM ECA	2	2	1/20BF	5BF	20BF	50BF		
CANADA 1	2	2	1 / 2 x 25¢, 3 / \$1	25¢	25¢			
CANADA 2	2	2	1 / 2 x 25¢, 3 / \$1	25¢	\$1.00			
CANADA 3	2	2	3 / \$1.00, 6 / \$2.00	\$1.00	\$2.00			
CANADA ECA	2	2	1 / 2 x 25¢, 3 / \$1	25¢		\$1.00	\$2.00	
DENMARK	2	2	3/5DKr, 7/10DKr	5DKr	10DKr			
FINLAND	2	2	1/1Fmk	1Fmk	5Fmk			
FRANCE 1	2	2	2/5Fr, 5/10Fr	5Fr	10Fr			
FRANCE 2	2	1	2/5Fr, 4/10Fr	5Fr	10Fr			
FRANCE 3	2	1	1/5Fr, 3/10Fr	5Fr	10Fr			
FRANCE 4	2	1	1/5Fr, 2/10Fr	5Fr	10Fr			
FRANCE 5	2	1	2/5Fr, 5/10Fr, 11/2 X 10Fr	5Fr	10Fr			
FRANCE 6	2	1	2/5Fr, 4/10Fr, 9/2 X 10Fr	5Fr	10Fr			
FRANCE 7	2	1	1/5Fr, 3/10Fr, 7/2 X 10Fr	5Fr	10Fr			
FRANCE 8	2	1	1/5Fr, 2/10Fr, 5/2 X 10Fr	5Fr	10Fr			
FRANCE 9	2	1	1/3 X 1Fr, 2/5Fr	1Fr	5Fr			
FRANCE 10	2	1	1/2 X 1Fr, 3/5Fr	1Fr	5Fr			
FRANCE 11	2	1	1/3 X 1Fr, 2/5Fr, 5/2 X 5Fr	1Fr	5Fr			
FRANCE 12	2	1	1/2 X 1Fr, 3/5Fr, 7/2 X 5Fr	1Fr	5Fr			
FRANCE ECA	1	1	1/10Fr, 2/20Fr, 4/30Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 1	1	1	2/5Fr, 5/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 2	1	1	2/5Fr, 4/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 3	1	1	1/5Fr, 3/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 4	1	1	1/5Fr, 2/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 5	1	1	2/5Fr, 5/10Fr, 11/20Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 6	1	1	2/5Fr, 4/10Fr, 9/20Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 7	1	1	1/5Fr, 3/10Fr, 7/20Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 8	1	1	1/5Fr, 2/10Fr, 5/20Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 9	1	1	1/3 X 1Fr, 2/5Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 10	1	1	1/2 X 1Fr, 3/5Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 11	1	1	1/3 X 1Fr, 2/5Fr, 5/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 12	1	1	1/3 X 1Fr, 3/5Fr, 7/10Fr	1Fr	5Fr	10Fr	20Fr	
FRANCE ECA 13	1	1	1/10Fr, 2/20Fr, 4/30Fr	1Fr	5Fr	10Fr	20Fr	
FREE PLAY	--	--	--	None	None	None	None	None
GERMANY 1	2	2	1/1DM, 6/5DM	1DM	5DM			
GERMANY 2	2	1	1/1DM, 7/5DM	1DM	5DM			
GERMANY 3	2	1	1/1DM, 8/5DM	1DM	5DM			
GERMANY 4	2	1	1/1DM, 5/5DM	1DM	5DM			
GERMANY 5	2	1	1/1DM, 6/5DM	1DM	5DM			
GERMANY ECA 1	2	2	1/1DM, 2/2DM, 6/5DM	1DM	2DM	5DM		
GERMANY ECA 2	2	1	1/1DM, 2/2DM, 6/5DM	1DM	2DM	5DM		
GERMANY ECA 3	1	1	1/1DM, 2/2DM, 6/5DM	1DM	2DM	5DM		

do not
use

NAME	START	CONTINUE	CREDITS/COIN	COIN 1	COIN 2	COIN 3	COIN4	BILL
HUNGARY	2	2	1/2X10Ft, 3/2X20Ft	10Ft	20Ft			
ITALY	2	2	1/500Lit	500Lit	500Lit			
JAPAN 1	2	2	1/100Yen	100 Yen	100 Yen			
JAPAN 2	2	2	2/100Yen	100 Yen	100 Yen			
JAPAN 3	1	1	1/100Yen	100 Yen	100 Yen			
JAPAN 4	1	1	2/100Yen	100 Yen	100 Yen			
JAPAN 5	1	1	4/100Yen	100 Yen	100 Yen			
JAPAN 6	1	1	1/2X100Yen	100 Yen	100 Yen			
NETHERLANDS	2	2	1/1HFI, 3/2.5HFI	1HFI	2.5HFI			
NEW ZEALAND 1	1	1	1/\$1	\$1	\$2			
NEW ZEALAND 2	1	1	2/\$1	\$1	\$2			
NORWAY	2	2	3/5NKr, 6/10NKr	5NKr	10NKr			
SPAIN 1	2	2	1/100Pta, 6/500Pta	100Pta	500Pta			
SPAIN 2	2	2	1/100Pta, 5/500Pta	100Pta	500Pta			
SWEDEN	2	2	1/3X1SKr, 2/5SKr	1SKr	5SKr			
SWITZERLAND 1	2	2	1/1SFr, 6/5SFr	1SFr	5SFr			
SWITZERLAND 2	2	2	1/1SFr, 7/5SFr	1SFr	5SFr			
SWITZERLAND 3	2	2	1/1SFr, 8/5SFr	1SFr	5SFr			
UK ECA 1	1	1	1/50p, 3/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 2	1	1	1/50p, 2/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 3	1	1	1/30p, 2/50p, 5/£1.00	£1.00	50p	20p	10p	£2.00
UK 4	1	1	1/50p, 3/£1.00	£1.00	50p			
UK 5	1	1	1/50p, 2/£1.00	£1.00	50p			
UK ECA 6	1	1	1/30p, 2/50p, 4/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 7	1	1	3/£1.00	£1.00	50p	20p	10p	£2.00
UK ECA 8	1	1	1/50p, 2/£1.00, 4/£2.00	£1.00	50p	20p	10p	£2.00
USA1	2	2	1/25¢	25¢	25¢			\$1.00
USA2	2	1	1/25¢	25¢	25¢			\$1.00
USA3	1	1	1/25¢	25¢	25¢			\$1.00
USA4	1	1	1/50¢, 3/\$1.00	25¢	25¢			\$1.00
USA5	2	1	1/50¢, 4/\$1.00	25¢	25¢			\$1.00
USA6	1	1	1/50¢	25¢	25¢			\$1.00
USA7	1	1	1/50¢, 3/\$1.00	25¢	25¢			\$1.00
USA8	2	2	1/50¢, 4/\$1.00	25¢	25¢			\$1.00
USA9	3	2	1/25¢, 4/\$1.00	25¢	25¢			\$1.00
USA10	3	3	1/25¢, 4/\$1.00	25¢	25¢			\$1.00
USA11	4	2	1/25¢, 4/\$1.00	25¢	25¢			\$1.00
USA12	4	3	1/25¢, 4/\$1.00	25¢	25¢			\$1.00
USA13	4	4	1/25¢, 4/\$1.00	25¢	25¢			\$1.00
USA14	3	2	1/25¢	25¢	25¢			\$1.00
USA ECA	2	2	1/25¢, 4/\$1.00	\$1.00	25¢	10¢	05¢	\$1.00
USA DC 1	2	2	1/25¢	25¢	\$1.00			\$1.00
USA DC 2	2	1	1/25¢	25¢	\$1.00			\$1.00
USA DC 3	1	1	1/25¢	25¢	\$1.00			\$1.00
USA DC 4	3	2	1/25¢, 4/\$1.00	25¢	\$1.00			\$1.00
USA DC 5	3	3	1/25¢, 4/\$1.00	25¢	\$1.00			\$1.00
USA DC 6	4	2	1/25¢, 4/\$1.00	25¢	\$1.00			\$1.00
USA DC 7	4	3	1/25¢, 4/\$1.00	25¢	\$1.00			\$1.00
USA DC 8	4	4	1/25¢, 4/\$1.00	25¢	\$1.00			\$1.00

Main Menu
Adjustments Menu
Standard Pricing

Select Standard Pricing Mode

DIP Switch coinage is ON
Pricing Mode set by DIP Switches B1

10 of 65
Pricing Mode: USA 10
3 to Start 3 to Continue
1 CREDIT/1 COIN

Coin 1 (Left):	.25
Coin 2 (Right):	.25
Coin 3: (Center)	-
Coin 4: (Extra)	-
Bill Validator:	\$1.00

Hit Any Button to Continue

Main Menu
Adjustments Menu
Custom Pricing

Custom Pricing Settings

Use joystick to select item

Hit any button to change selected items.

Left Units	1
Right Units	1
Center Units	0
Extra Units	0
Validator	4
Units per Credit	1
Units per Bonus	NONE
Minimum Units	NO MIN
Credits to Start	3
Credits to Cont.	3
Maximum credits	30
Coins per Bill	4
Show Fractions	NO
Return to Menu	

Units given for each coin the player puts into the left chute. (default is 1)

Units given for each coin the player puts into the right chute. (default is 1)

Units given for each coin the player puts into the center chute. (default is 1)

Units given for each coin the player puts into the extra chute. (default is 1)

Units given for each bill the player puts into the validator. (default is 4)

Number of units needed to make one credit. (default is 1)

Number of units needed before a bonus credit is given. Set to zero for no bonus (default.)

Minimum units needed before any credit is given. Set to zero for no minimum (default).

Whether or not to show fractional credits on the credits screen. (default is no.)

Total collections are based on this many coins per bill. Set to zero to disable the total collections display (default).

Maximum number of credits allowed (default is 30).

Number of credits needed to continue a game (default is 3).

Number of credits needed to start a game (default is 3).

Main Menu
Adjustments Menu
Mechanical Counters

Mechanical Counter Settings

Use joystick to select item.
Hit any button to change selected item.

<p>Sets the number of totalizer clicks for each coin through the left chute, right chute, center chute, extra chute, or bill validator.</p>	Left multiplier	255	<p>Sets the counter clicked when coins go through the left chute, right chute, center chute, extra chute, or bill validator.</p>
	Left Output	0	
	Right Multiplier	255	
	Right Output	0	
	Center Multiplier	255	
	Center Output	0	
	Extra Multiplier	1	
	Extra Output	0	
	Bill Multiplier	4	
	Bill Output	0	
Use Settings		No	<p>Whether to use custom values set above or std. settings.</p>
Return to Menu			

Main Menu
Adjustments Menu
Bill Validator

Bill Validator		
<p>Sets whether or not there is a bill validator installed.</p> <p>Factory setting is YES</p> <p>Current setting is YES</p> <table border="1" style="margin: 0 auto;"><tr><td style="text-align: center;">YES</td></tr><tr><td style="text-align: center;">NO</td></tr></table> <p>Select YES or NO with joystick.</p> <p>Confirm choice with any button.</p>	YES	NO
YES		
NO		

Main Menu
Adjustments Menu
Tournament Mode

Tournament Mode		
<p>Makes changes to game adjustments and features for Tournament Play</p> <p>Factory setting is OFF</p> <p>Current setting is OFF</p> <table border="1" style="margin: 0 auto;"><tr><td style="text-align: center;">ON</td></tr><tr><td style="text-align: center;">OFF</td></tr></table> <p>Select ON or OFF with joystick.</p> <p>Confirm choice with any button.</p>	ON	OFF
ON		
OFF		

Main Menu
Adjustments Menu
Free Play

Free Play		
<p>Allows game to be played without credits or inserting coins. Factory setting is OFF Current setting is OFF</p> <table border="1"><tr><td style="text-align: center;">ON</td></tr><tr><td style="text-align: center;">OFF</td></tr></table> <p>Select ON or OFF with joystick. Confirm choice with any button.</p>	ON	OFF
ON		
OFF		

Main Menu
Adjustments Menu
Game Difficulty

Game Difficulty	
<p>Adjusts the difficulty level of the game. Factory setting is 3 MEDIUM Current setting is 3 MEDIUM</p> <table border="1"><tr><td style="text-align: center;">3 MEDIUM</td></tr></table> <p>Select with joystick. Confirm choice with any button.</p>	3 MEDIUM
3 MEDIUM	

Main Menu
Adjustments Menu
Game Clock Speed

Multi Player Game Timer Speed

Adjusts the speed of the Multi-Player
Game Clock. 60 = Real Time.
Lower values make the Game Clock Faster
Factory Setting is 40

40

Select with joystick.
Confirm choice with any button.

Main Menu
Adjustments Menu
Winner Stays

Winner Stays

Determines if the winner of a
multi-player game will be awarded
a free game
Factory setting is OFF
Current setting is OFF

ON
OFF

Select ON or OFF with joystick.
Confirm choice with any button.

Main Menu

Adjustments Menu

Attract Mode Sounds

Attract Mode Sounds

Selects whether or not sounds will be played during attract mode.

Factory setting is ON

Current setting is OFF

ON

OFF

Select ON or OFF with joystick.

Confirm choice with any button.

Main Menu

Adjustments Menu

Blood Level

Game Blood Level

Determines the amount of blood effects
that will be displayed in the game.

