Cobalt™ 27

Service Manual
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Georgia

Cobalt™
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IGT

Cobalt™ 27 Service Manual

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Safety

This section contains safety precautions that should be reviewed and followed when troubleshooting any IGT machine. It includes safety precautions that pertain to all IGT products.

General Safety Precautions

- Follow all applicable local electrical codes. Check to ensure that adequate power is available based on the requirement(s) of the system being installed.

- Always ensure that the electrical outlets are correctly wired and properly grounded. Polarity and ground testers are available from most electronic stores. Test all outlets in the work area before working on any electrical equipment. If there are any doubts about the wiring in the work area, consult a qualified electrician.

  Never use an adaptor plug to connect a three-prong power plug to a two-prong wall outlet. Adaptors defeat the ground pin and eliminate the grounding protection.

- When working with either AC or DC voltage, take care not to touch the wires or circuitry to each other or any other point of contact, including yourself. Use only approved test equipment that is in good working condition.

- Turn off the power prior to connecting or disconnecting any electronic or electrical components.

- Take precautions to protect sensitive electronic components from damage before moving previously installed equipment.

- Disconnect the machine from all power sources before making changes to operating voltage or frequency. Double check all electrical connections before applying power to avoid permanent damage to the machine's electronic components.

- Handle all glass with extreme care to avoid breakage or injury from potentially sharp edges.

- Be cautious when handling all sheet metal to avoid injury due to sharp edges.

- Verify that the machine is securely bolted to a stand before beginning any work.

- Replace safety-critical components with the manufacturer's recommended parts only.

- Use caution to keep hands clear of pinch points when closing doors.

Safety Messages

Safety messages are included in this manual and affixed to the product hardware. Safety messages indicate:

- Potential hazard to the product or technician
- Instructions to reduce the chance of injury
- Results of not following the safety message instructions

Indicates that potential injury to the product or technician is possible if instructions are not followed.

Indicates that serious injury or death may result if the instructions are not followed.

Chapter 1 Cobalt Overview

This manual describes the technical aspects of the Cobalt EGM. The information contained in this document includes component identification, installation instructions, and preventive maintenance practices.

This section describes the technical aspects of the Cobalt EGM including an overview of all of its major components.

Topics include:

- *Cobalt Features* on page 10
- *Specifications* on page 11
- *External Components Overview* on page 15
- *Basic Operational Instructions and Features* on page 17
- *Internal Components Overview* on page 22
- *Powering On* on page 24
- *Cobalt Access Levels* on page 25

Cobalt Features

- Dual displays (27")
- Intelligent cabinet lighting
- Player Panel configuration(s):
  - Mechanical Button Panel with 5 buttons
- Topper (optional)
- Hard Meters
- Cashless System Components (optional)

Figure 1-1 Cobalt

Specifications

Environmental Specifications

Characteristic	Specification
Storage	14°F (-10C) to 140°F (60C), 0% to 90% non-condensing
Operating	50°F (10C) to 100°F (38C), 10% to 90% non-Condensing

Electrical Specifications

Characteristic		Specification
AC line voltage (single phase)	120 V option	108 to 132 VAC
	230 V Option	198 to 264 VAC
Power consumption (average)	120 VAC @ 50/60 Hz	2.4 Amps
		290 Watts
	230 VAC @ 50/60 Hz	1.2 Amps
		288 Watts
Circuit breaker		10.0A, 115 V/230 V
Heat flux (use for cooling requirements)		990 BTU/hr @ 120 VAC 980 BTU/hr @ 230 VAC

Physical Specifications

Each machine's weight may vary depending on the configuration of features and options. It is recommended that a reasonable factor of safety be incorporated to allow for variances in design and manufacturing of the individual products.

Characteristic	Specification	
Height	52.5"	133.3 cm
Height with Topper	70.3"	178.5 cm
Width	27.0"	69 cm
Depth	25.5"	64.78 cm
Weight with Topper	277 lbs.	125.65 kg

Dimensions
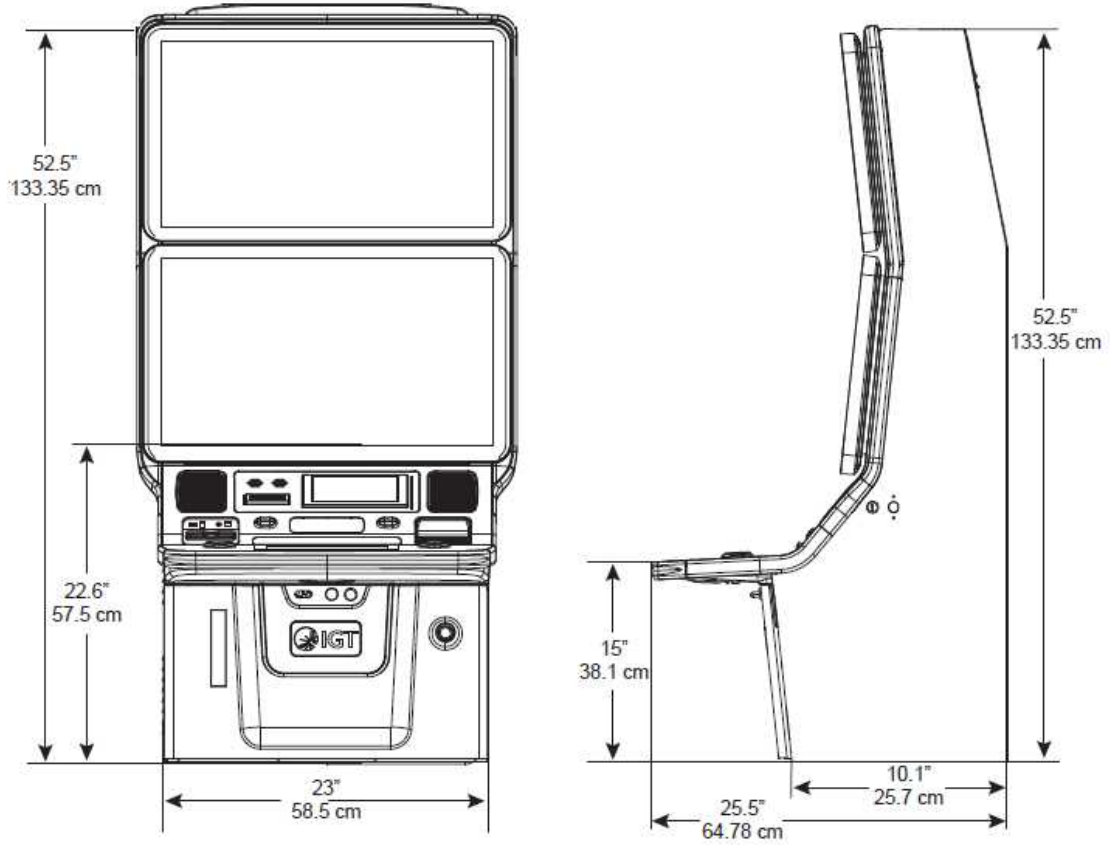
Figure 1-2 Dimensions

Dimensions - with Topper
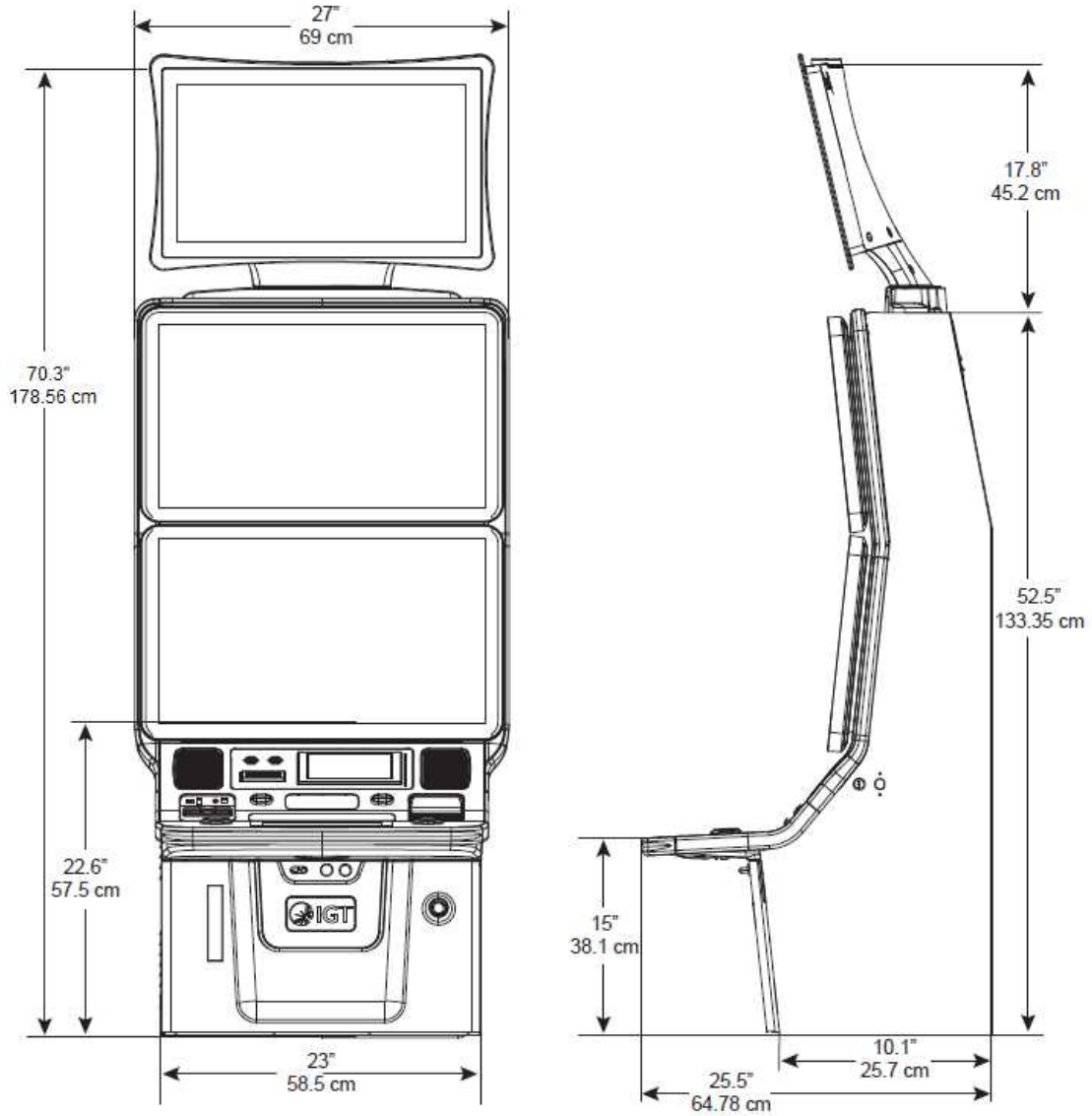
Figure 1-3 Dimensions - with Topper

Dimensions - with Doors Open
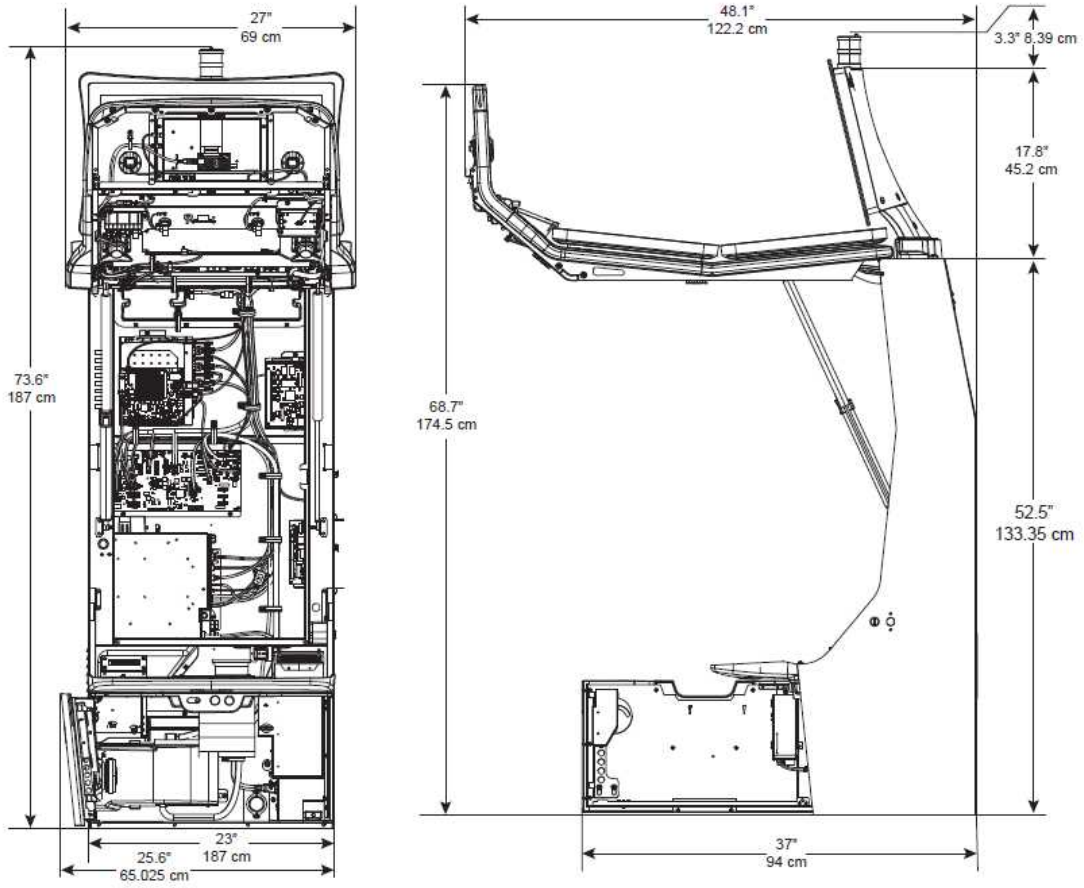
Figure 1-4 Dimensions - with Doors Open

External Components Overview

Cabinet Components
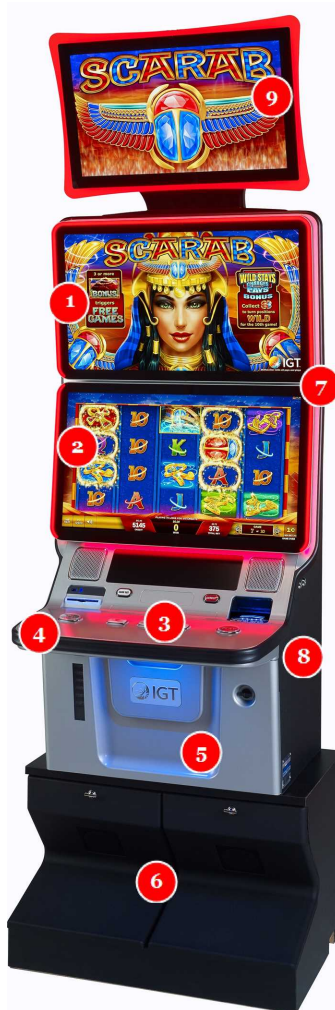
Figure 1-5 Cobalt External Components

Label	Description	Label	Description
1	Top Display	6	Stand
2	Main Display with Touchscreen	7	Cabinet Lighting
3	Player Panel	8	Attendant Key / Reset Switch
4	Main Door	9	Topper
5	Lower Door		

Player Panel Components

For more information, see *Player Panel* on page 45.

Figure 1-6 Static Button Panel

Label	Description
1	Speakers
2	Optional Cashless Components (SMIB Module / Card Reader)
3	USB Charging Port
4	Printer Bezel
5	Cashout Button
6	Service Button - Not used in this configuration
7	Bill Validator Bezel
8	Button Panel

Lower Door Components

Figure 1-7 Lower Door Components

Label	Description
1	Main Door Latch
2	Main Door Lock
3	Lower Door Lock
4	External Hard Meters Location (Optional)

Basic Operational Instructions and Features

Security

External Access Doors

There are two external access doors. The Main Door provides access to the main/upper portion of the cabinet. The Lower Door provides access to the lower area of the cabinet. Both doors may be keyed separately and operate independently.

- The **Main Door** enables access to regular technician and attendant activities such as ticket fills, jam clears, repairs, troubleshooting, etc. Access to the logic and cabinet controller area requires access through the main door.

- The **Lower Door** enables access to the cash box area for drop crew activities. The lower door must be opened to open the internal cash box door. Access to the lower door alone does not allow access to critical electronics. The lower door may be opened using a release mechanism through the main door without a key.

Internal Access Doors

- The **Cash Box Door** enables access to the bill validator cash box for removal. Access to this door first requires access to the main or lower door.

- The **Brain Box** (logic area) has a locking cover restricting access to the Secure USB Port and internal components.

Opening the Main Door

⚠️ *Use caution to keep hands clear of pinch points when closing doors.*

⚠️ *Care must be taken when closing the door when the terminal is not secured. Closing force should be applied downward rather than outward towards the operator.*

1. Set the Main Door lock to the unlocked position.
2. Move the Main Door latch to the left.

Figure 1-8 Main Door Latch and Lock

3. While holding the edge of the door, lift the door upwards (A). The bottom portion of the button panel remains in place (B).

Figure 1-9 Main Door Open

ℹ️ *When closing the door, ensure the lock is unlocked and the latch is to the left.*

Opening the Lower Door

1. Set the Lower Door lock in the unlocked position.

Figure 1-10 Lower Door Lock

2. Open the Lower Door to the left.

Figure 1-11 Lower Door Open

The Lower Door can also be opened while the Main Door is open. Pull the latch upwards and open the Lower Door.

