Revision

L

Xpress Pay Terminal®

Hardware Service Manual

SERVICE MANUAL

Revision L

This manual provides service procedures for the Xpress Pay Terminal (XPT). In this manual, we will discuss the hardware components that make up the XPT, their configuration and maintenance. We will also discuss troubleshooting and diagnostic procedures, and removal and replacement procedures for malfunctioning parts.

If further assistance is needed, please contact DRB Systems Support at (330) 645-3299.

When calling for assistance, you must have the following information available:

Site Location Code: _____

Xpress Pay Terminal Serial Number: _____

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Chapter 1

1 System Architecture and Design

The XPT standard components have been selected to meet the requirements of most site owners. In this portion of the manual, the system components and their integration are defined and discussed. For detailed information on specific components, see section 3, Operation and Maintenance.

1.1 Standard System Components

The standard XPT system components allow site owners to accept cash, coin, and credit payments. The barcode reader provides the ability to run a variety of promotional events, such as coupons and carwash clubs.

1.1.1 Payment Components

The XPT offers owners and customers a wide selection of carwash purchase options. It is designed to accept cash or tokens, give change in coins or bills, and accept major credit cards. The XPT can also be ordered in a cashless configuration, where credit cards are the only form of payment. The standard payment components are:

- **Bill Acceptor** – The U.S. bill acceptor accepts up to one thousand $1, $5, $10, or $20 bills, and the Canadian bill acceptor accepts up to four hundred $5, $10, and $20 bills.
- **Bill Dispenser** – The dual-denomination bill dispenser can dispense up to one thousand new bills (five hundred per cassette).
- **Card Reader** – The XPT uses an outdoor rated dual-head card reader for reading major credit cards and gift cards.

1.1.2 User Interface Components

The XPT user interface components are designed to provide customers with a familiar interface, similar to automated teller machines (ATMs). The display screen provides full color capabilities.

- **Display** – The display screen is engineered with brightness enhancements to provide clear legibility on even the brightest days. It also allows owners to select vibrantly colored backgrounds.
- **Touchscreen** – The touchscreen allows customers to interact with the system by pressing directly on the screen.
- **Receipt Printer** – The thermal printer is capable of printing barcodes and system reports. It uses paper rolls that are 60mm (2.36”) wide by up to 410’ long.
- **Speakers** – The XPT comes with two outdoor-rated speakers. The speakers also function as an intercom microphone to allow customers to speak with an attendant.

1.1.3 Unit Security Components

The following security features are found in each unit:

- **Main Door Lock Switch** - Allows the XPT software to detect when the main door is unlocked.
- **Main Door Switch** – Allows the XPT software to detect when the main door is open.
- **Cash Vault Lock Switch** – Allows the XPT software to detect when the cash vault has been unlocked.
- **Cash Vault Door Switch** – Allows the XPT software to detect when the cash vault is open.
- **Siren** – The siren produces a 100+db alarm when activated.
- **Door Locks** – Two high-security keyed entry locks limit access to the inside of the XPT unit. Additional keyed entry locks limit access to the cash vault and the bill dispenser.

1.1.4 Modules

The XPT modules are fully-encased assemblies that provide connectivity to the internal system components and external third-party devices. Each module includes connectors and indicators that are accessible without removing covers or requiring any disassembly, creating a "sealed" system with fewer parts that is easy to troubleshoot and repair.

- **Control Module** – Includes the motherboard/CPU, Solid State Drive (SSD), cash devices interface board, and an I/O board capable of interfacing with gates, lights, and other external devices.
- **Display Module** – Includes the LCD, touchscreen, USB hub, and an I/O board that interfaces to discrete devices on the main door.
- **Power Module** – Includes a 120V surge suppressor, multiple DC power supplies, a power distribution board, alarm system with built-in battery backup, and a heater assembly.

1.2 Optional Components

- **EMV** – The EMV hardware supports contact and contactless EMV credit cards, NFC-enabled mobile devices, and traditional magnetic stripe cards.
- **Coin Dispenser** –The coin dispenser dispenses up to 700 U.S. dollar coins or Canadian Loonies, or it can be configured to dispense up to 1,000 U.S. or Canadian quarters.
- **Coin Acceptor** – The U.S. coin acceptor accepts both quarters and dollar coins, and up to 4 programmable tokens. The Canadian coin acceptor accepts quarters, Loonies, Toonies, and 1 programmable token.
- **External Prox Loop Detector** – This option provides the ability to wire a vehicle detection loop directly to the control module, to detect when a vehicle is approaching or at the XPT.

- **Card Dispenser** – This option allows prepaid cards to be sold at the XPT. The built-in barcode reader activates the card as it's dispensed, according to the value chosen by the customer.

1.3 Wide-Angle Surveillance Camera

This wide-angle color camera is designed to interface directly with a site camera monitoring system to provide extra security at each XPT, and is not controlled or used by SiteWatch/Patheon.

1.4 Component Layout

The following figures display the location of the XPT components. Some of these figures include optional features. Depending on the optional features purchased, specific unit components may vary.

1.4.1 XPT Door Assembly

The door assembly contains the system components that provide direct access to the XPT. Figure 1 shows the front view of the door assembly with all visible components labeled.

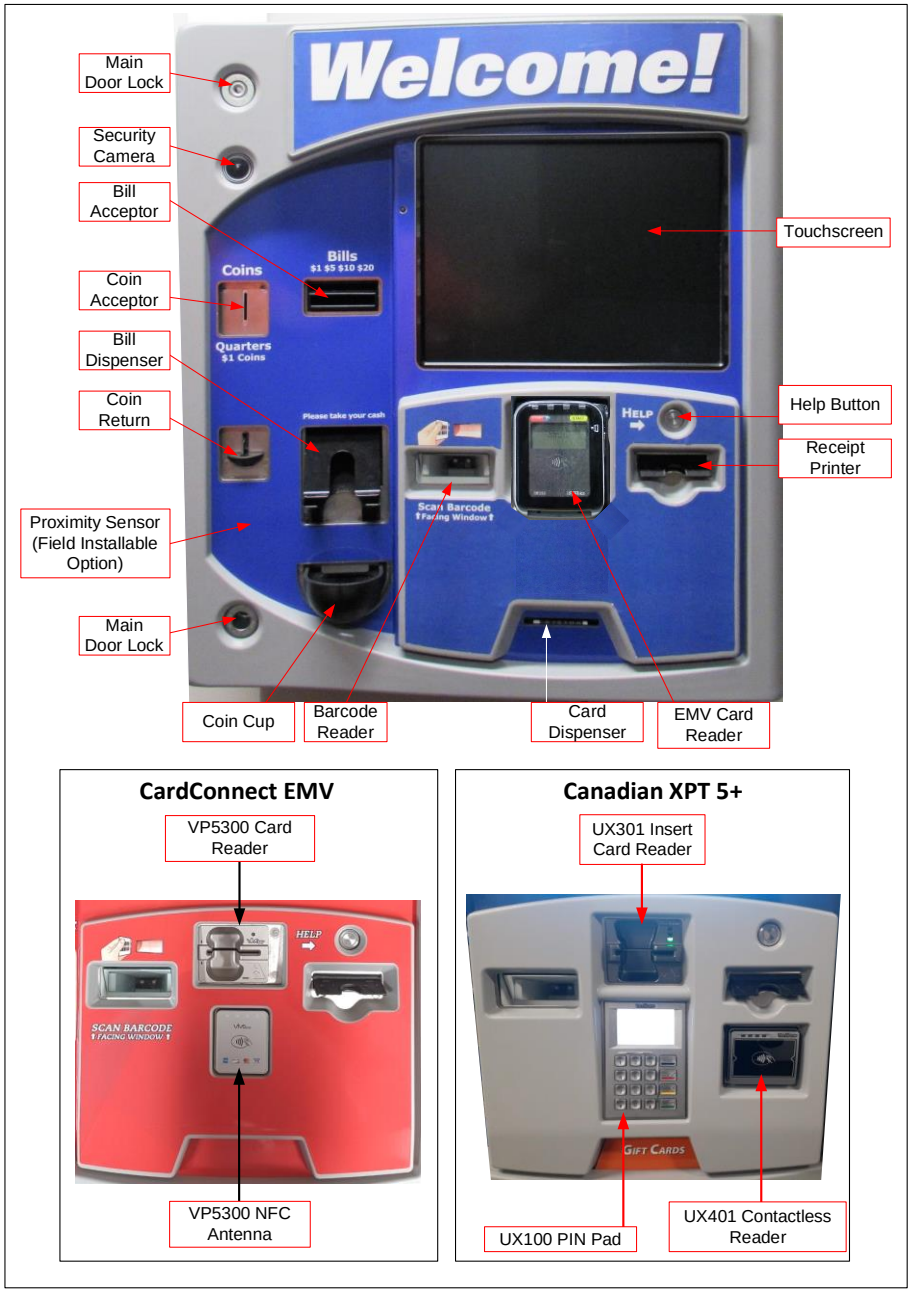

Figure 1. XPT Front View Visible Components

1.4.2 Inside the XPT Door Assembly

The system components built into the XPT door are laid out as shown in Figure 2.

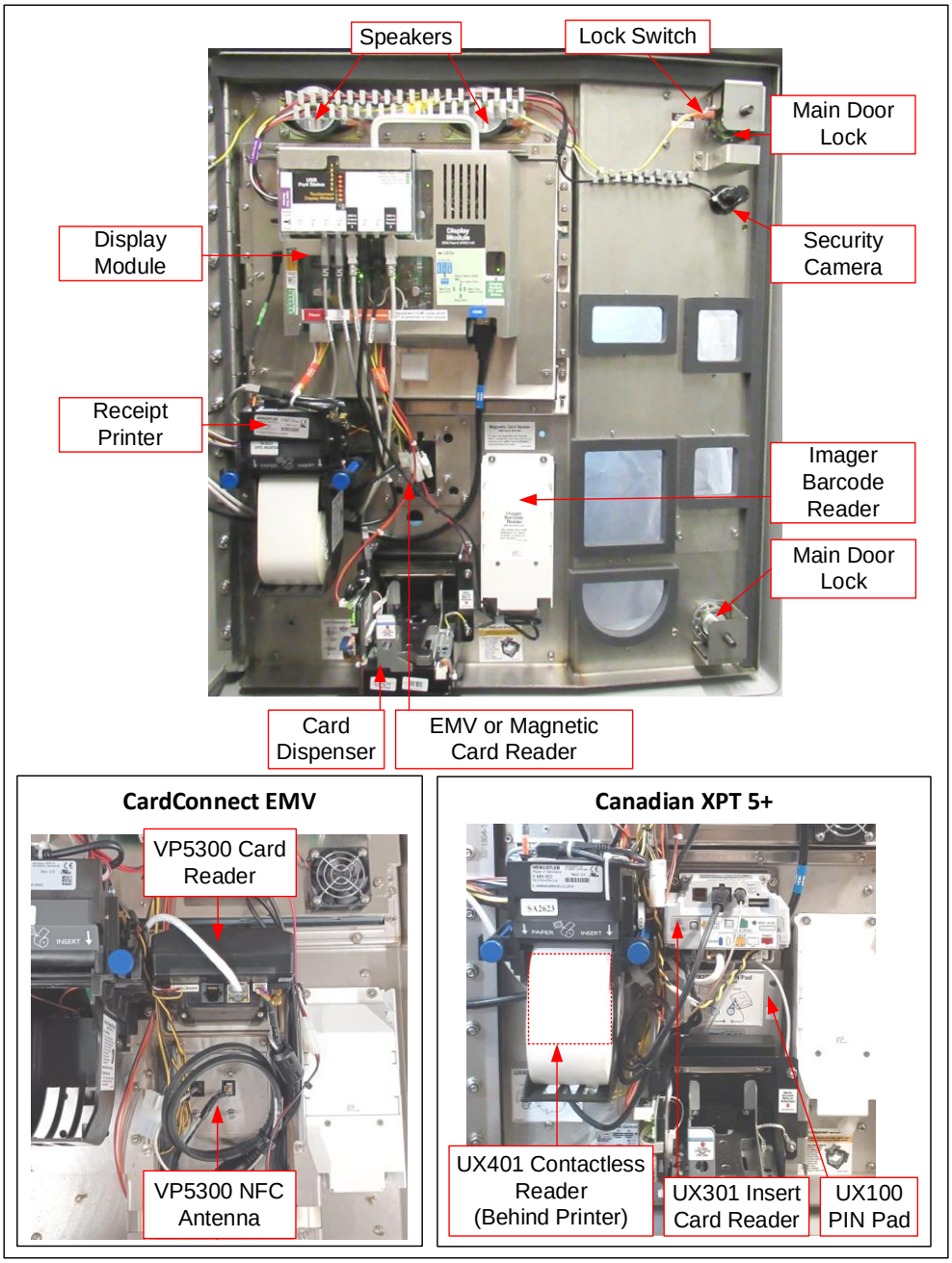

Figure 2. Components Inside the XPT Door

1.4.3 Inside the XPT Unit Case

Figure 3 provides a block diagram showing the components located inside the XPT. This drawing is intended to provide general component location information only.

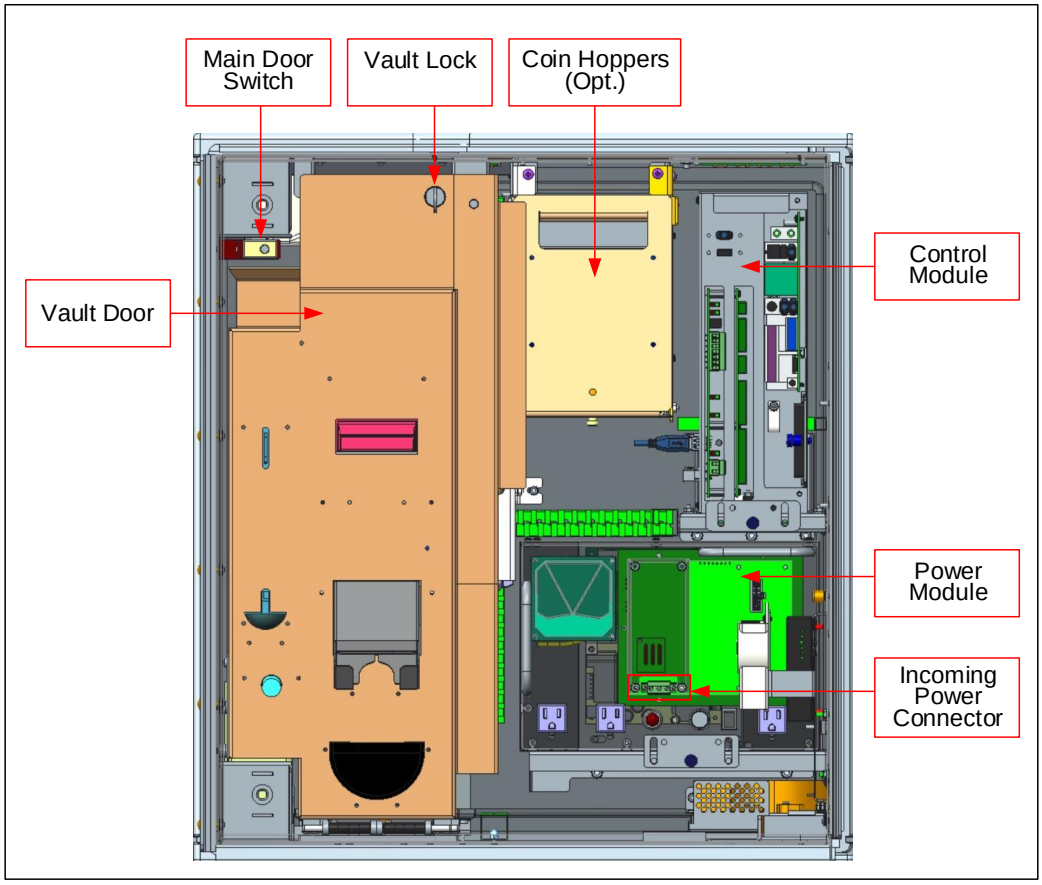

Figure 3. Block Diagram of Components Inside the XPT

1.4.4 Field Wiring

Field wiring enters the XPT through the conduit port located on the bottom right side of the unit. Wiring for non-Ethernet gates and merge loop signal wiring are connected to the control module at the time of installation. The intercom and security camera power are connected to the display module, whereas, the external alarm wiring connects to the power module. The site's network runs are connected to the XPT control module or EMV device (CardConnect and Canada), the PoE switch, and the IP security camera.