This adjustment can be overridden by the
NO BLOOD switch SW1-1 (See manual)

Factory setting is Default Blood

Current setting is Default Blood

Default, No Blood, or Max Blood

Select Level with joystick.

Confirm choice with any button.

Main Menu
Utilities
Clear Credits

Clear Credits				
<table border="1"> <tr> <td>CLEAR CREDITS ARE YOU SURE?</td> </tr> <tr> <td style="text-align: center;"> <table border="1"> <tr> <td>YES</td> </tr> <tr> <td>NO</td> </tr> </table> </td> </tr> </table>	CLEAR CREDITS ARE YOU SURE?	<table border="1"> <tr> <td>YES</td> </tr> <tr> <td>NO</td> </tr> </table>	YES	NO
CLEAR CREDITS ARE YOU SURE?				
<table border="1"> <tr> <td>YES</td> </tr> <tr> <td>NO</td> </tr> </table>	YES	NO		
YES				
NO				

Screens are essentially the same for Clear Coin Counter, Clear Game Audits, Reset all Player Codes, Reset High Scores, Default Adjustments, and Factory Settings

Main Menu
Utilities
Set Time and Date

Set Time and Date
<p>Move Joystick LEFT and RIGHT to select field to adjust.</p> <p>Move joystick UP and DOWN to change value.</p> <p>Hit Start button to set time.</p> <p>Any other button to cancel and exit</p> <p>Time: 07:00:35 PM</p> <p>Date: Friday July 04 1776</p>

Main Menu
System Information

System Information	
Game serial number	
Game Type	
Date of manufacture	
Game Code Version	
Game Code compiled	
Diag code version	
Disc ASIC U11 Version	

Hit any Button to Continue

Main Menu
Volume Adjustments
Set Volume

Set Volume

Adjust volume with Joystick
or Volume +/- Buttons.
Hit Any Other Button to Exit.

MAX



MIN

volume: 16

Main Menu
Volume Adjustments
Minimum Volume

Minimum Volume

Sets the minimum level allowed
when setting the volume.

Factory setting is 15
Current setting is 15

Minimum Volume

15

Select with joystick.
Confirm choice with any button.

NOTES:

THE GRID



CHAPTER

1 0 0 1 0 0 1 0 0 1 0 0 1 **0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 1 0 0 **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 1 0 **0 1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 1 **0** **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 **1** **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 **0** 1 0 0 **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 **0 0** 1 0 0 **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 **1 0 0 1 0 0 1 0 0 1 0** 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 1 0 0 **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 1 0 0 **1 0 0 1** 0 0 1 0 0 1 0 0
1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0

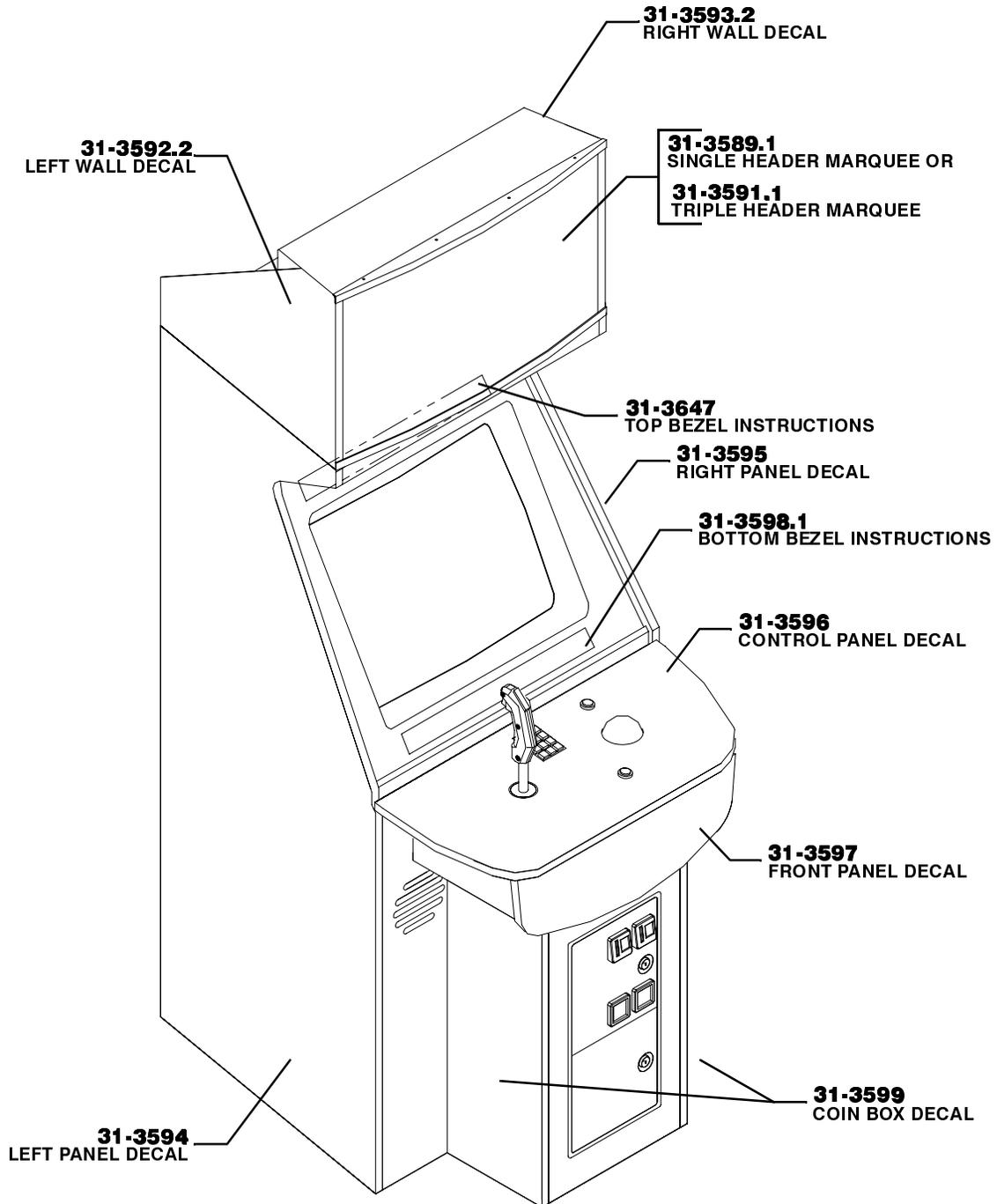
Parts

WARNING

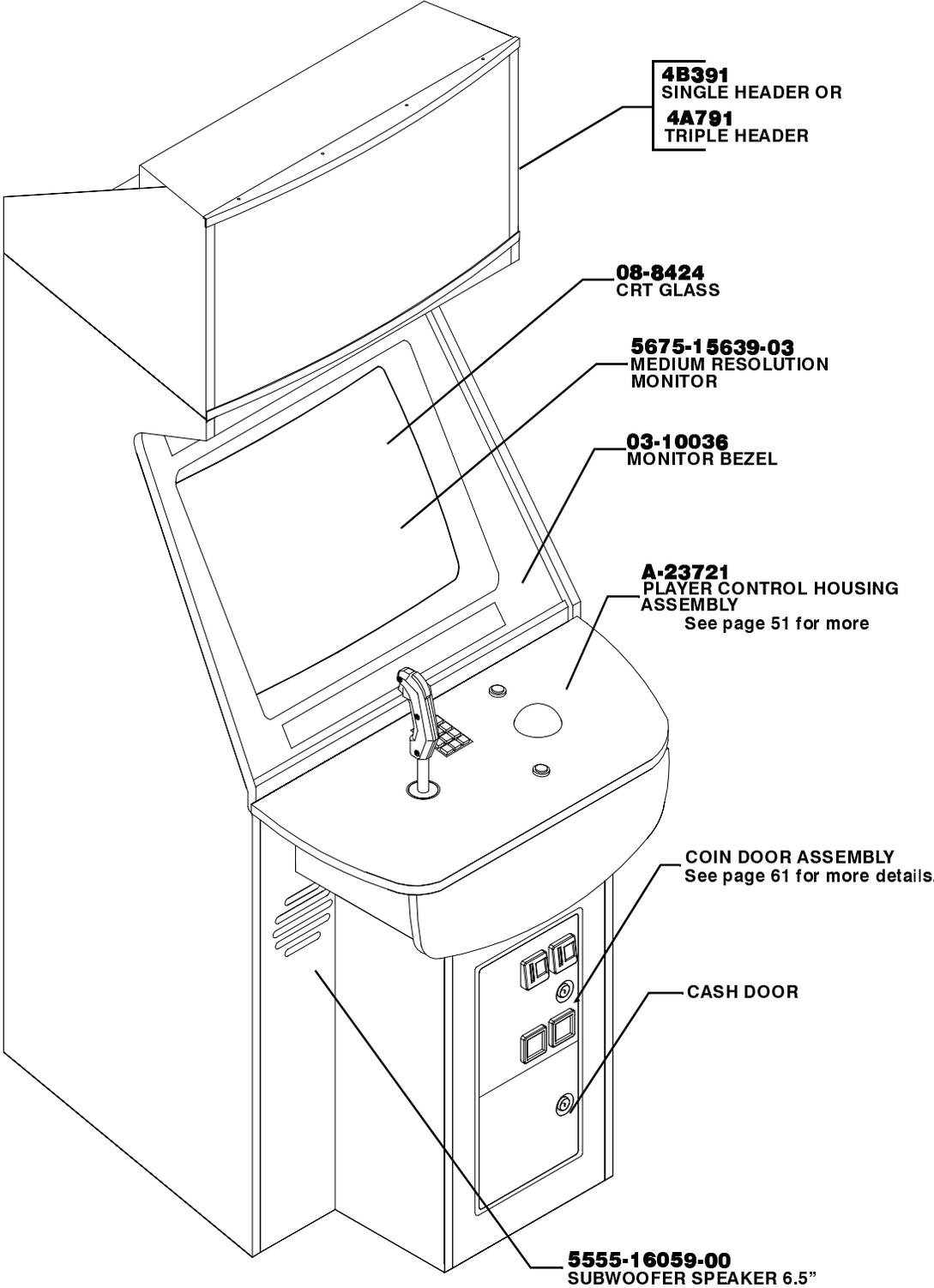
USE OF NON-MIDWAY PARTS OR CIRCUIT MODIFICATIONS MAY CAUSE SERIOUS INJURY OR EQUIPMENT DAMAGE!
USE ONLY MIDWAY AUTHORIZED PARTS.

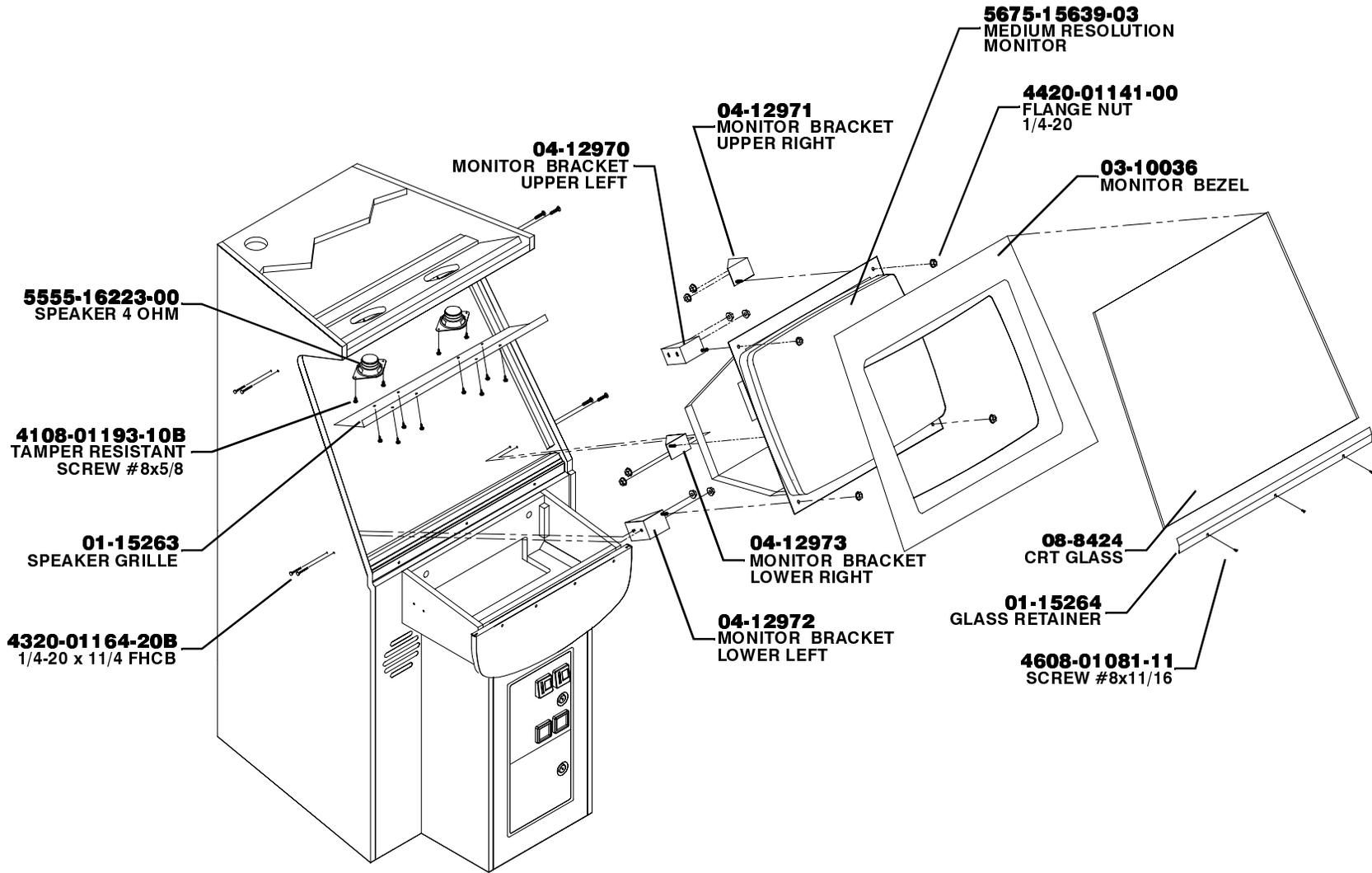
- For safety and reliability, substitute parts and modifications are not recommended.
- Substitute parts or modifications may void EMC directive or FCC type acceptance.

