SCR ADVANCE™ RECYCLER FIELD SERVICE GUIDE

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MEI® SCR Advance™ Recycler – Field Service Guide

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VERSIONS

G5

- First official release for customers.

G6

- Updated all images to include better details

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SAFETY INSTRUCTIONS

Expected use conditions: The MEI SCR Advance™ Recycler product validates, denominates, stores, and recycles banknotes. The product is intended to be integrated as a peripheral within a Host Machine.

SAFETY INSTRUCTIONS

Before installing the unit into a Host Machine, turn off all power.

When installing or removing electronic boards observe all ESD precautions to prevent damage.

Beware of hot surfaces!

STANDARDS CONFORMANCE

MEI SCR series products operate at Safety Extra Low Voltage level (SELV) as defined in standard EN60950-1 «Safety of information technology equipment». They may be designed into equipment complying with IEC60950-1/EN60335-1 ‘Safety of Information Technology Equipment’.

SCR Banknote Recycler Series products are of Class 2 construction.

EMC NOTICE

This digital device does not exceed the Class A limits according to EN 55032 and IEC/CISPR 32 limits for radio interference. In a domestic environment the User may be required to take adequate measures.

DANGEROUS ENVIRONMENTS

The unit must not be operated in the presence of flammable gasses, fumes or water.

PRODUCT DISPOSAL

Do not dispose of any part of a SCR Banknote Recycler Series by incineration.

1. FIELD SERVICE GUIDE

The intent of this document is to familiarize a trained field technician with the intermediate functions of the MEI® SCR Advance™ Banknote Recycler, ensure the product is installed properly, and highlight proper product upkeep and troubleshooting.

Convention used in this document and in the Service Manual:

- Paragraph with the icon  is intended to identify safety concerns.

- Paragraph with the icon  provides helpful instructions to make the SCR Advance Recycler easier to use.

1.1. Product Overview

SCR Advance Recycler

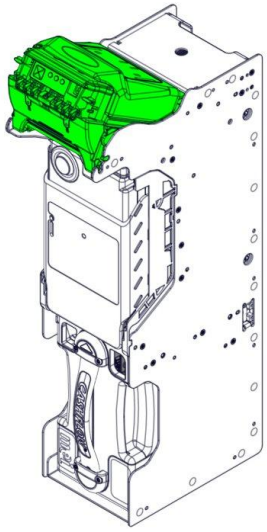
The product processes multi-width international “street money” with the following basic functions:

1. Denomination, Validation and Acceptance of street banknotes for multiple countries
2. Temporarily store the banknotes of the current transaction (Optional)
3. Provide change to the consumer from temporary cash stores held in the Recycler Drums
4. Store the banknotes in a permanent store, at the Cashbox Module

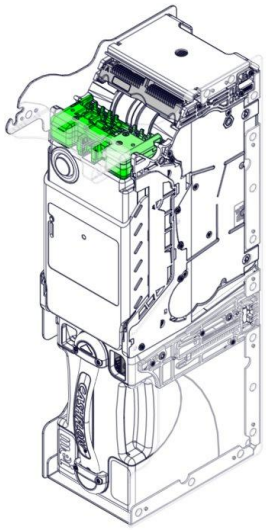
1.2. Main Components

The SCR Advance™ Recycler is composed of the following components:

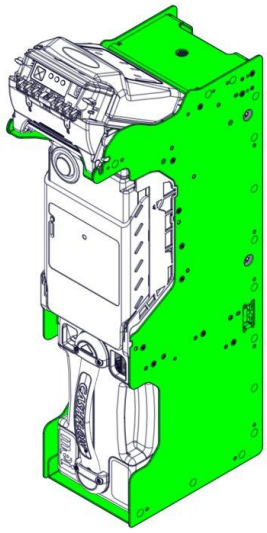
Acceptor Module- interface to the User (Inlet or “Bezel”) and banknote validation system.



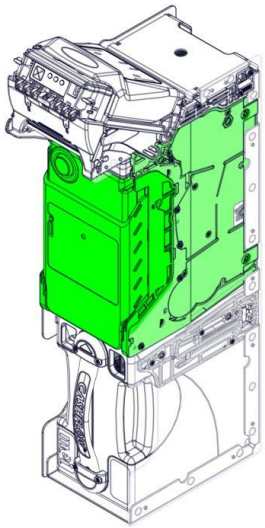
Vault Module- device used to prevent unauthorized access to stored banknotes.



Chassis - metal frame containing all the other modules. The Recycler Module is permanently fixed to the chassis.

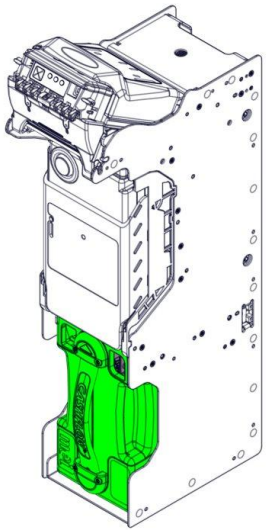


Recycler-Transport Module- device for storing, transporting, and dispensing banknotes.

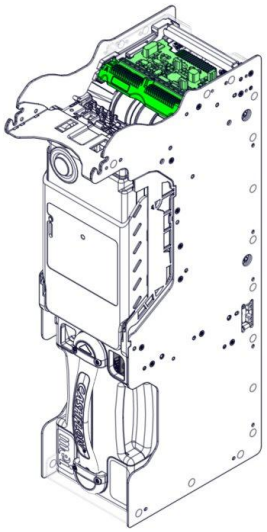


The Recycler/Transport Assembly can be removed from the Chassis as a single component. Please refer to Section 5.6 for detailed instructions.

CashBox Module- lockable, secure, and removable cash storage cassette.



Interface Card- interface which allows the Acceptor to communicate effectively with the host machine



2. INSTALLATION

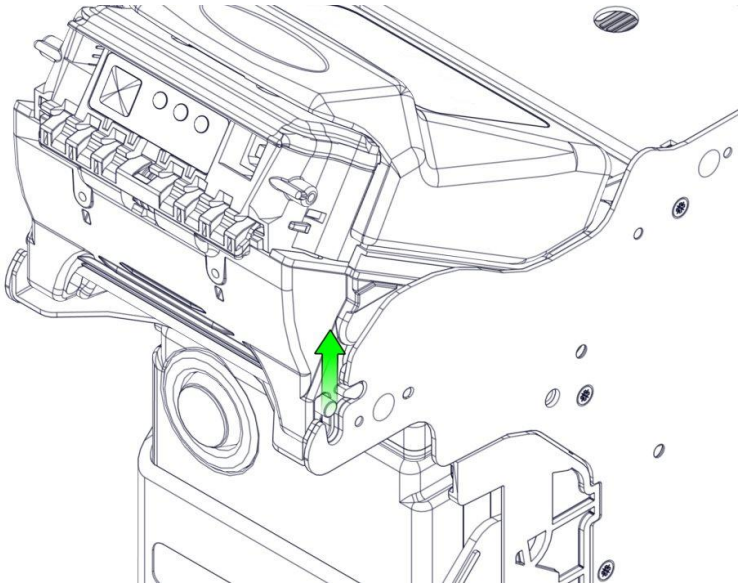
Ensure that power is completely removed from the host machine prior to installation

Take note that the cashbox does not physically lock into the chassis. When removing the unit from the original packaging, take care not to lift and carry via the yellow handle on the cashbox. Doing so may result in the chassis/acceptor detaching from the cashbox, causing damage

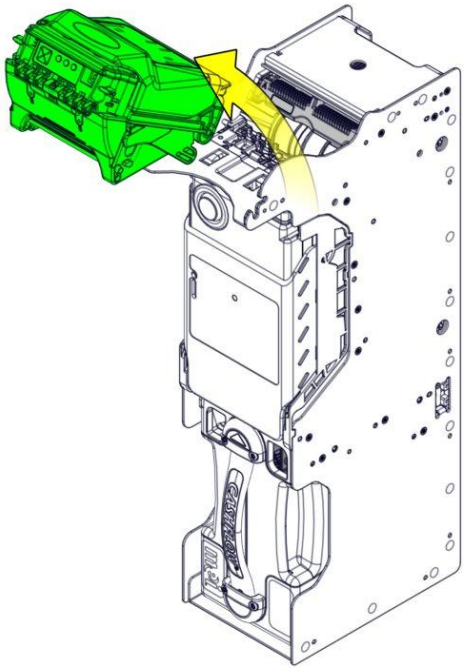
2.1. Acceptor Module

Acceptor Removal

- To remove, grasp the Acceptor firmly and lift the lower release bar



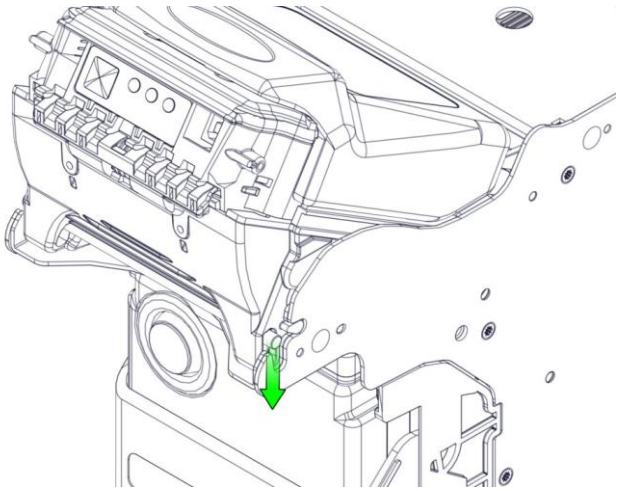
- Remove the Acceptor away from the Chassis