1.4.5 Interior Lighting

Multiple LED light panels are placed throughout the interior of the XPT to improve visibility during service. These lights turn on whenever the main door is open and will continue to operate even when the main power switch is turned off by sourcing power from the battery backup inside the power module.

1.4.6 Inside the XPT Cash Vault

The cash vault is secured by a lock, and is wired to the system alarm to provide greater security. Inside the cash vault you will find the bill acceptor, coin acceptor, coin bin, bill dispenser, siren, and external prox loop detector (optional) (See Figure 4.). On Canadian XPT 5+, you will also find an auxiliary heater assembly attached to the back wall, to support cold-weather operation.

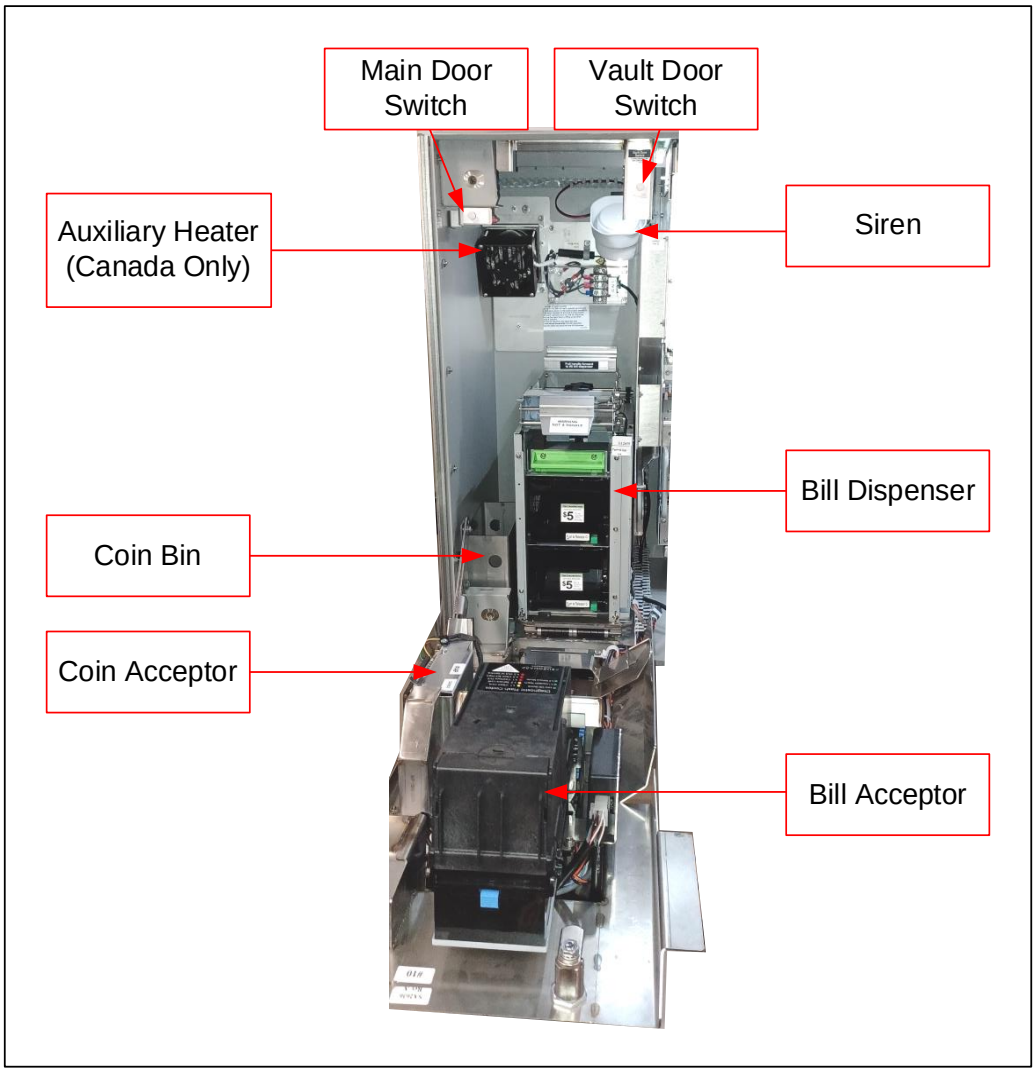

Figure 4. Block Diagram of Components Inside the Cash Vault

1.4.6.1 Friction Hinges

The vault door and the bill dispenser baseplate use a special hinge that adds friction to control the speed of the opening and closing motion, without requiring additional components. It is not necessary or recommended to lubricate these hinges.

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Chapter 2

2 Operation and Maintenance

2.1 Introduction

This section of the manual describes the normal operating procedures and maintenance techniques for each of the system components.

2.2 Display Module

The display module provides several LEDs that display the activity of their relative components. The following diagrams illustrate the locations of the indicators, as well as various connectors found on the module. **Note:** Some display modules may include only 5 USB ports and 1 upstream connector.

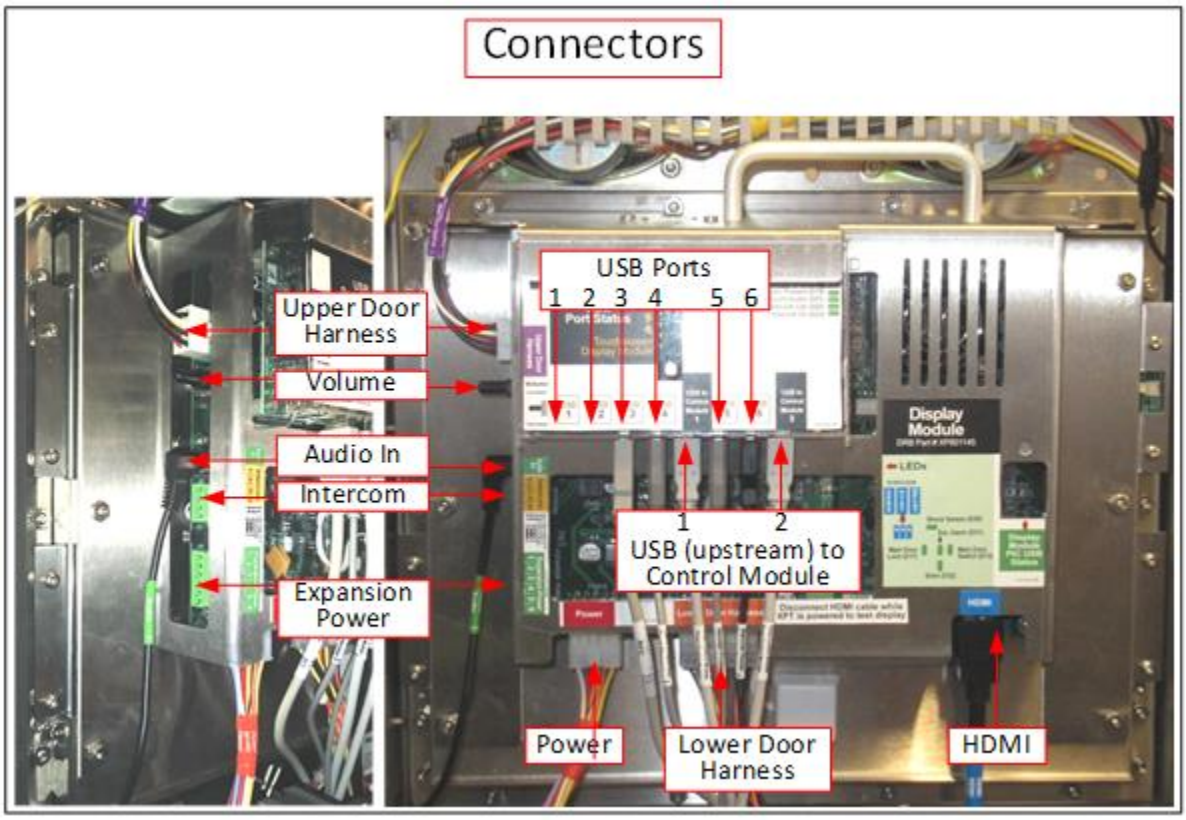

Figure 5. Display Module Connectors

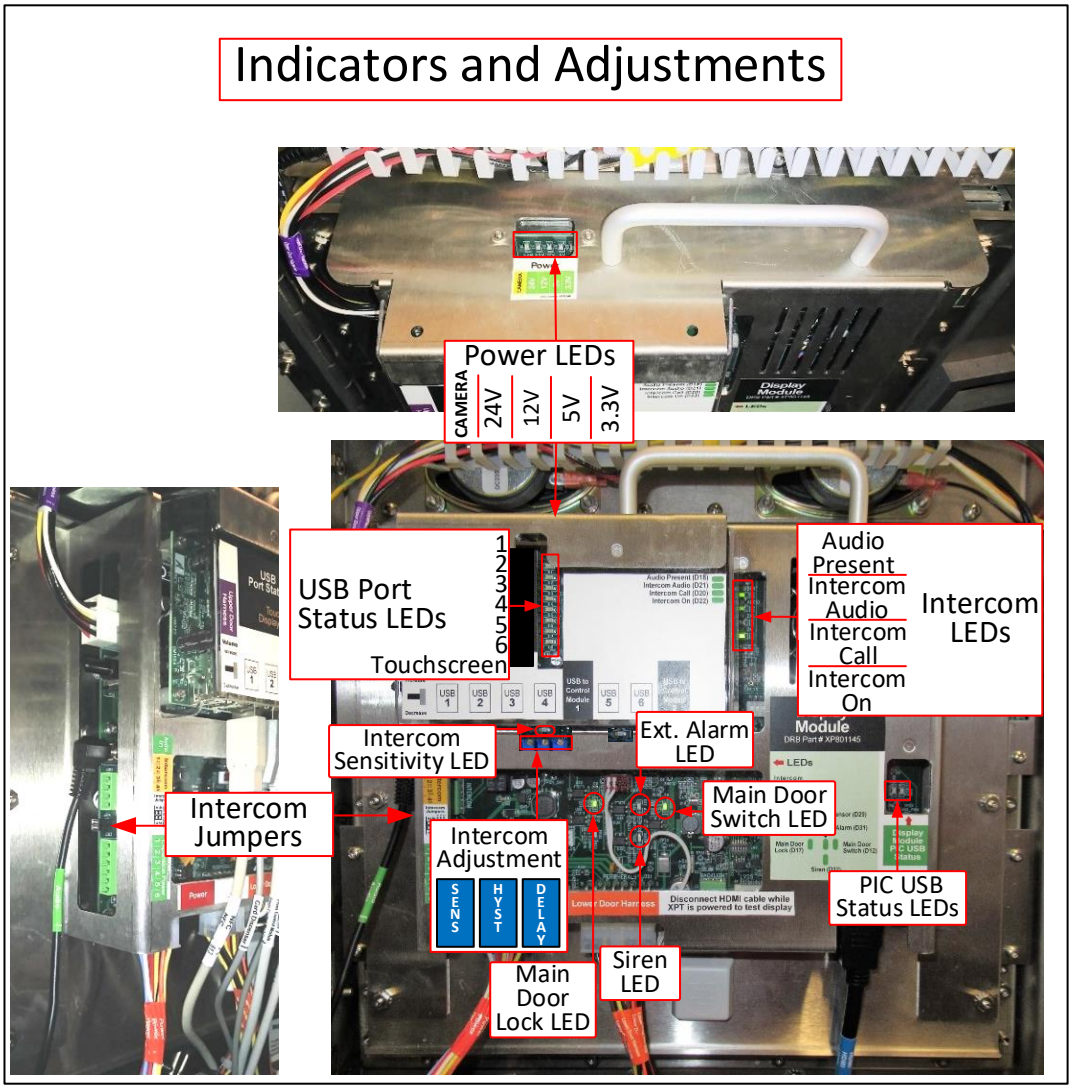

Figure 6. Display Module Indicators and Adjustments

Additionally, the display module includes a light sensor that protrudes through the XPT main door to automatically control the display backlights in varying ambient light conditions. The portion of the sensor that protrudes the main door should be cleaned monthly using a damp rag and mild detergent.

Figure 7. Display Module Light Sensor

2.2.1 Touchscreen Operation

The touchscreen uses micro-fine wires embedded between layers of glass to detect a change in capacitance caused by human touch.

2.2.2 Cleaning the Touchscreen

⚠	**Caution:**	Never use any type of ammonia-based solvent to clean the touchscreen. **Note**: Many common glass cleaners contain ammonia.

The outside of the touchscreen can easily be cleaned using a soft cloth dampened with water. If necessary, a diluted mild detergent, such as Simple Green, may also be used.

2.3 Control Module

The control module includes diagnostic LEDs that can be helpful in troubleshooting. A master diagram illustrating all the components on this module is included below.