CABINET DECALS



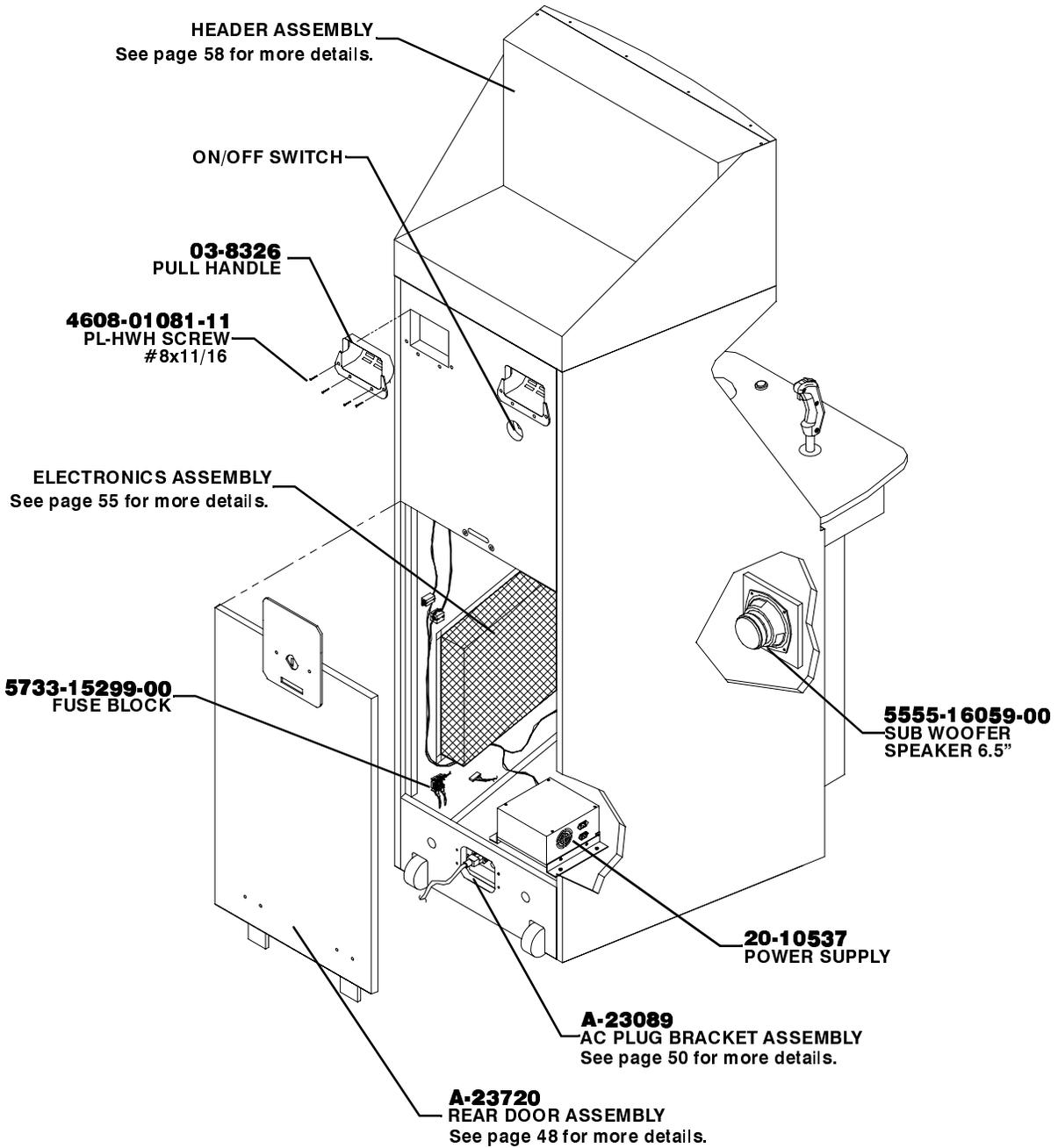
CABINET FRONT VIEW



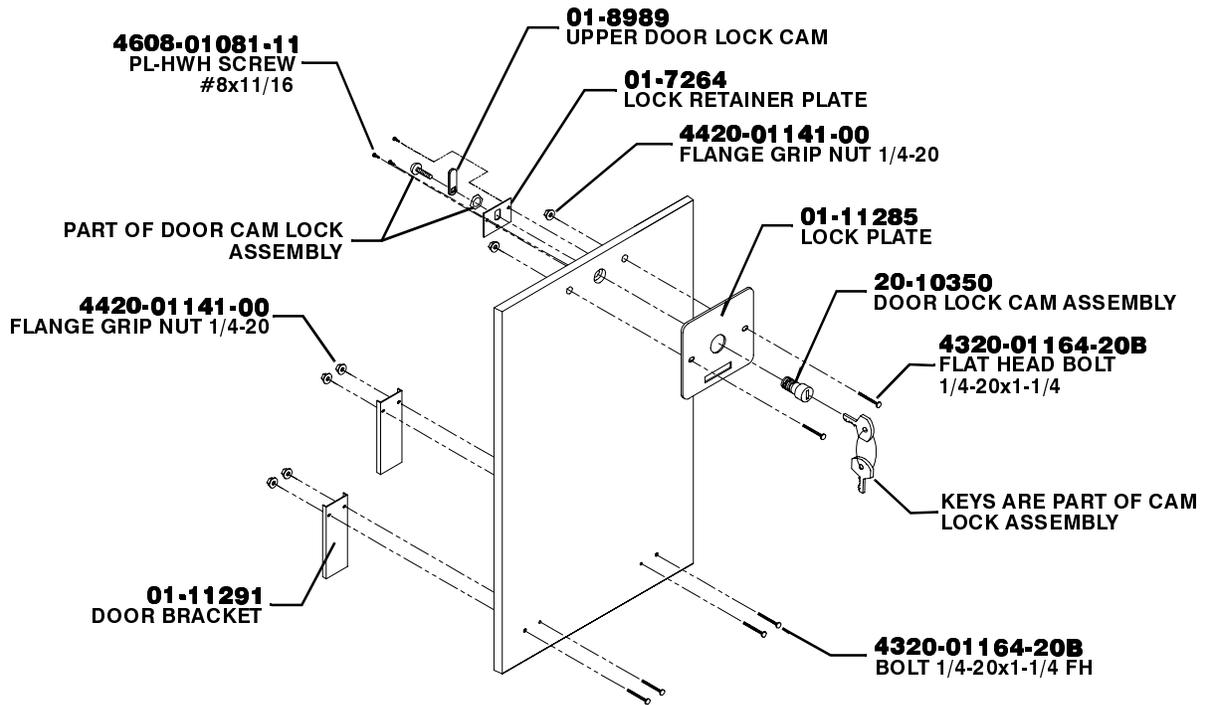


MONITOR MOUNTING

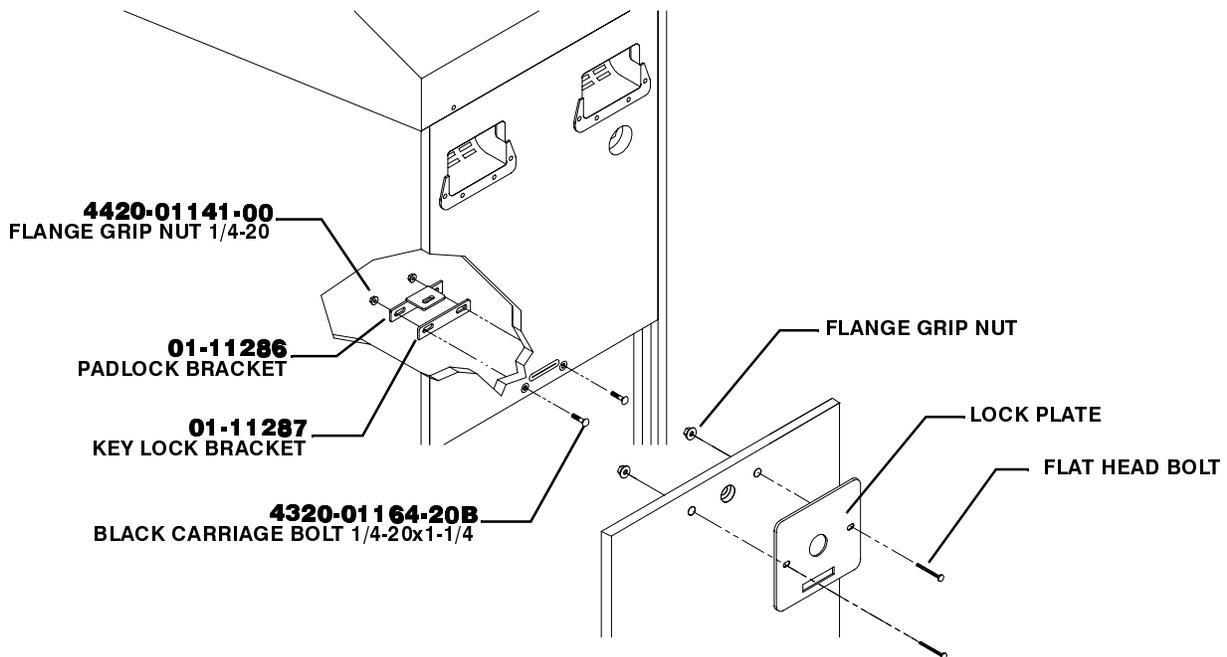
CABINET REAR VIEW



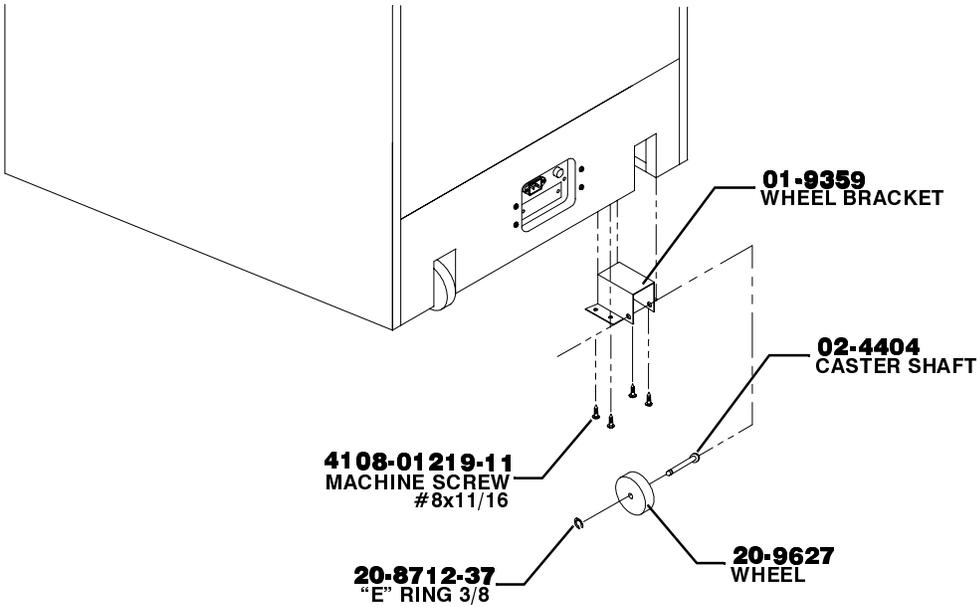
REAR DOOR ASSEMBLY (A-23720)