Figure 1-12 Open Lower Door from Main Door Access

Opening the Cash Box Door

1. Open the Lower Door.

2. Set the Cash Box Door lock in the unlocked position.
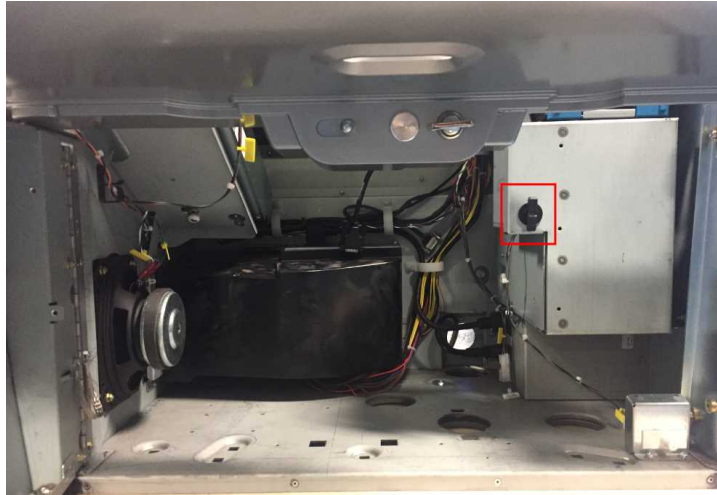
Figure 1-13 Cash Box Door Lock

3. Open the Cash Box Door downwards. Users can now remove the Cash Can.

Accessing the Brain Box Secure USB Port

1. Open the Main Door.

2. Set the Brain Box Cover lock in the unlocked position.
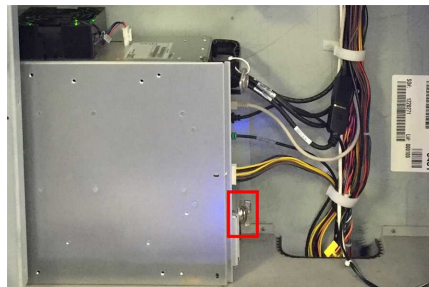
Figure 1-14 Brain Box Cover Lock

3. Slide the Brain Box Latch to the left.

Door Monitoring

Monitoring switches are used to detect when a door has been opened, even while the EGM is powered down.
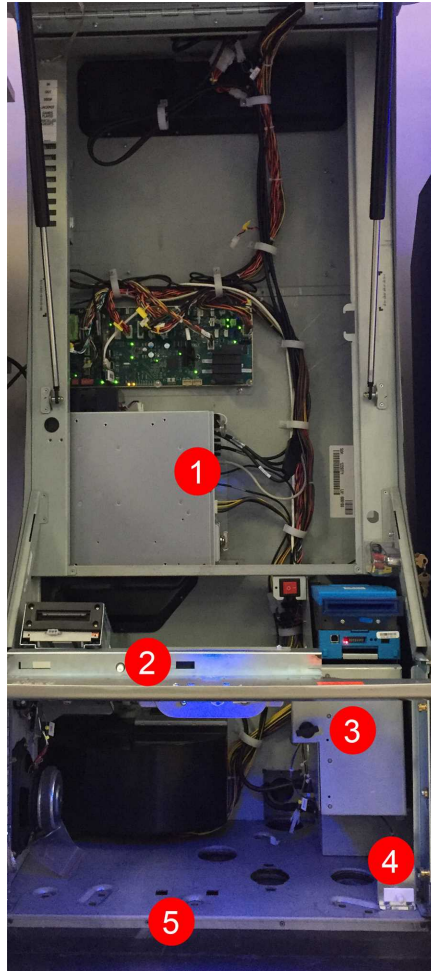
Figure 1-15 Monitoring Switches

Label	Description
1	Brain Box Switch
2	Main Door Switch
3	Cash Box Door Switch Cash Box Present Switch
4	Lower Door Switch
5	Stand Switch (optional)

Internal Components Overview
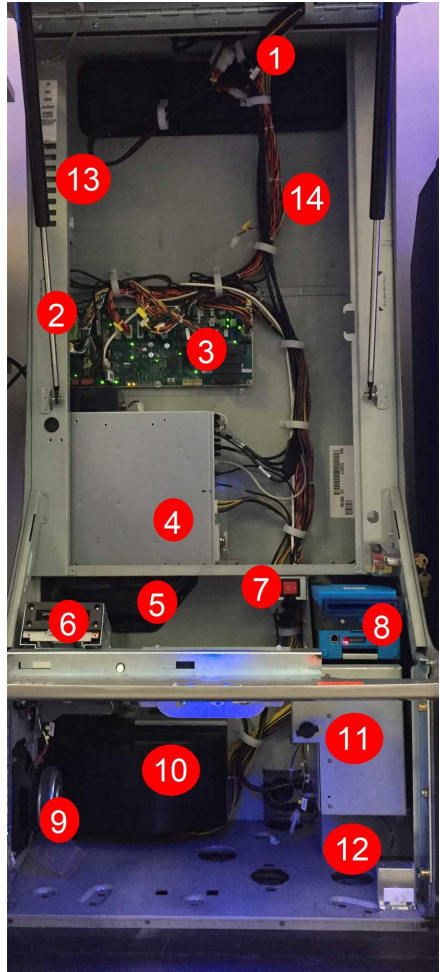
Figure 1-16 Internal Components

1	Topper Connectors
2	Audio Amplifier Board (mounted on side of cabinet- not shown)
3	Cabinet Controller Board
4	Brain Box
5	Brain Box Air Duct
6	Printer
7	Power Switch
8	Bill Validator
9	Bass Speaker
10	Power Supply & Shroud (Air Duct)
11	Cash Box
12	AC Box
13	Internal Hard Meters Location (Optional)
14	Fledging Board for use with Mutha Goose system. C-Lite Interconnect Board for use with the i-LINK Ultra Site Controller (Cashless System).

Mutha Goose System Hardware

The Fledging Board is used for Mutha Goose system configurations. Refer to *Fledging Board* on page 55 for more information.
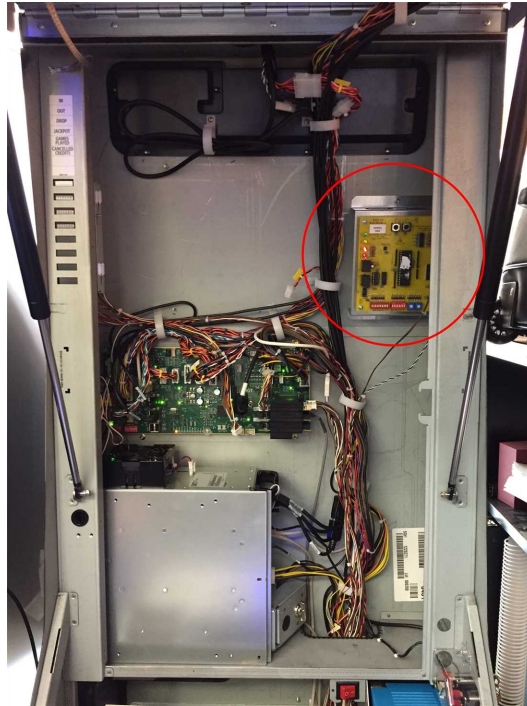
Figure 1-17 Mutha Goose System Fledging Board

Cashless System Hardware

The C-Lite Interconnect Board is used for Cashless System configurations. Refer to *C-Lite Interconnect Board* on page 61 for more information.

Figure 1-18 Cashless System C-Lite Interconnect Board

Powering On

⚠ *Before the EGM is powered on, it must be stored at ambient room temperature for four hours, or until no condensation is present.*

ℹ *For instructions to mount the cabinet on the stand, refer to Stand Mounting on page 87.*

1. Locate the AC power cord and route the power cord through the cable access plate and connect to a dedicated AC receptacle. Ensure the communication cables are properly connected to the network.

2. Turn the power switch to the **ON** position.
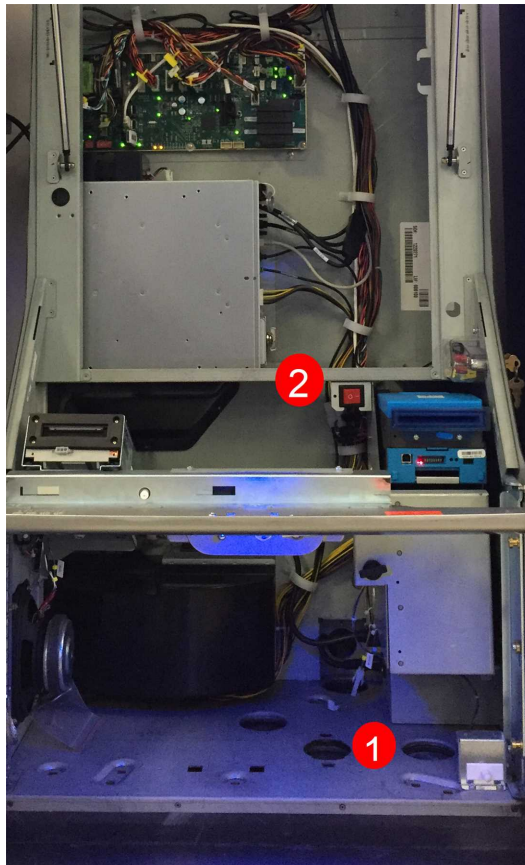
Figure 1-19 Cable Access Plate & Power Switch

Cobalt Access Levels

Figure 1-20 Access Levels (Cobalt)

Number	Description
1	Level 1: Attendant (Audit) Access - Key
2	Level 2: Technician Access - Test Switch on Brain Box

Chapter 2   Hardware

This section provides specific information for each component of the Cobalt EGM, and describes removal, connectivity, and operational instructions.

Topics include:

- LCDs
- AC Box
- Power Supply
- Brain Box
- Cabinet Controller Board
- Audio Amplifier Board
- Player Panel
- Cabinet Lighting
- Air Filters
- Hard Meters
- Fledging Board
- Cashless System Components
- Bill Validator
- Printer

LCD Displays

The Cobalt EGM is equipped with two high-definition LCD displays. Indirect lighting elements surround the displays.
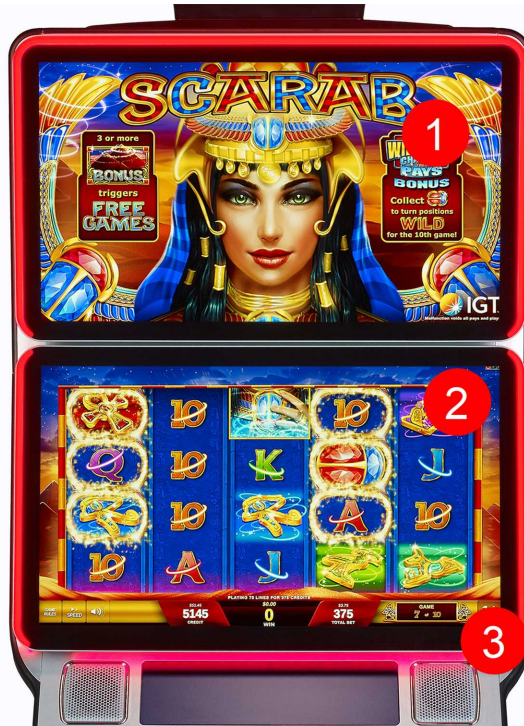
Figure 2-1 LCD Displays

Label	Description
1	Top LCD display
2	Main LCD display with Touchscreen
3	Lighting Elements

Main LCD Display

The main display is a 27" LCD with PCAP (projected capacitive) touchscreen. The display requires +24VDC power, and receives video through the DP (Display Port) cable from the Brain Box.
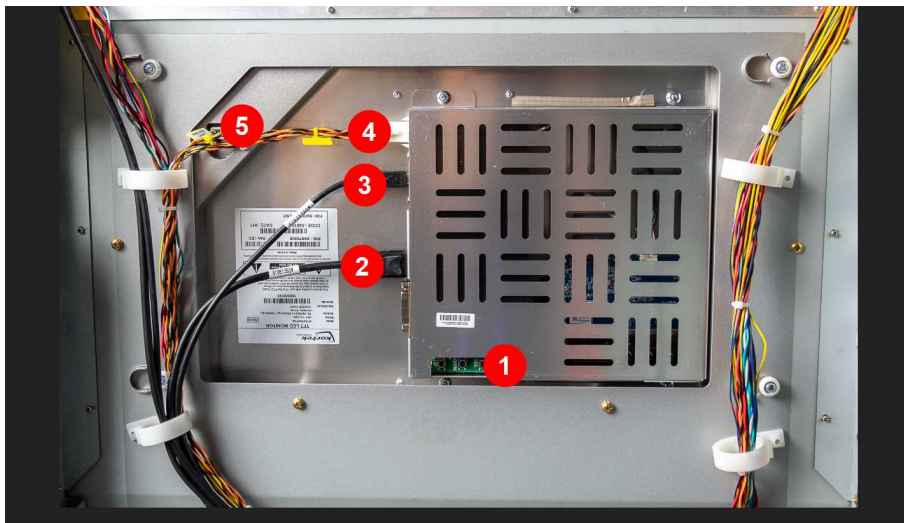
Figure 2-2 Main LCD Display Connectors

Label	Description
1	OSD
2	Display Port
3	USB-B
4	Power
5	LED Lighting Connection

Main LCD Display Touchscreen Calibration Verification

There is no calibration required on this display. Users can test the calibration using the Touchscreen Setup screen.

Top LCD Display

The top display is a 27" LCD with protective glass. The display requires +24VDC power, and receives video through the DP (Display Port) cable from the Brain Box.
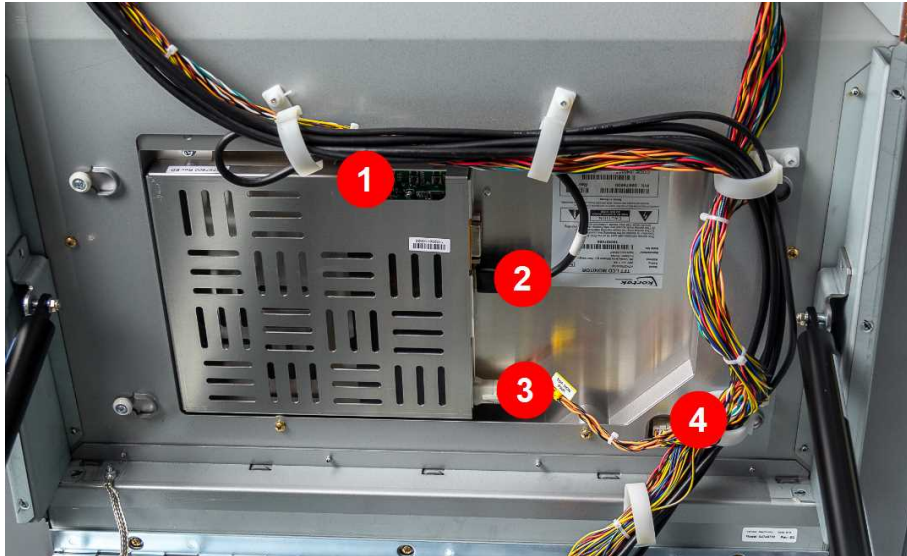
Figure 2-3 Top LCD Display Connectors

Label	Description
1	OSD
2	DP Video
3	Power
4	LED Lighting Connection

On Screen Display (OSD)

The LCD Settings have been calibrated at the factory; IGT does not recommend changing these settings.

The display picture can be adjusted via the OSD control board on the back of the displays.

The On Screen Display Menu can be accessed by using the OSD control board switches. From left to right the adjustment buttons are: MODE, SEL, DOWN, UP.

1. Press the MODE button to enter the OSD menu.

2. Use the other three buttons to navigate, enable, and disable features.

Figure 2-4 OSD Board

LCD Removal

⚠ *Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.*

⚠ *When removing one or both displays, the gas springs supporting the door frame will have excessive force. Pay special attention while removing or installating.*

Main LCD Display Removal

To remove the main LCD display:

1. Open the main door and power off the cabinet.

2. Disconnect the USB-B, Display Port, Power In and LED connections.

3. Remove the four gold screws, the display is still held in place by four white buttons.

4. Close the main door. Slide the display to the left and lift off the main door.
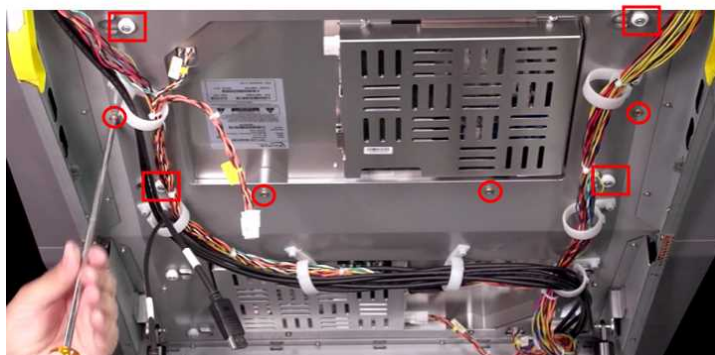
Figure 2-5 Main LCD Removal

Top LCD Display Removal

To remove the top LCD display:

1. Open the main door and power off the cabinet.

2. Disconnect the Display Port, Power and LED connections.

3. Remove the four gold screws.

4. Close the main door. Slide the display to the right and lift off the main door.
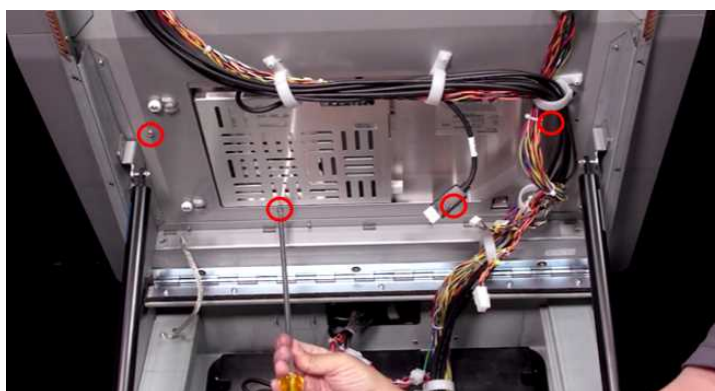
Figure 2-6 Top LCD Removal

AC Box

⚠️ *This component contains high voltage. Always power off the gaming machine and unplug the power cord prior to servicing.*

⚠️ *Service outlets are circuit breaker protected and should not be used for high current devices.*

The AC box (100-240V 50/60Hz, 10A) provides auxiliary AC outlets to the terminal.
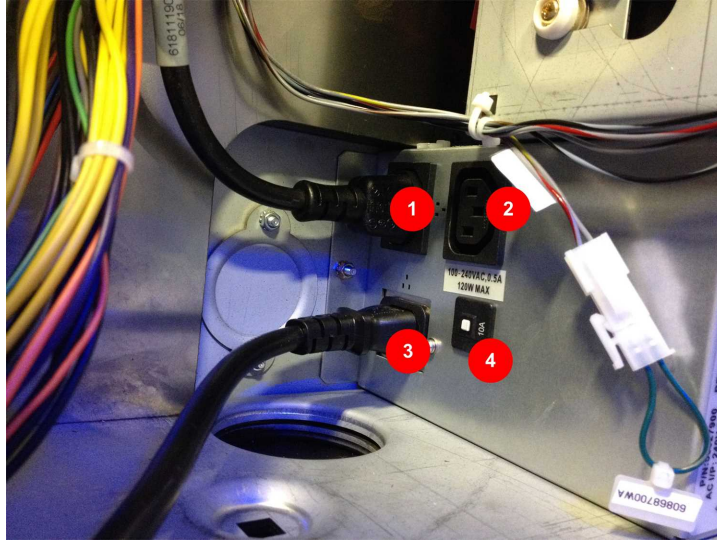
Figure 2-7 AC Box

Item	Description
1	Supplies AC power to the DC power supply.
2	Available power connector: 100-240VAC, 0.5A, 120W Max.
3	Power Inlet: Connector for the terminal's AC power cord.
4	10A Circuit Breaker.