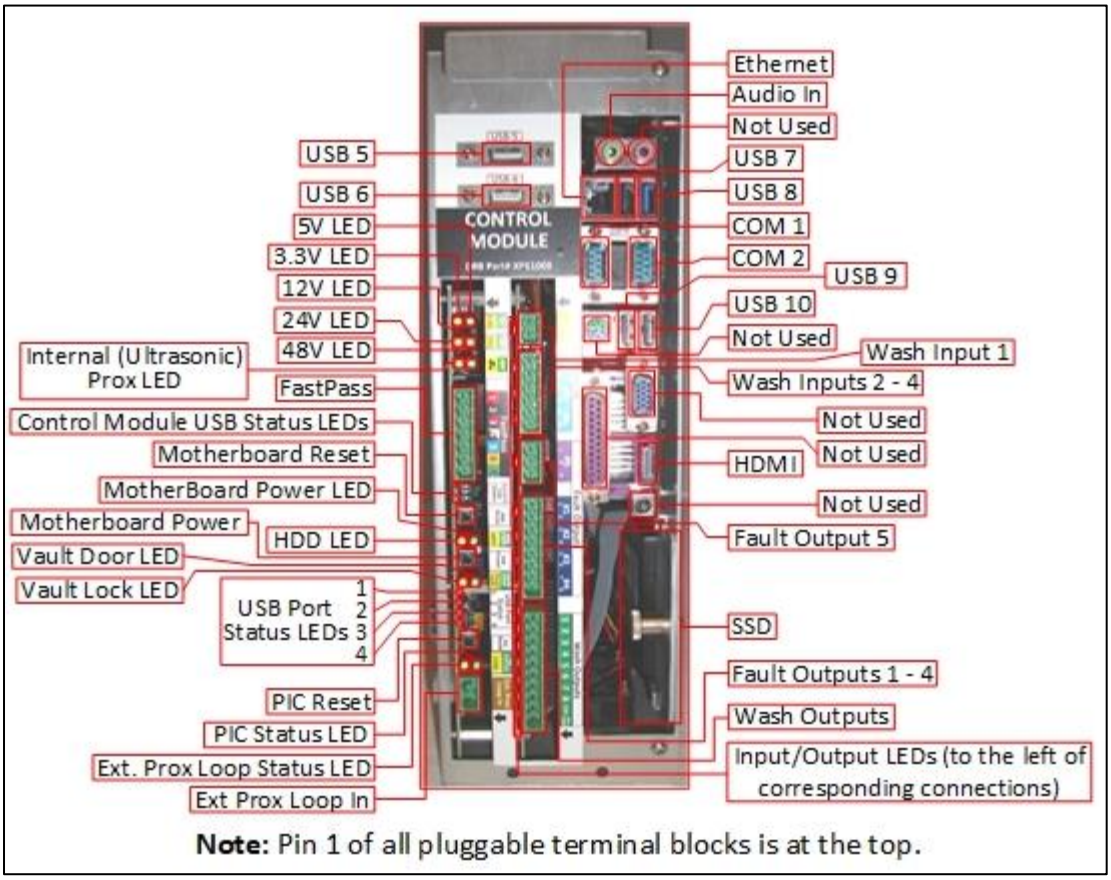

Figure 8. Control Module Front

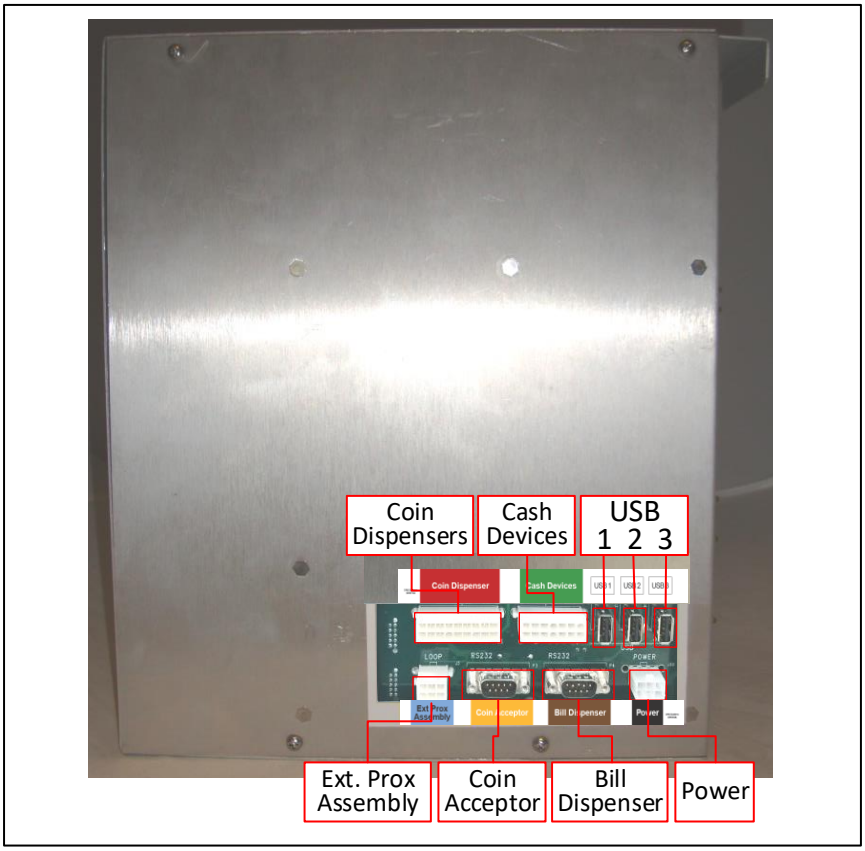

Figure 9. Control Module Side

2.4 Power Module

The XPT power module is designed to provide 3.3V, 5V, 12V, 24V, and 12V battery-backed power to the components of the XPT, as well as 48V for an optional FastPass reader. It also includes an integrated 120V surge suppressor, alarm circuitry, interior lighting control, and a 200W heater to regulate the XPT temperature in cold weather. In addition, there are three 120VAC outlets on the front of the module that are limited to 2A output each. One outlet is used for the auxiliary heater assembly (Canada only). A master diagram is included below.

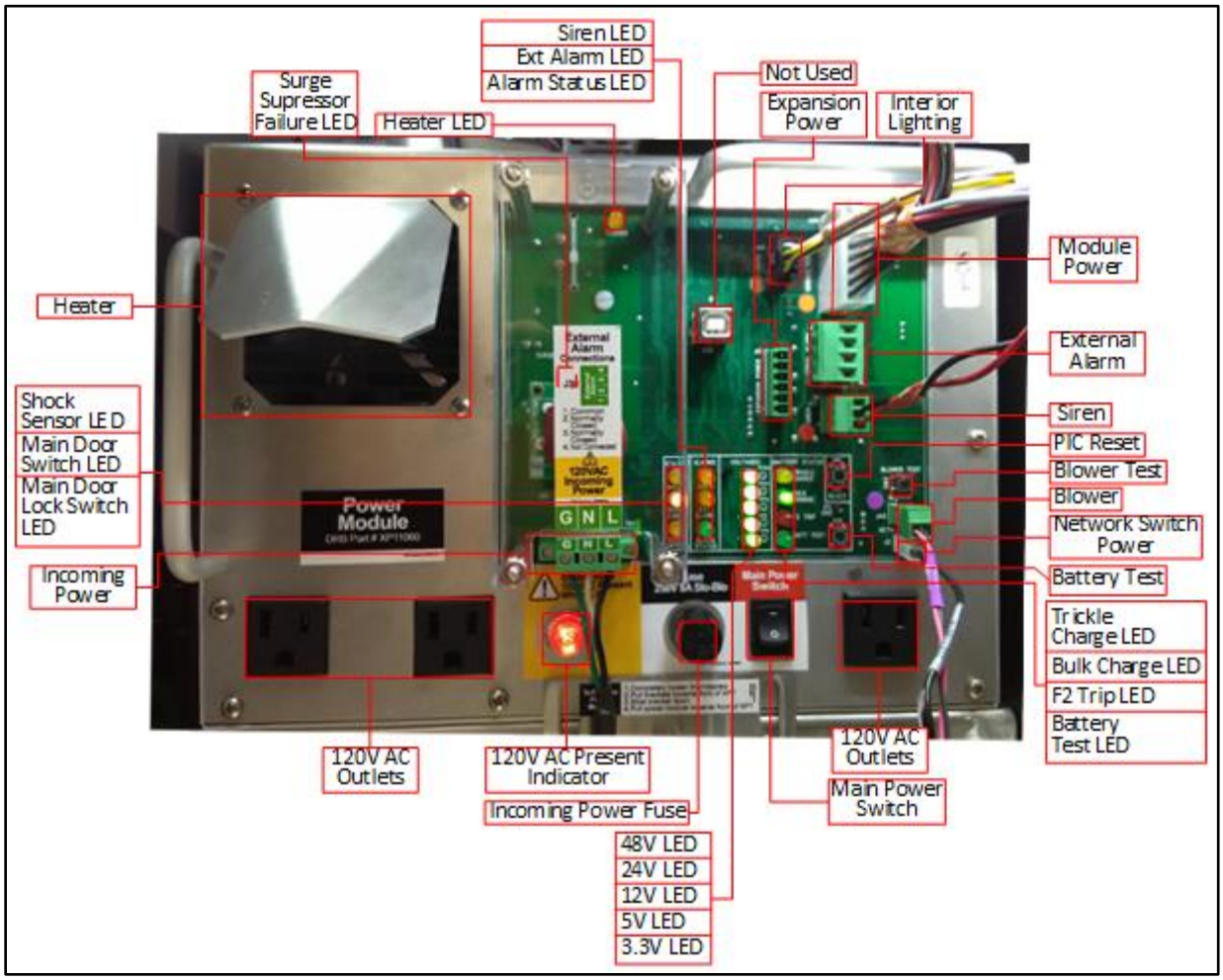

Figure 10. Power Module Diagram

2.5 Bill Acceptor

The U.S. XPT is equipped standard with the Talos model bill acceptor, whereas the Canadian model may include either a Canadian Talos or a Coinco Vantage VX bill acceptor. All models share similar procedures for emptying and replacing the bill stackers.

2.5.1 Emptying the Bill Stacker

The bill stacker is designed to allow quick and easy removal of stored money. To empty the bill stacker, hold the acceptor with one hand pushing the yellow or blue lock at the top of the acceptor with one of your fingers. With your other hand, lift the stacker upward to remove it.

Figure 11. Talos Bill Acceptor/Stacker

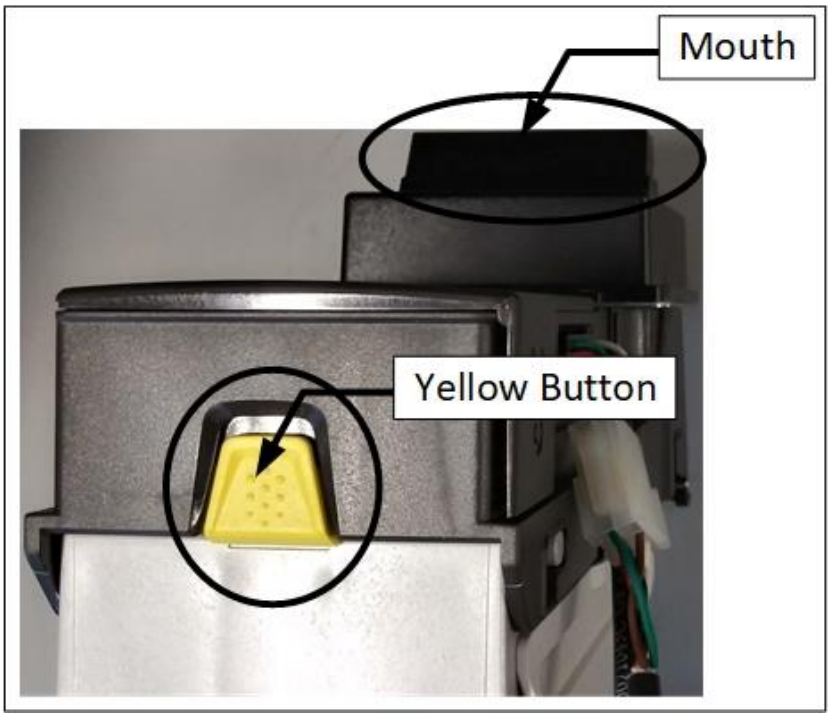

Figure 12. Talos Bill Acceptor – Top View

2.5.2 Replacing the Stacker

To replace the stacker, perform the following steps:

1. Place the stacker against the back of the bill acceptor.
2. Align the tabs on the bill stacker just above the guide slots on the bill acceptor.
3. Slide the stacker tabs into the guide slots, and then down until it is fully seated, as shown in Figure 13.

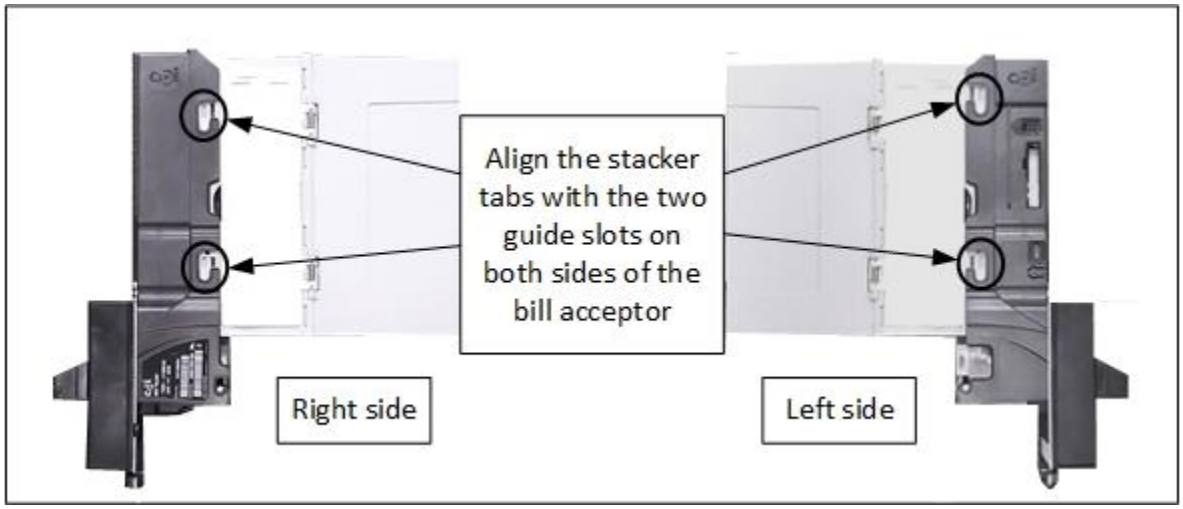

Figure 13. Bill Stacker Replacement

2.5.3 Bill Acceptor Flash Codes

The bill acceptors are equipped with an internal diagnostic LED flash code system. This LED flash code system is used to alert the operator of a failure or to indicate a need for servicing.

The flash code LEDs are located above the mouth of the bill acceptor on the Talos, and on the back of the lower housing on the Vantage VX. See Figure 14 for the Talos LED location, and Figure 15 shows the location and pattern table for the Vantage VX.

Figure 14. Talos Flash Code LEDs

The LEDs will repeat a specific number of flashes. Each number of flashes corresponds to a specific problem. Table 1 lists the meaning of each set of flashes for the Talos, and Figure 15. Vantage VX Bill Acceptor Flash Codes lists the flash codes for the Vantage VX. Many of these problems may be easily corrected without the need for technical assistance.

# Flashes	Diagnostic Code Description
1	Bill path jammed
2	Disabled from system
3	Lower housing removed
4	Cross channel blocked
5	Magazine (stacker) removed
Continuous slow	Unit failure, replace unit
Continuous fast	Stacker full
LED flash once per second	OK
LED off	Power off

Table 1. Talos Bill Acceptor Flash Codes

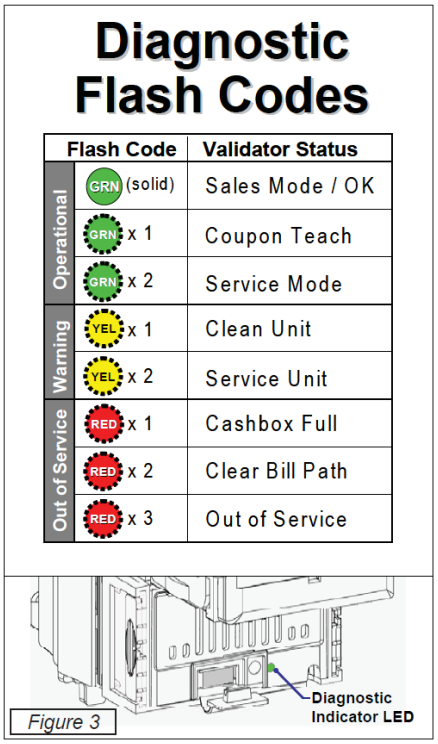

Figure 15. Vantage VX Bill Acceptor Flash Codes

2.5.4 Removing the Bill Acceptor Lower Housing

If necessary, the bill acceptor lower housing can be removed using the following procedures. The lower housing is the portion of the bill acceptor that sits just below the stacker and behind the bill mouth. The bill mouth is the part of the bill acceptor that is used to pull in and analyze the bills that have been inserted. Bills are pulled in by a system that draws them up into the main body. Once they have been pulled in, four photo-optic sensors are used to scan them and send the information to the electronics.

Perform the following steps to remove the bill acceptor lower housing.

1. Turn off the XPT at the main power switch.
2. Unlock and open the vault door.
3. Remove the bill stacker (see Section 3.5.1).
4. Remove the bill acceptor water shield.
5. Reach under the bottom of the acceptor and locate a silver rod on the Talos (see Figure 16), or the blue arrow button on the Vantage VX.
6. Using your thumb, push up on the silver rod or blue arrow button.
7. Firmly grasp the housing with your fingers and pull it away from the vault door. (Be sure to keep steady pressure on the housing at all times during removal.)
8. Slide the lower housing out of the back of the acceptor, revealing the belts, rollers and sensors.