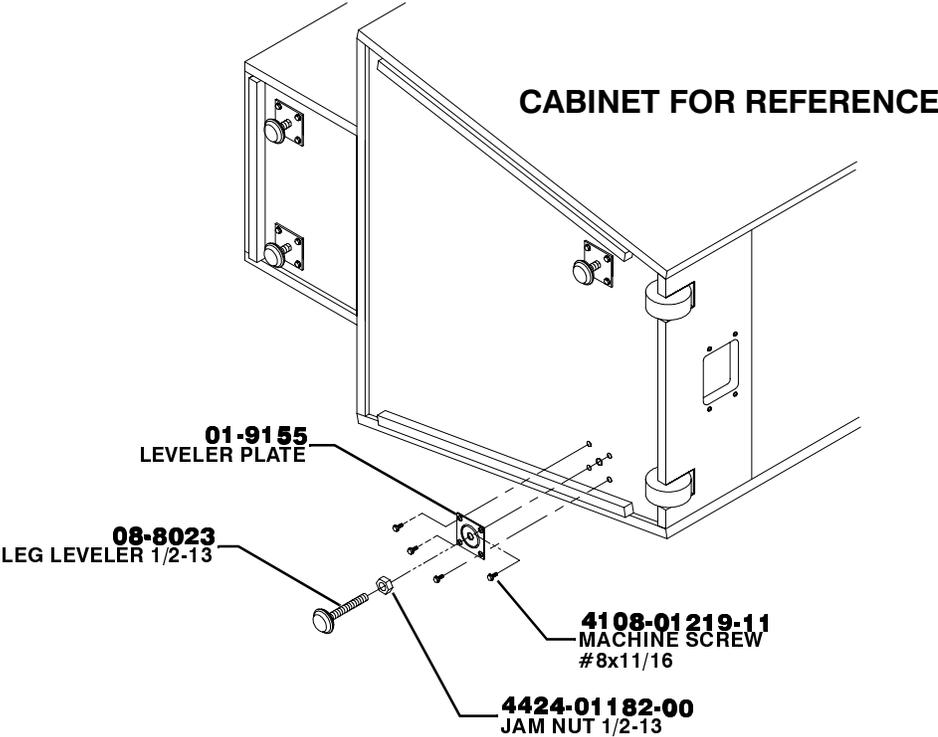
REAR DOOR LOCK ASSEMBLY



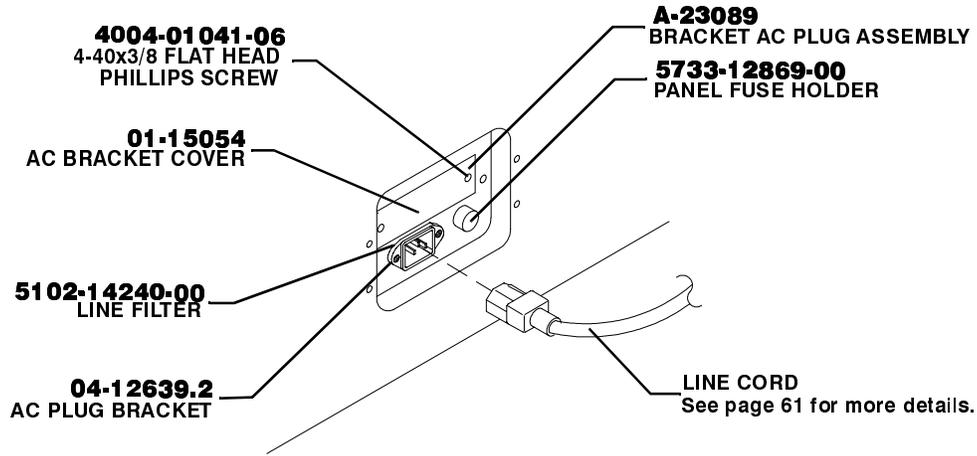
CASTERS



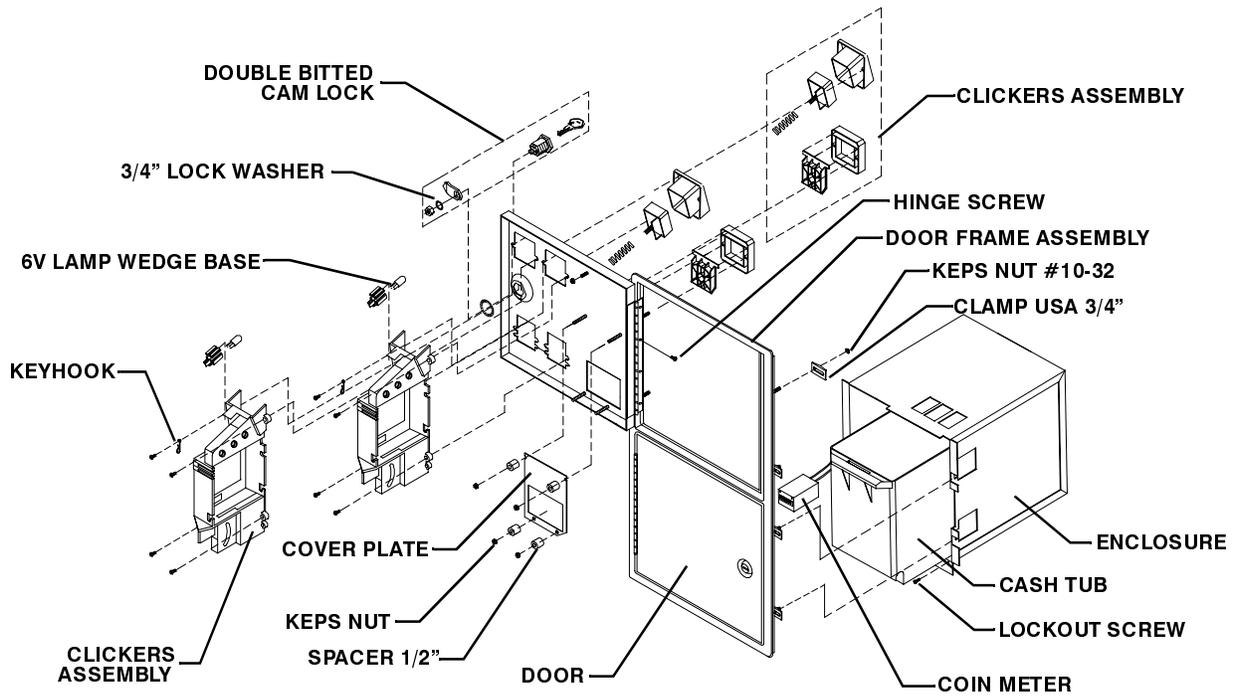
LEVELERS



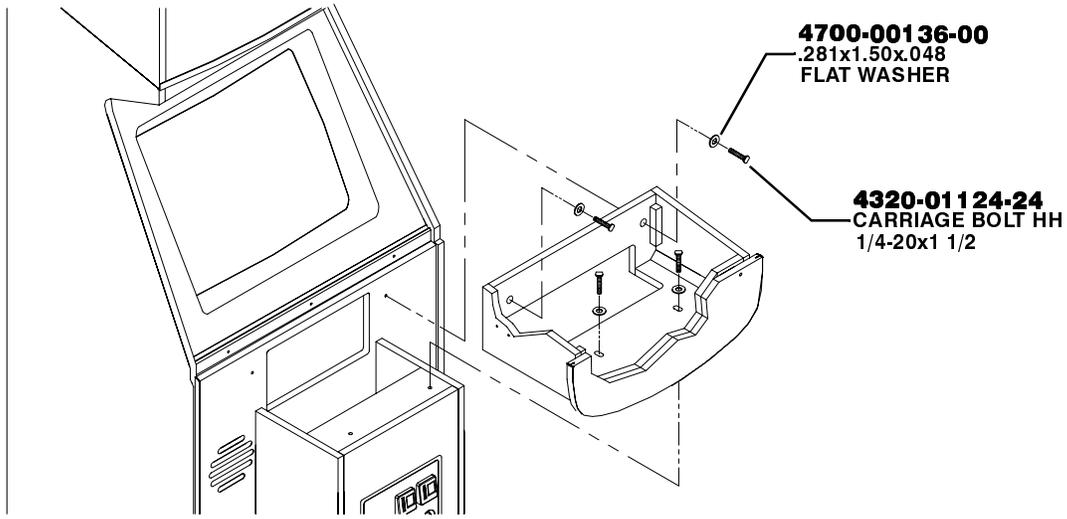
AC POWER PLUG WITH BRACKET ASSEMBLY (A-23089)