The Acceptor Module can be removed with or without removing the bezel (if equipped) beforehand

Acceptor Installation

- Depress the bar and place the Acceptor into the channel guides of the Chassis. Ensure that the release bar is fully seated into the cut out shown. ***Failure to fully seat the Acceptor may result in Out-of-Service (OOS) condition***

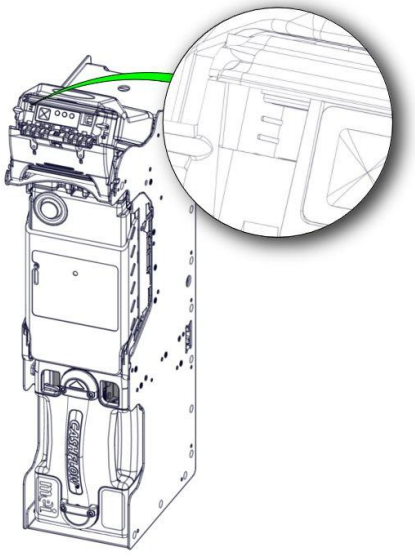


After replacement, the unit will automatically perform a full reset

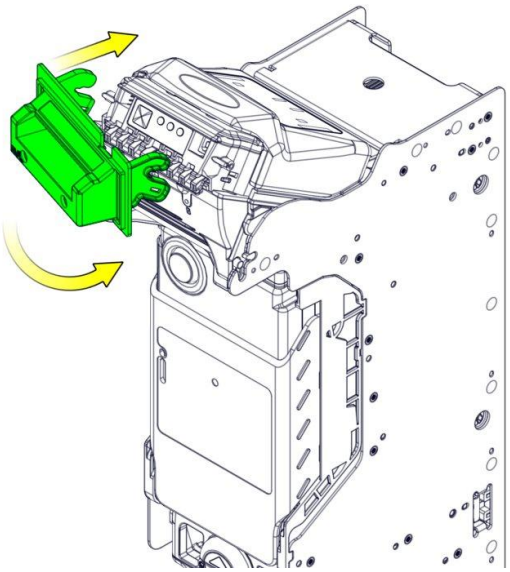
2.2. Bill Entry Guide (Bezel)

Bezel Installation

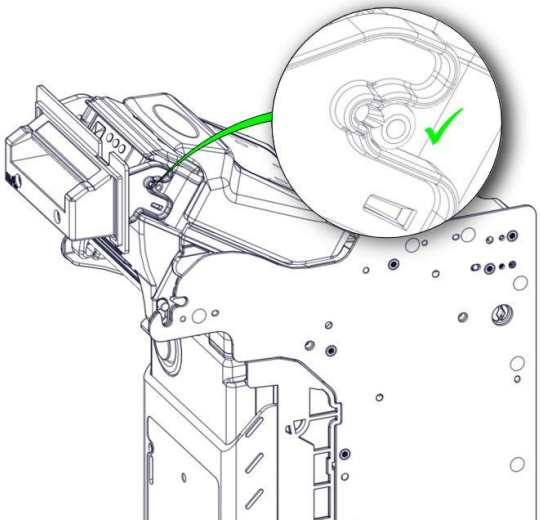
- If the Bezel contains lights, connect the provided harness prior to bezel installation. There is a connection port located to the left of the MMI lights



- Slide the Bezel onto the Acceptor, using the molded guides of the Acceptor Housing. To ease installation, slide one end on first and follow with the other end of the bezel

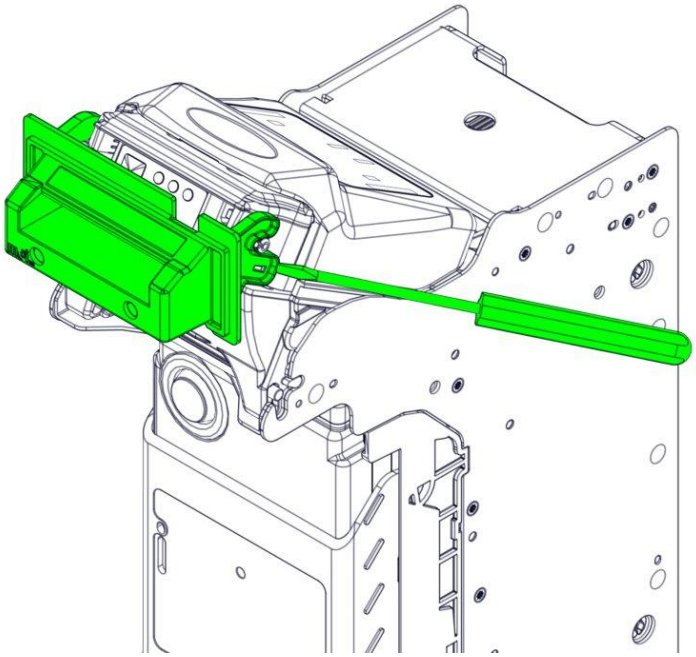


- Make sure that the guides of the Bezel are fully seated into the molds on the Acceptor. The Bezel should “snap” into place to indicate a full seat



Bezel Removal

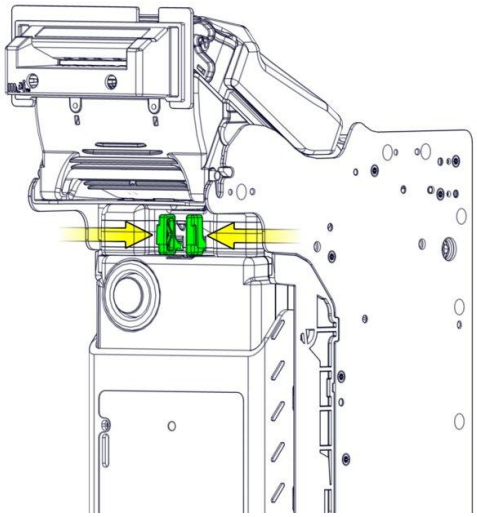
- Slide a small, flat screwdriver between the Bezel and Acceptor housing. Slowly and gently pry while pulling the Bezel away from the Acceptor. Repeat on opposite side, if necessary



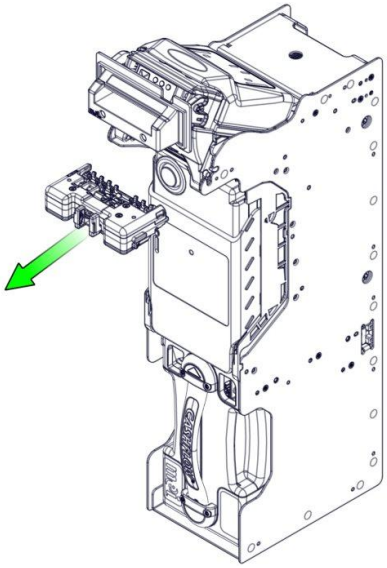
2.3. Vault Module

Vault Removal / Installation

- Locate the two yellow tabs on the Vault Module



- Pinch the yellow tabs inward and pull the Vault Module out and away from the Chassis



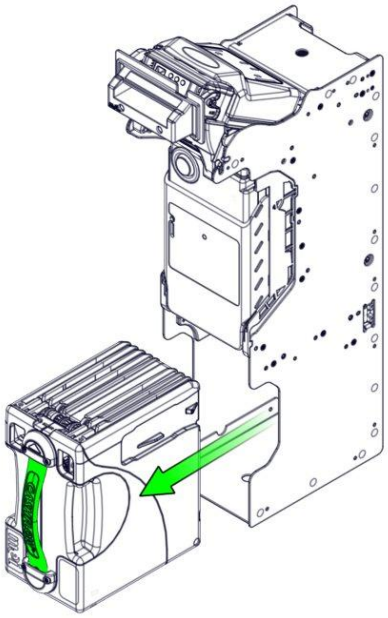
- To replace, insert Vault Module with serial number stickers facing down, into the Chassis