AC Box Removal

⚠️ *Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.*

To remove the AC Box:

1. Open the main door and power off the cabinet.

2. Open the lower door.

3. Remove the power coming into the AC Box.

4. Remove the connection from the AC Box to the Power Supply.

5. Remove the two M4 nuts.

6. Remove the AC Box from the cabinet. Pay special attention to the wiring on the side of the cabinet when removing the AC Box.

Power Supply

This component contains high voltage. Always power off the gaming machine and unplug the power cord prior to servicing.

The terminal has one (1) 750watt power supply to provide power for the machine's DC-powered components.

Features:

- Connection to Brain Box and Cabinet Controller board
- Auto switching 120-240 VAC
- +3.3VDC / +5VDC / +5VDC Unswitched / +12VDC / +24VDC / -12VDC
- Power supply wire harness separate from main wire harness
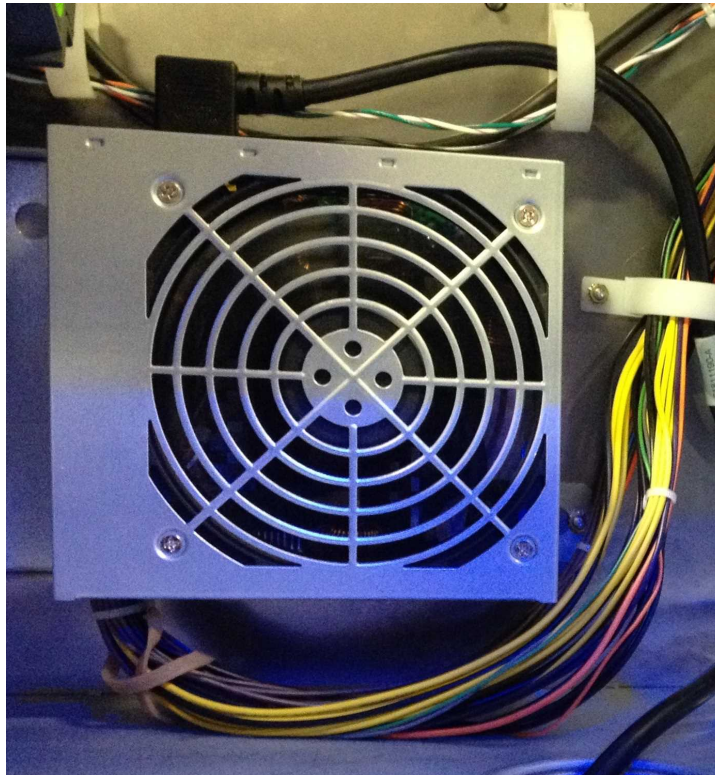
Figure 2-8 Power Supply

Power Supply Removal

⚠️ *Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.*

To remove the power supply:

1. Open the main door and power off the cabinet.

2. Open the lower door.

3. Remove the connection on the power supply from the AC Box.

4. Disconnect J1 & J2 at the cabinet controller board.
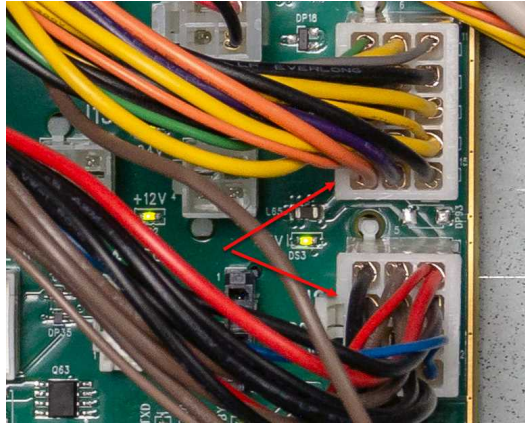
Figure 2-9 Power Supply Connections to Cabinet Controller Board

5. Remove the wiring from the harness guides and remove zip ties, if any.

6. Disconnect the power connection going to the Brain Box.

ℹ️ *The shroud and power supply are removed as a single unit. Once removed from the cabinet, the shroud can be detached from the power supply.*

7. Remove the two M4 nuts and remove the power supply and shroud from the cabinet.
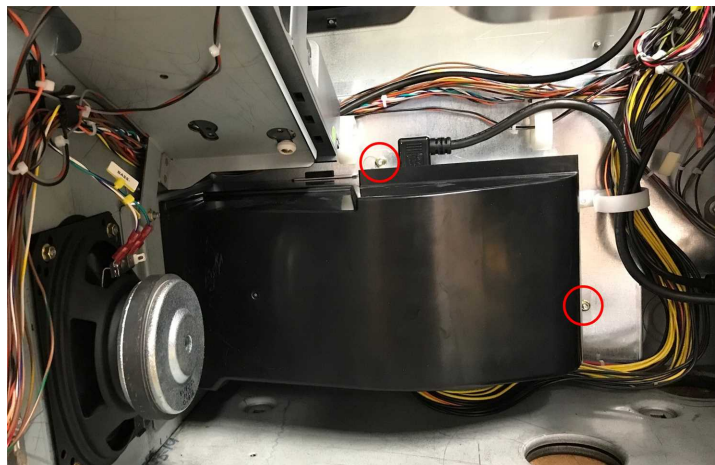
Figure 2-10 Power Supply Removal

8. Remove the shroud ducting on the power supply (no fasteners are used).
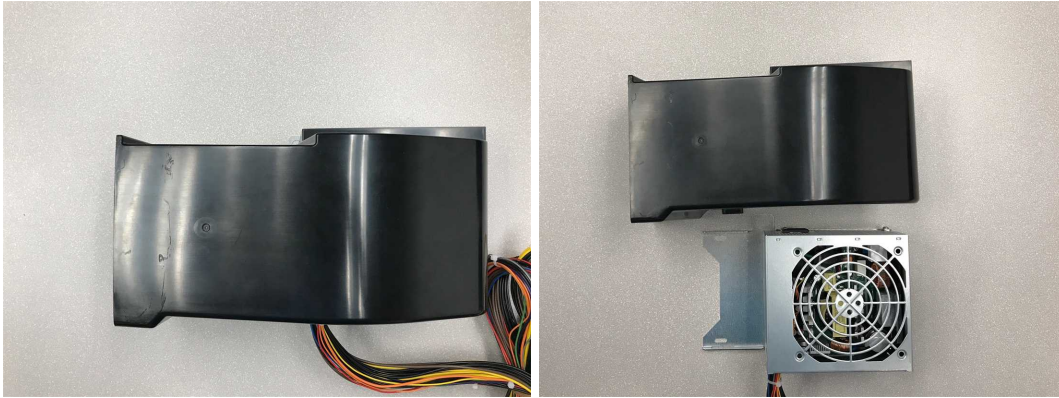
Figure 2-11 Power Supply & Shroud

AVP 4+ Brain Box

The following list details the features of the AVP 4.0+ Brain Box:

- AMD Merlin Falcon APU
- 16GB Memory (SODIMM) standard
- 32GB Memory (SODIMM) maximum
- GPU
    - Three Onboard mini-Display Port (mDP) video interfaces
    - AMD E9260 PCIe GPU (video card) with four mDP video interfaces available (onboard mDP will be disabled)
- Two 1Gb Ethernet Ports
- Dedicated on-board Authentication Processor
    - Requires APR00004 or later
- Solid State Drive in M.2 format (expansion card) standard

The following images and tables describe the AVP 4.0+ interface and components:

Figure 2-12 AVP 4.0+ Brain Box Interface (Security Door Closed)
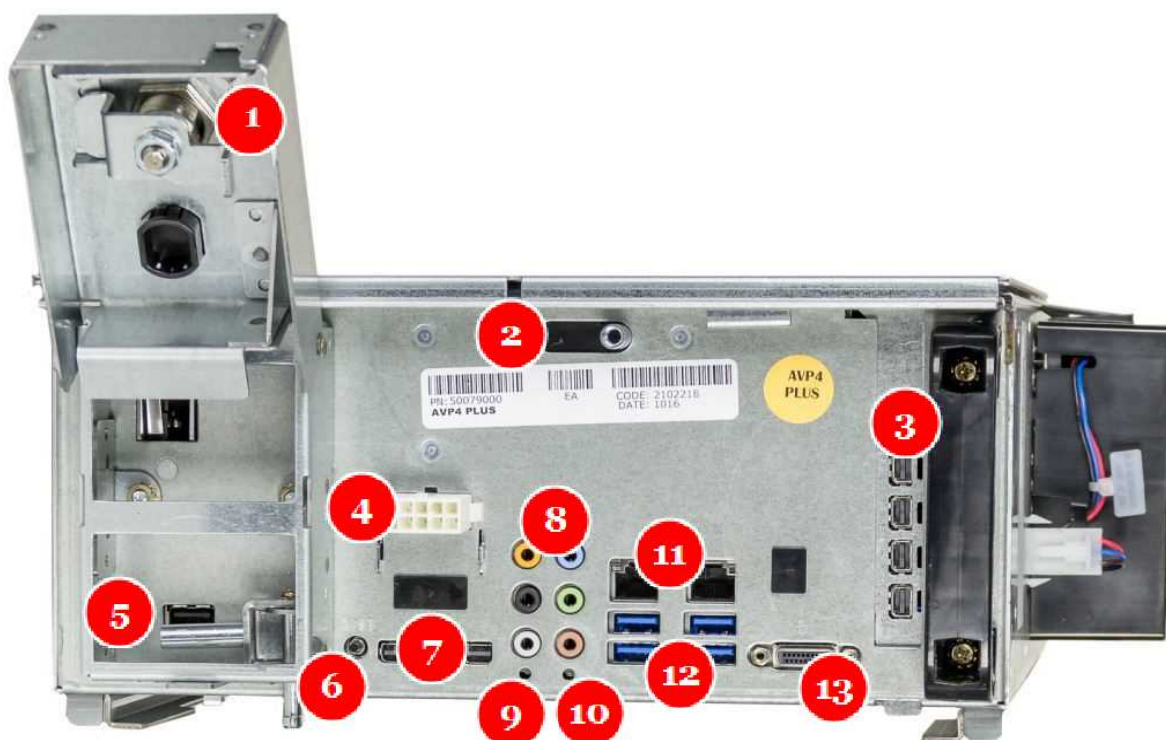
Figure 2-13 AVP 4.0+ Brain Box Interface (Security Door Open)

Number	Description
1	Logic Door Lock Location
2	Cover Slide Release
3	PCIe Card Slot for AMD E9260 GPU or future expansion.
4	12VDC Input
5	Secure USB 2.0 Port
6	Operator Test switch
7	Three Mini DP (display port) Outputs (not used when AMD E9260 video card is installed)
8	8-Channel Audio Panel
9	SATA LED (indicates activity)
10	Boot program authentication status LED. Red indicates failure; solid blue indicates success.
11	Ethernet Ports Left: LAN 1 - Gigabit Ethernet Port Right: LAN 2 - Gigabit Ethernet Port
12	Non-Secure USB 3.0 Ports
13	PCIe x1 Interface
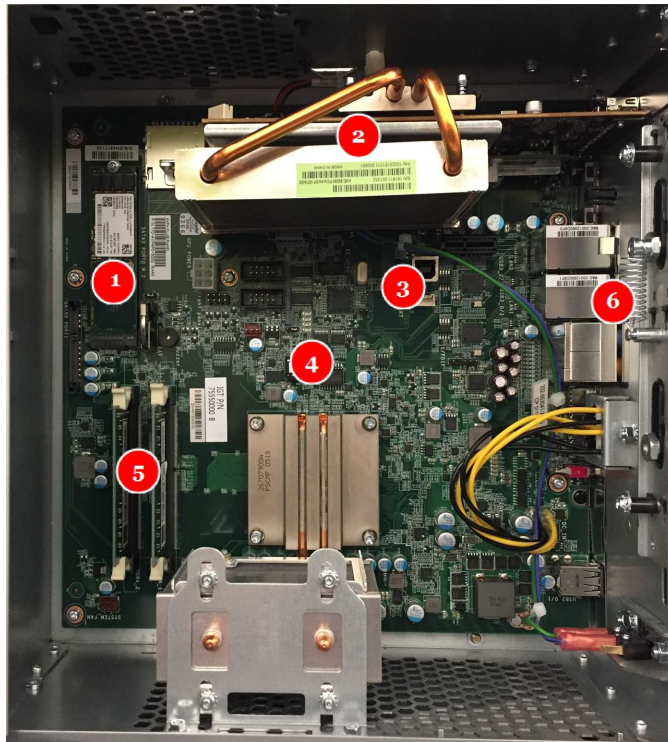
Figure 2-14 AVP 4.0+ Brain Box Components

Number	Description
1	Solid State Drive in M.2 format
2	AMD E9260 GPU (video card)
3	USB-B Port
4	AP PROM This chip contains a read only AP_Image directory which authenticates the boot image in the root directory. *APR00004 or later must be used and must be compatible with the boot release version. Refer to the theme overview for more information.*
5	Memory Slots
6	On-board Audio

Brain Box Removal

Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.

To remove the BrainBox from the terminal:

1. Open the main door and power off the cabinet.

2. Disconnect the Power In connection.

3. Disconnect the PCI-E Connection, USB connection(s), Audio connection, and the 4 mini display port connections.

4. Turn the key to unlock the brainbox, and slide that latch to the unlock the brainbox.

5. Slide the brainbox forward and remove it from the cabinet.

To open the lid on the brainbox, unlock the lid and slide the latch to open.

Cabinet Controller Board

The Cabinet Controller Board is the main interface between the power supply, Brain Box, and cabinet peripherals. The board functions include:

- Door Security

- Meters (if applicable)

- Internal and external communications control

- Power distribution

Two EEPROMs (electrically erasable programmable read-only memory) are present for the cabinet memory. A PCIe cable provides a communication link between the board and the Brain Box.
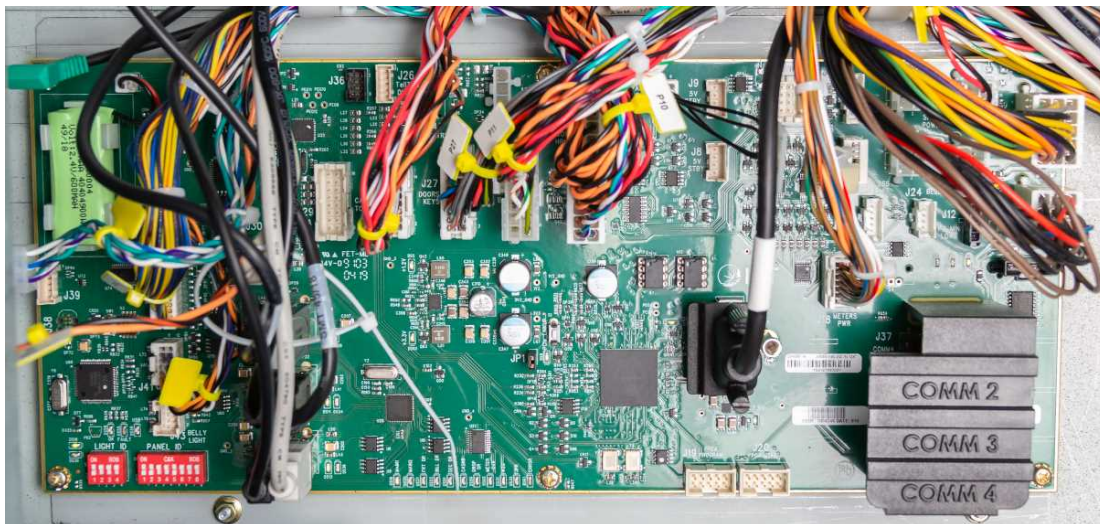
Figure 2-15 Cabinet Controller Board
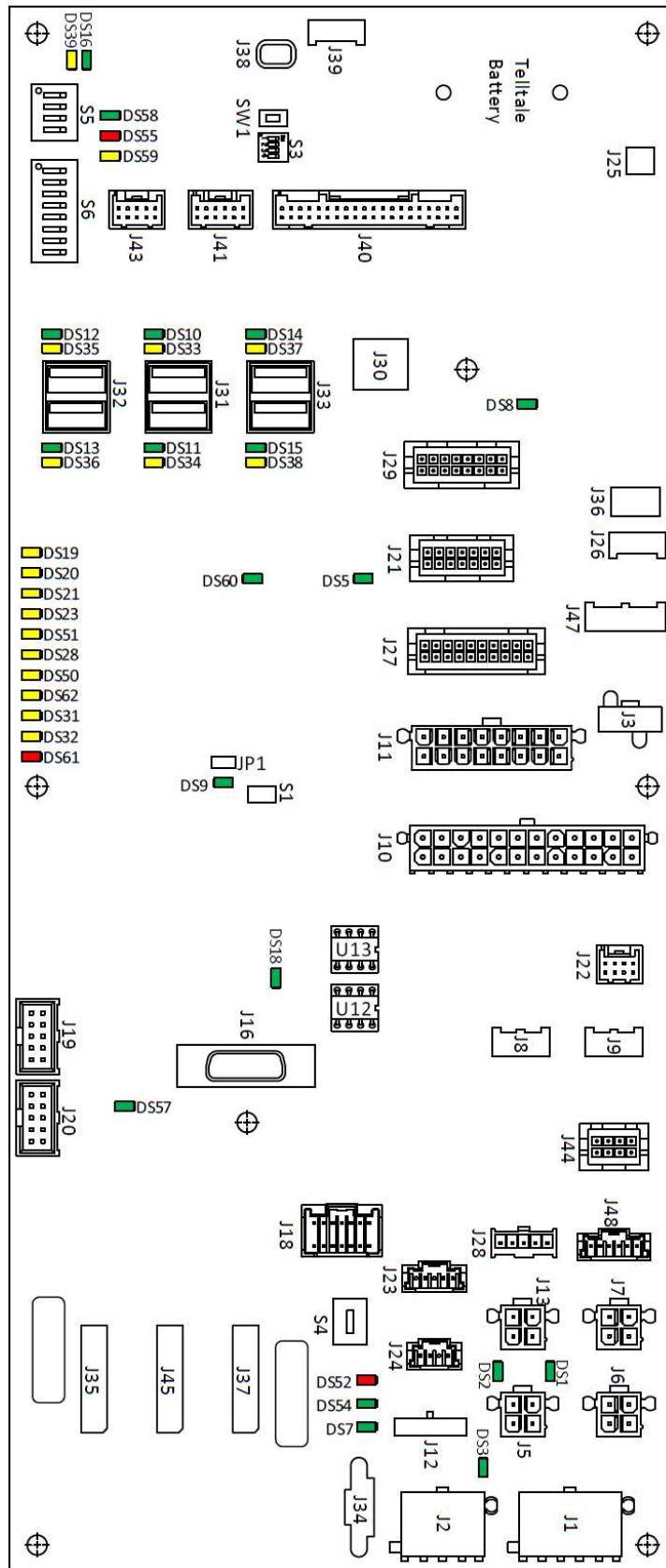
Figure 2-16 Cabinet Controller Board Connectors