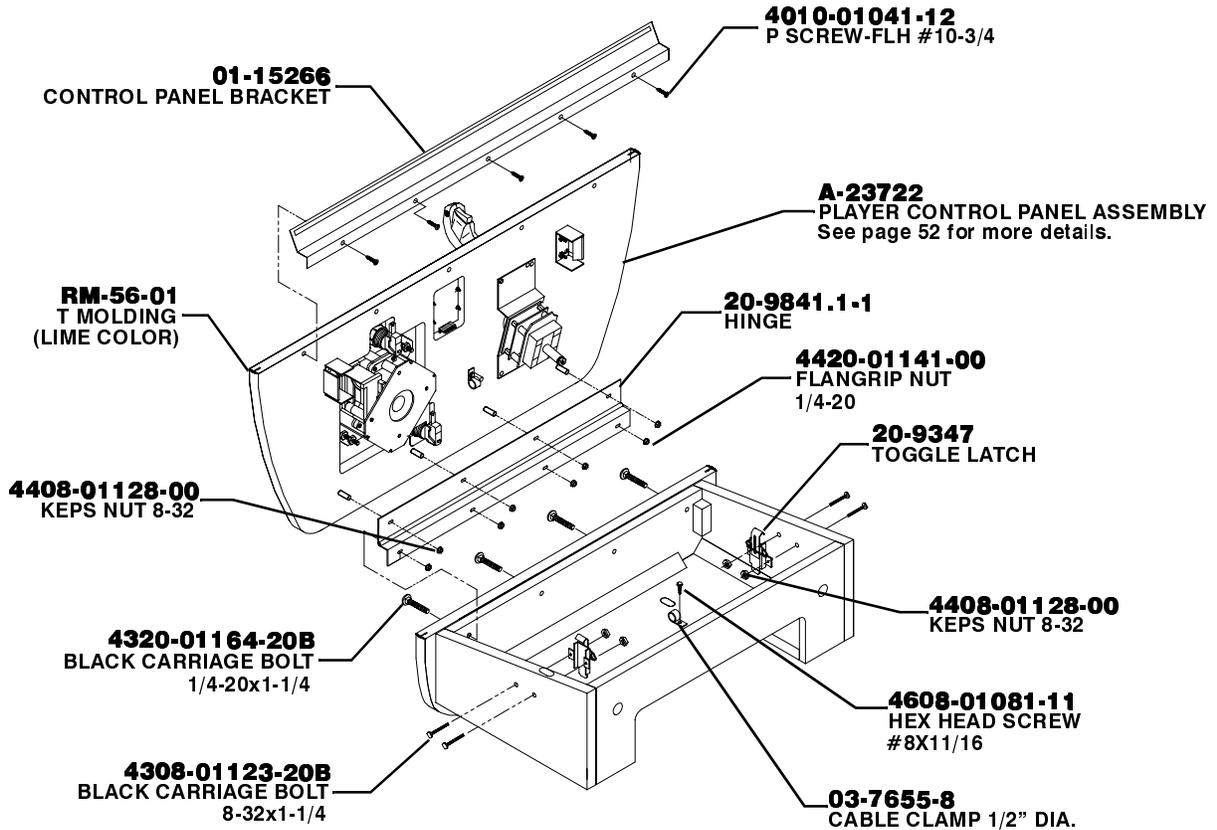
COIN DOOR ASSEMBLY



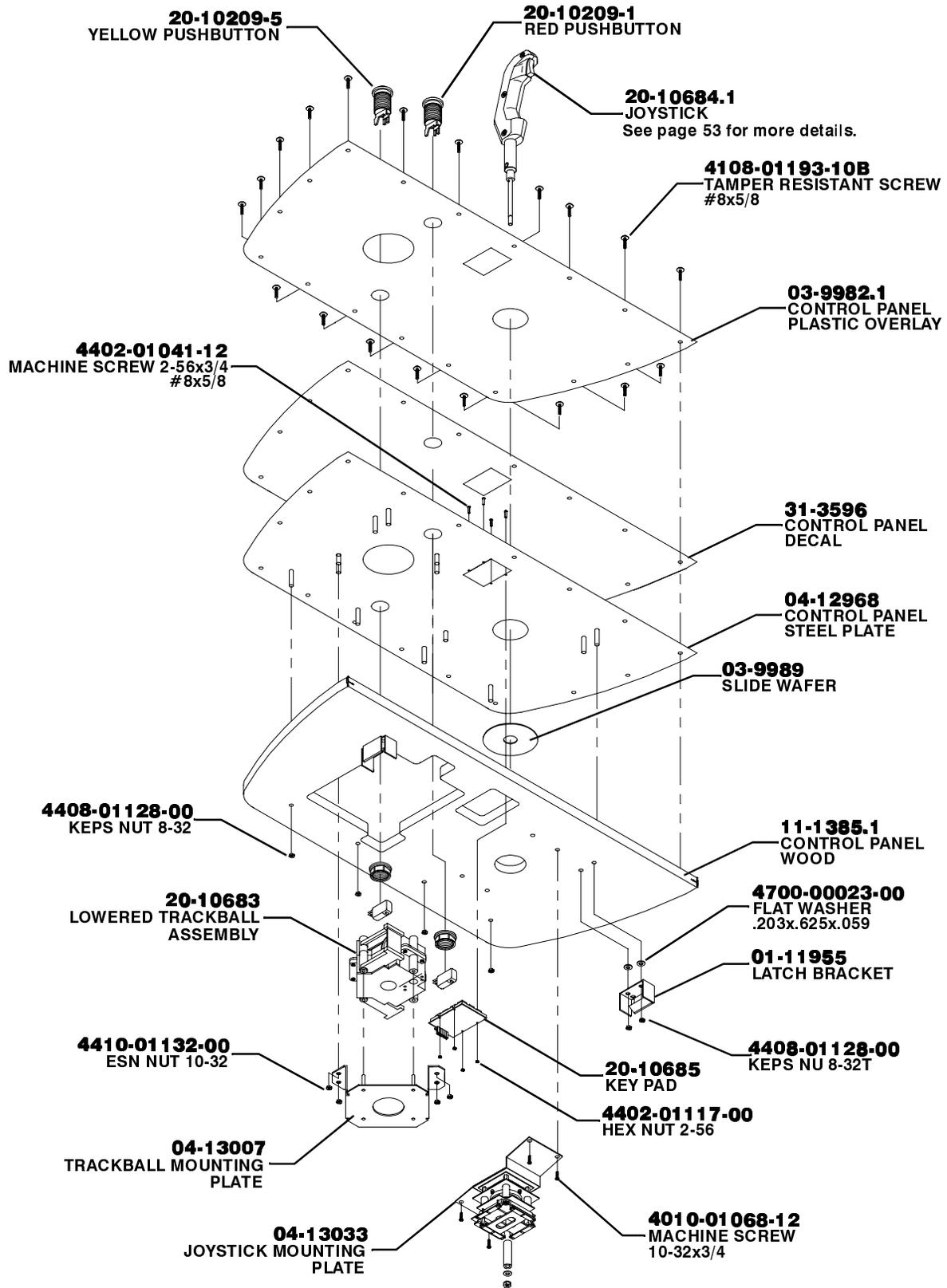
CONTROL PANEL WITH HOUSING INSTALLATION



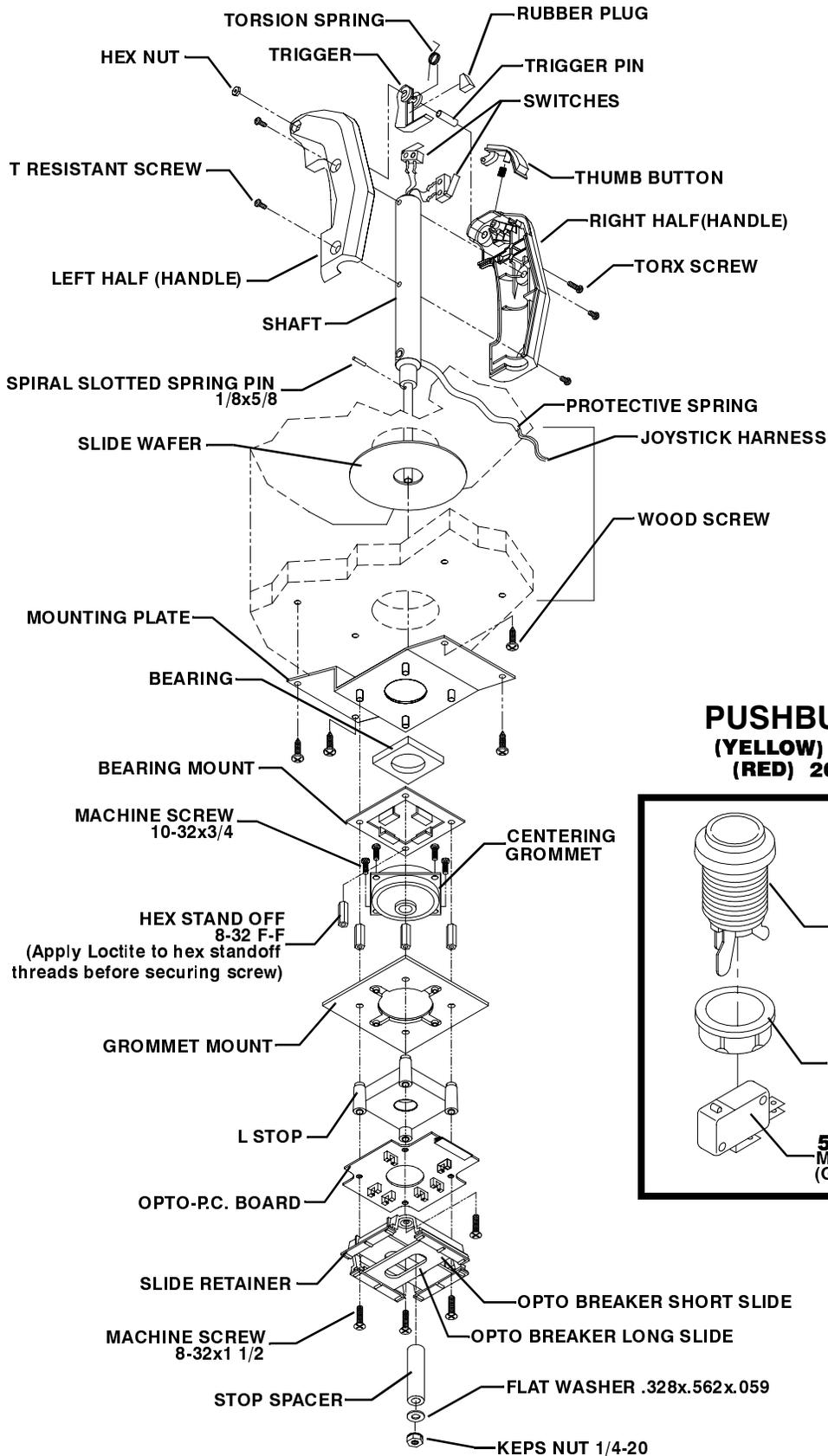
CONTROL PANEL AND HOUSING ASSEMBLY (A-23721)



CONTROL PANEL ASSEMBLY (A-23722)

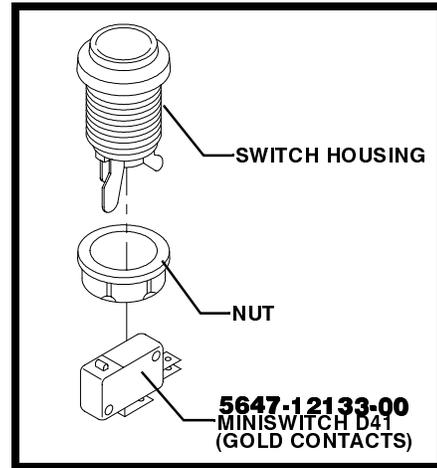


JOYSTICK ASSEMBLY (20-10684.1)

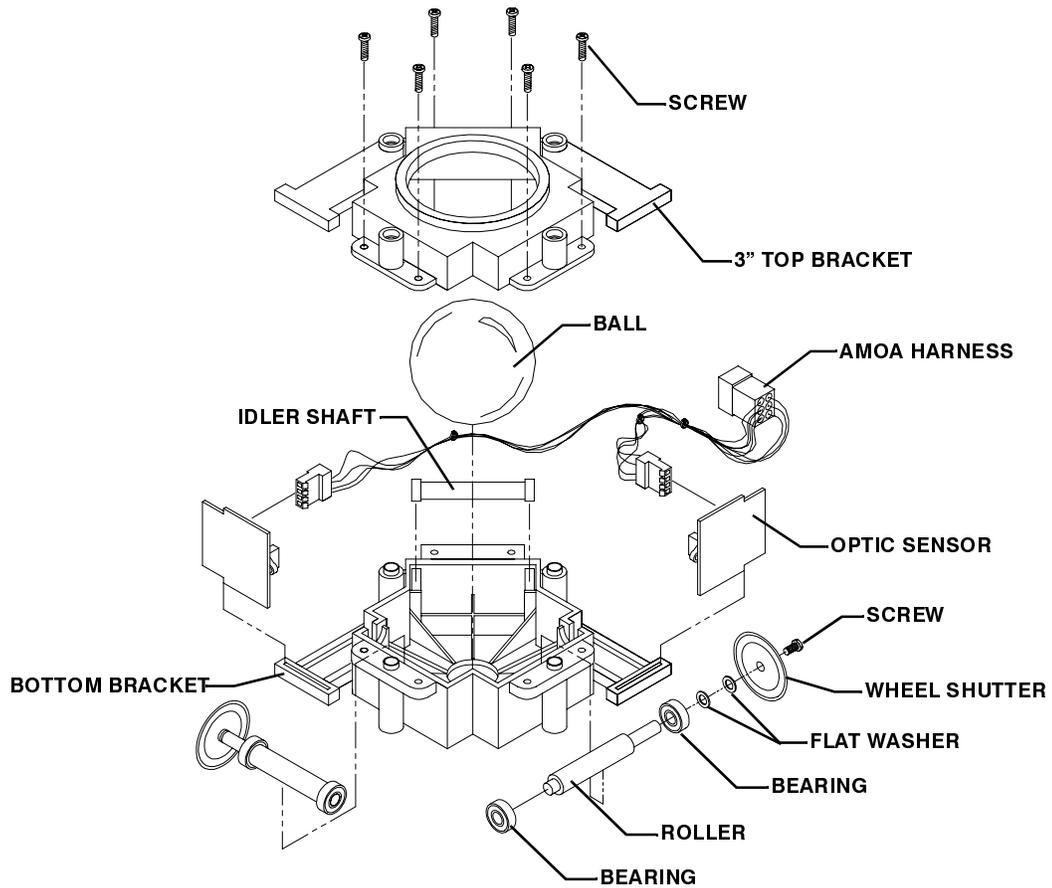


PUSHBUTTONS

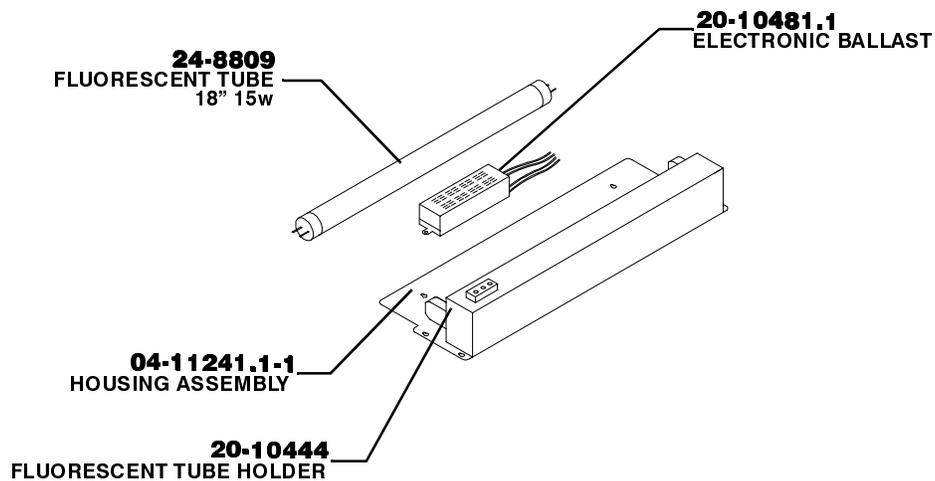
(YELLOW) 20-10209-5
 (RED) 20-10209-1



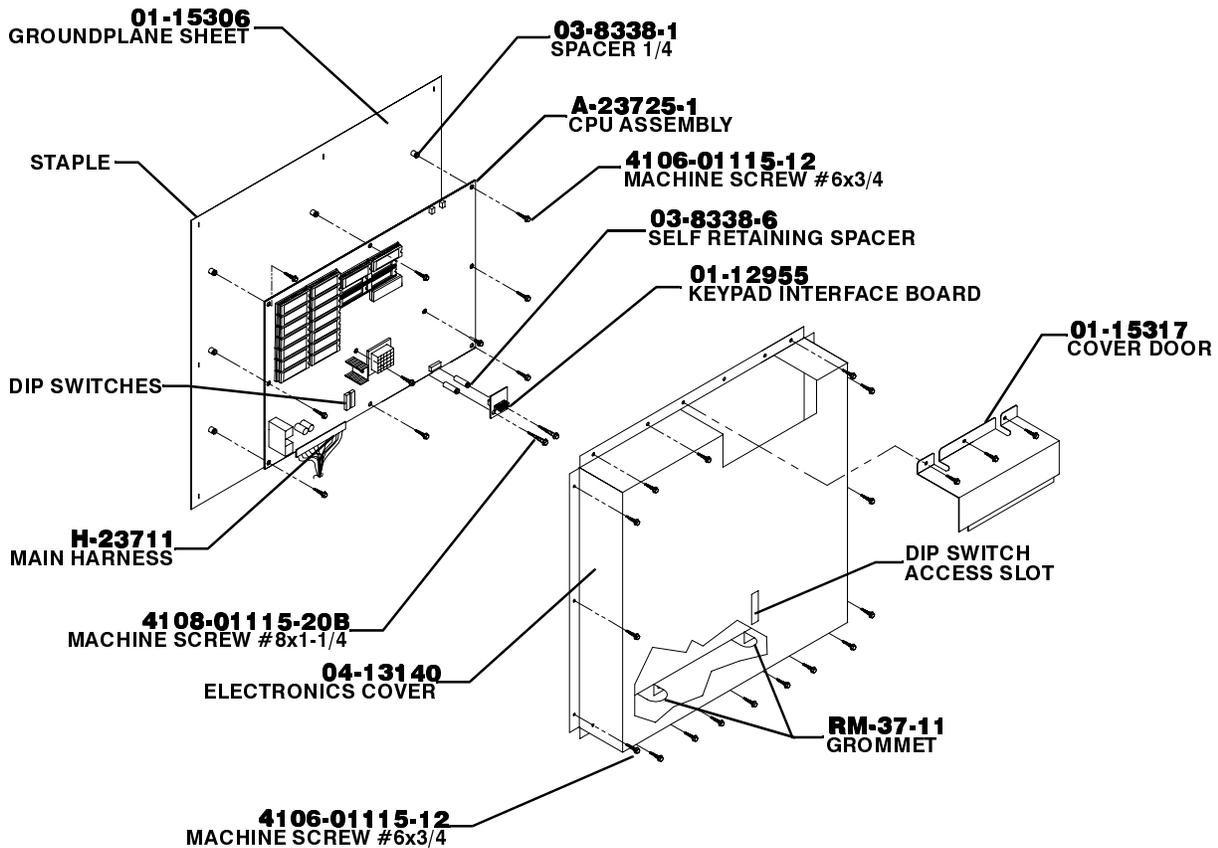
LOWERED TRACKBALL ASSEMBLY (20-10683)