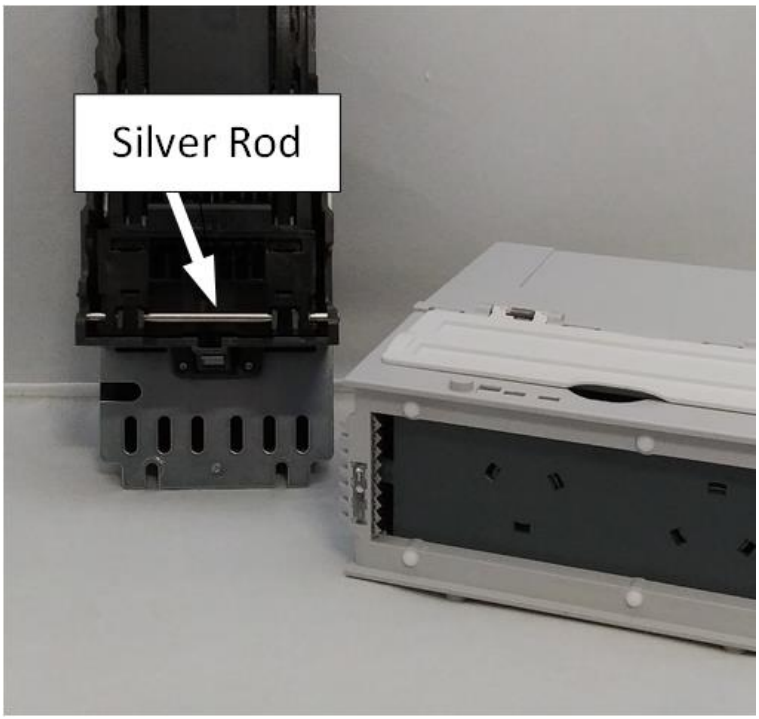

Figure 16. Talos with Lower Housing

Figure 17. Talos with Lower Housing Removed

2.5.5 Cleaning and General Maintenance

The bill acceptor should be cleaned at least every 4 months for best performance.

A pre-saturated cleaning card (DRB Systems Part# XP80000) is the most convenient way to frequently clean the device.

If a deeper cleaning is needed, the bill acceptor components can be easily disassembled and manually cleaned with a soft cloth and mild detergent (non-abrasive, non-petroleum based).

1. Follow the steps in section 2.5.4 to remove the bill acceptor lower housing.
2. Use a soft cloth dampened with mild detergent to wipe all areas of the bill path, shown below, until clean.

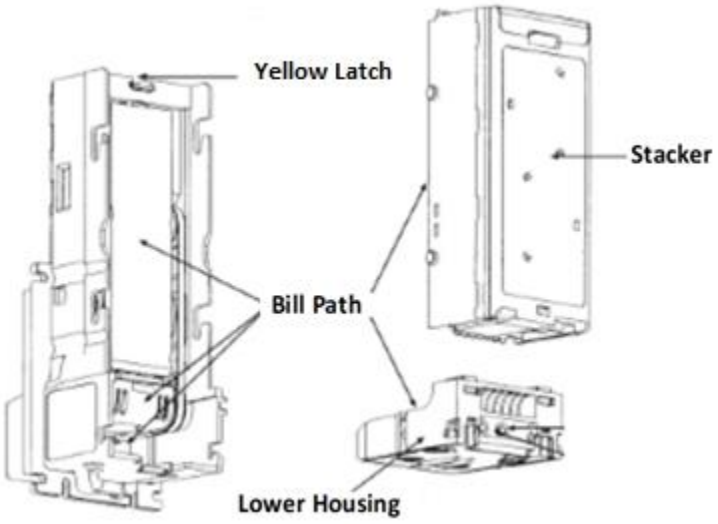

Figure 18. Bill Acceptor Diagram

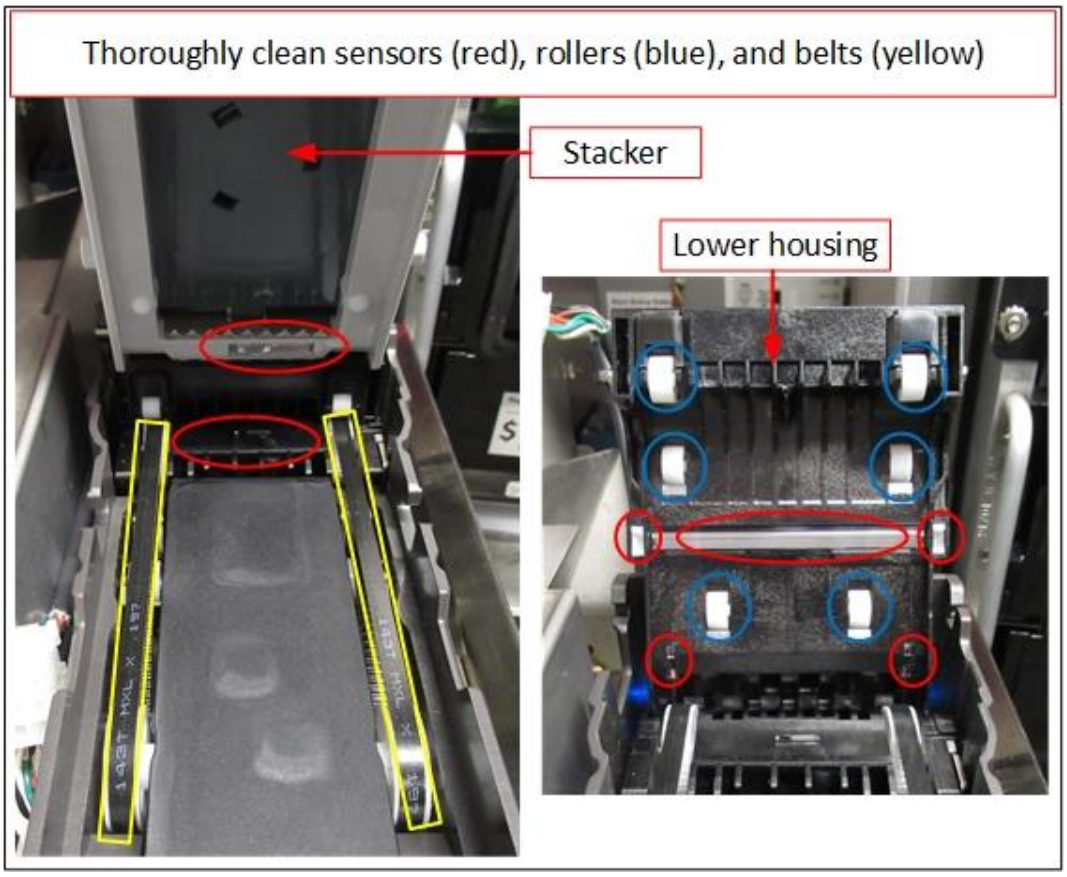

Figure 19. Sensor, Roller, and Belt Locations

2.6 Fujitsu Bill Dispenser

The Fujitsu F53 bill dispenser allows you to dispense two denominations of bills from the XPT as change. The XPT ships configured to dispense $1 and $5 bills in the U.S. and $5 bills in Canada, and can also dispense coins if the optional coin hopper assembly is purchased. This provides the most change dispensing options for the most common cash payment methods, and gives you added flexibility in selecting wash prices.

2.6.1 Bill Dispenser Location

The bill dispenser is installed behind the vault door, and is mounted to a hinged base plate that tilts forward for servicing. The power and communication cable connects at the front bottom left corner of the bill dispenser, to the cash devices harness.

2.6.2 Bill Dispenser Operations Components

The following figure shows the bill dispenser with the primary components labeled.

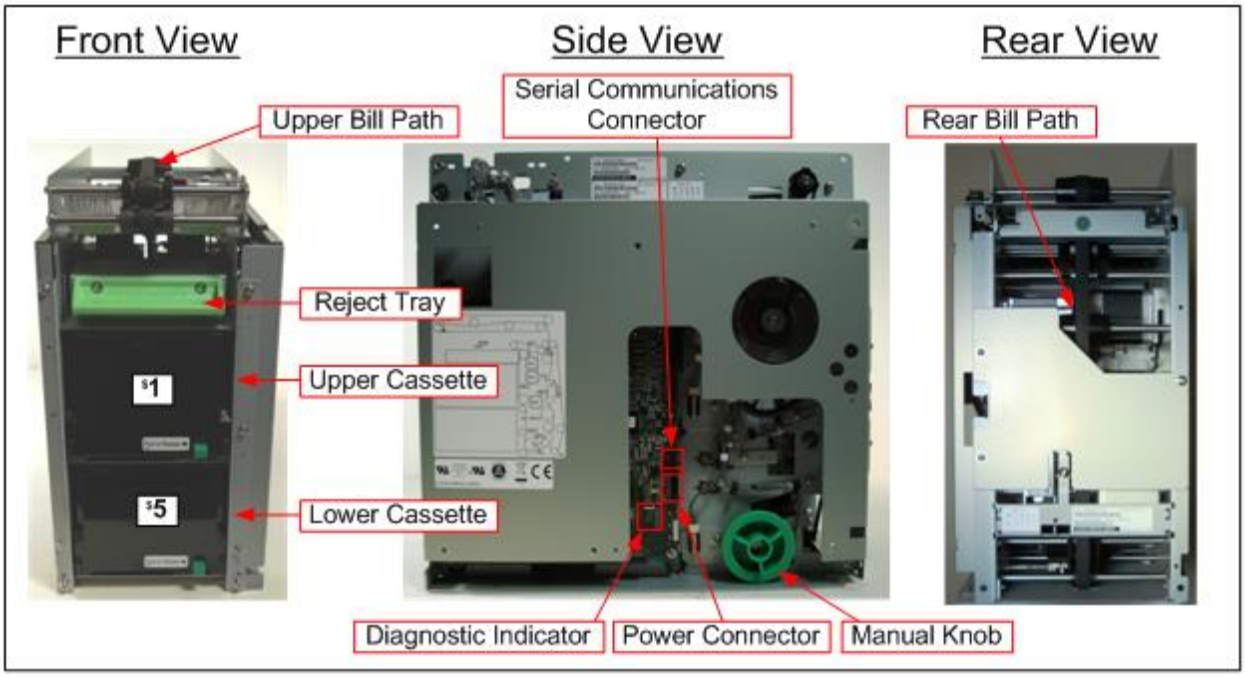

Figure 20. Bill Dispenser Components

- **Upper and Lower Cassette(s)** – The removable cassettes are loaded with bills, according to the denomination label (i.e., $1, $5) on the front of each. Note that these cassette positions (upper, lower) can be swapped and the software will continue to recognize the bill denomination according to the cassette type, indicated by the label on the front of each. **Loading bills in a cassette labeled for the wrong denomination will result in the XPT issuing the wrong amount of change!**

- **Reject Tray** – If the bill dispenser senses an error in the bills while dispensing (such as two bills instead of one), it will reject the erroneous bills and send them to the reject tray, instead of dispensing them. This tray should be emptied each time the cassettes are reloaded. The bills removed from this tray should not be reloaded into the cassettes, as they could cause jams.
- **Manual Knob** – This knob is used to advance the bill transportation devices manually in the event of a bill jam.
- **Upper and Rear Bill Path(s)** – During each bill dispensing operation, bills leave each cassette and travel through the rear bill path and upper bill path before ejecting into the bill chute and tray, where they can be retrieved by the consumer.

2.6.3 Loading the Bill Dispenser

1. Open the XPT main door.
2. Unlock and open the vault door.
3. Release each bill dispenser cassette by pressing the green button on the front of each, labeled "Push to Release".
4. Slide each cassette out of the bill dispenser by pulling it towards the front of the XPT.
5. Unlock each cassette, and press the green button on the rear of each cassette to open the lid.

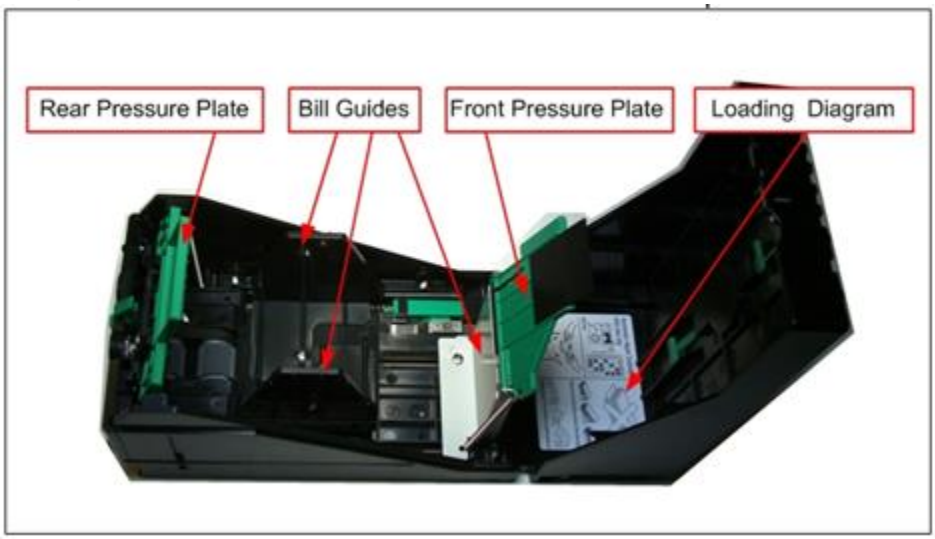

Figure 21. Bill Dispenser Cassette Components

6. Disengage the rear pressure plate by carefully sliding it upward, then rotating it toward the back of the cassette until it locks into place. **Note**: Using excessive force could cause the pressure plate to come unseated from the track.
7. Disengage the front pressure plate by swinging it toward the front of the cassette until it locks into place.

8. Hold a stack of 500 bills or less firmly in one hand and fan them using your other hand to make sure no bills are stuck together. Repeat the process on both ends of the bill stack.
9. **Remove any bills that are sticking out of the bill stack. The bill stack should be neat and orderly.**

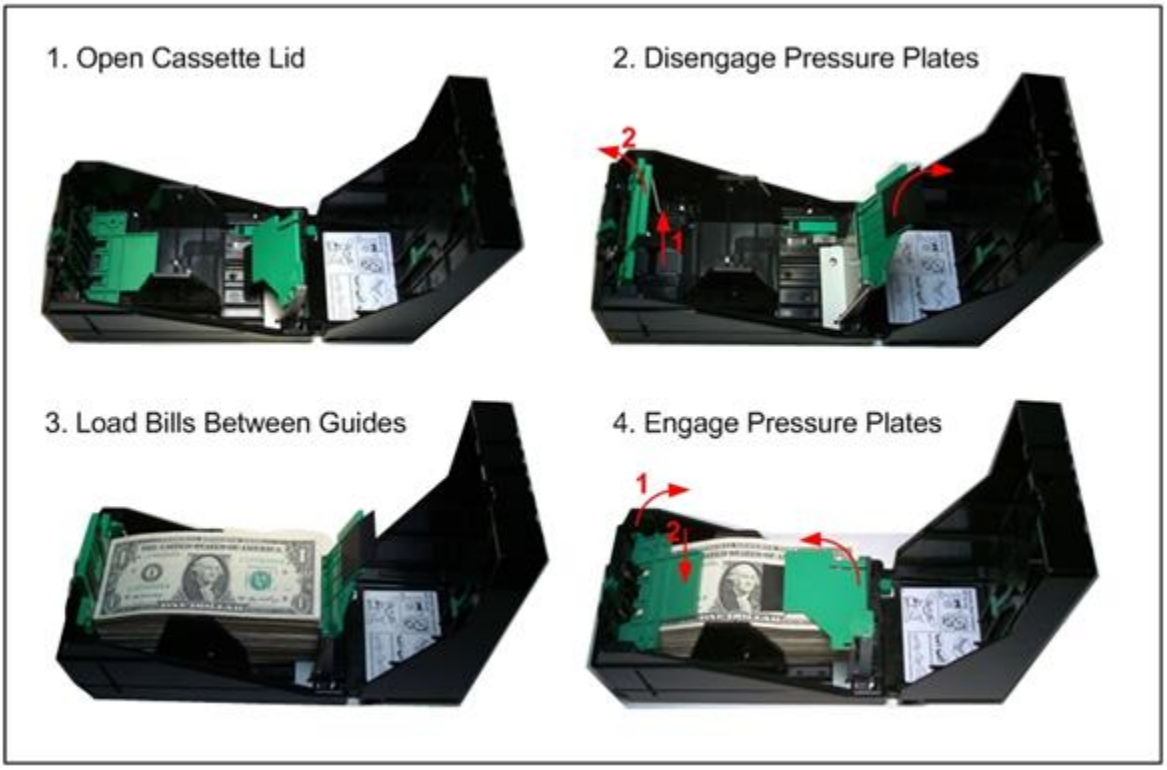

Figure 22. Bill Dispenser Cassette Loading

10. Insert a stack of up to 500 bills into the cassette that is labeled for the correct denomination (i.e., $1, $5).
    - Loading bills in a cassette labeled for the wrong denomination will result in the XPT issuing the wrong amount of change!
    - Overloading the cassette could result in bill jams!
11. Engage the rear pressure plate by rotating it toward the front of the cassette and then carefully sliding it downward.
12. Engage the front pressure plate by swinging it toward the back of the cassette until it locks into place.
13. Close and lock each cassette lid.
14. Slide each cassette back into the bill dispenser.
15. Lift up on the front of the reject tray, and then slide it out of the bill dispenser.
16. Remove all bills from the reject tray and DO NOT load those bills back into the bill dispenser.
17. Slide the reject tray back into the bill dispenser.
18. Rotate the swing plate to the left until fully closed.