Cabinet Controller Board Connectors

LED Table

LED	Color	Indication	LED	Color	Indication
DS1	Green	Presence of +24VDC rail	DS33	Yellow	USB over-current detection
DS2	Green	Presence of +12VDC rail	DS34	Yellow	USB over-current detection
DS3	Green	Presence of +5V rail	DS35	Yellow	USB over-current detection
DS5	Green	Presence of +1.2VDC rail.	DS36	Yellow	USB over-current detection
DS7	Green	Presence of +5V Standby rail	DS37	Yellow	USB over-current detection
DS8	Green	Telltale Battery Charge	DS38	Yellow	USB over-current detection
DS10	Green	USB device enumerator	DS39	Yellow	USB over-current detection
DS11	Green	USB device enumerator	DS50	Yellow	Drop Door
DS12	Green	USB device enumerator	DS51	Yellow	Security Door
DS13	Green	USB device enumerator	DS52	Red	RS232 transmit data
DS14	Green	USB device enumerator	DS54	Green	RS232 receive data
DS15	Green	USB device enumerator	DS55	Red	LPC1759 FAULT
DS16	Green	USB device enumerator	DS57	Green	Presence of +2.5VDC rail
DS18	Green	FPGA configure done	DS58	Green	LPC1759 processor OK
DS19	Yellow	Main Door 1	DS59	Yellow	LPC1759 USB device enumerator
DS20	Yellow	Main Door 2	DS60	Green	Presence of +3.3VDC rail
DS21	Yellow	Front Door	DS61	Red	FPGA Error Indicator
DS23	Yellow	Bill Door	DS62	Yellow	Meter Cover Indicator
DS28	Yellow	Cash Box			
DS31	Yellow	W2G			
DS32	Yellow	Jackpot Reset			

Connector Table

Connector	Description	Connector	Description
J1	3.3VDC, 5V_STBY, 12VDC Input	J25	Tell Tale Battery
J2	-12 VDC, 5VDC, 24VDC Input	J26	Tell Tale Diagnostic
J3	24VDC Output	J27	Main 1, Front, Bill, Drop Door JPR & W2G Key Switches Cabinet Power Switch Bass Speaker Out
J5	12VDC, 24VDC Output	J28	Main Door 2 (optic receiver)
J6	Topper Media Controller 12VDC (pre-wired)	J29	Coin Acceptor (if present)
J7	12VDC, 24VDC Output	J30	USB upstream from Brain Box
J8	5VDC standby	J31	USB dual downstream
J9	5VDC standby	J32	USB dual downstream
J10	Bill Validator Bezel 24VDC Printer Bezel 24VDC USB Charger 12VDC Audio AMP 24VDC Bass Speaker In Main LCD 24VDC Top LCD 24VDC DPP 12VDC	J33	USB dual downstream
J11	Belly Door Logo Light 24VDC Bill Validator 12VDC Printer 24VDC	J34	COMM 1
J12	-12VDC Output	J35	COMM 2
J13	12VDC, 24VDC Output	J36	Unused
J16	PCIe to Brain Box	J37	COMM 4
J18	Hard Meters	J38	SWD Port
J19	FPGA Program	J40	Button Deck
J20	FPGA JTAG	J41	Main & Top LCD Trim Lighting
J21	Candle 12VDC Video Topper 24VDC	J43	Belly Light (unused)
J22	Security Door Cashbox Present Door Internal Key Main Door 2 (optic emitter)	J45	COMM 3
J23	Loss Limit	J48	Unused
J24	Bell 24VDC (if present)	U12 & U13	EEPROM (Cabinet Memory)

Switches

Switch	Description
S1	Brain Box Comm Reset Button
SW1	ARM Reset Button
S3	**ARM Diagnostic Dipswitch** -4 ON for LCD LED lighting pattern cycle
S5	**LCD LED ID Dipswitch** 27" -1 OFF, all others ON
S6	**Player Panel ID Dipswitch** 5-Button - 1, 3, 5 OFF, all others ON
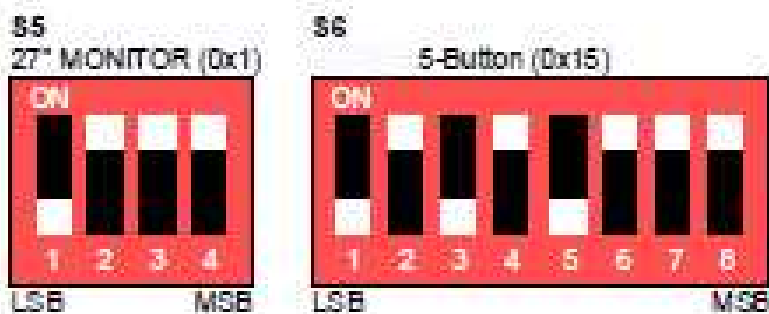
Figure 2-17 Dip Switch Settings

Cabinet Controller Board Removal

⚠️ *Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.*

To remove the cabinet controller board:

1. Open the main door and power off the cabinet.

2. Disconnect all connections from the cabinet controller board.

3. To remove the cabinet controller board and mounting plate, remove the four nuts.

4. To remove the cabinet controller board only, remove the seven M3 screws & the one M4 threaded standoff. It is important to re-install the threaded standoff, as this prevents the PCI-E connection from being installed backwards and damaging the connector or cable.
   The standoff can only be installed in one hole, since it is threaded M4 and the screws are M3.

5. Remove the cabinet controller board from the cabinet.

Audio Amplifier Board

The Audio Amplifier board receives audio input, amplifies, then distributes the sound channels to the internal speakers through the Cabinet Controller Board.

Green Jack: Front L/R.
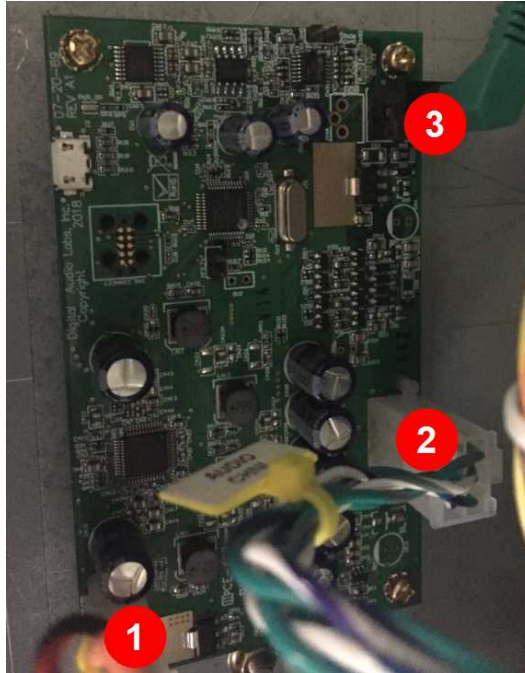
Figure 2-18 Audio Amplifier Board

Label	Description
1	AMP Power In
2	Speaker Channels Out
3	3.5mm Jack In

Audio Amplifier Board Removal

Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.

To remove the audio amplifier board:

1. Open the main door and power off the cabinet.

2. Disconnect all connections from the audio amplifier board.

3. To remove the audio amplifier board and mounting plate, remove the two M4 nuts.

4. To remove the audio amplifier board only, remove the four M3 screws.

5. Remove the audio amplifier board from the cabinet.

Player Panel

The player panel consists of the multiple components.

Figure 2-19 Static Button Panel
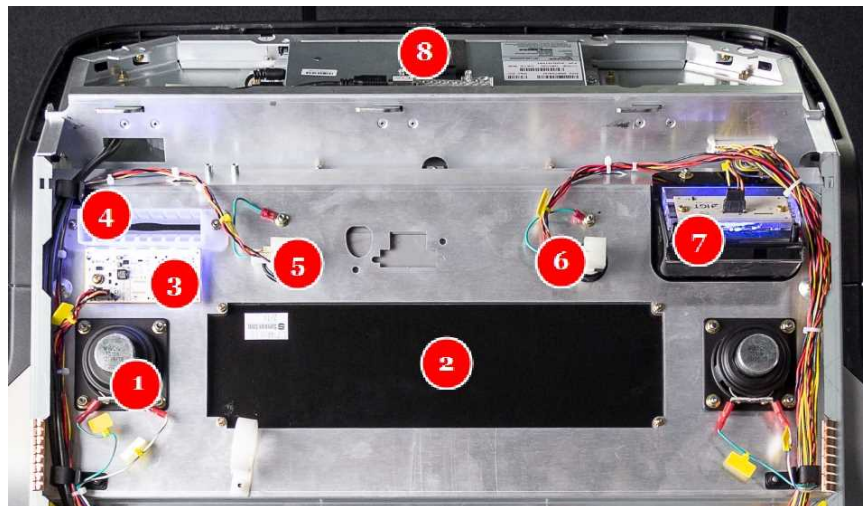
Figure 2-20 Player Panel Components (Door Open View)

Label	Description
1	Speakers
2	Optional Cashless Components (SMIB Module / Card Reader). Refer to *Cashless System Components* on page 58 for more information.
3	USB Charging Port
4	Printer Bezel
5	Cashout Button
6	Service Button - Not used in this configuration
7	Bill Validator Bezel
8	Button Panel

Speakers

The player panel includes two (2) speakers (one on each side). The speakers are connected to the Cabinet Controller Board.

Figure 2-21 Speaker

USB Charging Port

Located above the printer bezel, is a USB charging port available for players to charge mobile devices. This port is for charging only and does not include communication circuits. The USB Charging Port connects to the Cabinet Controller Board.

Figure 2-22 USB Charger

Bill Validator and Printer Bezels

The bezels support USB capable bill validators and printers currently approved for the EGM. For information on bezel lighting, see *Cabinet Lighting* on page 51.

Figure 2-23 Bill Validator Bezel
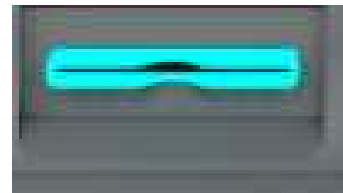
Figure 2-24 Printer Bezel

Cashout Button

The player panel includes a mechanical *Cashout* button, connected to the Cabinet Controller Board.

- Cashout Button: Allows players to cash out funds from the terminal.

Button Panel

The button panel consists of 5 mechanical buttons.
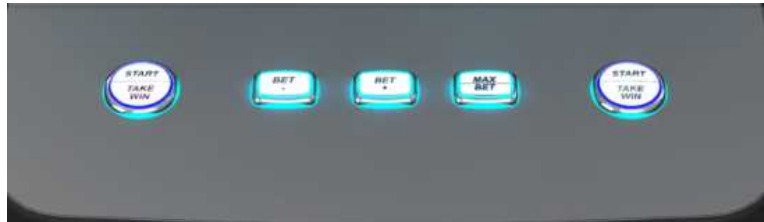
Figure 2-25 Static Button Panel

Button Panel Connectors

All buttons are interconnected by harness to the Cabinet Controller Board.
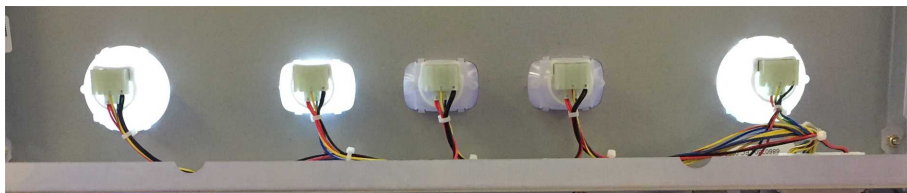
Figure 2-26 Static Button Panel Connectors

Player Panel Removal

⚠ *Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.*

To remove the player panel:

1. Open the main door and power off the cabinet.

2. Disconnect the Button harness.

3. Remove the M4 nut securing the USB-B and Mini DP to the panel.
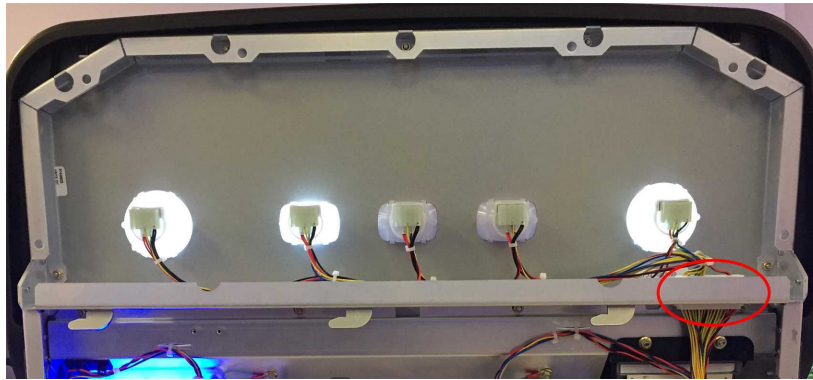
Figure 2-27 Player Panel Connections

4. Remove the eleven nuts using a 7mm nutdriver or socket on a ratchet.
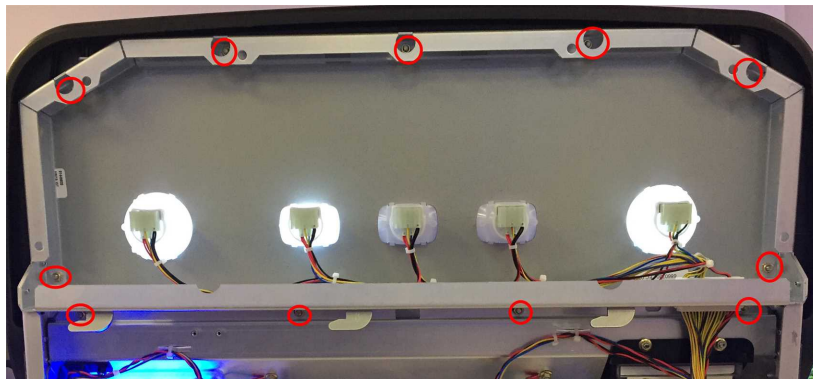
Figure 2-28 Player Panel Mounting Hardware

5. Remove the panel assembly from the cabinet (out the front of the door). Place the panel assembly on a safe and secure surface.
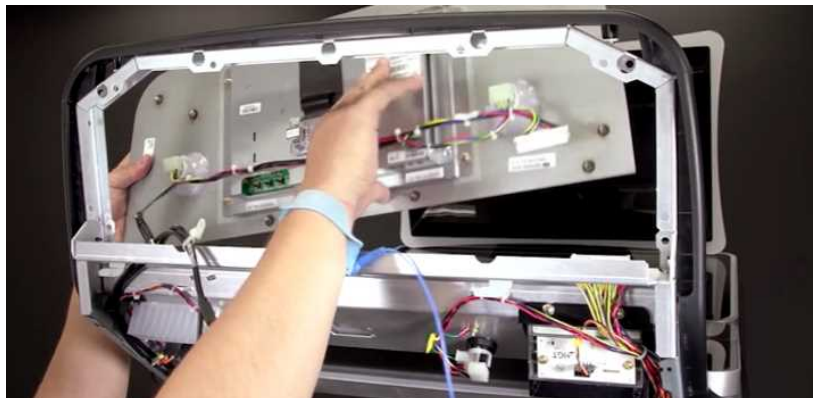
Figure 2-29 Player Panel Removal

Swapping Player Panel Configuration

When replacing the button panel with a different configuration (Dynamic Player Panel / Static Button Panel), the dip switch settings need to be changed on the cabinet controller board.

Refer to *Switches* on page 43 for more information.
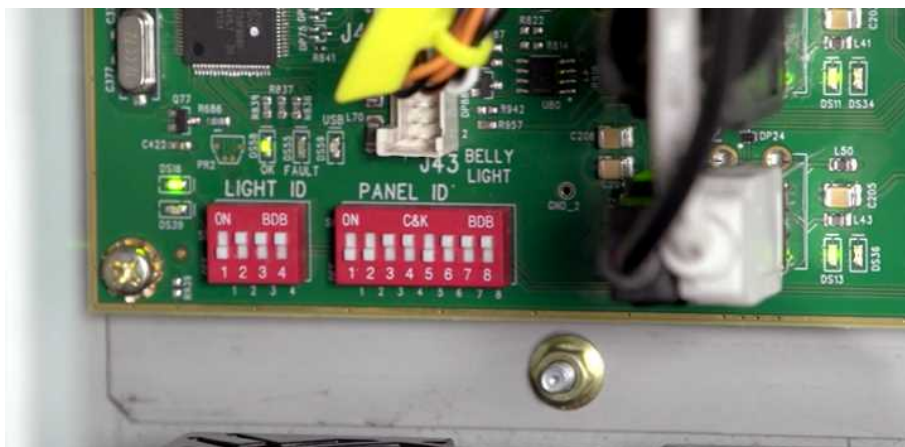
Figure 2-30 Cabinet Controller Board Dip Switch Settings

When using the Static Button Panel configuration, tuck the USB and Mini DP connections safely out of the way, since these are not being used. If needed, secure with zip ties.
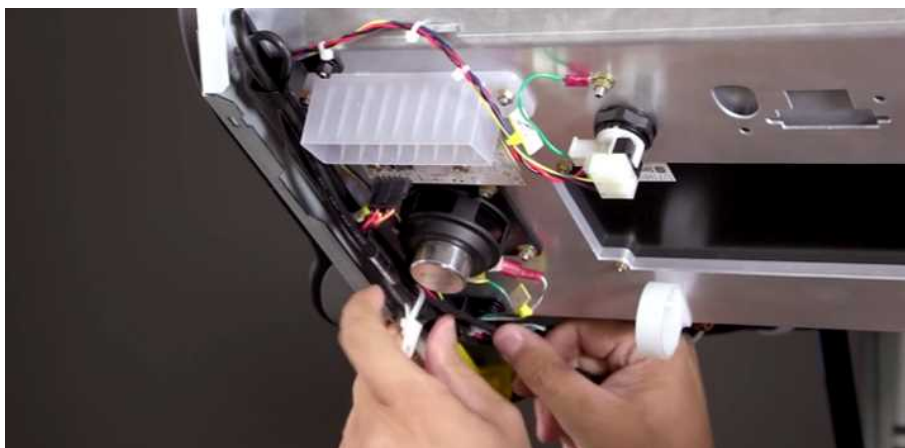
Figure 2-31 USB and Mini DP connections

Cashout Button Removal

Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.