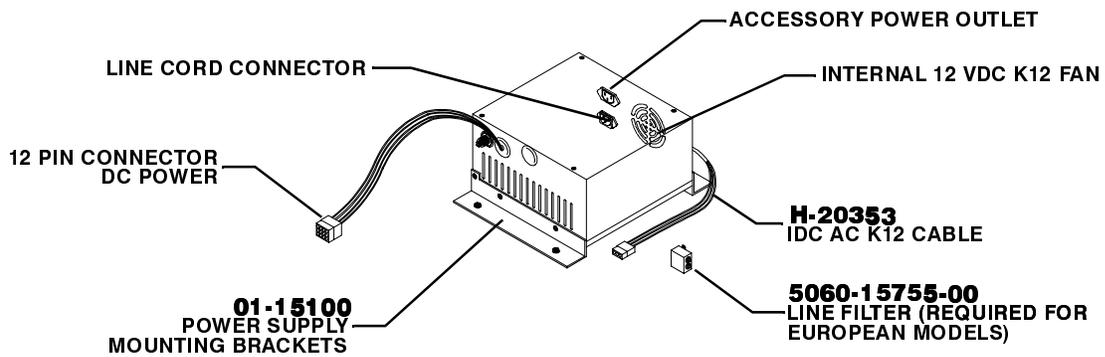
FLUORESCENT LAMP ASSEMBLY (A-22506-1)



ELECTRONICS ASSEMBLY (A-23899)



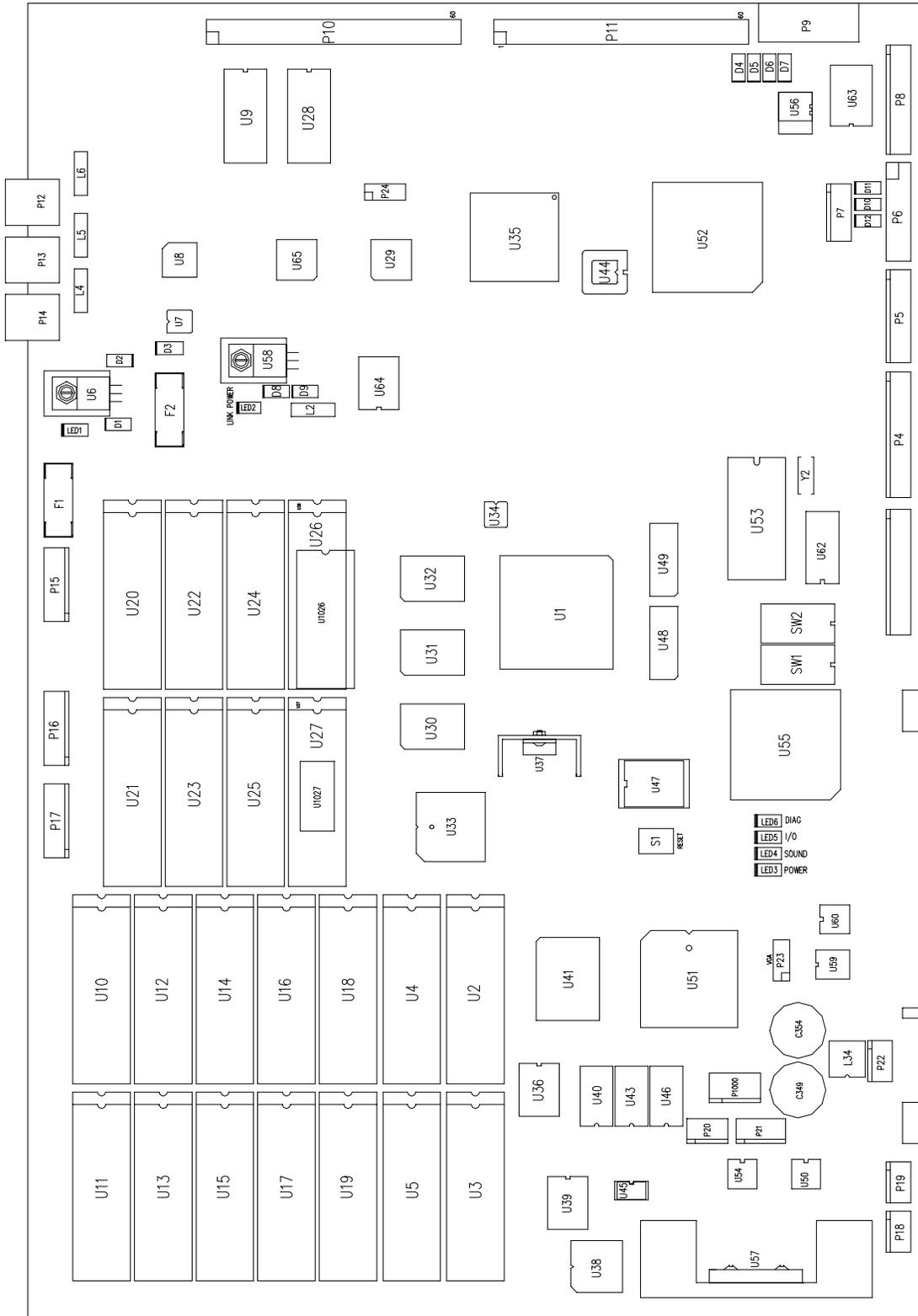
POWER SUPPLY (20-10537)



PIN #	FUNCTION	WIRE COLOR
1, 2, 3	+5 DVC	RED
4, 5, 6, 7, 8	GROUND	BLACK
9	-5 DVC	WHITE*
10, 11	+12 DVC	YELLOW*
12	-12 DVC	BLUE*

*NOTE: Many computer grade power supplies use alternate wire colors. This is acceptable as long as the pinout is correct.

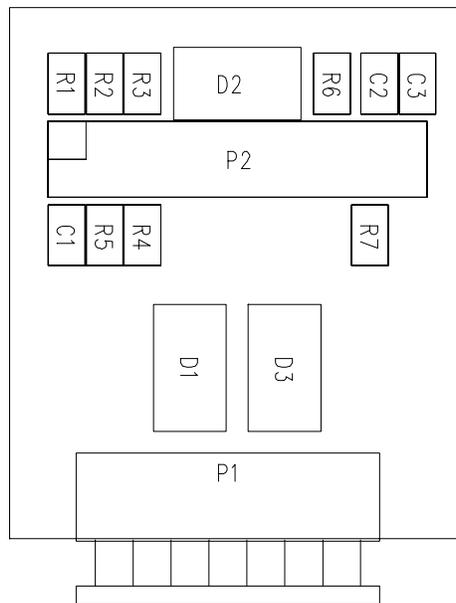
CPU ASSEMBLY (A-23725-1)



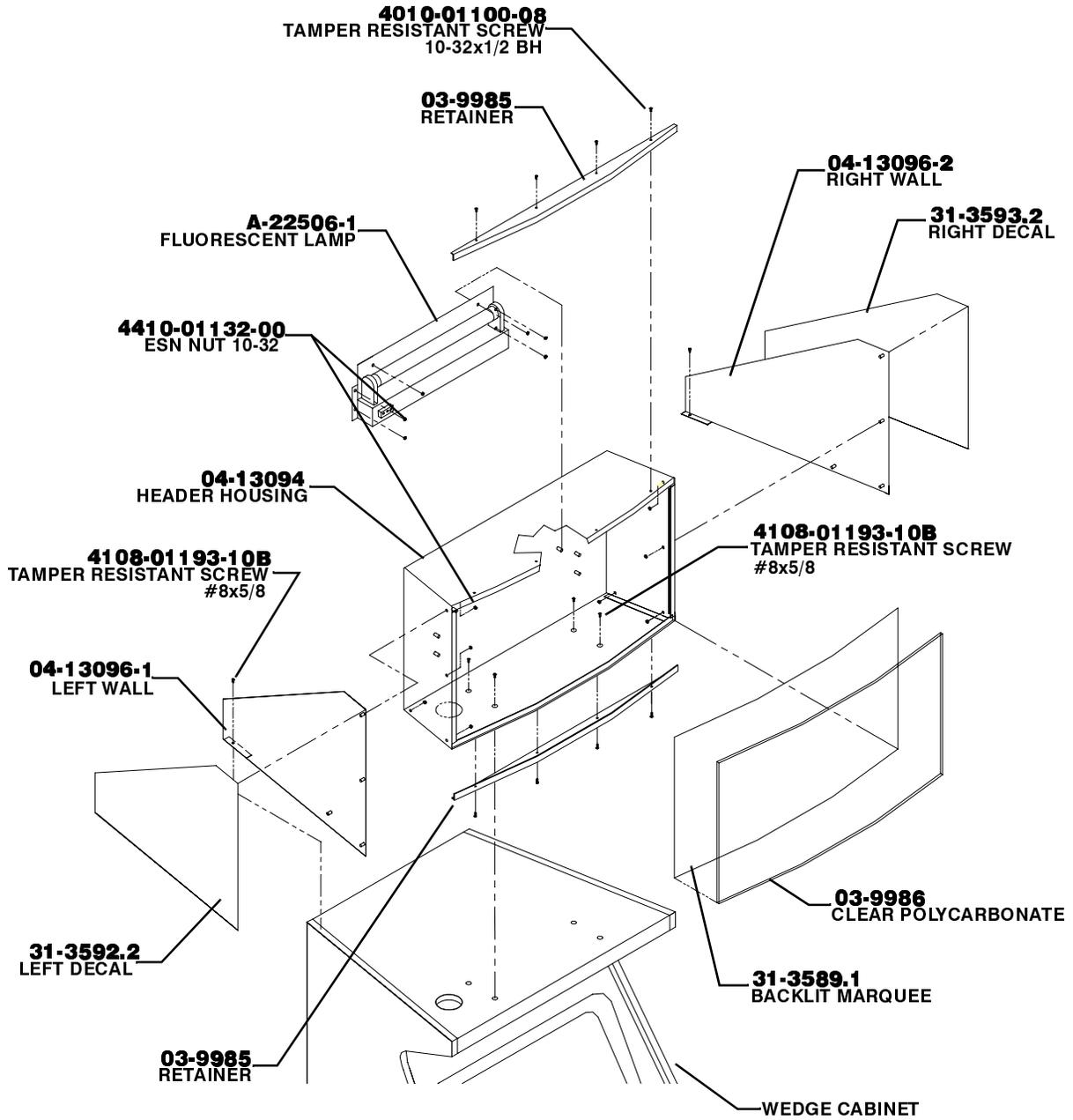
Field Replaceable CPU Board Parts

DESIGNATION	PART NUMBER	FUNCTION	DESCRIPTION
F1, F2	5735-13853-00	Circuit Protection	2A SB Fuse 5x20mm
U2	A-5343-40091-1	Sound	EPROM Assembly
U3	A-5343-40091-2	Sound	EPROM Assembly
U4	A-5343-40091-3	Sound	EPROM Assembly
U10	A-5343-40091-5	Programming	EPROM Assembly
U11	A-5343-40091-6	Programming	EPROM Assembly
U12	A-5343-40091-7	Programming	EPROM Assembly
U13	A-5343-40091-8	Programming	EPROM Assembly
U18	A-5343-40091-13	Images	EPROM Assembly
U19	A-5343-40091-14	Images	EPROM Assembly
U20	A-5343-40091-15	Images	EPROM Assembly
U21	A-5343-40091-16	Images	EPROM Assembly
U22	A-5343-40091-17	Images	EPROM Assembly
U23	A-5343-40091-18	Images	EPROM Assembly
U53	A-23726	Grid Game Instructions	PIC Assembly