19. Lock the swing plate.

2.6.4 Tilting and Removing the Bill Dispenser for Service

The bill dispenser is mounted to a hinged base plate that allows it to tilt forward for most maintenance operations, by performing the following steps:

1. Turn off the XPT.
2. Unlock and open the vault door.
3. Disconnect the bill dispenser harness from the cash devices harness.
4. Lift up and remove the reject tray from the bill dispenser and set aside.
5. Tilt the bill dispenser forward by grabbing the handle on top and pulling forward.
   a. **Note**: The hinge used on the vault door and bill dispenser base plate adds intentional friction, to prevent slamming open or shut. The hinge should NOT be lubricated.

In some instances, it may be necessary to completely remove the bill dispenser from the XPT. After the bill dispenser has been tilted forward, the tool-free removal process can be performed by following the steps below:

1. Reach underneath the back of the bill dispenser base plate, and pull the spring-loaded stop pin downwards, and then rotate 1/4 turn to lock it in place.
2. Grab the bill dispenser and slide it towards the back of the base plate, then pull it away from the base plate to remove it from the XPT.

2.6.5 Clearing Bill Dispenser Jams

Bill jams are often related to either poor bill quality or improper loading. When a jam occurs, refer to the instructions below to remove it. Once the jam is clear, verify the bill dispenser is functioning properly using maintenance mode.

1. Tilt the bill dispenser forward according to previous section until you are easily able to reach the green manual knob.
2. Turn the manual knob clockwise and counter-clockwise in attempt to loosen the jammed bill.
3. Remove the jammed bill by carefully pulling it to the side, out of the belts. **Note**: Excessive force will cause the belt to come off the pulleys.
4. After removing the jammed bill, visually inspect and verify that the belts are still properly aligned on their respective pulleys. Correct if necessary.
5. Tilt the bill dispenser back into the XPT.
6. Verify the bill dispenser is functioning properly using maintenance mode.

2.6.6 Cleaning the Bill Dispenser

The bill dispenser needs periodic cleaning to maintain optimum performance. There are two groups of components that need cleaned: the sensors and the cassette pick and sub rollers.

1. Clean the sensors.
    a. Use a can of compressed air to remove dust and debris from the following sensors. **Caution: Do NOT use on-site compressed air lines because of the potential for damage resulting from moisture and high pressure. Purchase canned spray air from an electronics or office supply store.**
        i. BPS
        ii. REJS
        iii. DFSS
        iv. FDLS1
        v. FDLS2
        vi. POM

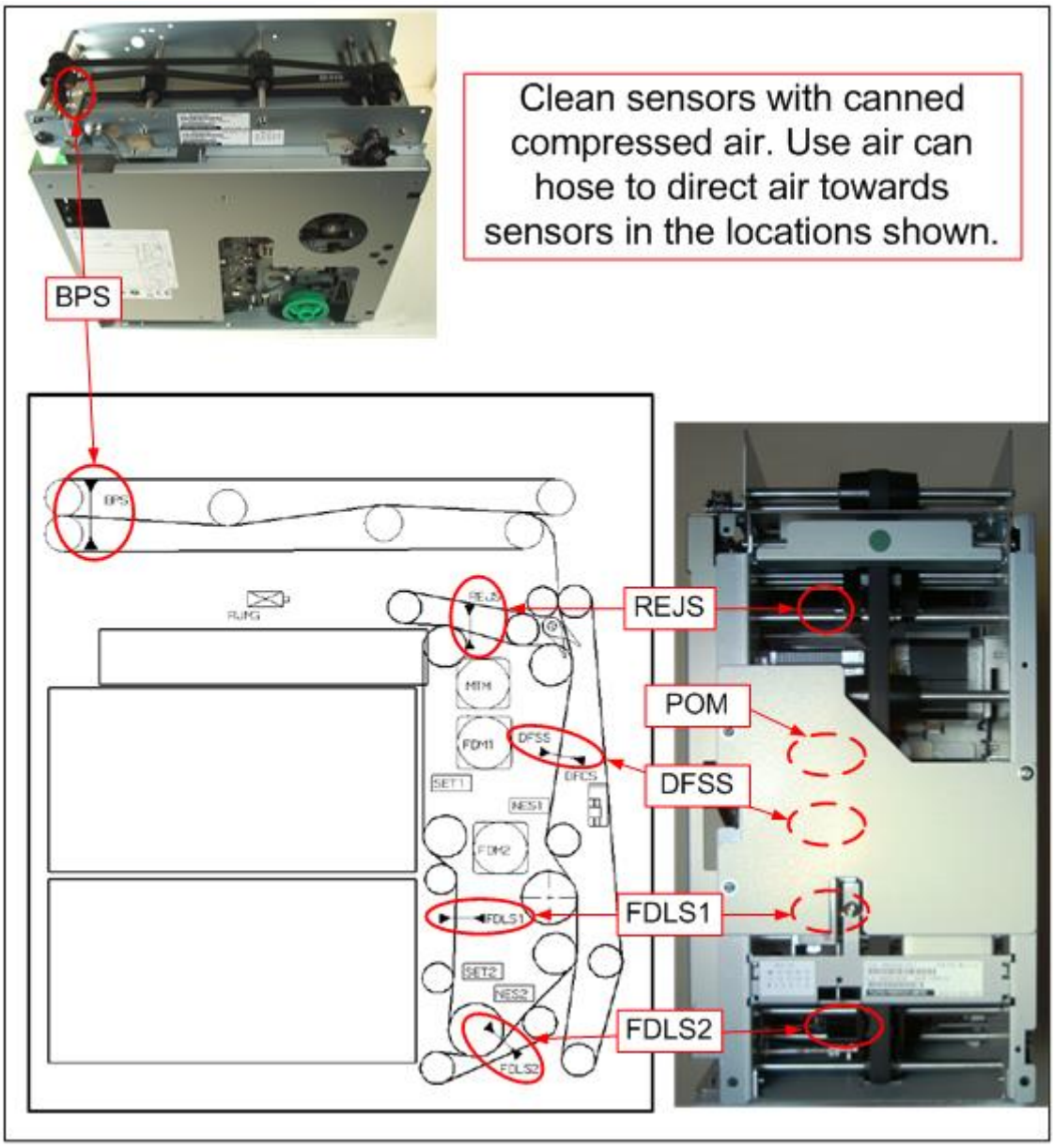

Figure 23. Bill Dispenser Sensor Cleaning

2. Clean the pick and sub rollers.
    a. The pick and sub rollers should be cleaned at least every four months to maintain reliable operation.
    b. Use a can of compressed air to blow out any debris and rubber shavings from around the pick and sub rollers.
    c. Dampen a soft cloth with rubbing alcohol.
    d. Clean the exposed surface of the pick and sub rollers. **Note**: To prevent bill theft when the cassette is locked, the pick roller cannot be rotated by hand. Therefore, only the exposed surface of the pick roller can be cleaned.
    e. Rotate the sub roller and continue cleaning.
    f. Repeat the step above until the entire surface of the sub roller is clean.
    g. Allow the roller surfaces to dry for 1 minute before reloading with bills.

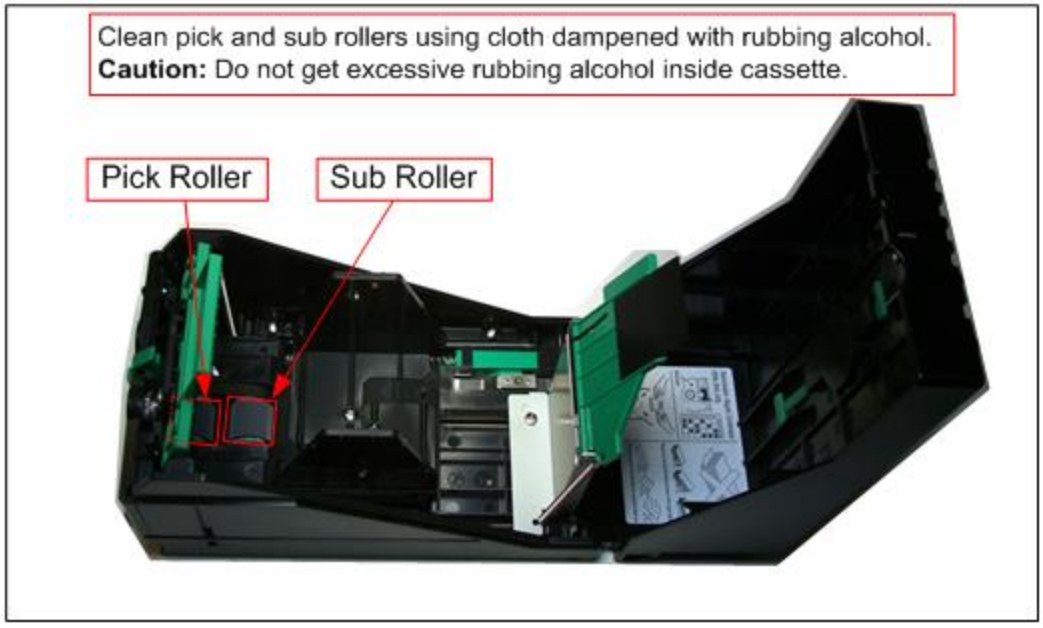

Figure 24. Bill Dispenser Pick and Sub Roller Cleaning

2.7 IDX Coin Acceptor

This item allows the XPT to accept quarters, dollar coins, and up to four different tokens in the USA. For Canadian units, quarters, Loonies, Toonies, and up to one token type are supported.

2.7.1 Programming the IDX Coin Acceptor

The unit has been factory programmed to accept U.S. quarters and dollar coins or Canadian quarters, Loonies, and Toonies. The unit will also accept site-specific tokens, with additional programming.

In order to complete the programming you must have six of each of the tokens and coins you wish to accept. It is very important that you follow these directions exactly. The IDX acceptor will average the variances in these different sample coins during programming, and calculate a more accurate reference model. Using fewer than six different coins will invalidate the average variance generated by this process.

Refer to the block diagrams shown in Figure 25 while programming the IDX coin acceptor.

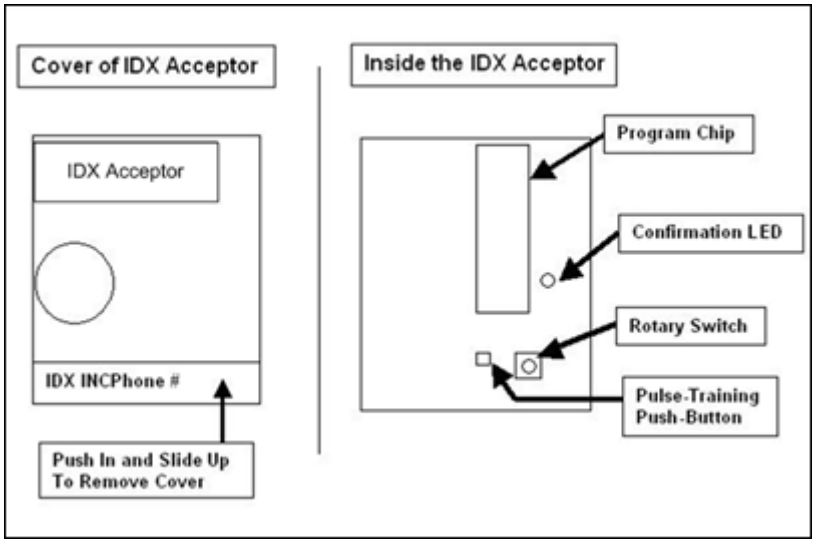

Figure 25. Outside/Inside of the IDX

You must answer the following questions before proceeding with the programming of the IDX coin acceptor.

- Do you want to accept tokens?
- How many different tokens will your site accept (only one is supported for Canada)?

	Note:	When inserting coins into the coin acceptor, you must be sure to close the cover completely. Verify the coin acceptor wiring is not keeping the door from closing.

2.7.2 Site-Specific Tokens

Before you begin programming, be sure that you have six of each token or coin you plan to program. Note that tokens are not available for purchase from DRB Systems.

To program the IDX to accept a single token, follow the instructions below.

1. Unlock and open the vault door.
2. Pull the hinged portion of the coin acceptor open about a half an inch, then slide the cover to the right to reveal the rotary switch.
3. Turn the rotary switch to 1, 2, 3, or 4 (each token type should be assigned to a different switch position). **Note**: The Canadian XPT 5+ coin acceptor only supports 1 token type, and therefore, only rotary switch position 1 can be used.
4. Press the button immediately to the left of the rotary-switch 1, 2, 3, or 4 times to match the position of the rotary switch. This defines the number of pulses you want that token to send.
5. Close the coin acceptor cover.
6. Close and lock the vault door.
7. Drop six sample tokens through the coin slot one at a time.
8. Unlock and open the vault door.
9. Open the sliding cover of the coin acceptor by pressing upward with your thumb on the bottom-right corner of the cover.
10. Reset the rotary-switch to position “0”.
11. Close the coin acceptor cover.
12. Close and lock the vault door.
13. View the coin acceptor screen in maintenance mode. The status should be **OK**.
14. Insert at least one of each type of coin and token the acceptor is trained for.
15. The **Last Test Coin** should accurately reflect the type of coin last inserted.

If accepting just one token type, use rotary switch position “1” with 1 pulse. If two token types are accepted, program them for positions “1” and “2” with the corresponding number of pulses for each. Token type three should be programmed with position “3” and 3 pulses, and token type four will use rotary position “4” with 4 pulses.

EXAMPLE:

The following example shows how to program the IDX acceptor to accept two different tokens.

1. Set the rotary-switch to position “1”.
2. Press the button directly to the left one time.
3. Drop six sample type 1 tokens into the coin slot one at a time and verify that the light (LED) blinks several times after the last token is entered.
4. Now set the rotary-switch to position “2”.
5. Press the button directly to the left of the rotary-switch two times (for two pulses).
6. Drop six sample tokens of the second type into the coin slot one at a time and verify that the light (LED) blinks several times after the last token is entered.
7. Reset the rotary-switch to position “0”.
8. Replace the cover.