To remove the Cashout button:

1. Open the main door and power off the cabinet.

2. Unplug the connection for the button to be removed.

3. Remove the plastic nut from the rear, and remove the button from the front of the door.
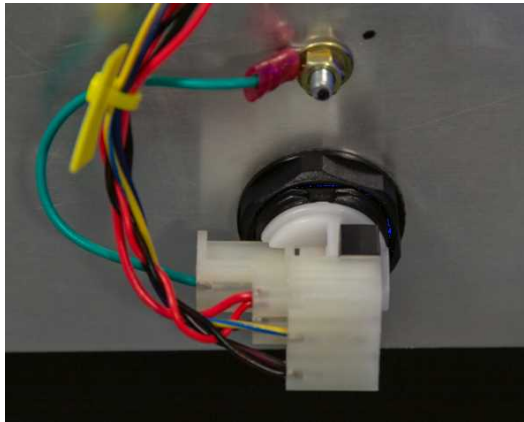
Figure 2-32 Cashout Button Removal

Bezel LED Board Removal

Always observe proper ESD precautions and use an ESD wrist strap when working on components inside the terminal.

To remove the left side (Printer Bezel LED Board & USB Charging Port) or the right side (BV Bezel LED Board):

1. Open the main door and power off the cabinet.

2. Disconnect the single connection on the back of the board being removed.

3. Remove the 2 Phillips head screws.

4. Remove the board from the cabinet.

Figure 2-33 Bezel LED Board Removal

Cabinet Lighting

The following lighting elements are individually controlled using a serial interface. LEDs may be controlled by the game.

- Indirect lighting elements provided around the 27" displays.
- Direct Marquee lighting elements provided around the perimeter of the 27" displays.

The following lighting elements have a single color (Blue) LEDs:

- Belly Door logo
- Bill Validator Bezel
- Printer Bezel
- USB Charger

LED Control Boards

Dual Displays

Figure 2-34 Dual Display Lighting

For dual 27" configurations, the following LED Boards are used:

- Main Display:
  - OWI Light 30 LED Board (J1 connects to J41 on CCB)
  - Left OWI Light 50 LED Board (J1 connects to J2 on OWI Light 30 LED Board)
  - Right OWI Light 50 LED Board (J1 connects to J3 on OWI Light 30 LED Board)
- Top Display:
  - OWI Light 60 LED Board (J1 connects to J41 on CCB)
  - Left OWI Light 50 LED Board (J1 connects to J2 of OWI Light 60 LED Board)
  - Right OWI Light 50 LED Board (J1 connects to J3 of OWI Light 60 LED Board)

Belly Door Logo

Figure 2-35 Belly Door Logo Lighting

For the belly door logo, the following LED Board is used:

- DOWN Light 5 LED Board (J1 connects to J11 on CCB)
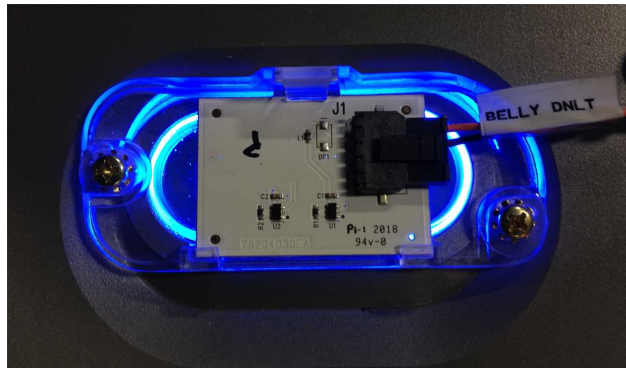
Figure 2-36 DOWN Light 5 LED Board

Bill Validator Bezel

The Bill Validator Bezel uses one LED Board (J1 connects to J10 on CCB).

Printer & USB Charger Bezel

The Printer and USB Charger Bezel uses one LED Board (J1 connects to J10 on CCB).

Figure 2-37 Bill Validator & Printer LED Boards

Air Filters

Two air filters are located externally on the right side of the cabinet. The top one is filtered air going into the Brain Box, the bottom one is filtered air going into the power supply.

Figure 2-38 Air Filters

Air Filter Maintenance

The air filters should be cleaned regularly for optimal performance.

Slide out the filters and clean using compressed air, or warm water if needed.

Hard Meters

The EGM is equipped with externally viewable mechanical meters. These meters record the lifetime financial records of the EGM. The mechanical meters increment in specified denominations configured in game software. The meters are not meant to be, nor should they ever be, reset to zero. They should always reflect the lifetime values.

- Total In
- Total Out
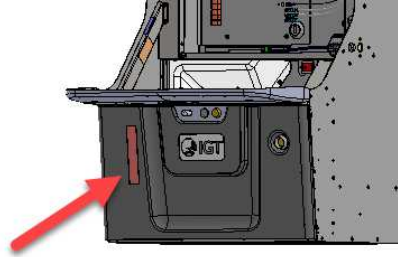
Figure 2-39 Hard Meters

Fledging Board

The Fledging Board is only present in Mutha Goose system configurations.

The Fledging Board provides communication between the EGMs and the Mutha Goose System.

- RJ45 connection to Mutha Goose system (or daisy-chained between multiple EGMs connected to the Mutha Goose system).
- Connection to Cabinet Controller Board to "listen" for meters.
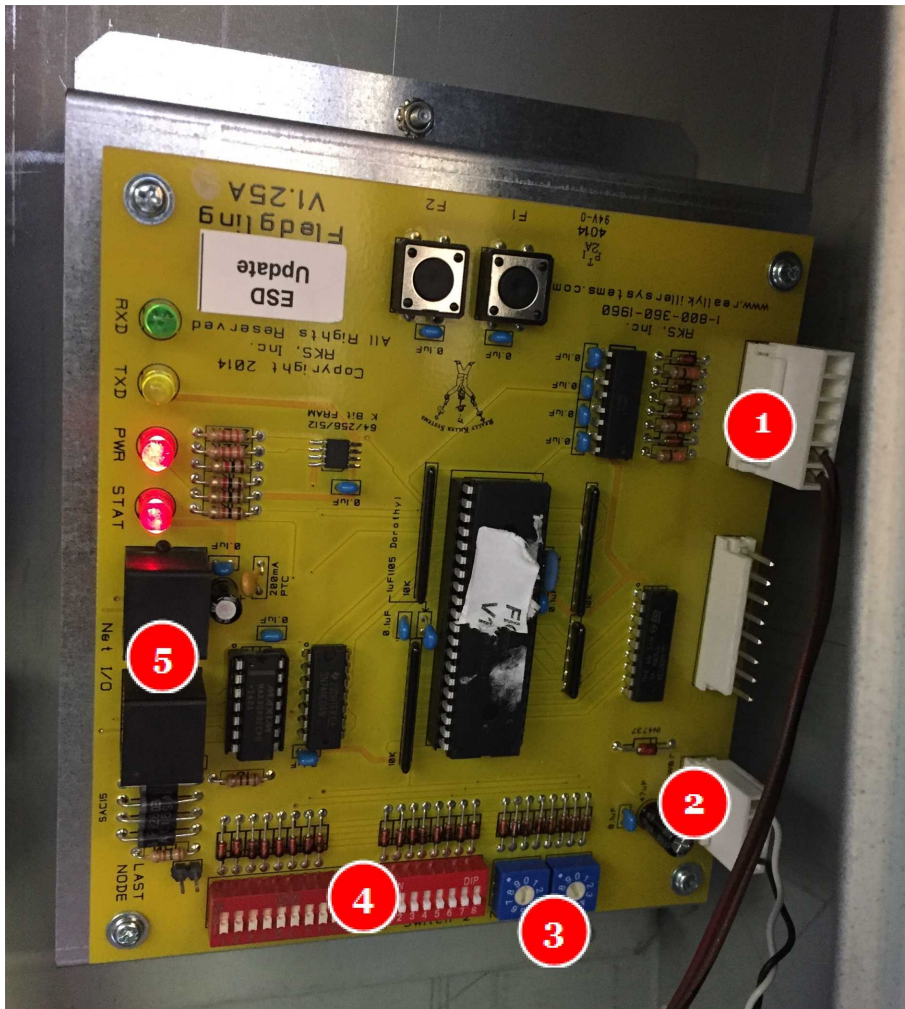
Figure 2-40 Fledging Board

Label	Description
1	Connection to physical Hard Meters
2	Power connector to Cabinet Controller Board (J37)
3	Node Number
4	Jumpers
5	RJ45 connections for Mutha Goose system / Daisy Chain

Fledging Board Connectors on Cabinet Controller Board
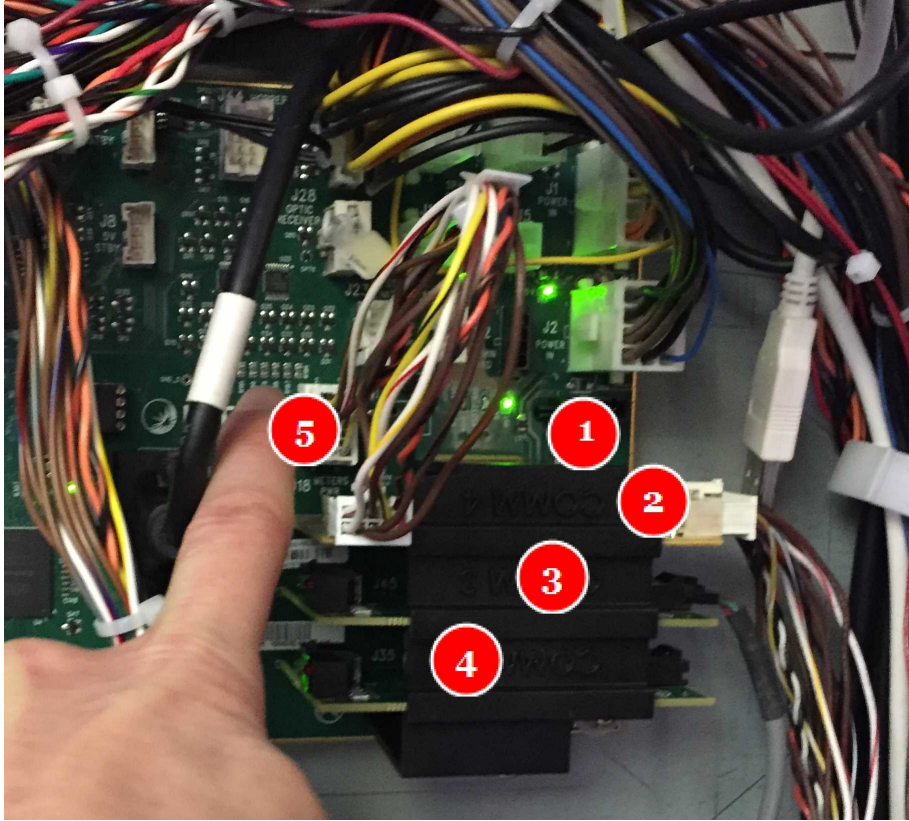
Figure 2-41 Fledging Board Connectors on Cabinet Controller Board

Label	Connector	Description
1	J34	Accounting SAS
2	J37	Connection to Fledging Board and serial Bill Validator
3	J45	Optional RS-232 Expansion board for AFT/EFT
4	J35	Optional RS-232 Expansion board for AFT/EFT
5	J18	Meter Power looped to J37 on Cabinet Controller Board

Fledging Board Removal

To remove the Fledging Board:

1. Disconnect harness connections.

2. Remove the four screws securing the Fledging Board to the bracket.
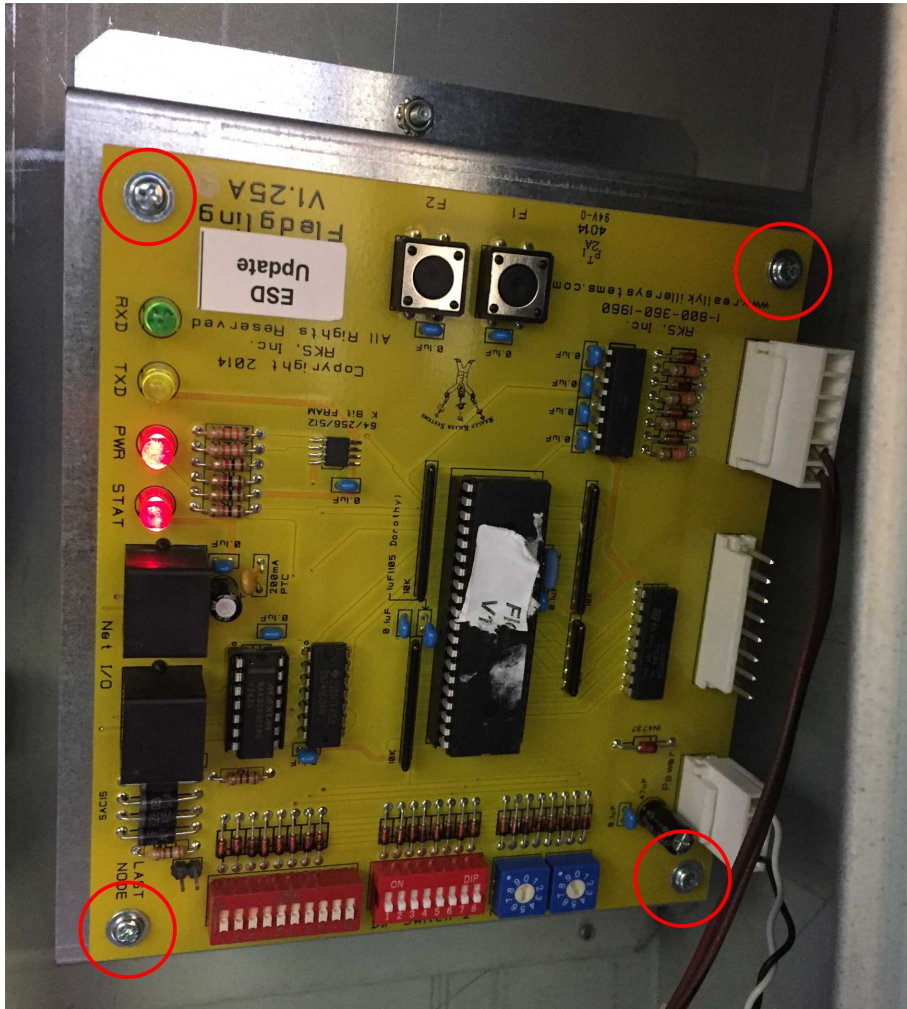
Figure 2-42 Fledging Board Removal

Cashless System Components

The Cashless System includes the following components:

- The SMIB Module and C-Lite Interconnect Board are used to communicate between the EGM and the i-LINK Ultra Site Controller.

    ○ The SMIB Module is connected to the EGM through the C-Lite Interconnect Board and connects to the i-LINK Ultra Site Controller via Ethernet connection from a network switch. Refer to *SMIB Module* on page 58 for more information.

    ○ The C-Lite Interconnect board connects to the Bill validator and hard meters. Refer to *C-Lite Interconnect Board* on page 61 for more information.

- The mag-stripe Card Reader is used to read player cards and load carded sessions on the EGM. Refer to *Card Reader* on page 63 for more information.

SMIB Module

The SMIB Module provides communication between the EGM and the i-LINK Ultra Site Controller.

The SMIB Module includes an internal Type Module board, a touch screen display; and is secured to the player tracking plate of the EGM. The module requires +12VDC of power (power brick connected to the AC Box service outlet).
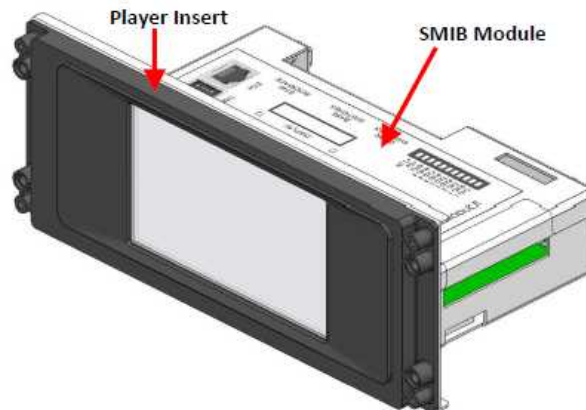
Figure 2-43 SMIB Module

SMIB Module Connectors
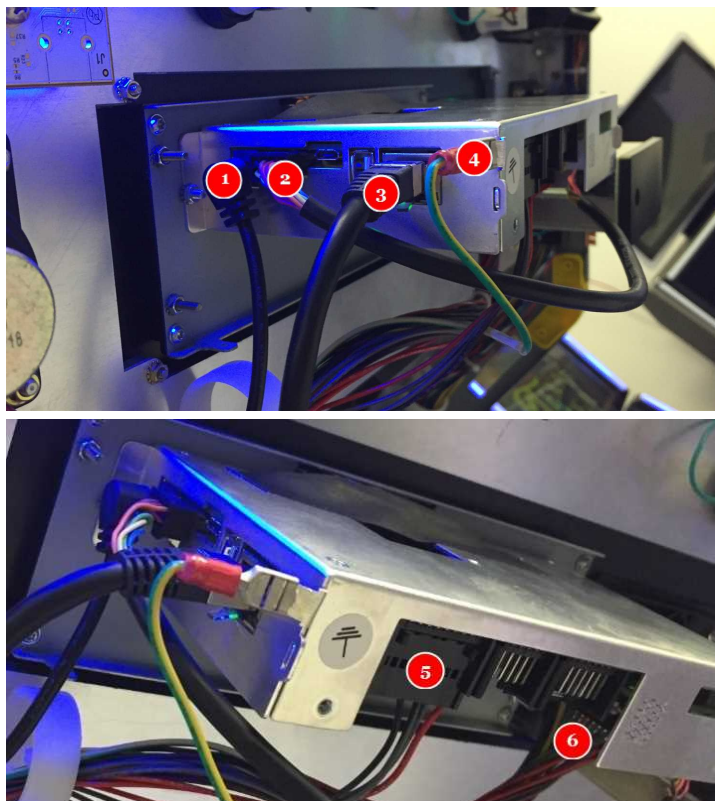
Figure 2-44 SMIB Module Connectors

Label	Description
1	Power (to power brick)
2	Connection to Card Reader
3	Ethernet connection to i-LINK Ultra Site Controller network
4	Ground cable
5	Harness to C-Lite Interconnect Board (J1)
6	Harness to C-Lite Interconnect Board (J5)

SMIB Module Removal

The SMIB Module is secured to the four standoffs on the player tracking plate with four M3 nuts (two on each side).