Make sure that the Vault is fully seated in the chassis. The Vault should have an audible click upon insertion, and the yellow tabs should be fully outward. If in doubt, push on the Vault module to make sure that it cannot move inward any further. After replacement of the Vault Module, the unit will automatically perform a full reset

2.4. Cashbox Module

Cassette Removal / Installation

- Grasp the handle of the Cashbox and pull to remove from Chassis

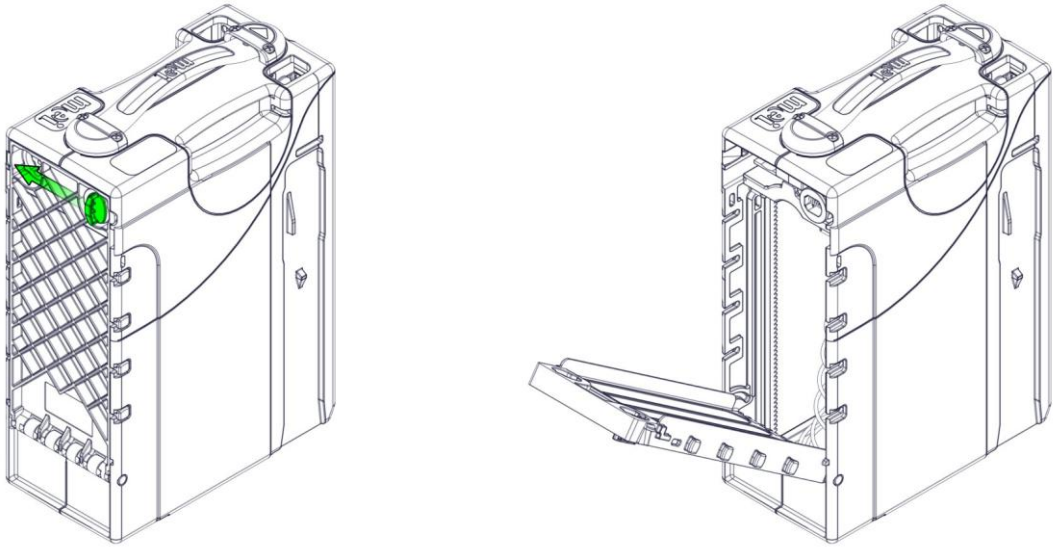


If more leverage is needed, place a thumb on the lower portion of the Transport Cover and pull to remove the Cashbox

- To replace, push Cassette into Chassis opening until fully seated. The Chassis contains guides for the Cashbox and is fitted with two springs near the end of travel, which provide resistance. Clearing the tension in these springs will ensure that the Cashbox is fully seated and flush against the back wall of the Chassis

Opening the Cashbox

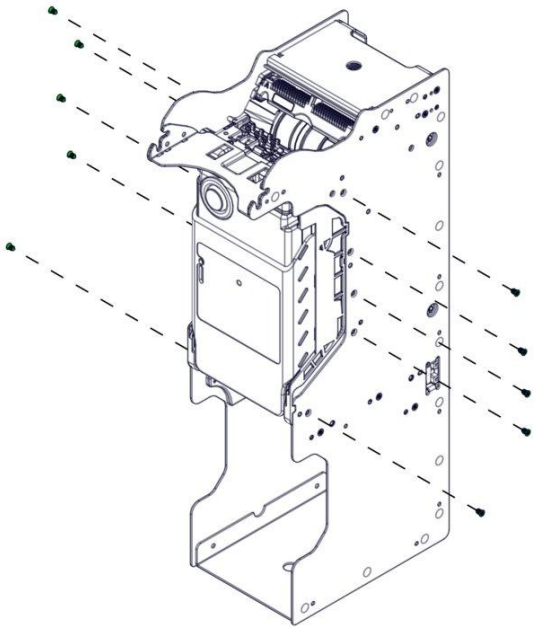
Cashboxes can be opened using the provided yellow latch. Using a thumb or finger, move the spring-loaded latch inwards to release the access plate



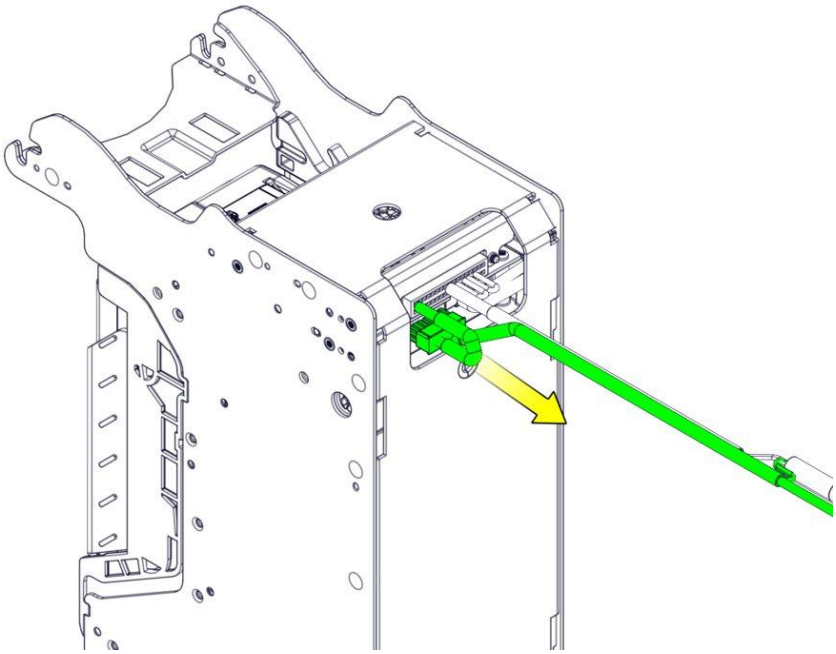
After replacement, the unit will automatically perform a stack and cycle of the Stacker Motor

2.5. Recycler / Transport Assembly

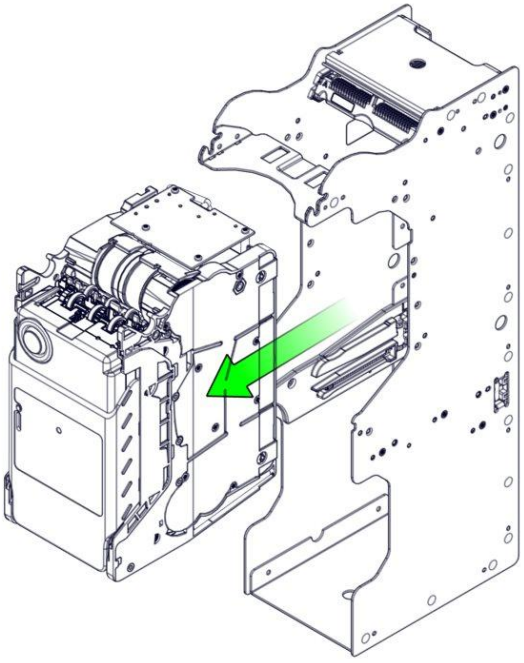
- Remove the Acceptor, Cashbox, and Vault modules
- Locate and remove the (10) RE / TR retention screws using a Phillips screwdriver



- Locate the cable and connector for the Power Conditioning PCB, which rests on the top of the Recycler / Transport assembly. Disconnect connector using a flat-bladed screwdriver or pair of pliers



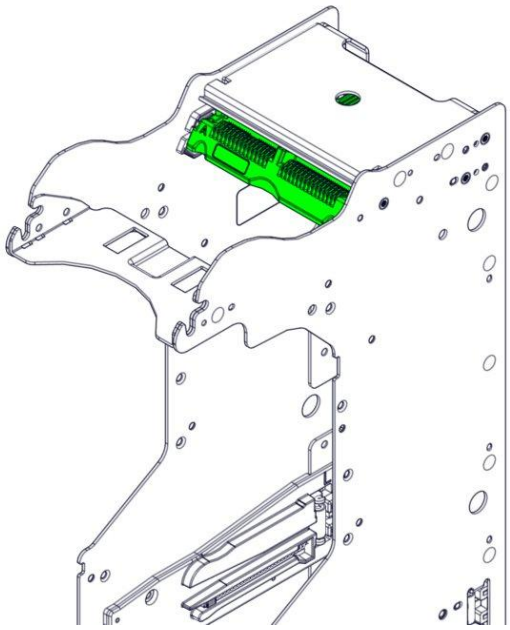
- Slide the Recycler / Transport assembly out to remove