2.7.3 Program the IDX to Accept U.S. or Canadian Quarters

Follow the steps below to program the IDX to accept U.S. or Canadian quarters. This should have already been done to standard XPTs sold within the U.S. before they ship from the factory. These instructions are included in case the programming for quarters has been erased or accidentally overridden with a different coin.

1. Pull the hinged portion of the coin acceptor open about a half an inch, then slide the cover to the right to reveal the rotary switch.
2. Locate the rotary-switch and set it to position “6”.
3. Press the button located immediately to the left of the switch one time.
4. Drop six different U.S. or Canadian quarters through the acceptor and verify that the light (LED) blinks after the last quarter has been entered.
5. Move the rotary switch back to position “0”.

2.7.4 Programming the IDX to Accept U.S. Dollar Coins

Follow the steps below to program the IDX to accept U.S. dollar coins. This should have already been done to standard XPTs sold within the U.S. before they ship from the factory. These instructions are included in case the programming for U.S. dollar coins has been erased or accidentally overridden with a different coin.

1. Set the rotary-switch to position “5”.
2. Press the button located immediately to the left of the switch one time.
3. Drop six different U.S. dollar coins through the acceptor and verify that the light (LED) blinks after the last coin has been entered.
4. Move the rotary switch back to position “0”.

2.7.5 Programming the IDX to Accept Canadian Loonies

Follow the steps below to program the IDX to accept Canadian Loonies. This should have already been done to standard XPTs sold to Canada before they ship from the factory. These instructions are included in case the programming for Loonies has been erased or accidentally overridden with a different coin.

Since Canadian Loonies produced in or after 2012 have a significantly different weight and metal composition than those produced prior, it is necessary to program two rotary switch positions for this coin type. Therefore, it is also necessary to have six Loonies from prior to 2012, and six from 2012 or after, for the reprogramming procedure.

1. Set the rotary switch to position 5.
2. Press the button located immediately to the left of the switch one time.
3. Drop six different Canadian Loonies that were minted prior to 2012 through the acceptor and verify that the light (LED) blinks after the last coin has been entered.
4. Move the rotary switch to position 4.
5. Press the button to the left of the switch one time.

6. Drop six different Canadian Loonies that were minted in 2012 or later through the acceptor and verify that the light (LED) blinks after the last coin has been entered.
7. Move the rotary switch back to position 0.

2.7.6 Programming the IDX to Accept Canadian Toonies

Follow the steps below to program the IDX to accept Canadian Toonies. This should have already been done to standard XPTs sold to Canada before they ship from the factory. These instructions are included in case the programming for Toonies has been erased or accidentally overridden with a different coin.

1. Set the rotary switch to position 3.
2. Press the button located immediately to the left of the switch eight times.
3. Drop six different Canadian Toonies that were minted prior to 2012 through the acceptor and verify that the light (LED) blinks after the last coin has been entered.
4. Move the rotary switch to position 2.
5. Press the button to the left of the switch eight times.
6. Drop six different Canadian Toonies that were minted in 2012 or later through the acceptor and verify that the light (LED) blinks after the last coin has been entered.
7. Move the rotary switch back to position 0.

2.7.7 Erasing the Coin Acceptor Programming

If, for some reason, you need to erase programming or start over, use the following procedure:

1. Pull the hinged portion of the coin acceptor open about a half an inch, then slide the cover to the right to reveal the rotary switch.
2. Set the rotary switch to the position that corresponds to the coin you wish to re-program or erase.
3. Press the button located immediately to the right of the rotary switch one time.
4. Return the rotary switch to position “0” without passing any coins through the acceptor. This will erase the program that has been stored for that number.
5. Return the front cover to the coin.

2.7.8 The Coin Bin

It is very important that you check your bin often to ensure that it does not overflow.

You can empty the bin by grasping it firmly at the top and lifting it up and out of the XPT vault. When returned to the vault, the bin locks into an upright position using a bracket on the floor of the XPT.

2.7.9 Coin Acceptor Cleaning and Maintenance

Check the coin-accepting system for proper operation each time you remove cash from the vault. Customers have been known to insert invalid coins, debris, and bills into the coin slot.

In addition, the two optical sensors must be cleaned periodically. Use a cotton swab dabbed in isopropyl alcohol to wipe the inner wall area inside the first two inches of the coin slot.

If the unit malfunctions and cleaning does not solve the problem, reprogram the acceptor as described in section 3.7.1

2.8 Coin Hopper and Assembly

The XPT is equipped with two Suzo Mark II cube hoppers, housed in one removable coin hopper assembly. The hopper assembly is able to hold/dispense up to 500 U.S. or Canadian quarter-sized coins from each cube hopper, for a total of 1,000 quarter-sized coins.

2.8.1 Removing the Coin Hopper Assembly

To remove your hopper, follow the steps below.

1. Unlock and open the vault door.
2. Grasp the handle in the front of the hopper and pull the hopper back about an inch to release the self-aligning connector in the rear of the hopper.
3. Tilt the rear of the hopper upward by applying pressure to the handle in the front of the unit as you pull the hopper forward. This allows the post on the bottom of the hopper to release through the opening in the bottom of the floor of the hopper cage.
4. Slide the hopper the rest of the way out of the cage. Be sure to keep a firm grip on the hopper because it can be very heavy when full.

2.8.2 Filling the Hopper

Follow the instructions below to fill the coin hopper.

1. Open the main door and vault of the XPT.
2. Remove the coin hopper assembly.
3. Gently pour the replacement coins into each of the cube hoppers.
4. When each cube hopper is filled with 300 - 400 coins, begin to add coins by hand, until the coins reach the top of the plastic coin bin. Using this method, coins will tend to slide into the dispensing wheel more easily, which will reduce the possibility of jams.

2.8.3 Cleaning and General Maintenance

The following maintenance should be performed on the XPT every three months:

1. Remove the coin hopper assembly from the unit.
2. Remove all coins from each cube hopper.
3. Use a damp rag to clean any metal dust that may have accumulated on the exit ramp.

4. Use a cotton or foam swab to clean the coin exit slot.
5. Remove the top part of the hopper by sliding the red lever on the side of the hopper downward. Slide the top part of the hopper upward to remove it.
6. Remove the hopper wheel and clean it with a damp rag.
7. Clean the inside of the hopper with a damp rag.

2.8.4 Configuring the Hopper Assembly

XPTs shipped with optional hopper assemblies are configured to dispense U.S. dollar coins or Canadian Loonies (or similarly sized tokens). If you want your XPT to dispense these coins, this procedure is **NOT** necessary. However, if you wish to dispense other size coins or tokens, each cube hopper must be modified with a new hopper arm and dispensing wheel appropriate for the size of coin to be dispensed. Also, the coin acceptor will need to be programmed if you are going to accept the same tokens you are dispensing. This section will cover the setup of the coin hopper assembly.

Before modifying the hopper assembly, refer to the table below to ensure the correct wheels and arms are present.

Coin/Token	Token Thickness	Wheel	Arm	DRB Systems Part Number
U.S. Dollar Canadian Loonie	.083 - .126	9	C1	XP90005
Canadian Toonie	.059 - .126	8	C2	XP90013
U.S. Quarters 0.984" tokens 1.0000" tokens	.059 - .082	4	B2	XP90006
0.882" tokens 0.900" tokens 23mm tokens	.059 - .082	4	B1	XP90010
U.S. Nickels 0.800" tokens	.059 - .082	2	A	XP90120

Table 2. Coin Hopper Assembly Wheels and Arms

2.8.5 Disassembling the Hopper

1. Remove the hopper assembly from the hopper cage (see section 3.8.1).

Figure 26. Coin Hopper Assembly

2. Remove the (2) screws on each side of the guard and set them aside.
3. Remove the guard.
4. Slide the red locking clasp downward.

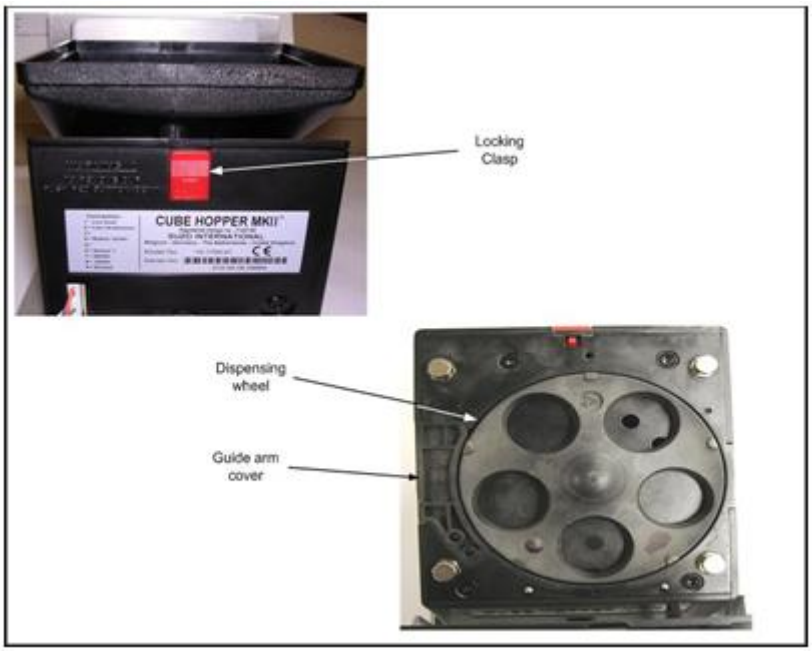

Figure 27. Hopper View – Remove Coin Bin from Hopper Cube

5. Slide the coin bin up and off the black plastic hopper to expose the dispensing wheel.

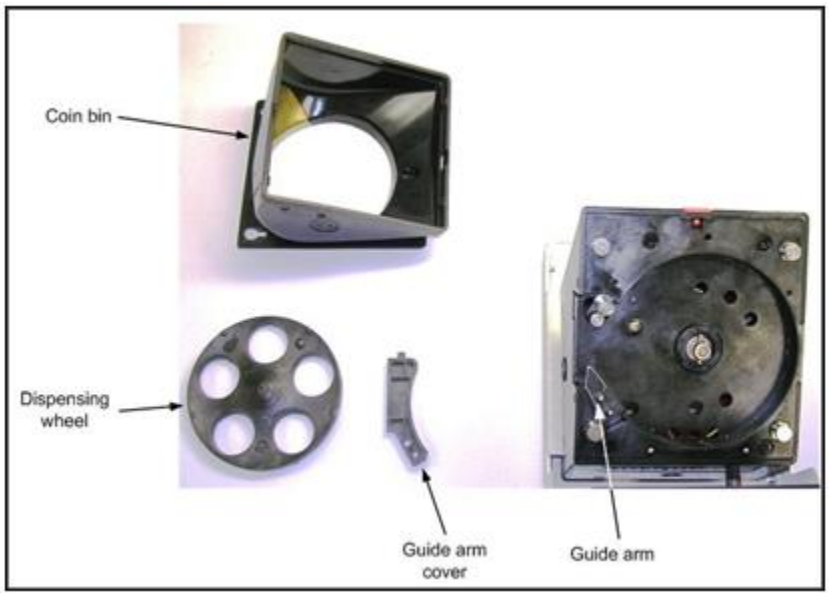

Figure 28. Disassembled Hopper Cube

6. Remove the dispensing wheel by lifting it off.
7. Remove the guide arm cover from the coin exit opening by lifting it off.

8. Using a screwdriver, gently pry off the old hopper arm. Be very careful not to break the pins that hold the arm in place.
9. Place the new hopper arm into the slot exactly as the old one was.
10. Place the new hopper wheel into the plastic hopper exactly as the old one was.

2.8.6 Reassembling the Hopper

1. Once the new guide arm and dispensing-wheel have been replaced, reinstall the hopper guard and screws.
2. Slide the coin bin back onto the hopper cube assembly. Securely latch it in place by locking the clasp.
3. Place the coin hopper back into the hopper cage.

2.9 Magnetic Card Reader

The dual-head magnetic card reader accumulates dirt over time.

It is best to clean your card reader by repeatedly inserting and removing a pre-saturated disposable card reader cleaning cards. These can be purchased through DRB Systems (part #XP80001).

2.10 EMV Card Readers

The EMV hardware option depends on the XPT model and options selected. For all EMV hardware variations, the cleaning procedures are generally the same.

Repeatedly insert and remove a pre-saturated disposable cleaning card in the EMV card slot, and then insert or slide it repeatedly through the magnetic stripe slot (if separate).

Use a cloth and soapy water to clean the display and/or NFC antenna, when necessary. Do not use abrasives or solvent products to clean the display.

Vantiv

The iUC285 EMV card reader is an all-in-one device with a magnetic stripe read head and an EMV read head, along with an integrated display.

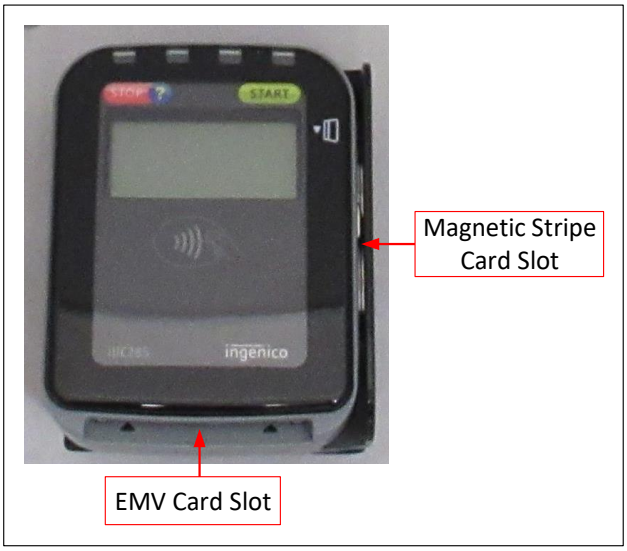

Figure 29. Vantiv iUC285 Cleaning

CardConnect

The VP5300 EMV hardware includes two separate devices – an insert card reader and a separate NFC antenna. The NFC antenna does not require any regular maintenance outside of general surface cleaning.

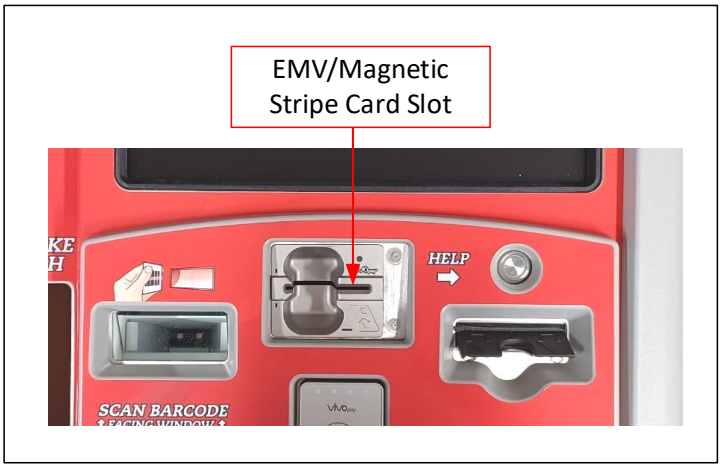

Figure 30. CardConnect VP5300 Cleaning

Canadian XPT 5+

The Verifone UX EMV hardware includes three discrete devices – a UX301 insert card reader, a UX401 contactless/NFC reader, and a UX100 PIN pad. The UX401 and UX100 do not require any regular maintenance outside of general surface cleaning.