1. Disconnect the harnesses connected to the SMIB Module.

2. Remove the mounting hardware to release the SMIB Module from the player tracking plate.

Figure 2-45 SMIB Module Removal

C-Lite Interconnect Board

The C-Lite Interconnect board provides connection between the EGM's components and the SMIB module.
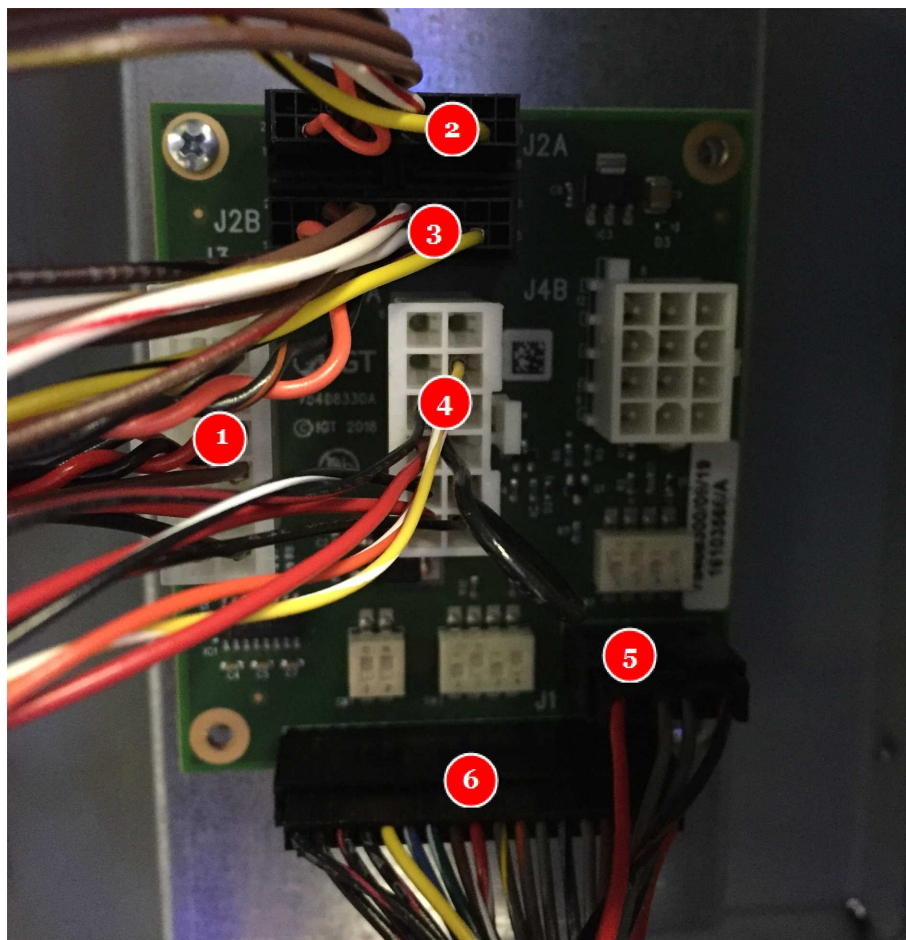
Figure 2-46 C-Lite Interconnect Board

Label	Connector	Description
1	J3	Power to J7 on Cabinet Controller Board, Harness to J37 Expansion Board on Cabinet Controller Board
2	J2A	Meters on Cabinet Controller Board (J18)
3	J2B	To physical Hard Meters
4	J4A	Bill Validator connector (custom, replacing existing BV harness)
5	J1	SMIB Module connector
6	J5	SMIB Module connector

C-Lite Interconnect Board Connectors on Cabinet Controller Board
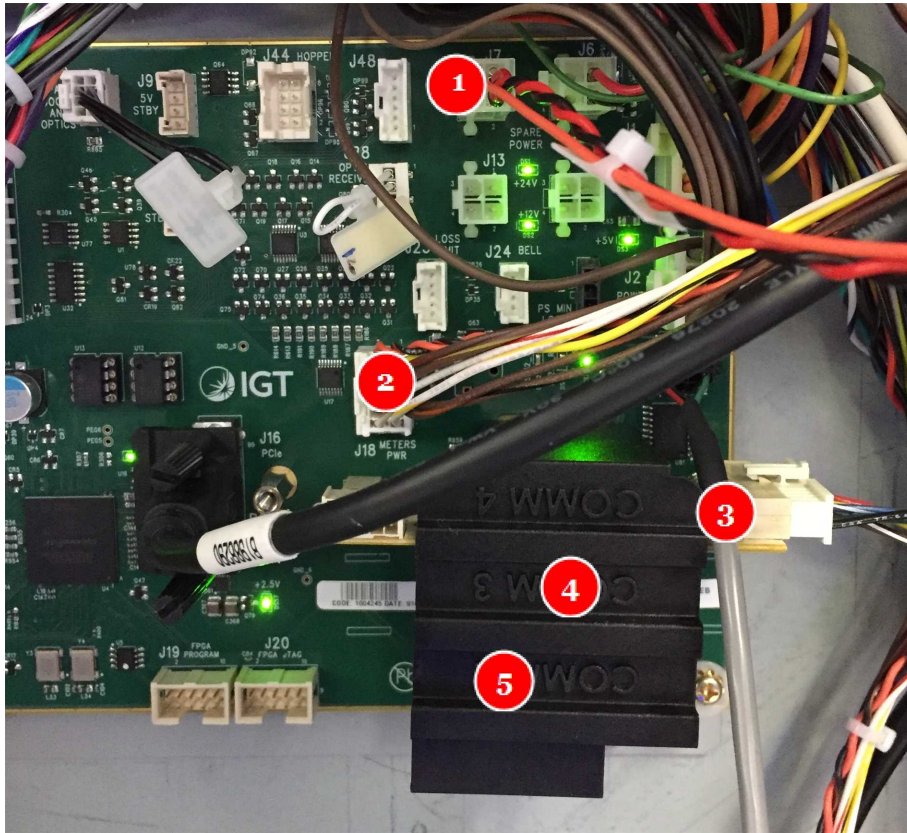
Figure 2-47 C-Lite Interconnect Board Connectors on Cabinet Controller Board

Label	Connector	Description
1	J7	Power to C-Lite Interconnect Board
2	J18	Meter Power
3	J37	Connection from C-Lite Interconnect Board
4	J45	Optional RS-232 Expansion board for AFT/EFT
5	J35	Optional RS-232 Expansion board for AFT/EFT

C-Lite Interconnect Board Removal

To remove the C-Lite Interconnect Board:

1. Disconnect the harnesses from the Interconnect Board.
2. Remove the screws securing the board to the bracket.

Card Reader

The mag-stripe Card Reader is used to read player cards and load carded sessions on the EGM.
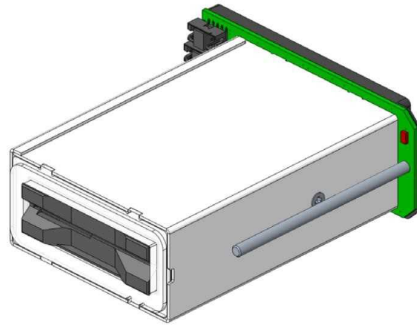
Figure 2-48 Card Reader

Card Reader Connector

The Card Reader connects to the SMIB Module.
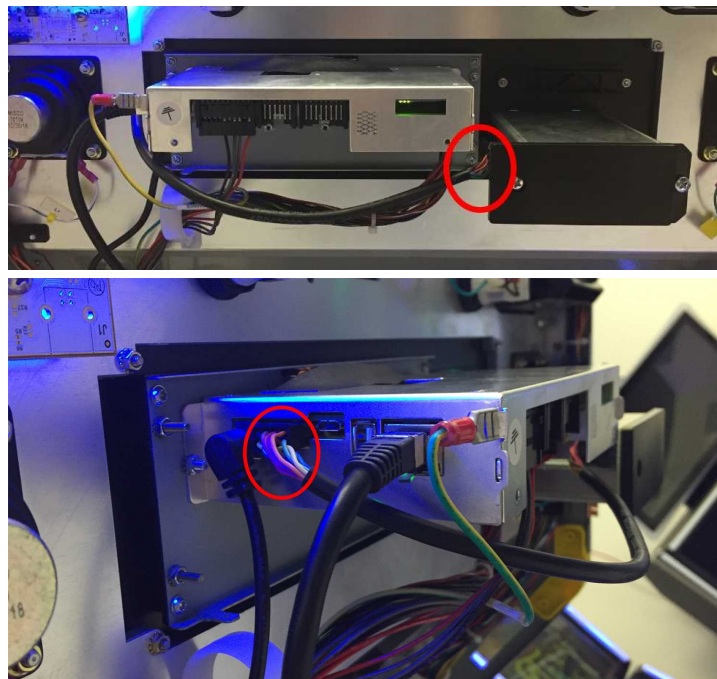
Figure 2-49 Card Reader Connector

Card Reader Removal

The card reader is secured to the two standoffs on the player tracking plate with two Phillips screws (one on each side).

1. Disconnect the harness connected to the card reader.

2. Remove the mounting hardware to release the card reader from the player tracking plate.

Figure 2-50 Card Reader Removal

Bill Validator Theory of Operation

For configurations using the Mutha Goose system, communication is done through the Bill Validator and Brain Box.
For cashless configurations using the SMIB Module, communication is done through the Bill Validator and the SMIB Module.

1. The bill is read by the bill validator unit, which confirms the validity and the denomination of the inserted bill. If the illuminated bezel is blinking, the bill is not accepted.

2. If accepted, the bill validator transmits this information to the Brain Box / SMIB Module.

3. The Brain Box / SMIB Module acknowledges this communication and sends a command to the bill validator to send the bill to the stacker box or reject the bill. Once the bill is stacked the credits are added to the game.

4. If failures or jams occur during these steps, the terminal will enter into an error condition. In the event the error still persist, restart the terminal.

UBA® Bill Validator

The bill validator has four-way acceptance (face up/down, right side up/down) and it communicates to the Cabinet Controller Board through the harness at the back of the UBA. The same harness provides +12VDC from the power supply to power the UBA. The UBA bill validator uses 8Mb Flash Chips to store the firmware that dictates what currency it is to accept.

Figure 2-51 UBA Bill Validator

UBA Bill Validator Components
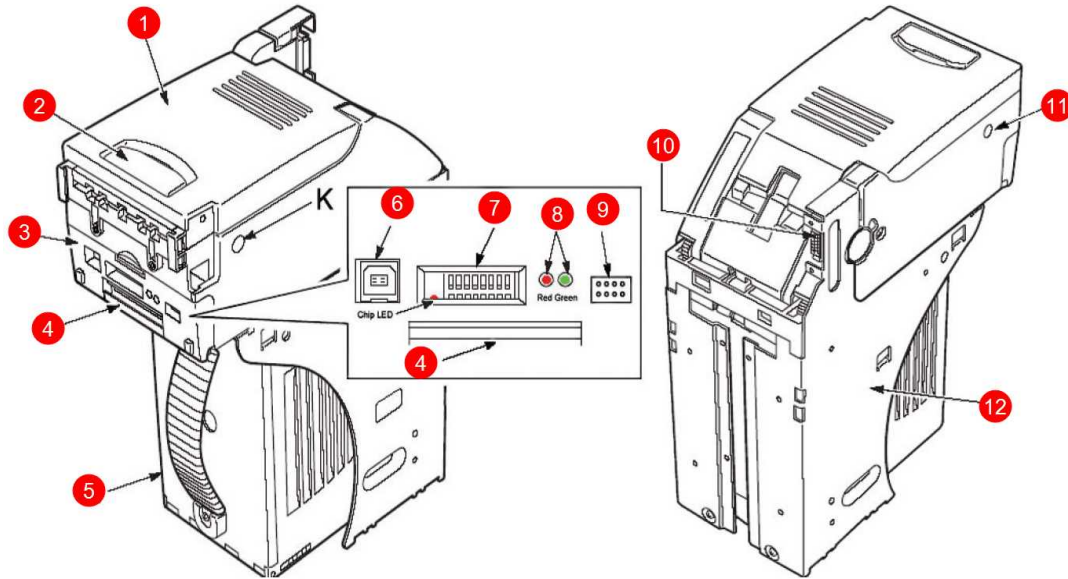
Figure 2-52 UBA Components

Number	Description	Number	Description
1	Acceptor Unit	7	DIP Switch Block
2	Upper Guide Access Lever	8	Diagnostic LEDs
3	Front Access Door	9	Front Bezel Connector
4	Acceptor Unit Release Lever	10	Interface Connector
5	SS Style Cash Box	11	Centering Guide Release Port
6	USB Type B Male Receptacle for software downloading and adjustments	12	Housing Frame

UBA Bill Validator Connectors & Sensors

The UBA bill validator does not require field calibration. It only requires calibration when a component (sensor) board or the CPU Board is replaced. The calibration process involves a PC based program that adjusts the sensors to factory levels and is done at the repair depot only.
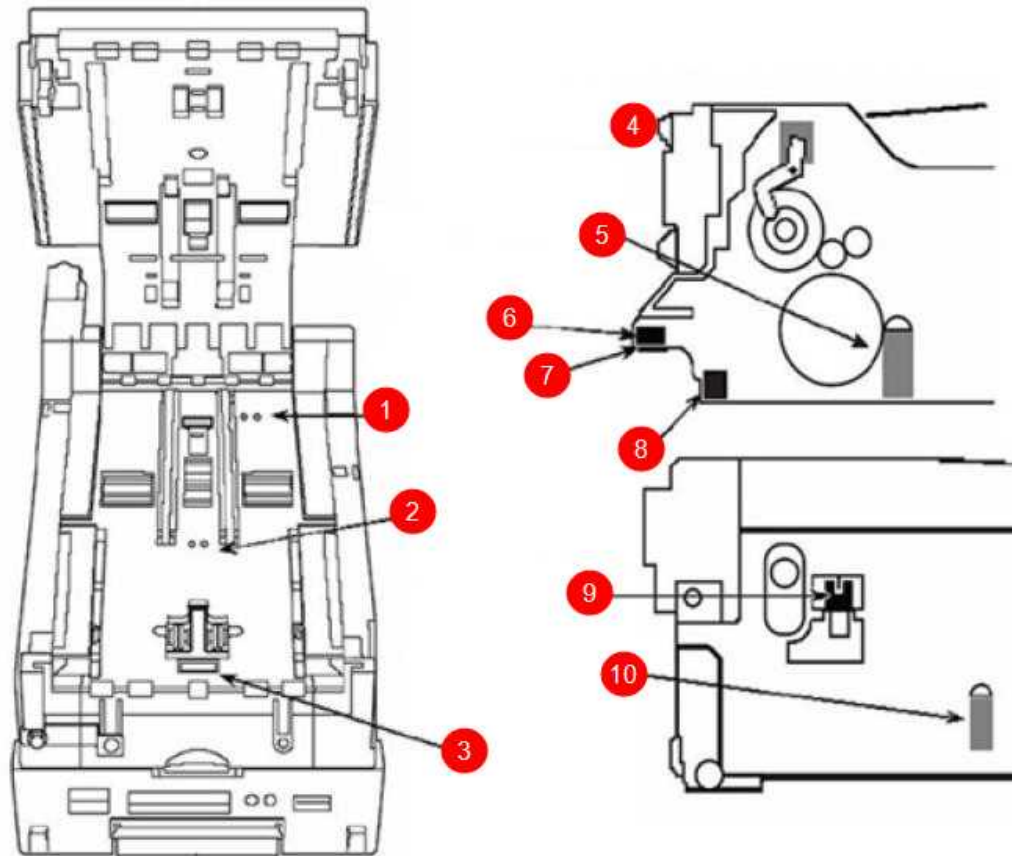
Figure 2-53 UBA Connectors and Sensors

Number	Description	Number	Description
1	PB-In Sensor	6	Pusher Home Sensor
2	Centering Mechanism Timing Sensor	7	Cashbox Installed Sensor
3	Entrance Sensor	8	Exit Sensor
4	PB Home Sensor	9	Centering Mechanism Home Sensor
5	Transport Motor Encoder Sensor	10	Stacker Mode Encoder Sensor

UBA Bill Validator Removal

The validator unit and stacker can be removed from the chassis of the bill validator.

Follow these steps to remove the validator unit and stacker:

1. Turn off the terminal.

2. Press down on the validator unit latch and slide the validator unit forward to remove it from the chassis.

Figure 2-54 UBA Validator Unit Removal

3. Pull the stacker box handle to remove the stacker box.

Figure 2-55 UBA Stacker Box Removal

UBA Bill Validator Error Codes

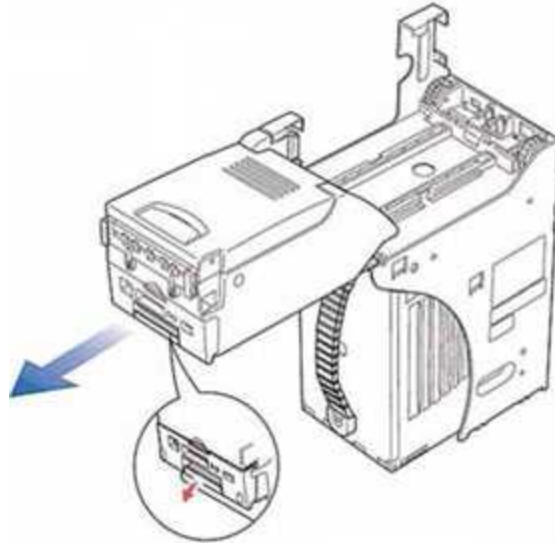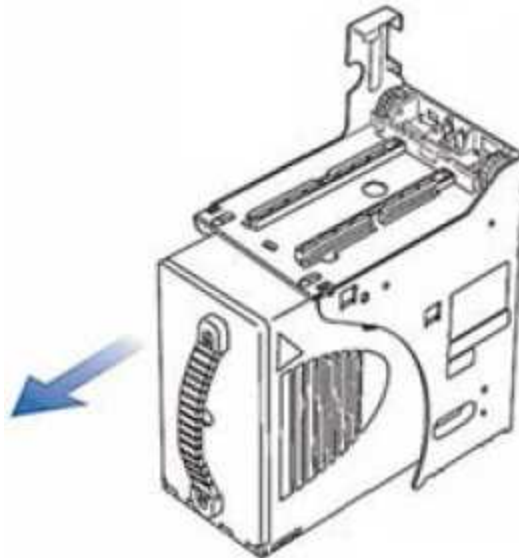| LED Status		Error	Causes and Solutions
Red LED	Green LED		
Flashes 1 x	ON	Boot ROM error	
Flashes 2 x	ON	1. Incorrect external ROM contents or empty program 2. No program in the external Flash ROM	Change the CPU Board.
Flashes 3 x	ON	Internal RAM error	
Flashes 4 x	ON	External Ram error	
Flashes 1 x	OFF	Cash Box full	Empty the cash box and re-install
Flashes 2 x	OFF	Stacker Pusher Mechanism fault (Transport Jam Type 1)	Stacker motor may be corrupted. Change the motor if defective. A Stacker Encoder Board failure may have also occurred. Check all harnesses and connectors. Exchange the Stacker Encoder Board and/or CPU Board if required with a known good board.
Flashes 3 x	OFF	Transport Jam Type 2	The ICB is disabled/cash box is active. An Exit Sensor Board failure may have occurred. Check all harness and connecters. Exchange the Exit Sensor Board and/or CPU Board if required with a known good board.
Flashes 4 x	OFF	Stacker Encoder Signal fault or a Validator Jam	A Stacker Encoder Sensor failure may have occurred. Check all lenses for dirt or scratches. A Lower Sensor Board failure may have occurred. Exchange the Sensor Board if required with a known good board.
Flashes 5 x	OFF	Transport Motor speed error	The Transport Motor Speed Encoder does not detect motor rotation or requires sensor adjustment. Check all harnesses and connectors. A Motor or CPU Board failure may have occurred. Exchange the Motor and/or CPU Board with a known good board.
Flashes 6 x	OFF	Transport Motor failure	
Flashes 7 x	OFF	Reserved	N/A
Flashes 8 x	OFF	Reserved	N/A
Flashes 9 x	OFF	Anti-Pullback Unit error	An Anti-Pullback Home Sensor Board and/or a Lower Sensor Board failure may have occurred. Check all harnesses and connectors. Exchange the Anti-Pullback Home Sensor Board and/or Lower Sensor Board with a known good board.
Flashes 10 x	OFF	Cash Box error	Cash box not seated or not present. A Cash Box Sensor Board failure may have occurred. Check all harnesses and connectors. Exchange the Cash Box Sensor Board and/or CPU Board if required with a known good board.
Flashes 11 x	OFF	Reserved	N/A
Flashes 12 x	OFF	Cheated	Cheat attempt detected.
Flashes 13 x	OFF	Centering Mechanism Solenoid error	A Solenoid or an Upper Sensor Board failure may have occurred. Check all harnesses and connectors. Exchange the Upper Sensor Board with a known good board.
Flashes 14 x	OFF	Centering Mechanism error	A Centering Mechanism Home Sensor Board and/or CPU Board failure may have occurred. Check all harnesses and connectors. Exchange the Centering Mechanism Home Sensor Board with a known good board.