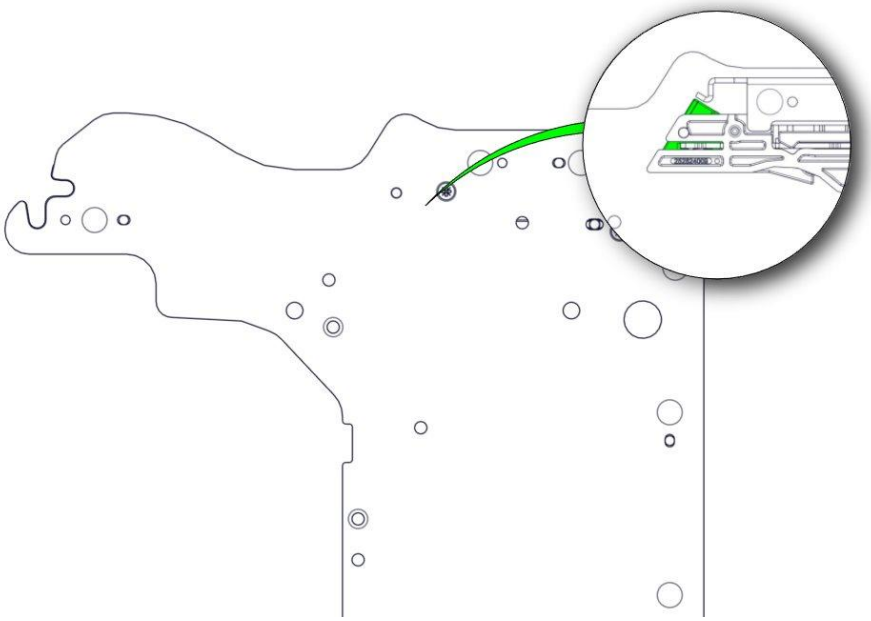
2.6. Interface Card

- Remove the Recycler / Transport assembly as detailed in Section 2.5

- Grasp the I/F card and pull out to remove. This is easily performed by resting the palm of the hand against the chassis and gripping the I/F card with the fingers in the molded section, highlighted below

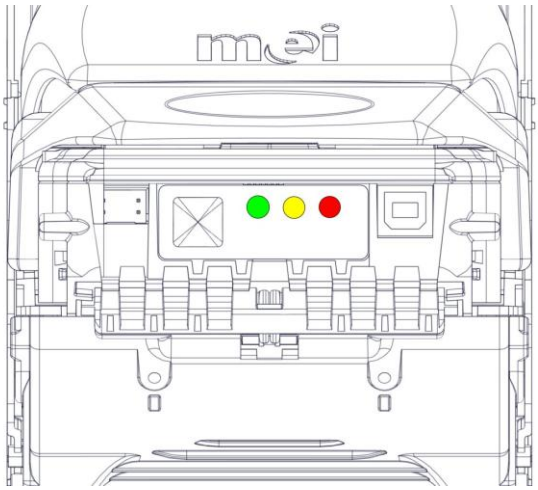


- Insert a new card. Firmly press the card using the molded guides, until fully seated. An audible “click” will be heard when completed successfully



3. MMI WARNING AND ERROR CODES

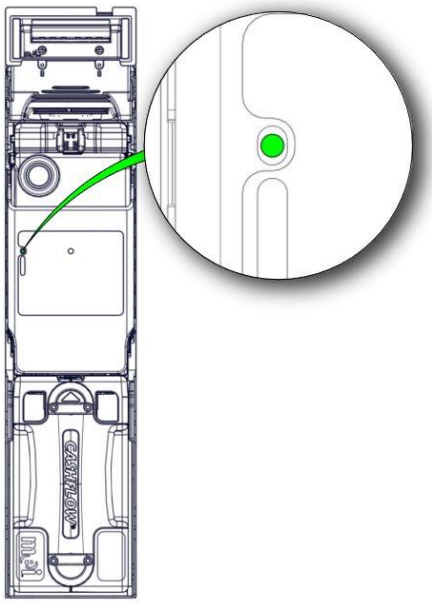
Each MEI® Acceptor Module is equipped with a Man-Machine-Interface (MMI) panel, located on the front face. This panel is used to indicate the device's internal state and highlight if the SCR Advance™ Recycler currently has an error or fault. For indication, three LEDs are used: Green, Yellow (Amber) and Red.



In addition to the Acceptor Module, one Green LED is provided on the front face of the Transport Module. This LED is designed to provide information concerning the "owner" of a note that has jammed in normal operation.

When the LED is illuminated and solid, the note belongs to the User / Customer.

When the LED is blinking, the note belongs to the system / SCR Advance Recycler.



The table below provided a reference to help determine the current device state and possible methods that can be employed to correct irregular operation.

MMI Indicator			Status	Correction	Section
Green	Yellow	Red			
Solid ON	-	-	Normal Operation	None	-
1 flash	-	-	Unit disabled by interface	Clear condition with host machine that is causing the note recycler to be disabled	-
2 flashes	-	-	Disabled by network	Correct network condition	-
3 flashes	-	-	Reserved	None	-
-	Solid ON	-	Cashbox not seated or not present	Reseat Cashbox	2.4
-	1 flash	-	Poor note acceptance	Preventative maintenance required by technician	5.2
-	2 flashes	-	Jam in Acceptor Module	Remove the jammed note from the acceptor's head	4.1
-	3 flashes	-	Jam in Cashbox	Remove jammed note from Cashbox	4.4
-	4 flashes	-	Jam in Recycler Module	Open recycler door and remove the jammed note. If Recycler Module's front green LED is solid, then return the note to the customer. If blinking, this note belongs to the Recycler/Cashbox (System)	4.2 / 4.3
-	5 flashes	-	Jam in Vault	Remove the vault module and open the Transport door. If Recycler Module's front green LED is solid, then return the note to the customer. If blinking, this note belongs to the Recycler/Cashbox (System)	5.3
-	-	Solid ON	Cashbox is Full	Replace Cashbox with a new (empty) one	2.4
-	-	1 flash	Acceptor hardware failure	Replace Acceptor Module	2.1
-	-	2 flashes	Interface Board failure	Replace Interface Board	2.6
-	-	3 flashes	Reserved	None	-
Solid ON	Solid ON	Solid ON	Unprogrammed unit of Software allocation memory is corrupt	Program unit with service tool (*for example, Cashflow™ STS or PPM Advance™*)	6
Flashing	Flashing	Flashing	Generic unit (programmed with factory default software)	Program unit with service tool (*for example, Cashflow STS or PPM Advance™*)	6
-	-	4 flashes	Unit's Asst Number miss-match (*related to Easitrax™*)	Insert blank Cashbox or with matched number programmed (*more information can be found in Easitrax™ User Manual*)	-
-	-	5 flashes	Easitrax Tag not found	Insert Cashbox with RF Tag installed	-
-	-	6 flashes	Communication Error (*related to Easitrax*)	Reseat or replace Cashbox with another RF tag	-
-	-	7 flashes	Asset number not found (*related to Easitrax*)	Program the Asset number into acceptor using Cashflow STS service tool	-
-	8 flashes	8 flashes	Unit has security timeout triggered (*related to high-security software*)	Wait 20 minutes until the timeout has elapsed. *Do not remove power from the unit.*	-

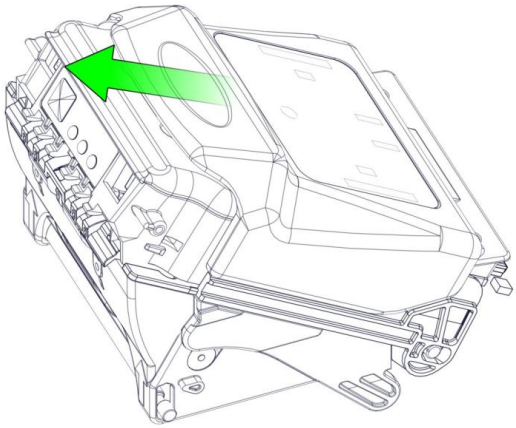
4. JAM CLEARING

The following cases highlight how to properly open the SCR Advance™ Recycler and retrieve the jammed note in order to return functionality to the machine. To determine where the jam is located, refer to Section 3.