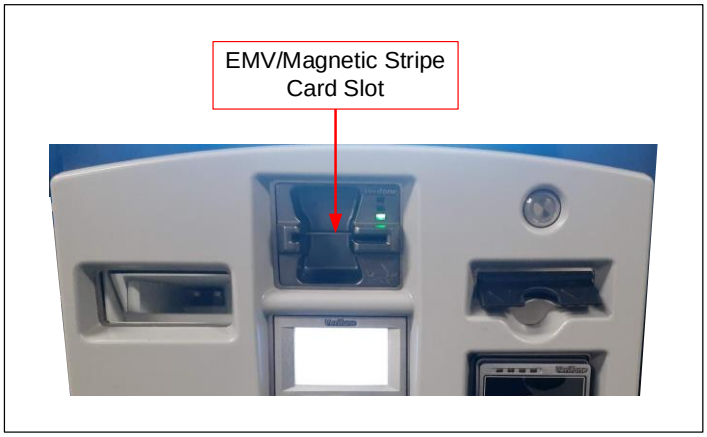

Figure 31. UX301 Cleaning

2.11 Receipt Printer Assembly

The Hecon C-56 printer assembly is an all-in-one thermal receipt printer that communicates with the XPT through a USB interface. Receipt paper rolls are loaded into a paper tray rather than on a spindle, and the unit is capable of detecting when the paper roll is low, or if a jam occurs in the paper path.

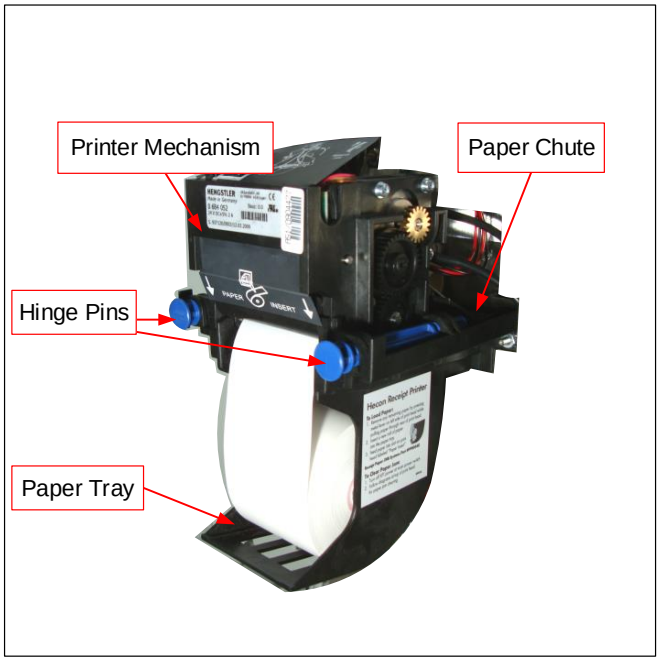

Figure 32. Receipt Printer Assembly

2.11.1 Receipt Paper Specs

It is important to use paper that complies with the specs listed below. Using paper with other specifications or poorer quality may result in frequent printer jams or reduce the service life of the print head.

Roll Width: 2.29" - 2.39" (58mm - 60mm)

Maximum Roll Outside Diameter: 4" (100mm)

Outside Core Diameter: 1" - 1.16" (25.4mm - 29.5mm)

Paper Thickness: 2.0 micron - 2.4 micron (50 - 61 µm)

Notes: White thermal sensitive paper with thermal coating wound to outside and optional pink paper low indication.

DRB Systems XPT Receipt Printer Paper Part #: PP00440

2.11.2 Replacing the Printer Paper

Replace printer paper when you see a red mark running down the side of the receipt or the unit is reporting paper low.

1. Remove any remaining paper from the print head.
2. Squeeze and hold the metal lever on the left side of the print head. **Note**: The lever only travels a very small distance, and therefore may not feel like it has been activated properly. Tension on the paper will be released when properly activated.
3. Pull any remaining paper through the rear of the print head.
4. Release the metal lever on the left side of the print head.
5. Remove the core left over from the previous paper roll from the paper tray.
6. Insert the new paper roll into the paper tray.
7. Place the new paper roll into the paper tray with the orientation shown below.

Figure 33. Paper Roll Properly Loaded

8. Insert the edge of the paper into the paper slot in the rear of the print head labeled "Paper Insert".
9. The paper automatically feeds into the printer.

2.11.3 Clearing a Paper Jam

1. If the Hecon receipt printer detects a jam, it will attempt to automatically clear the jam by reverse feeding the last printout through the rear of the print head.
2. Squeeze and hold the metal lever on the left side of the print head. **Note**: The lever only travels a very small distance, and may not feel like it has been activated properly. Tension on the paper will be released when properly activated.
3. Gently pull the paper through the rear of the printer mechanism.
4. Pull the right hinge pin to the rear position.
5. Tilt the printer mechanism to the left.

Figure 34. Receipt Printer in Tilted Position

6. If there are torn pieces of paper near the chute, try to remove them. If you're unable to get them out, refer to the "Removing and Disassembling the Paper Chute" section below.
7. If the XPT still reports **Paper Jammed** after cleaning the printer and paper chute, the paper chute optical sensor may be dirty or its cable may be damaged. The receipt printer will stop printing until the sensor is cleaned or repaired.
8. Inspect the wires connected to the paper chute and verify there is no damage.
9. Proceed to the next section to disassemble the paper chute.

Figure 35. Removing Jammed Receipt Paper

10. If a torn piece of the receipt paper appears stuck in the print head, it must be removed manually.
    a. Turn the XPT off at the main power switch.
    b. Manually turn the drive pinion gear clockwise to eject the paper from the print head.

Figure 36. Manually Removing Stuck Receipt Paper

c. Tilt the printer mechanism to the right so that it is back to the normal operating position.
d. Slide the right hinge pin forward.

2.11.4 Removing and Disassembling the Paper Chute

If a jam remains in the paper chute, or if the optical sensor needs to be cleaned, the paper chute must be removed and disassembled.

1. Turn the XPT off at the main power switch.
2. Disconnect the power and USB cables from the printer mechanism. Note that a locking tab must be pressed on the power connector while disconnecting.

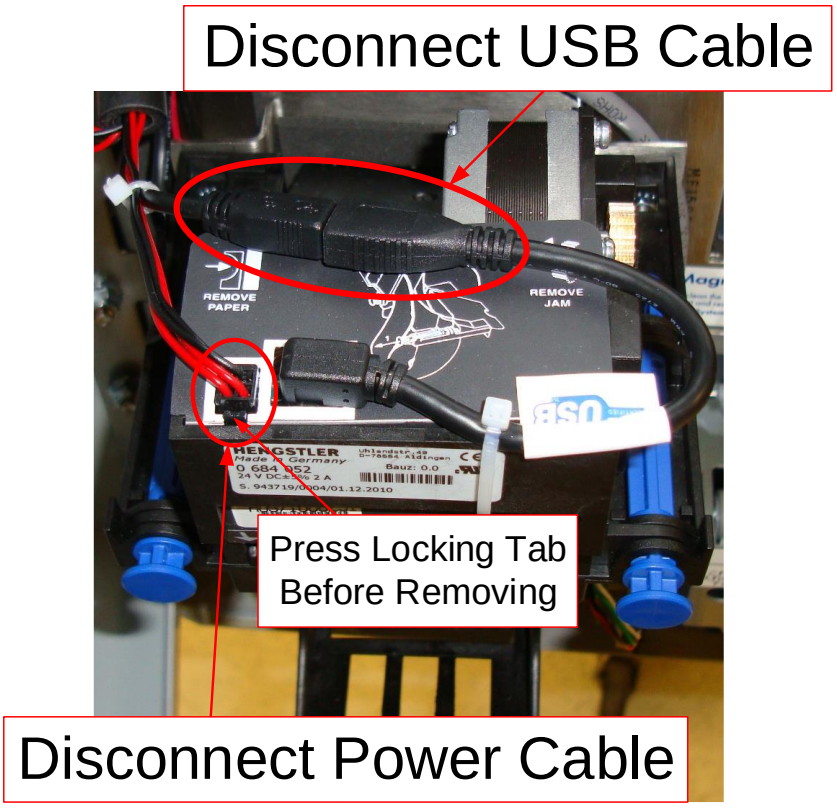

Figure 37. Disconnecting Receipt Printer Power and USB Cables

3. Disconnect the paper chute sensor and paper low sensors from the printer mechanism and bend the tabs open on the cable clamp securing the paper chute sensor wires.

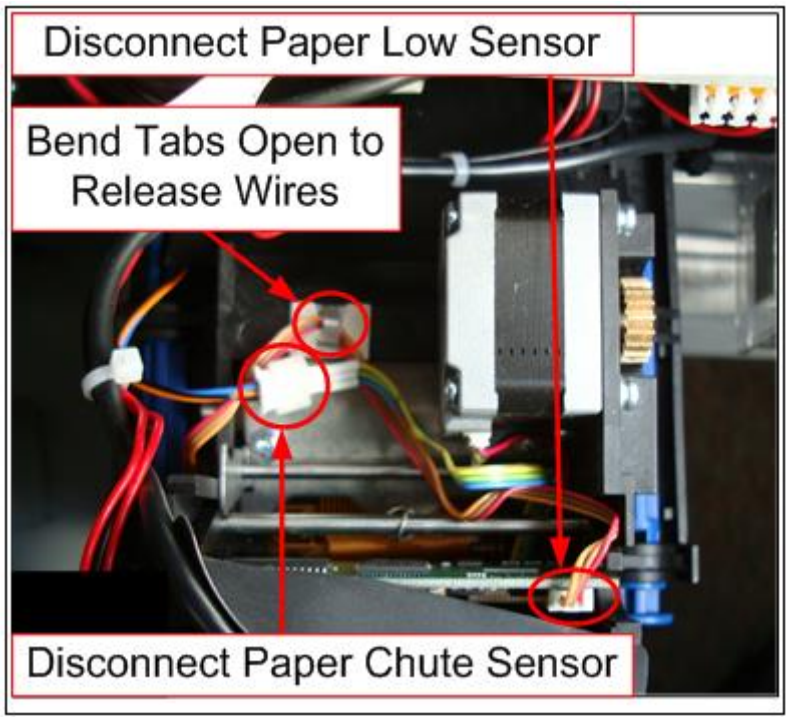

Figure 38. Disconnecting Receipt Printer Sensors

4. Pull both hinge pins to the rear position.
5. Lift the print mechanism up and off the paper tray and set aside.
6. Pull the paper chute through the rear of the opening in the XPT main door.

Figure 39. Removing Paper Chute

7. Disassemble paper chute by sliding the top and bottom half of the paper chute in opposite directions and pulling apart.
8. Remove any paper scraps or foreign material from the paper chute.
9. Clean the optical sensor using a lint free towel, dampened with isopropyl alcohol.
    a. If a towel is not adequately cleaning the paper residue or debris from the recess around the optical sensor, consider using a small, soft bristle brush or toothbrush.

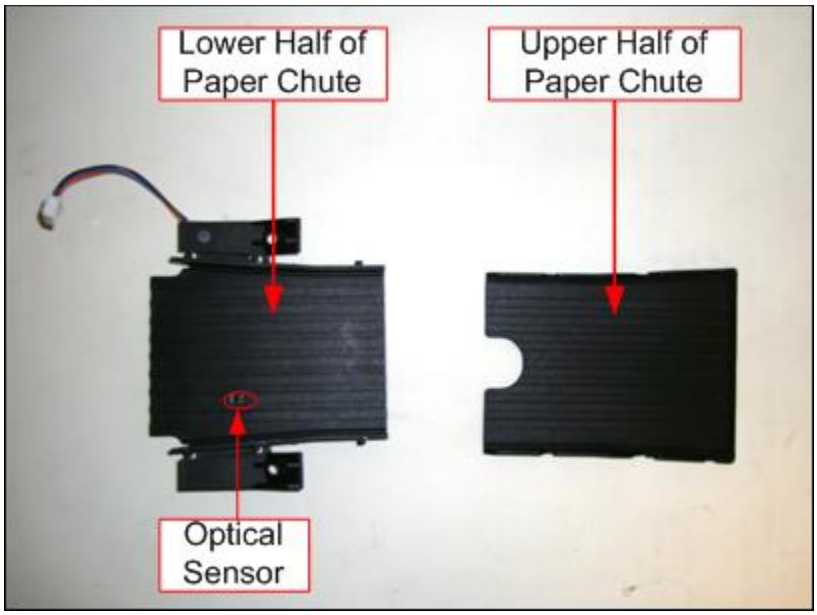

Figure 40. Disassembled Paper Chute

10. Reassemble the paper chute by sliding the top and bottom half of each paper chute toward each other.
11. Push the paper chute back into the rear of the opening in the XPT main door.
12. Put the print mechanism back on top of the paper tray.
13. Push both hinge pins back into place.
14. Reconnect the paper chute sensor and paper low sensors.
15. Reconnect the power and USB cables.

2.12 Card Dispenser

The XPT card dispenser is capable of automatically reading a barcode on a card and dispensing it through a slot in the front of the XPT when the appropriate item is selected on-screen. Note that only new cards that meet the specs outlined in the following section should be loaded into the card dispenser. Previously used cards could cause unreliable dispensing.

The card dispenser assembly is made up of several main components: the card dispenser mechanism, barcode reader assembly, controller, card stack weight, and card low sensor.

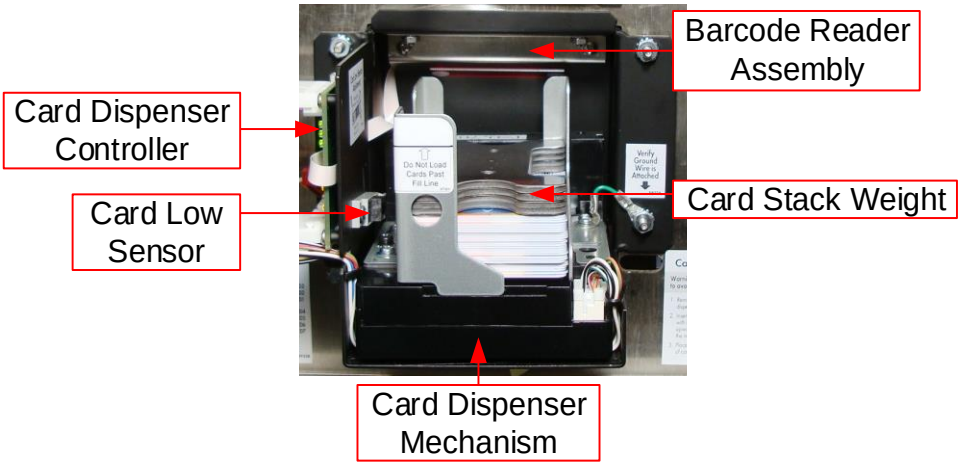

Figure 41. Card Dispenser Assembly Components

2.12.1 Card Specs

In order for the barcodes to automatically scan while the cards are being dispensed, the barcode must be printed along the narrow edge of the card, according to the specs provided by DRB Systems. Contact DRB Systems Support at (330) 645-3299 to request these specs.

Regardless of whether or not barcodes should be read while dispensing, the cards must meet the following criteria:

Material: PET or equivalent
Thickness: .030"
Length: 3.34" - 3.37"
Width: 2.10" - 2.13"
Notes: Non-embossed

2.12.2 Loading the Card Dispenser

1. Remove the weight from the top of the card stack.
2. Insert a stack of cards with barcodes facing up and toward the main door, until the maximum fill line is reached (approx. 50 cards). **Note**: If the barcodes do not need to be read while being dispensed, the direction in which barcodes are facing doesn't matter.

Figure 42. Card Dispenser Loading

3. Replace the weight on the top of the card stack.

2.12.3 Card Dispenser Controller Diagnostic LEDs

The controller has 7 diagnostic LEDs that correspond to the descriptions shown in the Table 3 below. Note that the Status LED flashes to indicate 1 of 11 states.