LED Status		Error	Causes and Solutions
Red LED	Green LED		
OFF	Flashes 1x	Slanted Bill Insertion	Re-insert the bill straight
OFF	Flashes 2x	Magnetic Sensor pattern error	Check all lenses for dirt or scratches. An Upper Sensor Board failure may have occurred. Check all harnesses and connectors.
OFF	Flashes 3x	Paper detected inside the Validator in standby mode	Remove the paper jam from the Validator path and clean the lenses. An Upper and/or Lower Sensor Board failure may have occurred. Check all harnesses and connectors.
OFF	Flashes 4x	Optical Sensor error Type 1	
OFF	Flashes 5x	Bill feed error Type 1	Check all lenses for dirt or scratches. An Upper Sensor Board failure may have occurred. Check all harnesses and connectors.
OFF	Flashes 6x	Bill identification error	Remove the bill from the Validator and clean the lenses. An Upper and/or Lower Sensor Board failure may have occurred. Check all harnesses and connectors.
OFF	Flashes 7x	Optical Sensor error Type 2	
OFF	Flashes 8x	Optical Sensor error Type 3	
OFF	Flashes 9x	Inhibited bill	Check and set DIP switches properly.
OFF	Flashes 10x	Return bill	Bill inhibited by host machine
OFF	Flashes 11x	Reserved	N/A
OFF	Flashes 12x	Bill feed error Type 2	Check all bill path sensors
OFF	Flashes 13x	Bill length error	Check all belts and rollers in the transport path.
OFF	Flashes 14x	Optical Sensor error Type 4	Remove the bill from the Validator and clean the lenses.
OFF	Flashes 15x	Optical Sensor error Type 5	

Nanoptix PayCheck 4™ Printer

The Nanoptix PayCheck 4 printer is a thermal printer that has a jam-resistant bezel, allows for quick drop in replacement, and has easy access to the paper path. The Nanoptix printer is connected to Cabinet Controller Board through a USB port at the back of the printer.

Figure 2-56 Nanoptix PayCheck 4 Printer

Nanoptix PayCheck 4 Printer Components

Figure 2-57 Nanoptix PayCheck 4 Printer

Number	Feature	Number	Feature
1	Paper Tray	3	Release Lever
2	Paper Loading Slot	4	Ticket Out Slot, Bezel

Nanoptix PayCheck 4 Printer Connectors and Sensors

The printer is equipped with three communication interface ports: one power/communication port at the bottom rear, one USB port at the top rear, one maintenance USB port on the side, and a 3 pin I/O connector used to control the illuminated bezel.

Figure 2-58 Nanoptix PayCheck 4 Connectors

Number	Feature	Number	Feature
1	USB Port	3	Maintenance USB Port
2	Power Communication Port	4	3 pin I/O Connector

Optical and reflective sensors are used to:

- Detect low paper
- Start the feeder motor when loading paper
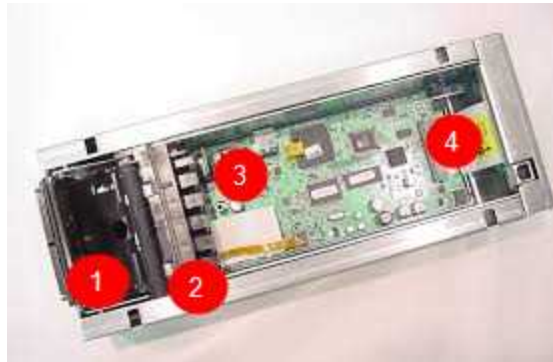- Realign paper back to its "ready" position

Figure 2-59 Nanoptix PayCheck 4 Sensors

Number	Feature	Number	Feature
1	Paper Chute	3	Paper Low
2	Top of Form	4	Tray In

Nanoptix PayCheck 4 Printer, Loading Paper

1. Pull tray forward inside the gaming machine to provide better access to the paper tray.
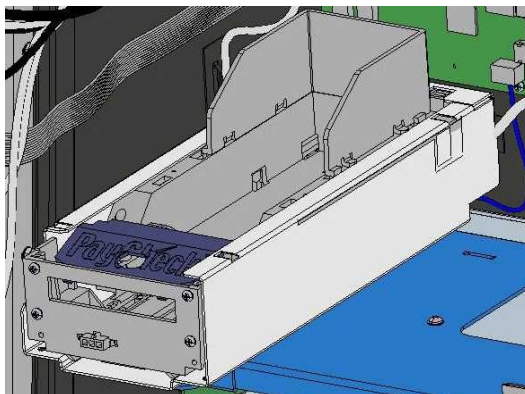

Figure 2-60 Nanoptix PayCheck 4 Tray

2. Place the paper ticket stack in the tray with the Top of Form facing up.
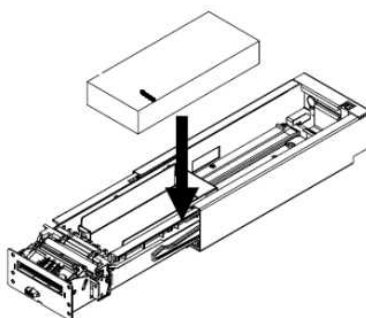

Figure 2-61 Nanoptix PayCheck 4, Load Paper

3. Feed the ticket into the printer mechanism until resistance is felt. The printer will automatically pull the ticket into the printer and align it.
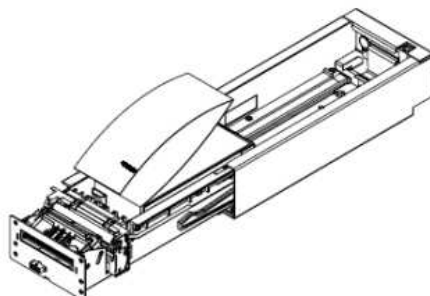

Figure 2-62 Nanoptix PayCheck 4, Feed Ticket

4. Push the printer tray back into the gaming machine and secure the metal printer stopper thumbscrew, and the printer is ready to print.

Nanoptix PayCheck 4 Printer, Clearing Paper Jams

1. Loosen the thumbscrew on the metal printer stopper and swing downward. Pull tray forward inside the gaming machine to provide better access to the printer.

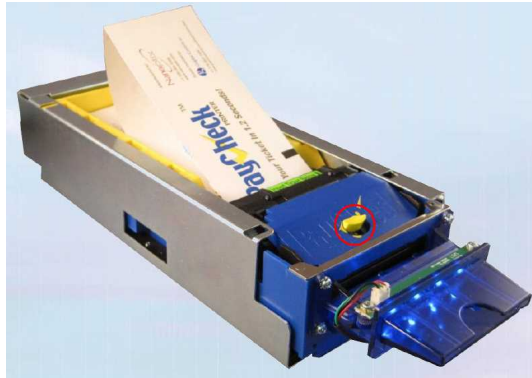2. Push the yellow release lever to remove the printer's paper guide.

Figure 2-63 Nanoptix PayCheck 4 Release Lever

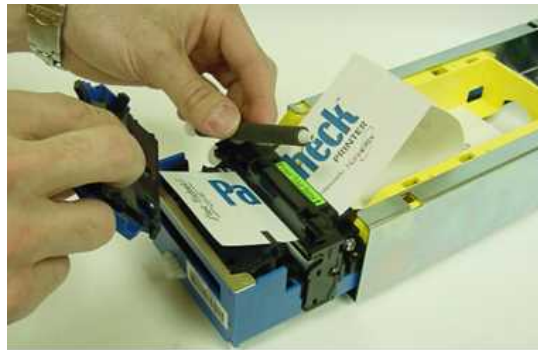3. Lift the printing mechanism roller to remove paper.

Figure 2-64 Nanoptix PayCheck 4 Printer Mechanism Roller

4. Clear the printer error from the terminal. In the event the error will not clear, cycle power on the terminal.

Nanoptix PayCheck 4 Printer Status Codes

To view the LED status of the printer, slide it forward and out of the gaming machine. The status LEDs are on the left side of the printer.

Figure 2-65 Nanoptix PayCheck 4 Status LED

Error LED (Red)	Status LED (Green)	Condition
OFF	ON	Printer Ready
ON	OFF	Paper Out
Med Blink	OFF	Temperature Error
Slow Blink	OFF	Voltage Error (Over 26.2 VDC)
Fast Blink	ON	Print Head Error
Fast Blink	ON	Missing Black Index Mark
Fast Blink	ON	Paper Jam

Nanoptix PayCheck 4 Printer Removal

To avoid damaging the printer, do not disconnect or remove the printer while the gaming machine is powered on.

Tools Required:

#1 Phillips screwdriver

1. Unlock and open the main door of the gaming machine.
2. Pull the printer forward.
3. Disconnect the communication cable from the back of the printer.
4. Slide the printer mechanism out of the chassis.
5. Disconnect the communications and power cable from the printer.
6. Remove the printer bracket screw.
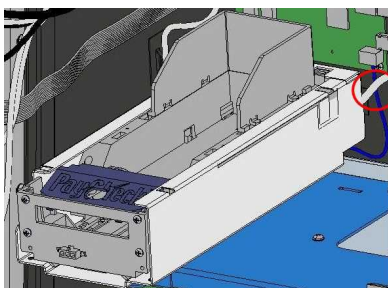7. Remove the four #2 Phillips screws below the printer.

Figure 2-66 Nanoptix PayCheck 4 Removal

Chapter 3   Power Distribution

This section provides a description of power distribution throughout the Cobalt EGM.

Topics include:

- Power Distribution Overview
- Power Distribution Diagram

Power Distribution Overview

115VAC power from the wall goes into the AC box. 115VAC power (from the AC box) is routed to the On/Off switch, and when the switch is turned on, 115VAC is routed back to the AC Power Distribution Module. This 115VAC power, which is referred to as Switched AC (power distributed after the On/Off switch), is sent to the DC switching power supply. The DC switching power supply is used to create +3.3VDC, +5VDC Unswitched, +5VDC, +12VDC, +24VDC, and -12VDC. The +12VDC and +24VDC are the primary operating potentials for the EGM. The +12VDC and +24VDC, along with the +3.3VDC, +5VDC Unswitched, +5VDC, and -12VDC are sent to the Cabinet Controller board for distribution throughout the rest of the EGM.
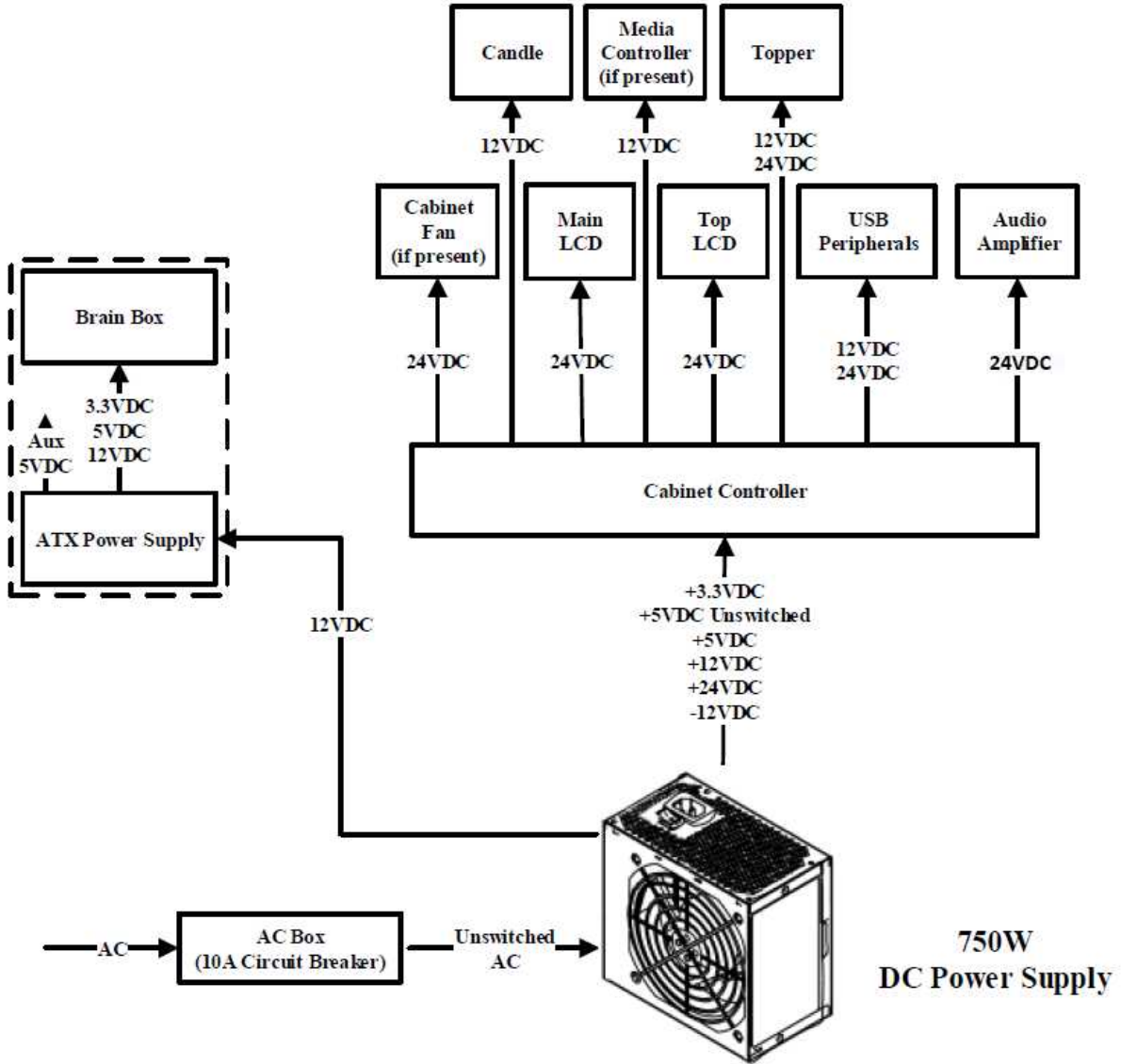
Power Distribution

Figure 3-1 Power Distribution Diagram

Chapter 4   Installing Software & Clearing Memory

This chapter describes how to install software and/or clear memory on the terminal.

Chapter Overview:

- Program Installation
    - Requirements
    - BIOS and AP Chip Installation
    - Software Installation
- Clearing Memory
    - Master Reset
    - CFInit

Program Installation

Installing SGF software into an AVP 4.0+ Brain Box requires the appropriate tools and programs. This section describes the program requirements and installation steps.

If the terminal has already been running SGF software, existing programs should be verified for compatibility prior to theme changes or program version updates.

Requirements

Tools:

- Market-specific Security Key (Master Reset Dongle)
    - Allows AVP-SGF software installation into AVP Brain Box
    - Allows Level-3 menu access
    - Clears NVRAM data, excluding communication settings and Bonus Pots/Progressives
- CFInit USB Stick / Payload USB Stick (if applicable)
    - Clears all NVRAM data

Program examples:

P/N	Description
AVP4P_SGF_1_00	BIOS, AVP 4+ SGF, VERSION 1.00
APR00000X	SECURE AVP 4.0 AUTHENTICATION PROCESSOR
CMVLTx.x.x	Core Market X.X SGFHD (or similar)

BIOS and AP Chip Installation Steps

Remove the Brain Box from the terminal to install/update the Authentication Processor and the BIOS image using a PC running Windows 7.

1. Install the Authentication Processor chip (example: APR00000X) into the 8-pin socket. Pay attention to chip (notch) orientation.
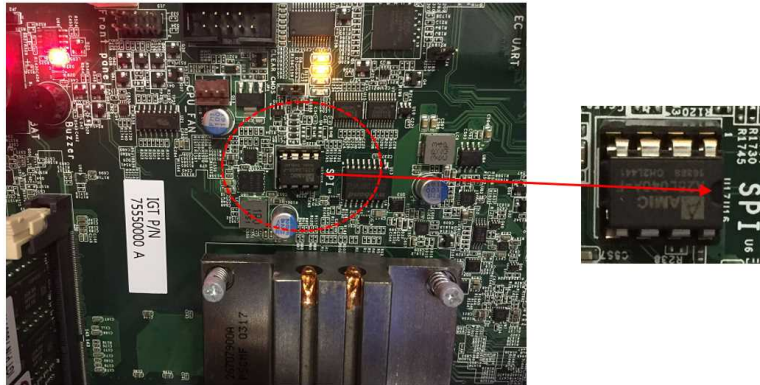

Figure 4-1 BIOS and AP Chip Installation

2. Connect a USB cable from the PC to the Brain Box's internal USB-B connector.

3. Apply power to the Brain Box. The Brain Box will chirp, and two drive partitions will appear in Windows Explorer; AVP4_AP and AVP4_BIOS.