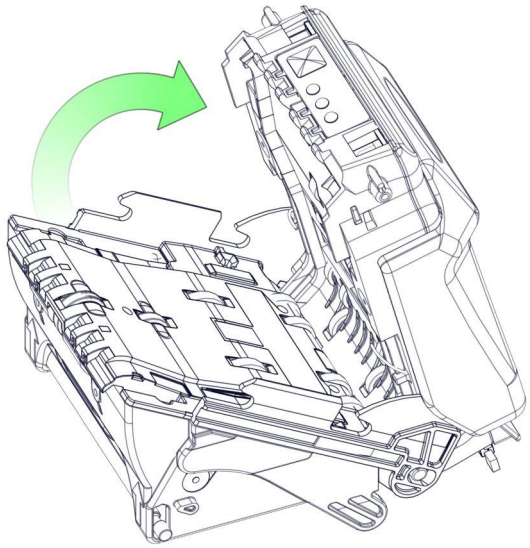
4.1 Acceptor Jam

An Acceptor bill jam will be indicated by 2 flashes on the Yellow MMI LED (per Section 3)

- Grasp the top latch of the Acceptor and pull in the direction of the arrow to disengage the lid



- Lift the top portion of the Acceptor



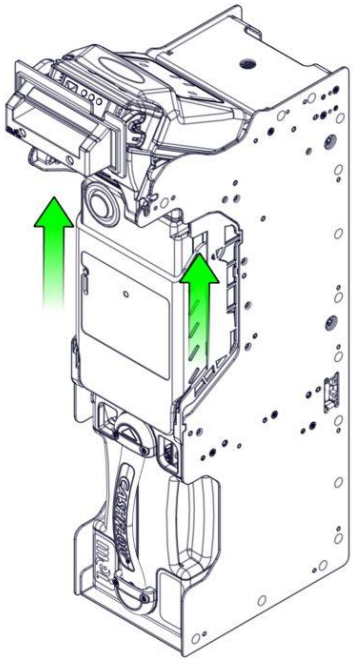
- Check the bill path to see if note or debris is present. Clear any obstruction, if one exists

- Grasp the upper latch of acceptor head again and close until fully seated

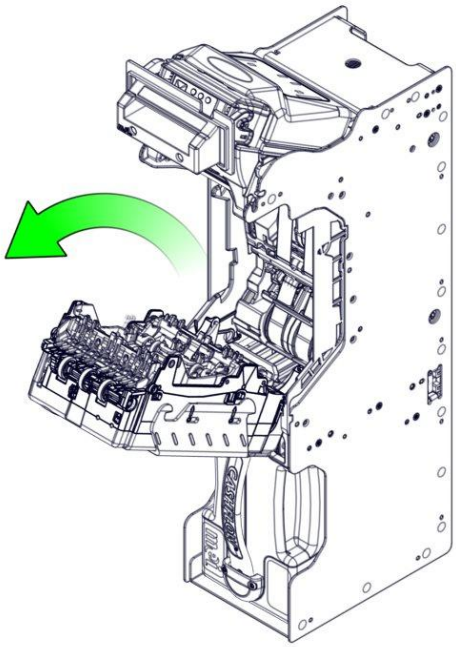
4.2 Transport / Recycler Jam

A transport/recycler bill jam will be indicated with 4 flashes on the Yellow MMI LED (per Section 3)

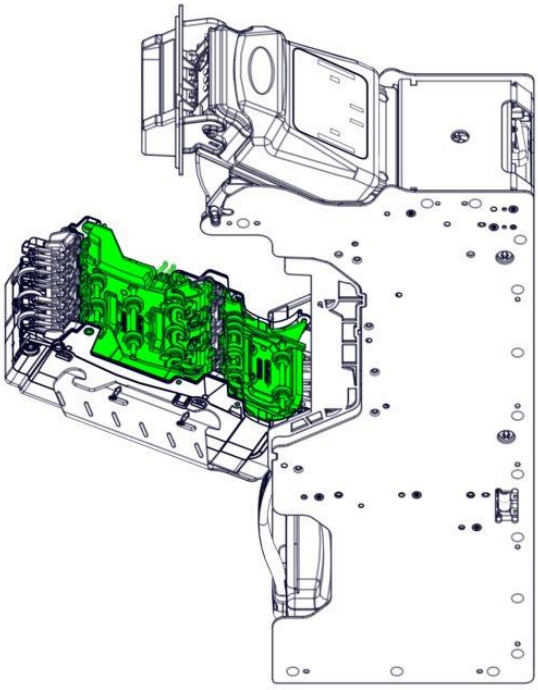
- Remove Vault Module
- Grasp both sides of the Transport Module Cover and pull up



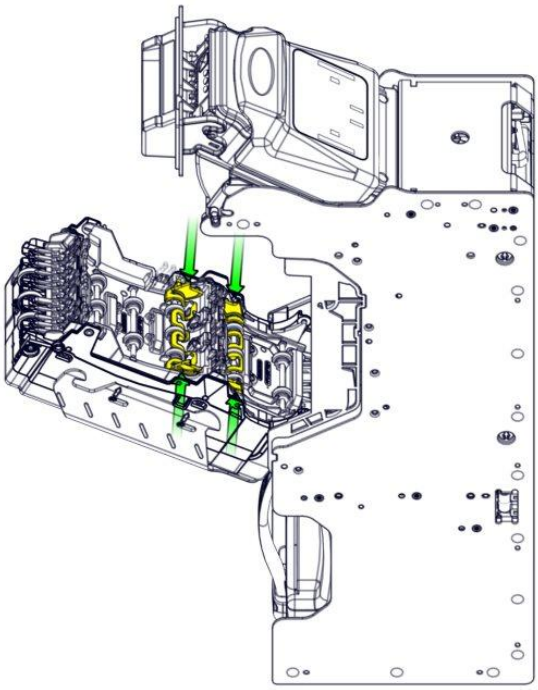
- Rotate the Transport section out, exposing the Recycler drums and transport internals



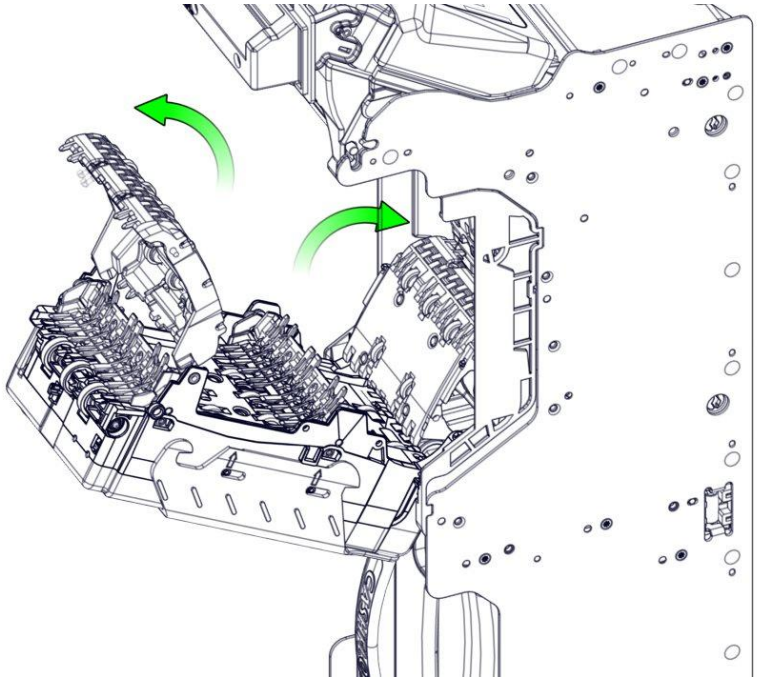
- Locate the Upper and Lower Bill Path Covers



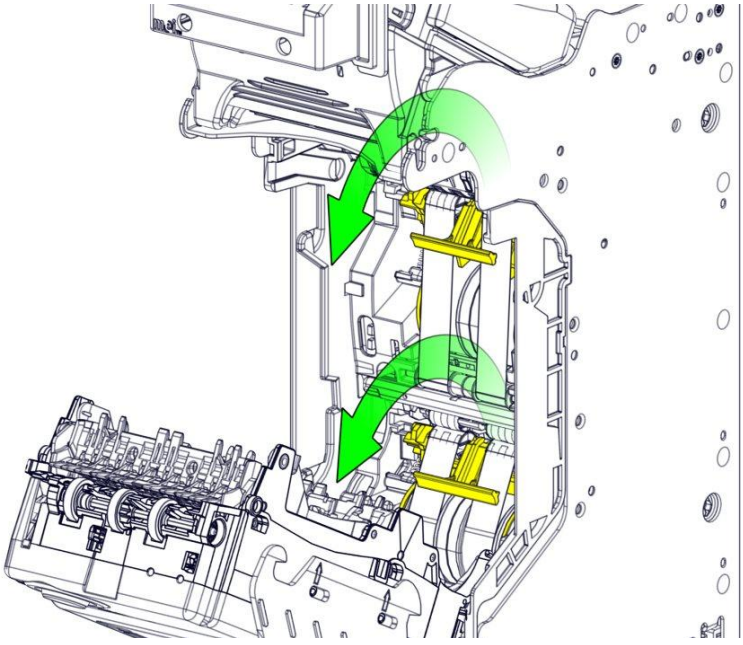
- Open each Bill Path Cover by pinching the yellow tabs on each end



- Rotate the Bill Path Covers up and check for bill jams in the Transport Section. If no note or debris is present, close the Upper and Lower Bill Path covers



- If no bill or debris is present, check the Recycler Module drums. These drums can be accessed via the yellow pull handles. Using a finger, pull down on the horizontal bar / handle. The handle will rotate down about 75 degrees and reveal the recycling drum



Take care when opening the Recycling Drums. The tape should remain straight. If any of the tape becomes twisted, do not clear the jam and reset the unit without first straightening the tape. <u>Never</u> cut or pull the tape

The images below show the normal position of a note located in the Recycler Drum (in this case, Drum 1). If the note is retrievable and not twisted around the tape, carefully grasp the edge of the note and slowly pull towards you to remove.