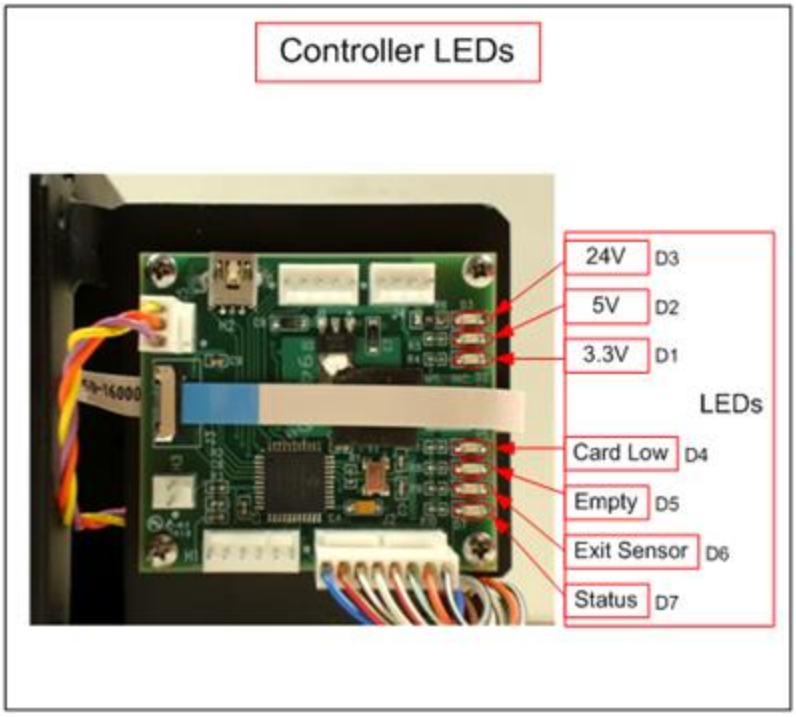

Figure 43. Card Dispenser Controller LEDs

LED	Description
24V	Indicates 24V is supplied to the controller.
5V	Indicates 5V is supplied to the controller.
3.3V	Indicates 3.3V is supplied to the controller.
Card Low	Indicates the card low sensor is detecting cards.
Empty	Indicates the empty switch on the card dispenser mechanism has activated.
Exit Sensor	Indicates the dispense path is clear. This LED turns off when a card is jammed in the dispense path.
Status	Off - Normal operation
	1 Flash - Cards low
	2 Flashes - Empty
	3 Flashes - Jammed
	4 Flashes - Exit sensor failure
	5 Flashes - Taken sensor failure
	6 Flashes - Barcode reader failure
	7 Flashes - Barcode alignment mode
	8 Flashes - Self-test active
	Continuous Flashing - Firmware downloading

Table 3. Card Dispenser LED Descriptions

2.12.4 Adjusting the Card Dispenser Card Low Sensor

The card low sensor can be adjusted to provide a warning when approximately 1 to 15 cards remain in the dispenser. The **Card Low** LED on the controller is lit when cards are detected, and is off when the cards are low.

1. Turn the screw securing the card low sensor counterclockwise with a #1 Phillips screwdriver.

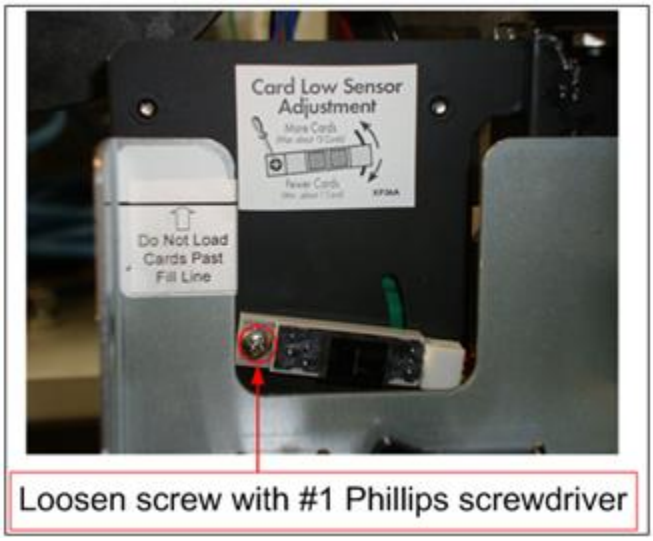

Figure 44. Card Low Sensor Adjustment

2. Rotate the sensor counterclockwise to activate the card low signal when more cards remain in the dispenser.
3. Rotate the sensor clockwise to activate the card low signal when fewer cards remain in the dispenser.
4. Turn the screw securing the card low sensor clockwise to tighten.

2.12.5 Cleaning the Barcode Reader Window, Stack Roller, and Exit Sensor

The card dispenser barcode reader window should be cleaned at least every two months, and the stack roller and exit sensor should be cleaned at least every four months.

1. Clean the barcode reader window.
   a. Remove the card stack weight and cards from the dispenser.
   b. Use a damp cloth to clean the barcode reader window. Do NOT use detergents as they can permanently damage the window.

Figure 45. Cleaning the Barcode Reader Window

2. Clean the stack roller.
   a. Remove the card stack weight and cards from the dispenser.
   b. Use a cloth dampened with water and mild detergent to wipe the roller.
   c. Rotate the roller and continue to wipe until the entire surface is clean.

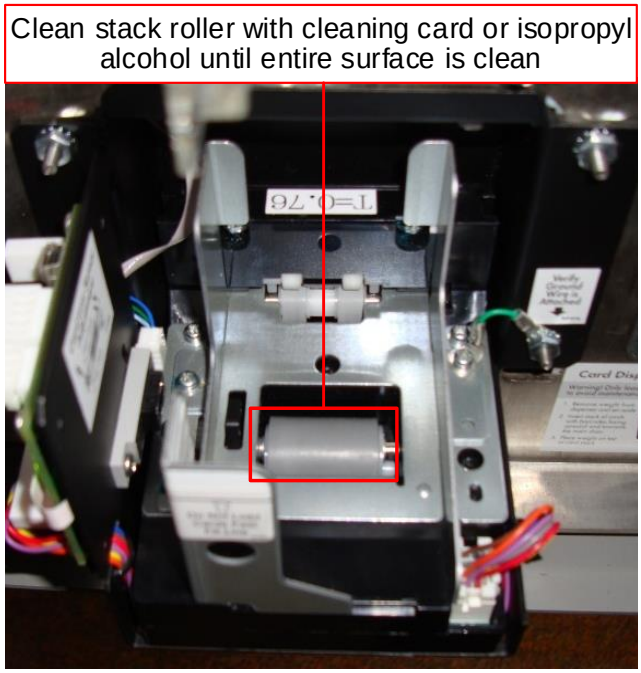

Figure 46. Cleaning the Stack Roller

3. Clean the delivery rollers.
   a. Remove the card stack weight and cards from the dispenser.
   b. From the **Main Status Screen**, press **Enable & Test Hardware**. The **Enable & Test Hardware** screen appears.
   c. Press **Card Dispenser**. The **Card Dispenser** screen appears.
   d. Press **Roller Reverse**. The card dispenser motor and rollers run in reverse for 30 seconds.
   e. Lightly press a magnetic card reader cleaning card (DRB Systems Part# XP80001), or a cloth dampened with isopropyl alcohol, against the delivery rollers as they turn.
      i. **Caution:** If using a cloth, make sure it is damp but not dripping alcohol, as excess could drip into the card dispenser electronics. Also, take care not to allow the rest of the cloth to get wound into the stack roller.

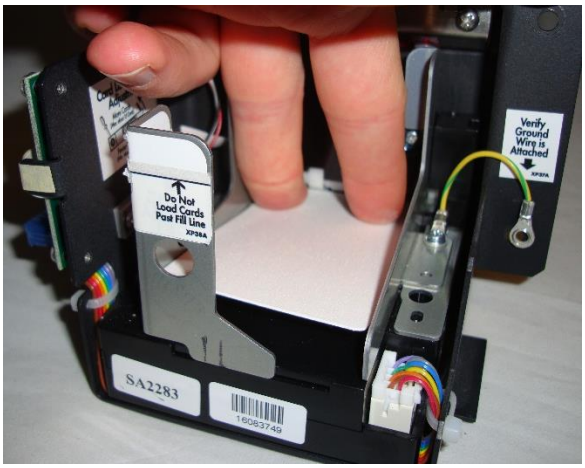

Figure 47. Cleaning the Delivery Rollers

   f. Turn the cleaning card around, and/or flip it over, and repeat the cleaning process, until the rollers are clean.

4. Clean the exit sensor.
   a. Use a can of compressed air to clean the exit sensor. **Note**: Do not use local compressed air lines because of the potential for damage resulting from moisture and high pressure. Purchase canned spray air from an electronics or office supply store.

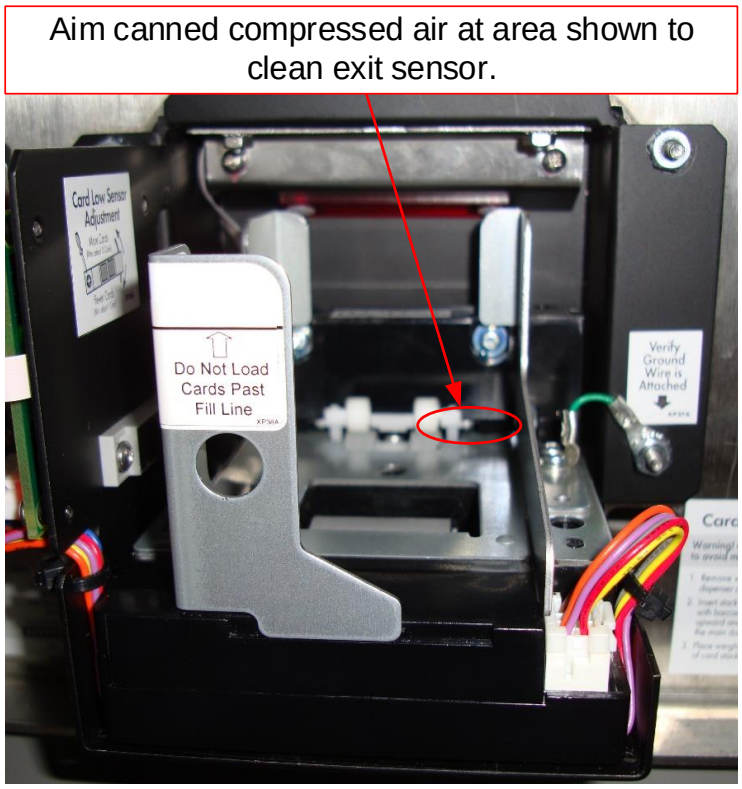

Figure 48. Cleaning the Exit Sensor

2.13 Imager Barcode Reader

The barcode imager is capable of reading 1D and 2D barcodes on both printed media and mobile devices. Because this technology essentially uses a camera to take a picture of the barcode, the exit window must be kept clean for best performance. Additionally, ambient lighting is very important for barcode reading, so adequate site lighting is strongly recommended at each XPT lane.

2.13.1 Cleaning the Imager Exit Window

The exit window should be cleaned every 3 weeks, at a minimum, and more often at sites where dust is prevalent.

1. Use a non-abrasive damp cloth and mild detergent to clean the exit window. Do NOT use ammonia based detergents, as they could permanently damage the glass coating.
2. Dry the window with a lint-free towel.

Figure 49. Cleaning Barcode Imager Exit Window

2.14 Proximity Sensor – Field Option

An ultrasonic proximity sensor can be added in the field if an external prox loop cannot be installed. This hardware is mounted on the vault door below the coin acceptor. The distance at which the proximity sensor detects a vehicle can be adjusted by using the push-button located on the side of the sensor.

To adjust the proximity sensor:

1. Unmount the sensor from the vault door, while still leaving its cable connected.
2. Decide the distance at which you want the prox sensor to detect an approaching vehicle - usually 36".
3. Have a staff member stand the desired distance away from the sensor, holding a 12" by 12" or larger metal plate.
4. Aim the sensor at the metal plate, and then momentarily press the push button on the sensor and then release it.

5. When the yellow indicator light turns on solid, place finger over the face of the sensor.
6. Momentarily press then release the program button while keeping finger over the face of the sensor.
7. Wait for the light to blink 5 times.
8. Test to verify the detection distance is where the sensor was set to.

   When adjusted properly, the Int. Prox Sensor LED on the front of the control module, and the yellow indicator light on the rear of the prox sensor, should remain on for the duration that the object is in front of the sensor, at the desired distance.

2.15 External Prox Loop Detector - Optional

The optional external prox loop detector is located in the top vault side of the XPT. This device is designed to connect to an in-ground vehicle detection loop (supplied by customer), to detect when a vehicle is approaching or at the XPT. Its ability to only detect large metallic objects prevents it from improperly detecting site employees walking past the XPT.

The external prox loop detector connects to the control module through a dedicated harness, and the in-ground loop terminates to a terminal block on the front of the control module.

Refer to the XPT Installation Manual for detailed loop installation and connection instructions.

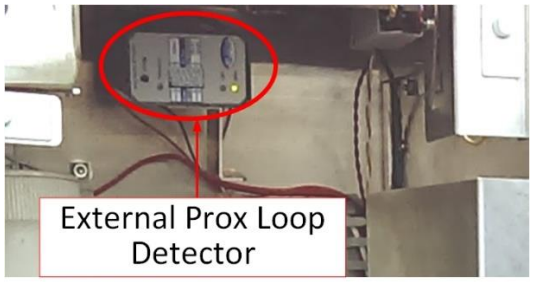

Figure 50. External Prox Loop Detector

2.15.1 External Prox Loop Detector Settings

The Reno AX4 loop detector includes 6 DIP switches on the front of the unit. These switches shouldn't need to be changed from their defaults, but each switch and its settings are listed below. After making any changes to the DIP switches, press the Reset button directly below the switches.

External Prox Loop Detector - DIP Switch Settings		
DIP Switch	**Function**	**Default Setting**
1	Frequency	OFF
2		OFF
3	Pulse/Presence	OFF
4	Sensitivity Boost	OFF
5	Sensitivity	ON
6		OFF

Table 4. External Prox Loop Detector Settings

2.16 Air Intake Assembly

The XPT main case is thermostatically cooled using filtered outside air, which is drawn through the air intake assembly, located underneath the power module. The filter should be changed at least every 6 months, and more often in dusty areas.

2.16.1 Changing the Air Filter

1. Turn the XPT off at the main power switch.
2. Disconnect the air intake blower power cable from the front of the power module.
3. Completely loosen the thumbnut on the bracket that secures the air intake assembly, and set the bracket aside.
4. Slide the air intake assembly to the left side of the power module shelf.
5. Slide the air intake assembly towards the front of the XPT.

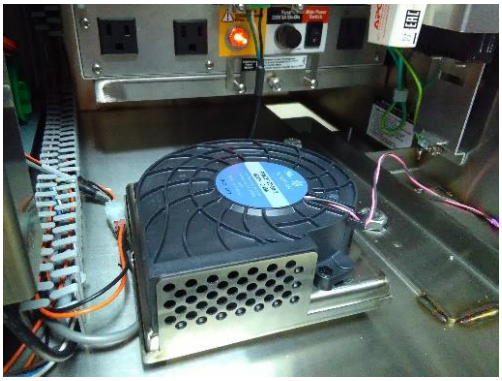

Figure 51. Air Intake Assembly

6. Lift the top half of the air intake assembly from the bottom half.

7. Remove and discard the air filter.

Figure 52. Air Filter

8. Install the new air filter.
9. Reassemble the air intake assembly.
10. Slide the air intake assembly back into its original position.
11. Reinstall the bracket and tighten the thumbnut to secure the air intake assembly.
12. Reconnect the air intake blower power cable to the power module.

2.17 Interior Lighting Timeout

To prevent draining the battery when the main door is left open for an extended period, the interior lights will automatically turn off after 15 minutes. To turn the lights back on for an additional 15 minutes, simply press and release the main door switch.

Note that the 15-minute timeout does not apply, and the interior lights will remain on as long as the main door is open, if the XPT is supplied with 120VAC and the XPT main power switch is on.