   Do NOT access the AVP_AP partition. Accidently deleting the AP image will require replacement of the Authentication Processor chip.
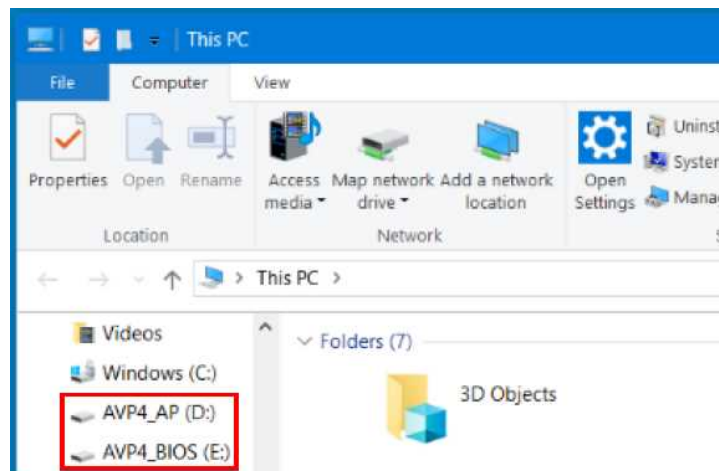

Figure 4-2 Windows Explorer Partitions

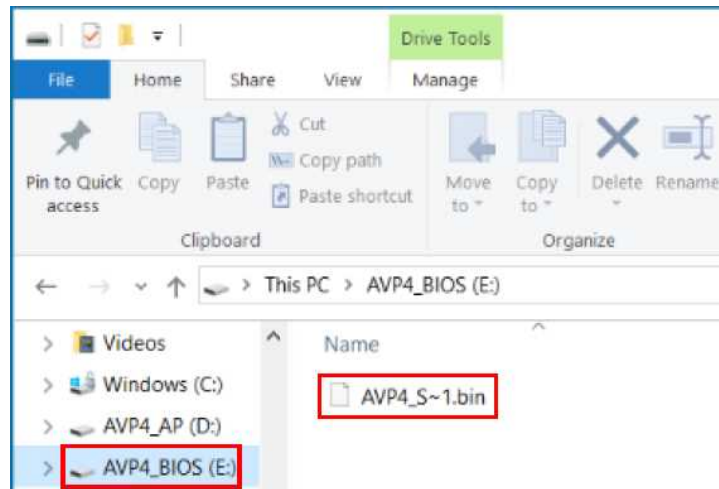4. Select the partition named AVP4_BIOS.

Figure 4-3 AVP4_BIOS Partition

5. Delete any existing file.

6. Copy the BIOS bin file from the source thumb drive (example label: AVP4P_SGF_X_XX) to the AVP4_BIOS partition. A series of tones will sound during the write process, and another will indicate completion.

7. Disconnect the USB cable and re-install the Brain Box into the terminal.

Software Installation Steps

1. Open the Brain Box door and insert the Master Reset Dongle into the Secure USB port.

2. Insert the Payload USB (example label: CMVLTx.x.x) stick into an available USB port on the Cabinet Controller Board.

3. Insert the CFInit USB stick into an available USB port on the Cabinet Controller Board.

4. Power ON the gaming machine. Two screens indicate status during the download process.

Figure 4-4 Download Progress   **Figure 4-5 Download Complete**

A red screen indicates a download failure and provides details of the failure.

5. Remove USB sticks from the Cabinet Controller Board and the Master Reset Dongle from the Secure USB port on the Brain Box.

6. Reboot the terminal.

Clearing Memory

There are two methods of clearing memory:

- Master Reset
- CFInit

Refer to the table below for information regarding the memory erased from NVRAM during a memory clear.

Contents Erased with Memory Clear	Power Cycle	Master Reset	CFInit
General errors	✓	✓	✓
User-defined configurations		✓	✓
Financial reporting		✓	✓
Game history		✓	✓
System errors and events		✓	✓
Bonus Pots / Progressives *Bonus Pots / Progressives values must be recorded prior to memory clear.*			✓

Master Reset

The Master Reset procedure erases some information stored in NVRAM and returns the software and custom configurations to default values. The Master Reset clears critical errors (RAM errors) that can occur on the terminal, but it does not erase any game software or bonus pot/progressive values.

When to use Master Reset

A Master Reset should be done only when there is a system crash or system error that cannot be cleared by a reboot of the terminal.

Procedure to perform Master Reset

1. Open the main door and power OFF the terminal.

2. Open the Brain Box door and insert the Master Reset Dongle into the Secure USB port.

3. Power ON the gaming machine. A Master Reset Complete screen appears.

4. Power OFF the terminal and remove the Master Reset Dongle.

5. Power ON the terminal.

CFInit

The CFInit procedure erases all information stored in NVRAM including all financial history and system configuration settings. Bonus Pot and Progressive values (if any) are also erased.

When to use CFInit

The CFInit procedure is used when the terminal is unrecoverable with a Master Reset.

Procedure to perform CFInit

⚠️ *Warning: This step will clear ALL memory from the terminal. Once erased it cannot be retrieved. Before performing the CFInit procedure, collect the bonus pot / progressive values.*

1. Unlock and open the main door, and power OFF the terminal.

2. Open the Brain Box door and insert the Master Reset Dongle into the Secure USB port.

3. Insert the CFInit USB Key in an available USB port on the Cabinet Controller Board.

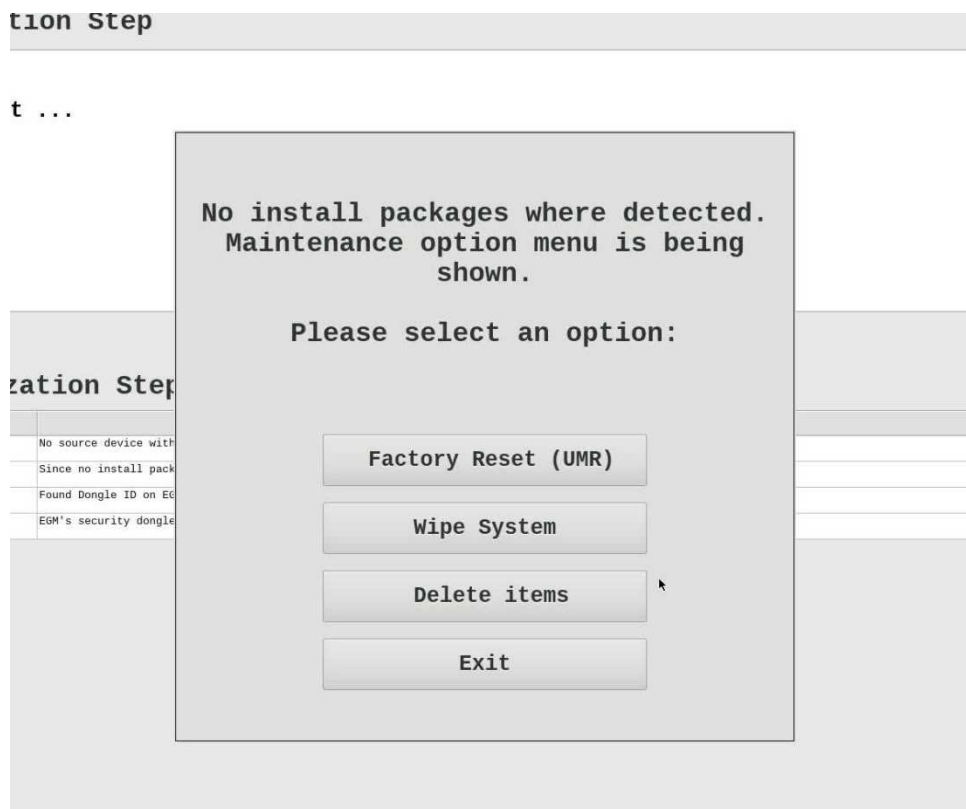4. Power ON the terminal. The GenCFInit Maintenance Menu displays.

Figure 4-6 Maintenance Menu

5. Select an option from the maintenance menu:

- **Factory Reset (UMR)**—This option enables users to re-format the NVRAM (configurations/settings data) on the machine, returning it to factory settings.

- **Wipe System**—This option enables users to completely wipe the storage device (NVRAM and software). Software installation is required after performing the **Wipe System** function in order to make the terminal functional.

- **Delete items**—This option could appear if the option to update components is enabled in the market. The system will display the option of deleting a component, like a game, that needs to be removed from the machine.

- **Exit**—Exit from the Maintenance Menu.

6. Power OFF the terminal, and remove the Master Reset Dongle from the Brain Box and the CFInit USB Key from the Cabinet Controller Board.

7. If the **Wipe System** procedure was performed, re-install the software on the machine.

8. Power ON the terminal.

Appendix A Stand Mounting

> *During final installation, the machine must be secured as soon as possible when elevated on the stand. Extreme caution should be used until the machine is secured.*

The rear of the stand requires two Quick Connect Bolts (Figure A-1) to be installed which allow the EGM to slide into proper position on the stand. Once in place, the standard EGM bolts easily install into the two front mounting positions.

> *The Cobalt cabinet requires the slotted bolts to be raised 1/8". Hardware kit P/N 91439801 provides an additional four washers to raise the slotted bolts as seen in Figure A-1.*
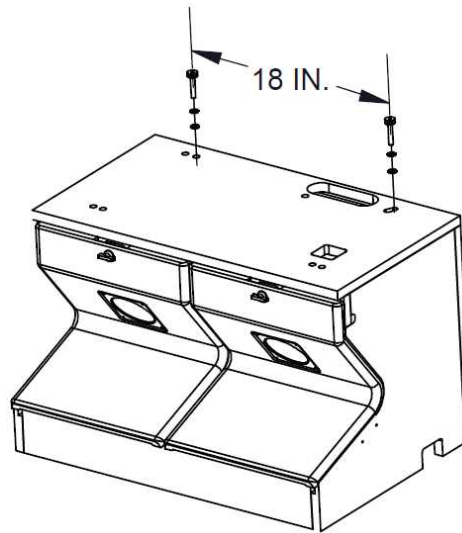

Figure A-1 Stand Specifications

Cobalt machines must be mounted to a stand for operation. Stands are available from IGT in two configurations, standard and stability. The mounting hole pattern (Figure A-2), is used with all stands.

The standard stand (Figure A-3) is designed to be used when machines are grouped together, back-to-back, or against a wall. It is available in 18-inch and 20.5-inch high configurations.

The stability stand (Figure A-4), (P/N 147-398-xx) should be used when machines are located in a stand-alone orientation.

> *IGT requires a minimum distance of 6 inches (15.2 cm) between the sides of two upright machines (4.75 inches (12.1 cm) on G23 Machines, 2.07 inches (5.3 cm) on Crystal Core machines, 2.375 inches (6.0325 cm) on Cobalt Machines). The backs of upright machines may be touching. Slant-top machines may be in contact side-to-side or back-to-back.*

> *Follow the procedures from the Machine Installation Manual (IGT P/N 821-287-XX) to properly mount and brace the machine.*

> *In addition to the stability stand, IGT can supply an optional Stabilizer Kit (IGT P/N 91427500) to modify a standard stand for increased stability. This kit includes instructions and a template to mount the stabilizers.*
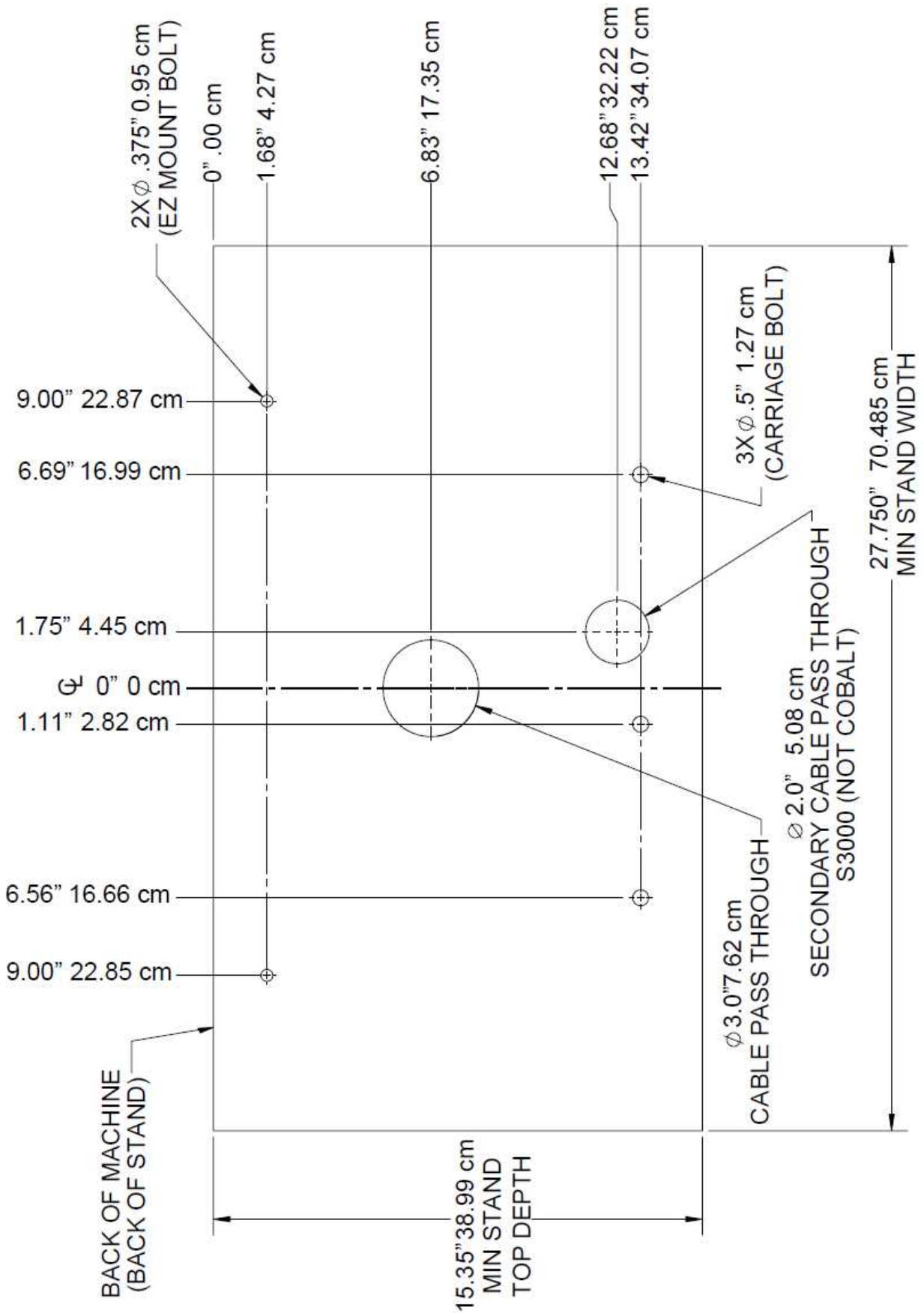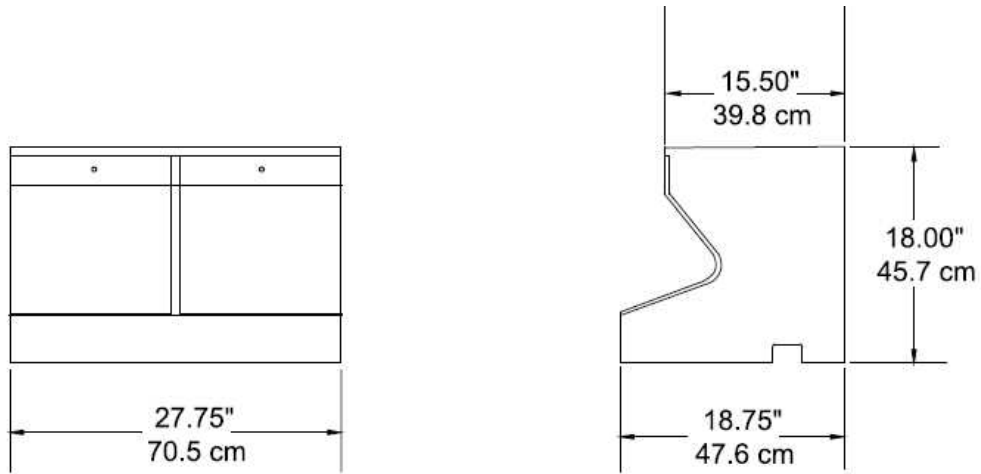
Figure A-2 Stand Drill Pattern

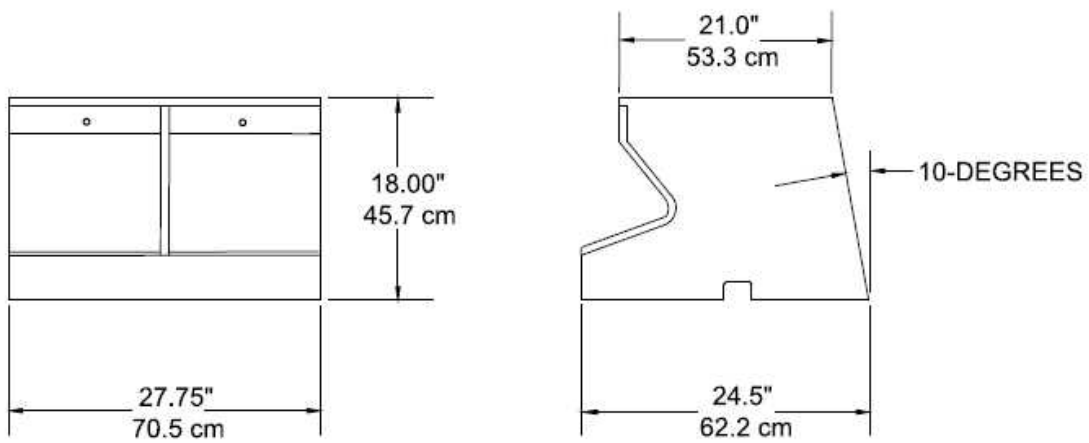**Figure A-3 Stand Dimensions - Standard (also available in 20.5-inch height)**

Figure A-4 Stand Dimensions – Stability (P/N 147398XX)

Document Modification History

Date	Version	Description of Change
February 2020	00	Initial Release
March 2020	01	Update: Contents Erased with Memory Clear