It is not advisable to remove more than the jammed note from this location. Any note removed from the system will report as missing. Report the retrieved notes and account for them accordingly

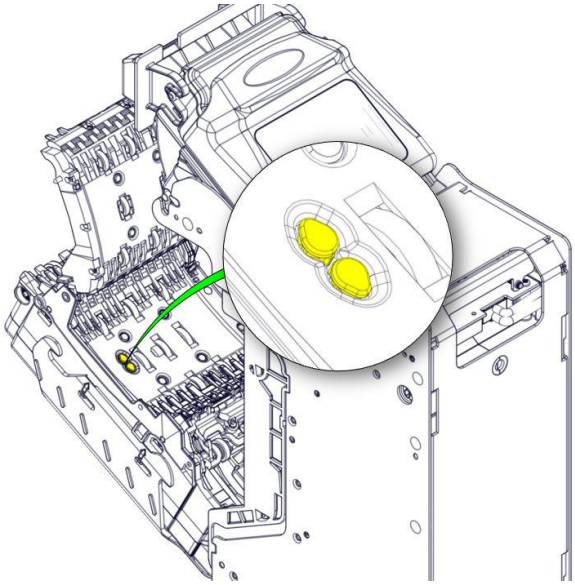
- **Be sure to close each recycling drum access handle prior to shutting the Transport Module**
- Close the Transport Module and verify that it is fully latched
- Reinsert the Vault Module

4.3 Advanced Recycler Jam

If the procedure detailed in Section 4.2 fails to clear the jam, or the notes contained within the Recycler tape are not accessible by hand, two alternative methods can be used.

4.3.1 Transport Service Buttons

Assuming that the Transport Door is already open, rotate the Bill Path Covers up to reveal two (2) yellow service buttons, located on the bill path



The service button closest to the Acceptor (top) controls the motor for the Top-most Recycler (Drum 1)

The service button closest to the Cashbox (bottom) controls the motor for the Bottom-most Recycler (Drum 2)

Regardless of the Drum motor selected, pushing the service button will trigger the Recycler Motor to move such that the tape is pushed in the outward direction (as if the Recycler was dispensing a note). The motor will continue to run until the button is released

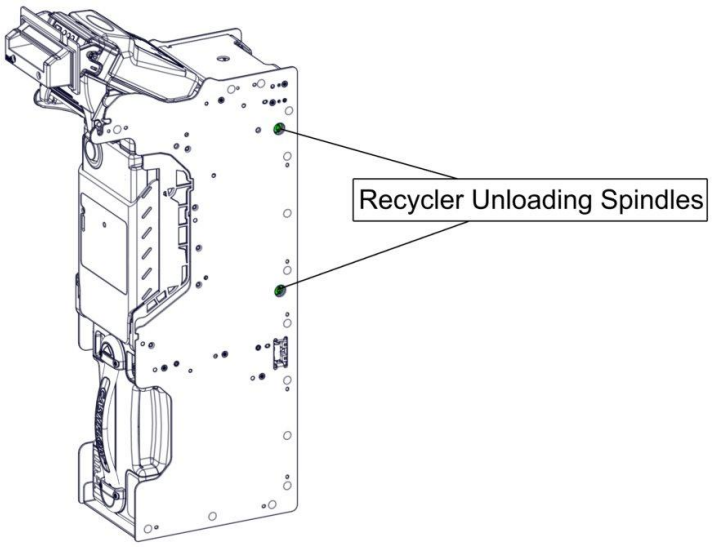
Once pushed, watch the Drum and tape to see if the jammed note appears. Extract the note, when visible

Only run the Recycler Drum motors in 5 second increments. If the tape is not moving, it may indicate a deeper issue. Do not continuously cycle the motors if the jammed note does not easily appear for extraction.

4.3.2 Manual Unloading

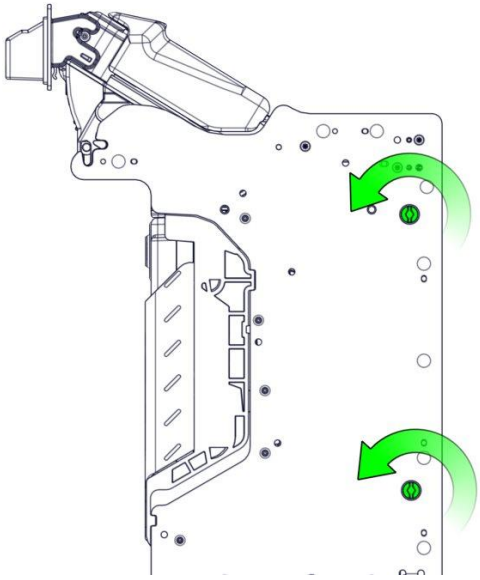
In the event that the service buttons do not successfully clear the jam, or the jam is too much for the Recycler motors to overcome, it is possible to manually rotate the Drums in order to clear a jam.

Assuming that the unit has sufficient clearance, or is removed from the host enclosure, locate the two (2) yellow maintenance access spindles on the right-hand side of the unit. The upper spindle is for Drum 1 and the lower is for Drum 2.



Using a flat-bladed screwdriver, manually rotate the maintenance spindle counter-clockwise. This motion will move the tapes outward, simulating what the motor would do to push a note out of the Recycler drum. Continue to rotate the spindle until the note can be retrieved by hand.

Particular attention must be paid to the tapes when rotating the spindle. The distance markers on the tape (holes) should be parallel on both sides. Make sure that both tapes on the drum are moving at the same speed. Misalignment of the tape can only be addressed by a service center. If severe misalignment is present, replace the Transport / Recycler assembly and send to a local service center for repair



4.4 Cashbox Jam

- Check the Transport Section for the note jam. It is possible that a note may be at the very bottom of the Transport and can be retrieved without Cassette removal
- Refer to Section 2.4 for removal of the cassette (cashbox) module

Be sure to carefully pull the cashbox, if removal is necessary. Aggressive removal may result in a torn note

5. PREVENTATIVE MAINTENANCE

5.1 Cleaning Frequency

The following table highlights the recommended maintenance frequency. The cleaning frequency was chosen to ensure optimal performance. It may be necessary to perform more or less frequent cleaning, depending on the operating environment and usage. If operating under particularly harsh conditions, extra attention should be given to the cleaning of the recognition sensors and transport rollers.

Training Level Required	Estimated Time for Labor	Indoor		Outdoor	
		Location	Frequency	Location	Frequency
End User[1]	10 minutes	Field	6 months or 60,000 cycles	Field	3 months or 30,000 cycles
Field Service	**30 minutes**	**Field**	**12 months or 100,000 cycles**	**Field**	**6 months or 60,000 cycles**
Overhaul[2]	60-75 minutes	ASC[3]	24 months or 200,000 cycles	ASC[3]	12 months or 100,000 cycles

Table 2

[1]End User maintenance is to be conducted by on-site personnel. These procedures have been omitted from this document. Refer to the SCR Advance™ Recycler User Guide for details on basic, routine cleaning and maintenance.

[2]Overhaul maintenance and repairs require specialized equipment and training. These procedures have been omitted from this document. Should a unit meet these maintenance thresholds, please contact the nearest CPI Approved Service Center (ASC). Locations can be found at www.meitechnical.com.