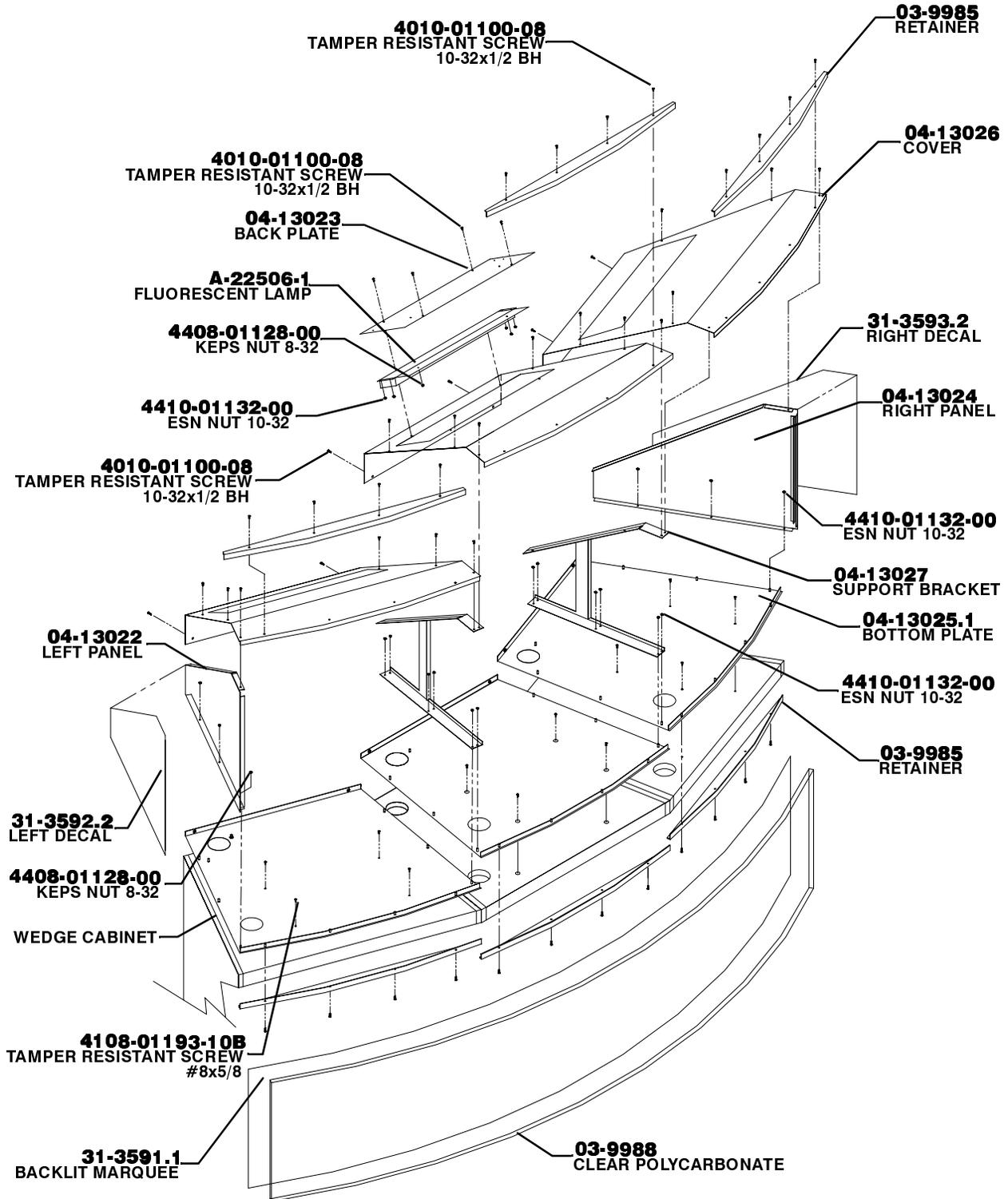
KEYPAD INTERFACE BOARD ASSEMBLY (04-12955)



SINGLE HEADER ASSEMBLY (4B391)



TRIPLE HEADER ASSEMBLY (4A791)



SUPPLEMENTARY PARTS

Bulbs, Filters and Fuses	Part Number
Bulb #555 6.3V, 0.25A	24-8768
Fuse, 1ASB, 250V	5731-06569-00
Fuse, 3ASB,250V, 3AG	5731-10356-00
Holder, 2x3AG, 1/4" Terminal Fuse	5733-15139-00
Ferrite Bead, 1 1/4 SQ	5556-13956-00
Ferrite Bead 3/4 SQ	5556-13957-00

Cables	Part Number
Fire Wire Linking Cable, 16FT	20-10536-16
IDC Cable ac ki2	H-20353
Line Voltage Cable	H-23710
Main Wiring Harness	H-23711.1
Control Panel Cable	H-23712
Ground Braid w/ring 1/4x95	H-22327-95
Cabinet speaker cable	H-23742

Documentation	
Game Operation Manual	16-40091-101
Product Registration Card	16-10650

Kit, Spare Parts	Part Number
01-11286	Pad lock bracket
08-7377	3" leg leveler
4422-01117-00	Nut 3/8-16
4320-01123-32	Bolt Cb 1/4-20x2
20-9620	Tamper resistant long arm key T20
20-10144	Tamper resistant long arm key T25

LINE CORD APPLICATION CHART

Part No. Country	5850-14699-00	5850-14699-01	5850-14699-02	5850-14699-03	585014699-06
USA					
UK					
Italy					
Japan					
New Zealand					
Germany					
Spain					
Denmark					
Finland					
Holland					
Norway					
Switzerland					
Hungary					
Canada					
Austria					
France					
Australia					
Belgium					
Sweden					

COIN DOOR APPLICATION CHART

Part No. Country	09-96026-14	09-96026-20	09-96026-33	09-96027
USA				
UK				
Italy				
Japan				
New Zealand				
Germany				
Spain				
Denmark				
Finland				
Holland				
Norway				
Switzerland				
Hungary				
Canada				
Austria				
France				
Australia				
Belgium				
Sweden				

NOTES

THE GRID



CHAPTER

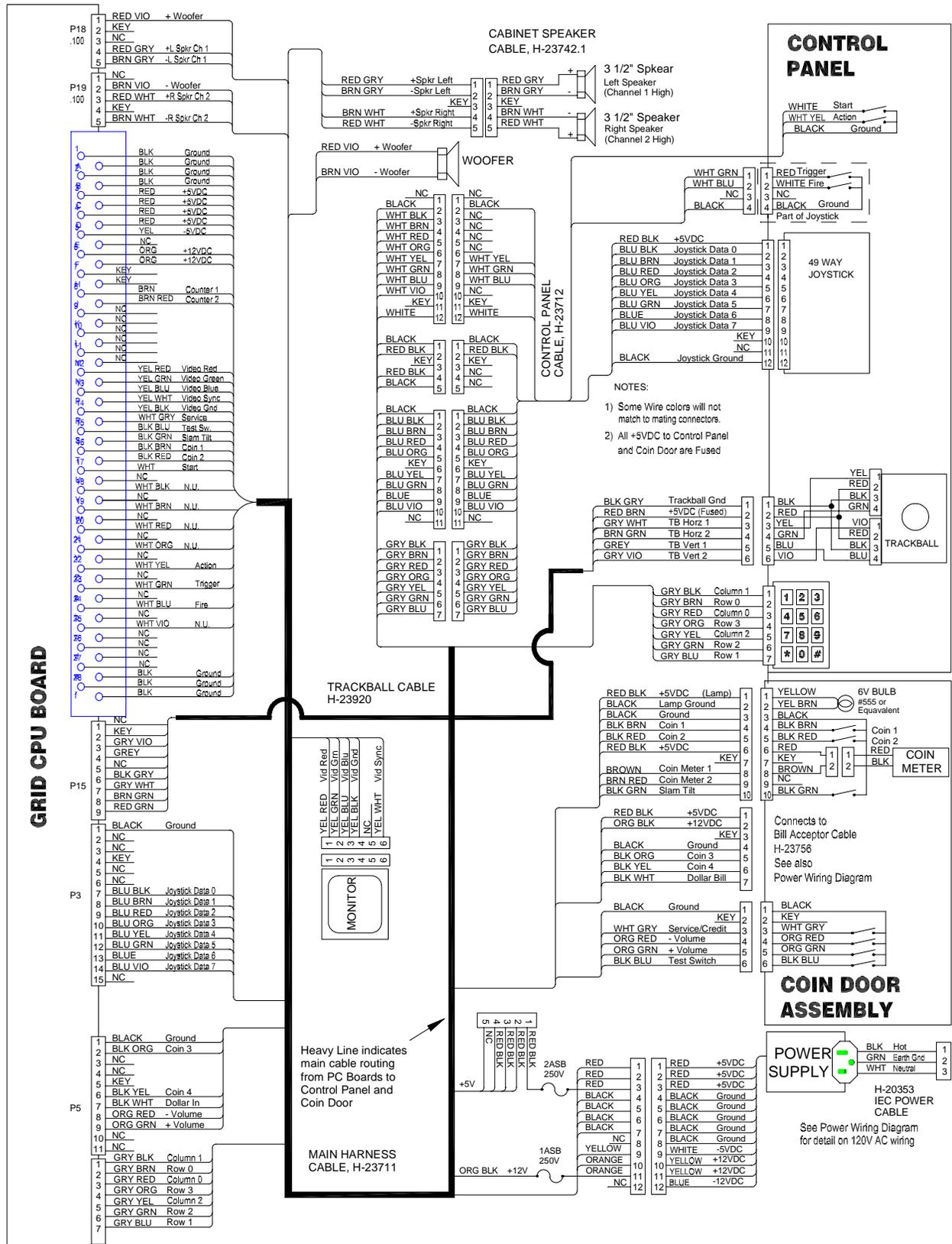
5

Wiring

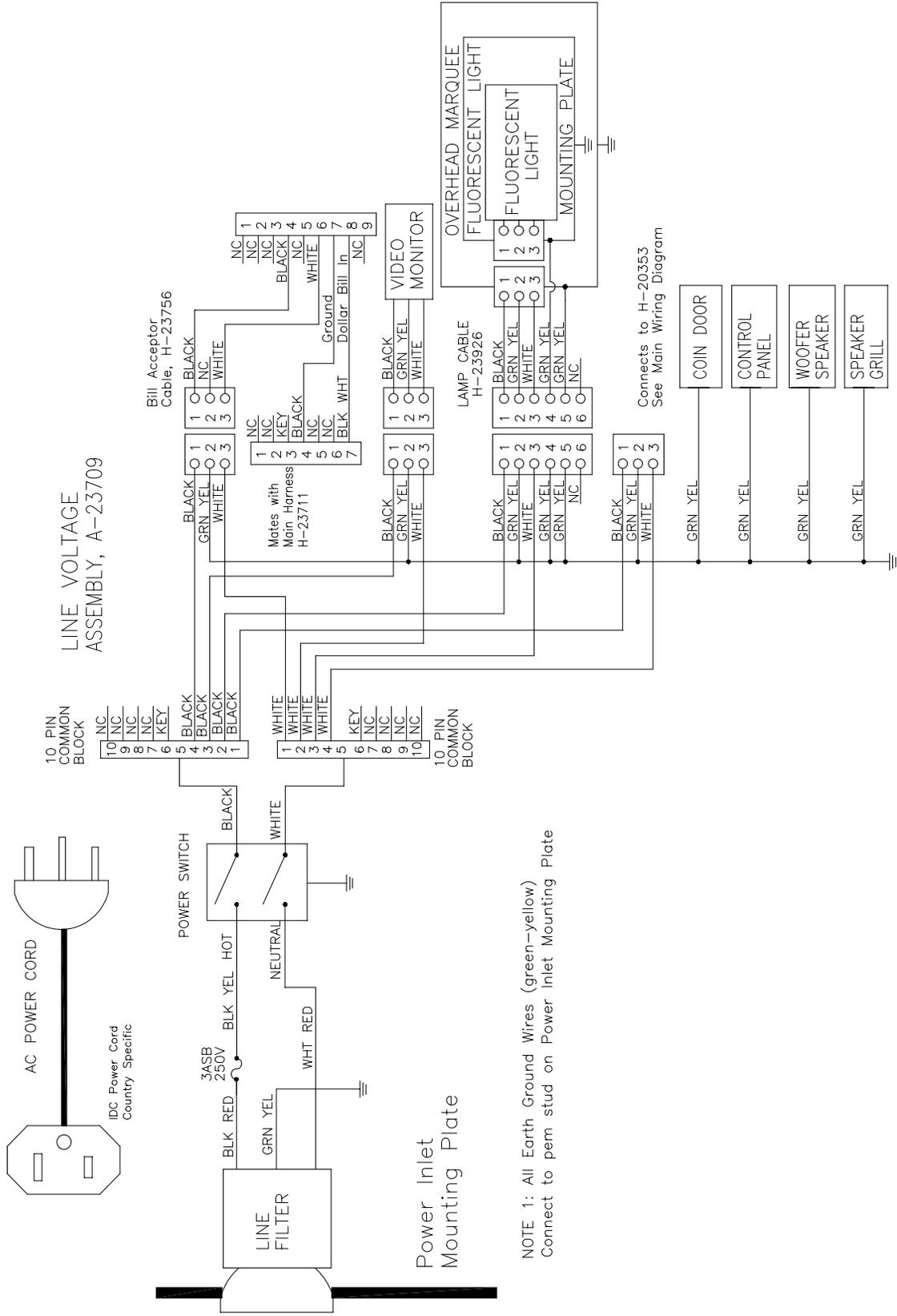


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Cabinet Wiring Diagram



Power Wiring Diagram



NOTE 1: All Earth Ground Wires (green-yellow)
Connect to pem stud on Power Inlet Mounting Plate

CPU Board Accessory Functions

LED Functions

- LED 1 IEEE AC power
- LED 2 IEEE linkage power
- LED 3 Main +5V Power
- LED 4 Sound
- LED 5 I/O
- LED 6 Diagnostic

Jumper Functions

- J601 Sound Jumper 1
- J602 Sound Jumper 2

DIP Switch Functions (* = factory setting)

BANK 1 FUNCTIONS	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Show Blood	OFF* ON							
Not Used		OFF						

BANK 2 FUNCTIONS	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
DIP coinage	OFF							
CMOS coinage	ON*							
USA 1 Ger 1 Fr ECA 1 UK 1 ECA		OFF*	OFF*	OFF*				
USA 10 Ger 2 Fr ECA 2 UK 2 ECA		ON	OFF	OFF				
USA 14 Ger 3 Fr ECA 3 UK 3 ECA		OFF	ON	OFF				
USA 2 Ger 4 Fr ECA 4 UK 4		ON	ON	OFF				
USA DC 1 Ger 5 Fr ECA 5 UK 5		OFF	OFF	ON				
USA DC 5 Ger ECA 1 Fr ECA 6 UK 6 ECA		ON	OFF	ON				
USA DC 4 Ger ECA 2 Fr ECA 7 UK 7 ECA		OFF	ON	ON				
USA DC 2 Ger ECA 3 Fr ECA 8		ON	ON	ON				
FREE PLAY		ON	ON	ON				
USA coinage					OFF*	OFF*		
France coinage					ON	OFF		
Germany coinage					OFF	ON		
United Kingdom coinage					ON	ON		
NOT USED							OFF	OFF

Note that to set Free Play, switches 2-6 on Bank 2 must all be set to ON.