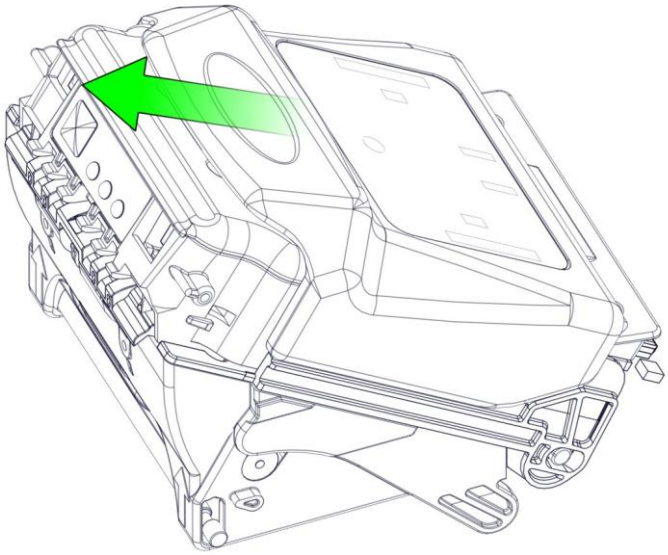
[3]ASC stands for Approved Service Center

Before performing any Preventative Maintenance, ensure that power has been disconnected to the entire unit

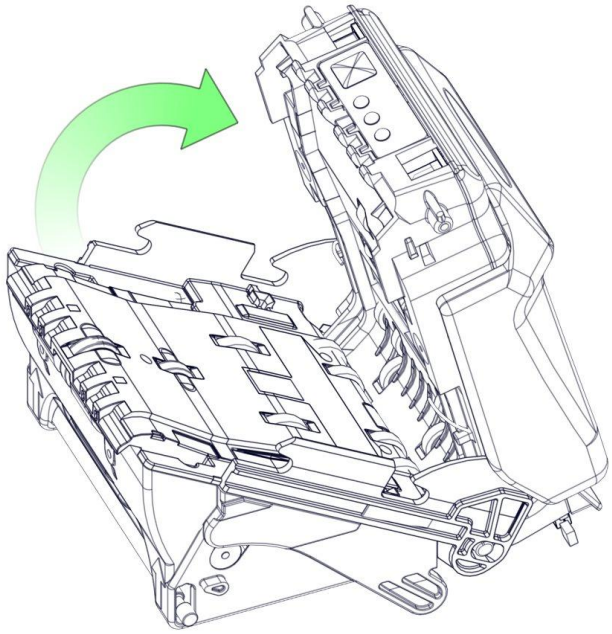
5.2 Acceptor Module

- Remove the Acceptor Module from the Chassis

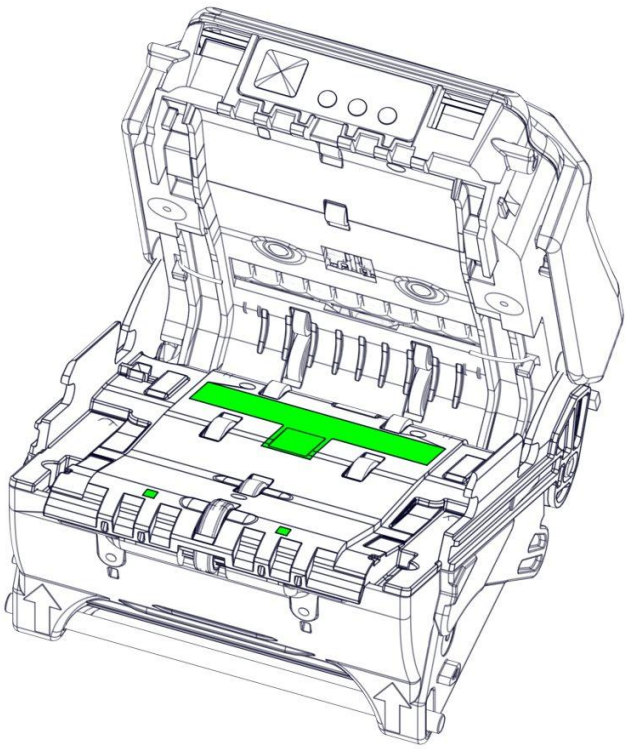
- Grasp the top latch of the Acceptor head and pull in the direction of the arrow to disengage the lid



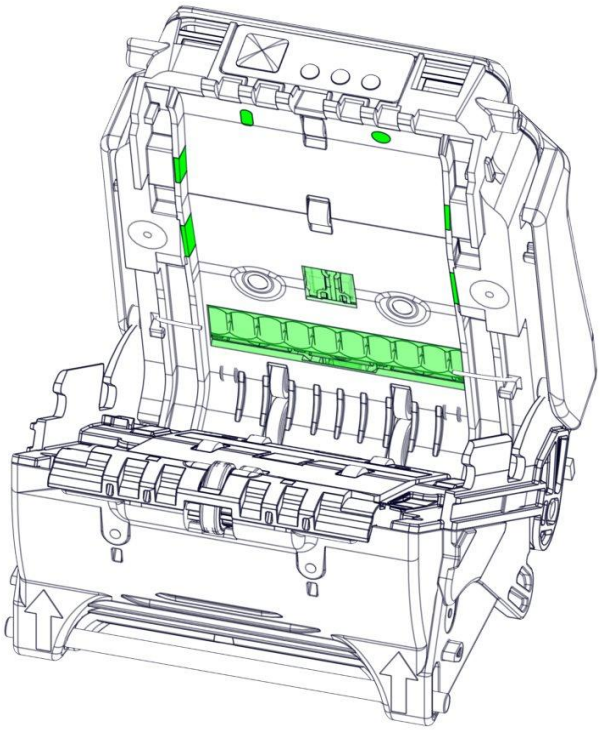
- Lift the top portion of the Acceptor head



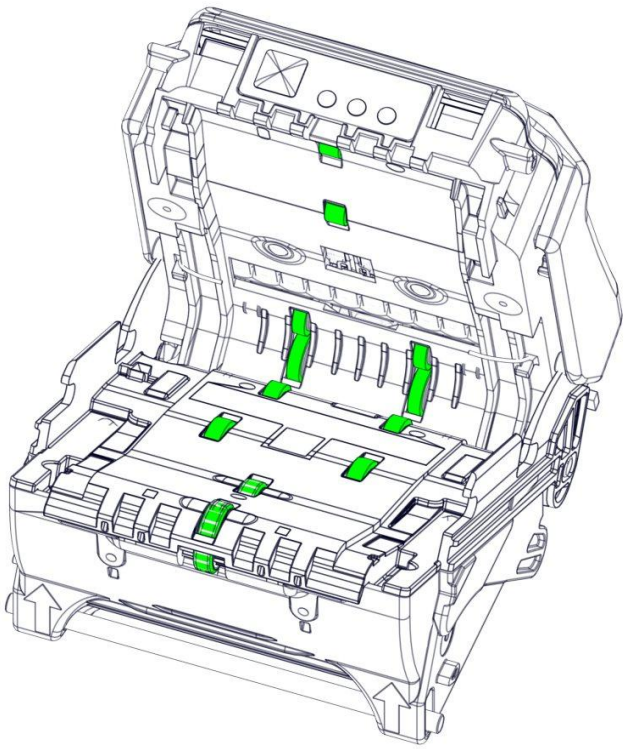
- Clean the optics and recognition sensors on the lower half of the Acceptor, using a lint-free swab or cloth (no cleaner)



- Clean the optics and recognition sensors on the upper half of the Acceptor, using a lint-free swab or cloth (no cleaner)



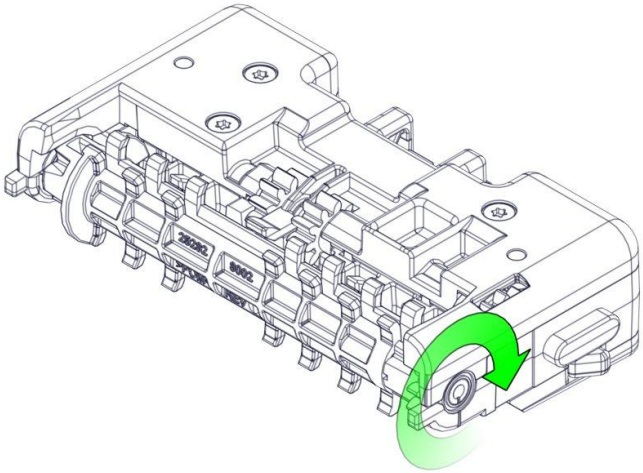
- Using a 5% Isopropyl Alcohol (IPA) solution and lint-free cloth, clean the Acceptor rollers of any residual build-up