THE GRID



CHAPTER

1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0
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1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0
1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0
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1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0

Troubleshooting



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Game Will Not Start

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> Machine appears non-functional No audio No Illumination No video display 	Lack of electricity	<ol style="list-style-type: none"> 1. Check that Power Switch has been turned on 2. Verify that line cord is plugged fully into receptacle and into power supply. 3. Try another power outlet.
	Wrong voltage	<ol style="list-style-type: none"> 1. Ensure power supply line voltage switch matches local line voltage. 2. Using voltage meter, correctly adjust +5V output on power supply using adjustment knob.
	Open fuse	<ol style="list-style-type: none"> 1. Turn off AC power. Examine AC fuse on power chassis. 2. Examine DC fuses on cabinet wall or electronic equipment shelf. 3. Replace faulty fuses with identically rated parts. 4. Turn on AC power. If fuse opens again, check DC wiring harness and connectors.
	Faulty line cord	<ol style="list-style-type: none"> 1. Test line cord, power plug, and IEC connector for breaks or damage. Replace if necessary. 2. Verify continuity of each wire in cord.
	Poor connection	<ol style="list-style-type: none"> 1. Ensure cabinet wiring harness connectors are fully seated in corresponding power supply and board connectors. 2. Inspect wiring for breaks or damage.
<ul style="list-style-type: none"> Machine appears non-functional. Currency acceptor price indicator is illuminated 	CPU Board Assembly not operational	<ol style="list-style-type: none"> 1. Inspect board assemblies under low light level conditions. A glow will be seen from the Light Emitting Diodes if there is voltage in the processor circuits. This does not mean that voltages or signals are as they should be, but it indicates that boards are receiving some DC power from power supply. The power supply fan should also be operating. 2. Turn AC power off. Inspect board assemblies. Ensure JAMMA wire harness connector is attached and fully seated onto mating board connector. Check other wiring harness connectors in same way. 3. Verify game switches and jumpers are set correctly. Refer to Board Configuration Chart for variables and default settings.
	Power supply out of voltage tolerance.	<ol style="list-style-type: none"> 1. Turn AC power on. Using 20V DC setting on digital voltmeter, measure voltages at power connector pins. Adjust +5V source if necessary. Refer to Cabinet Wiring Diagram for specific wiring information and voltage limits. 2. Using 2V AC setting on digital voltmeter, measure same DC voltages as above. A reading indicates that supply voltages are unstable and may contain ripple or noise.

Game Cannot Be Played

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Game does not accept currency or tokens. • Game does not start. • Audio present • Video present 	Blocked coin path.	<ol style="list-style-type: none"> 1. Unlock and open cash door. Empty cash box and inspect revenue for counterfeit currency. 2. Remove items that block path from coin mechanism. 3. Ensure proper mounting of each mechanism. Clear currency path. Reinstall and latch mechanism.
	Poor leveling	Verify mechanisms are level when doors are closed. Repair or replace bent or damaged coin door. Adjust cabinet leg levelers to keep mechanisms vertical.
	Incorrect software setting	<ol style="list-style-type: none"> 1. Enter Menu System by pressing TEST MODE button. From GAME AJUSTMENTS menu, choose COIN OPTIONS. Confirm pricing and setup of each mechanism. 2. Choose DIAGNOSTIC TESTS and SWITCH TESTS to check operation of each coin or bill mechanism.
<ul style="list-style-type: none"> • Game accepts currency or tokens. • Game does not start. • Audio present • Video present. 		<ol style="list-style-type: none"> 1. Ensure proper mounting of each mechanism. Verify each release latch is closed and locked. Test acceptance and rejection functions with known good and bad coins. 2. Ensure no loose parts or wires are caught in hinges, latches, or switch contacts. 3. Inspect illumination of external coin door indicators (i.e., pricing, flashing arrows). Check wiring continuity of connectors and cables from CPU Board to coin mechs. 4. Enter Menu System by pressing TEST MODE button. From GAME AJUSTMENTS menu, choose COIN OPTIONS. Confirm pricing and setup of each mechanism. 5. Check for continuity in each suspect switch connection (Common to Normally Open or Common to Normally Closed) Replace faulty switches (bent levers, broken actuators, etc.) 6. Place coin mechs in known good unit to verify operation.
<ul style="list-style-type: none"> • Bill validator fails after field installation. • Coin mechanisms operate properly. 		<ol style="list-style-type: none"> 1. Enter Menu System by pressing TEST MODE button. From GAME AJUSTMENTS menu, choose COIN OPTIONS. Confirm pricing and setup of each mechanism. Check validator switch settings against manufacturer's instructions. 2. Check illumination of external coin door indicators (i.e., pricing, flashing arrows). Free parts or wires caught in hinges, latches, or switch contacts. Verify seating of harness connectors. Check validator cable continuity. 3. Place bill validator in known good unit to verify operation.
<ul style="list-style-type: none"> • Coin indicators do not light. • Game operates normally. 	Bad fuse.	Check coin light fuse and wiring harness. Replace bad fuse.

Audio Problems

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Audio non-functional. • Video present. • Game operates normally. 	Volume set too low	<ol style="list-style-type: none"> 1. Press TEST switch to enter Menu System. From Main Menu choose VOLUME ADJUSTMENTS. Then choose ADJUST VOLUME. Verify that attract and game volume levels are not set to zero. Change to appropriate levels. 2. Return to Main Menu and choose DIAGNOSTIC TESTS. Then choose SOUND TEST. Verify operation of each speaker.
	Faulty hardware	Turn off AC power. Remove grills and inspect speakers. Ensure no loose parts or wires are caught in speaker cones, terminals, mounting screws, or stuck to magnets.
	Poor voltage	<ol style="list-style-type: none"> 1. Turn AC power on. Using 20 V DC setting on digital voltmeter, measure voltages at power connector pins. Verify +5V, -5V, and +12V sources. Refer to Cabinet Wiring Diagram for specific wiring information and voltage limits. 2. Using 2 volt AC setting on digital voltmeter, measure voltages at speaker terminals. Any reading here indicates supply voltages are unstable and may contain ripple or noise. 3. Place speaker in good machine to verify operation.
<ul style="list-style-type: none"> • Audio muffled, distorted, or missing frequencies. • Constant, low hum. 	Faulty speaker	<ol style="list-style-type: none"> 1. Press TEST MODE switch to enter Menu System. From Main Menu select DIAGNOSTIC TESTS and choose SYSTEM TEST. This verifies some audio functions. 2. Using 2 volt AC setting on digital voltmeter, measure voltages at speaker terminals. Any reading here indicates supply voltages are unstable and may contain ripple or noise. 3. Place speaker in good machine to verify operation.
	Wrong speaker	Turn AC power off. Remove grills and inspect speakers. Ensure each coaxial speaker is full range (100 to 10,000 Hz response) and rated for at least 10 watts.
	Faulty wiring	<ol style="list-style-type: none"> 1. Check cabinet wiring is correct for game. 2. Verify all cabinet wiring provides separate wires (not a common return) for each speaker. 3. Ensure all ground wires are connected. Refer to Cabinet Wiring Diagram for specific wiring information.
<ul style="list-style-type: none"> • Weak, low frequencies. • Thin or hollow sound quality 	Incorrectly phased speakers	Inspect speaker wiring and reverse back to correct position. See Cabinet Wiring Diagram.
<ul style="list-style-type: none"> • Monaural audio 	Faulty wiring	Verify cabinet wiring is correct. Check for shorted wires. Refer to Cabinet Wiring Diagram.

Video Problems



WARNING: Do not operate monitor without Remote Adjustment Board.

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> • Monitor appears non-functional. • Audio present • Controls operate normally. 	Poor signal	<ol style="list-style-type: none"> 1. Verify AC power is connected to video monitor. 2. Inspect neck of CRT under low light level conditions. If there is voltage in filament circuits, you will see a glow near the CRT base. This indicates monitor circuits are receiving power, not that voltages or signals are proper. 3. Turn AC power off. Verify video signal and remote adjustment board connectors are fully seated on video monitor board assembly. Check other monitor connections in the same way. 4. Examine AC line fuse on video monitor. If faulty, replace with fuse of proper voltage and current rating. 5. Ensure no loose parts or wires are caught on chassis or mounting brackets.
	Bad settings	Ensure brightness and contrast are not at minimum levels.
<ul style="list-style-type: none"> • Power-up self test runs. • Game does not appear. • No audio. 	Error message	Record error messages. Enter Menu System. From DIAGNOSTIC TESTS, select SYSTEM TEST. These tests verify CPU Board functions
	Poor voltage	<ol style="list-style-type: none"> 1. Turn AC power on. Use 20V DC setting on digital voltmeter to measure voltages at power connector pins. Verify +5V source. 2. Using 2V AC setting on digital voltmeter, measure same DC voltages as above. A reading indicates that supply voltages are unstable and may contain ripple or noise. 3. Compare LED states with indicator charts.
<ul style="list-style-type: none"> • Monitor fails to lock onto signal and provide stable picture. • Colors missing, etc. 	Poor sync	<ol style="list-style-type: none"> 1. Check connectors and cables for wiring continuity from CPU Board Assembly to monitor. 2. Verify jumpers are set correctly for monitor. 3. Ensure monitor is correct for game. Incorrect resolution results in horizontal tearing or complete loss of sync. 4. Place monitor in working machine to verify operation.
<ul style="list-style-type: none"> • Game operates normally. • Picture wavers or rolls, has dark bars, uneven colors, etc. 	Faulty wiring	<ol style="list-style-type: none"> 1. Check connectors and cables for wiring continuity from CPU Board Assembly to monitor. 2. Ensure all cabinet ground wires are connected, especially at monitor chassis. 3. Place monitor in good machine to verify operation.
	Interference from other equipment	Move cabinet away from machines, appliances, other games, etc. Very strong electrical or magnetic fields are emitted from some equipment when operating normally.

Miscellaneous

Symptom	Problem	Suggested Solution
<ul style="list-style-type: none"> Game is not recognized in network 		<ol style="list-style-type: none"> Open rear doors. Ensure network cables are plugged in tightly.
<ul style="list-style-type: none"> Indicator lamps intermittent or non-functional. Game starts and plays normally. 		<ol style="list-style-type: none"> Remove Light Box from header. Remove fluorescent tube from holders. Install new lamp if cracks or darkened ends are found. Clean tube. Verify that lamp and starter pins make good connection with socket contacts. Measure Fluorescent Lamp Assembly AC voltages. Check wiring and connector continuity from Power Supply connector to lamp assembly. Ensure Fluorescent Lamp Ballast is rated for local AC line voltage and frequency. Check for continuity of both fluorescent lamp filaments, starter, and ballast. One at a time, verify that lamp, starter, and ballast operate by placing each in a known good unit. Examine DC fuse on Electronics Assembly shelf. If any fuse is faulty, replace with identical fuse from spare parts bag. Replace spare fuse when repairs are complete.
<ul style="list-style-type: none"> Game operates normally. Fan noisy. 		<ol style="list-style-type: none"> Check bottom and rear of cabinet for blocked air flow. Move game away from heat sources. Turn AC power off. Remove dust from vent holes with high power vacuum cleaner. Unlock and remove rear door. Ensure fan is connected to wiring harness.
<ul style="list-style-type: none"> Game resets randomly. 		<ol style="list-style-type: none"> Check fan assemblies on CPU Board Assembly. Ensure fans are connected to power sources. Check cabinet and Electronics Assembly ventilation holes for obstructions. Clear obstructions and allow ventilation holes access to fresh air.
<ul style="list-style-type: none"> Error messages appear. Game does not start. No audio. 		<ol style="list-style-type: none"> Check any assembly identified in error message. Call your authorized distributor for help with unresolved screen messages.