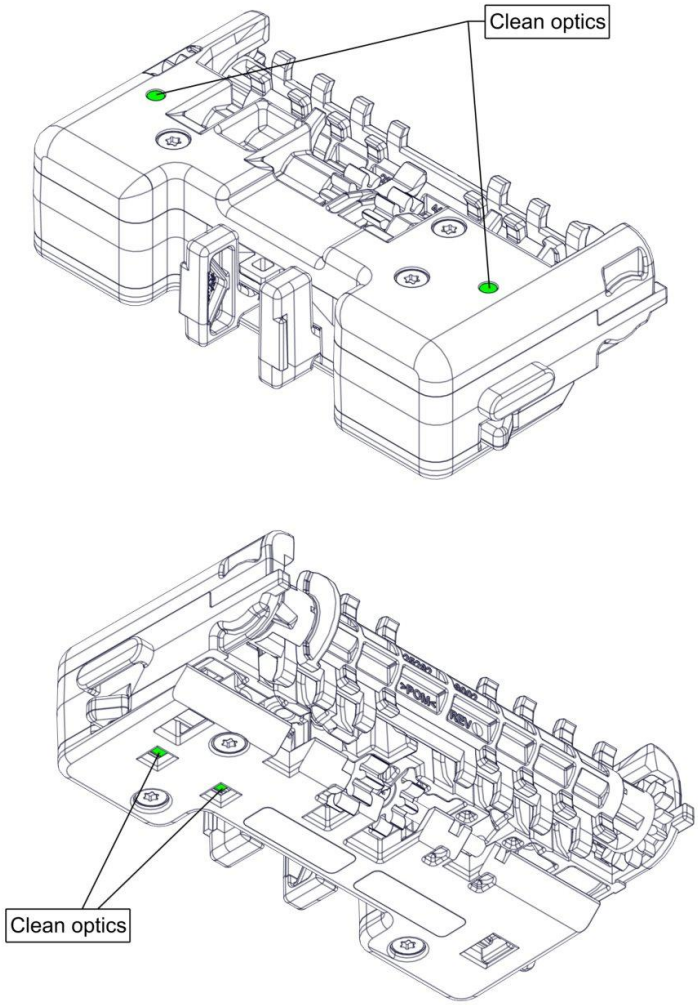
5.3 Vault Module

- Remove the Vault Module from the Chassis

- Manually verify operation of the Vault Module by rotating the drum in the clockwise direction until an audible “click” is heard. Ensure that the movement is smooth and free from any unexpected friction



- Clean the transmission gears and optical lenses of dust and debris using a lint-free swab or cloth

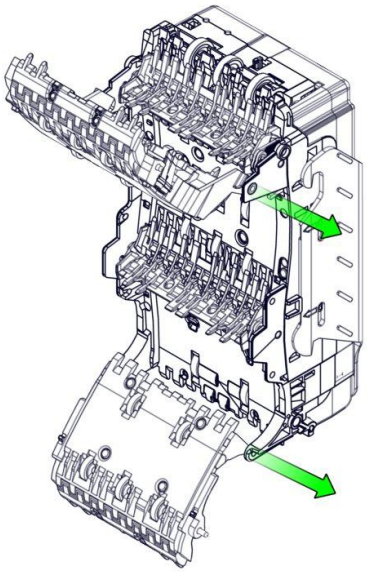


5.4 Transport Module

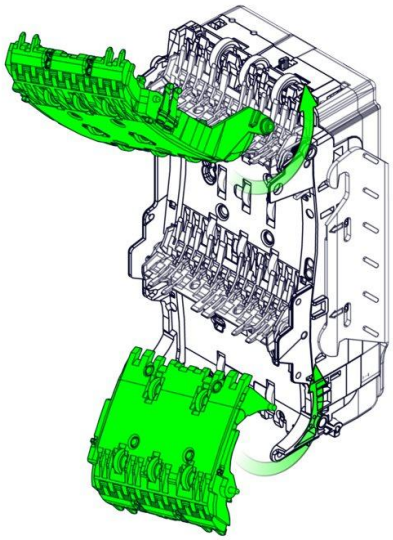
The Transport Module is shown removed from the assembly for clarity. All work is intended to be completed with the Transport attached

- Articulate the Vault Module away from the Chassis. Open the Transport Bill Path Covers

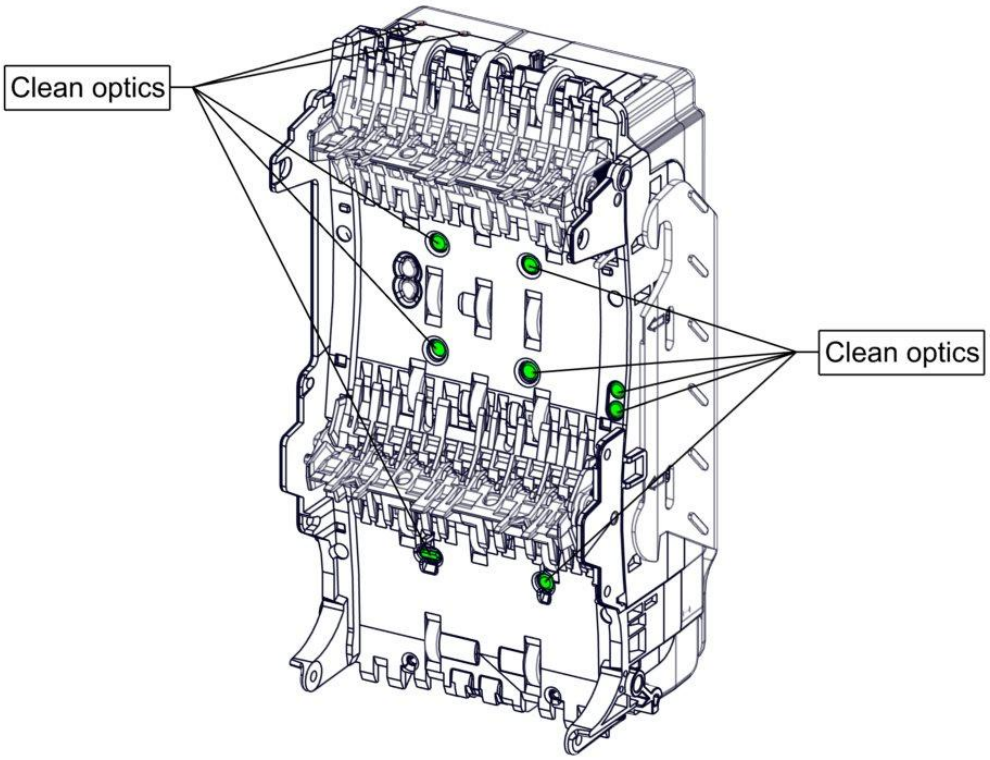
- Locate the cover pivot points and gently flex outwards to gain some clearance for removal



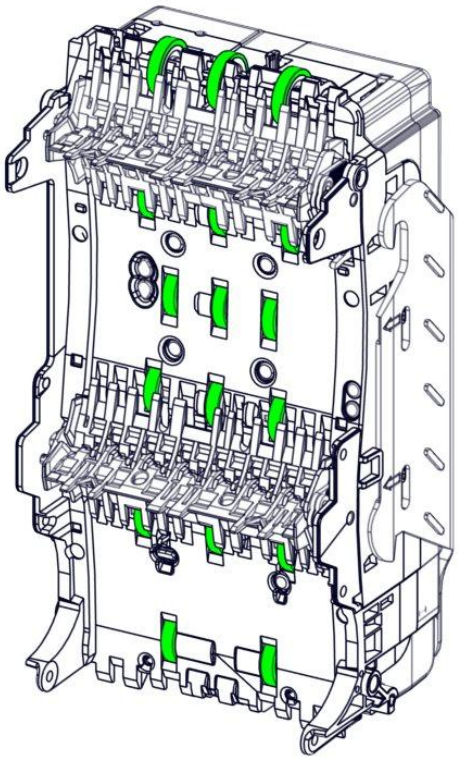
- Remove bill path covers



- With the covers removed, inspect and clean all optical lenses on the bill path, using a lint-free swab or cloth. Ensure that no lenses are cracked or contain scratches

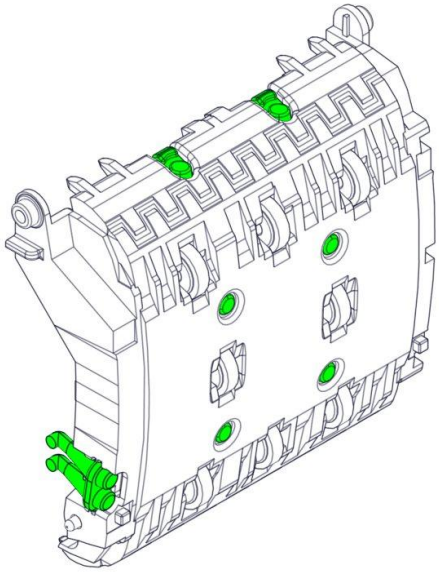


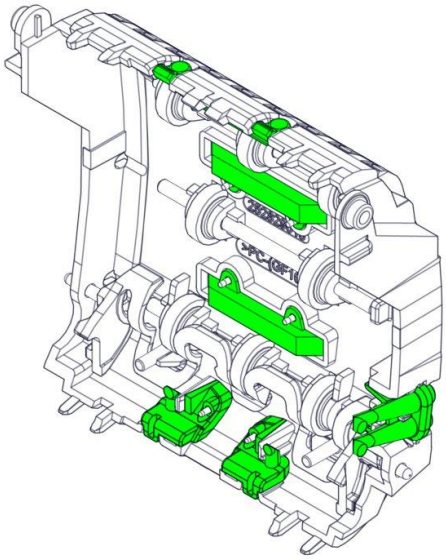
- Using a 5% Isopropyl Alcohol (IPA) solution and lint-free cloth, clean the Transport rollers of any residual build-up (17 rollers total)



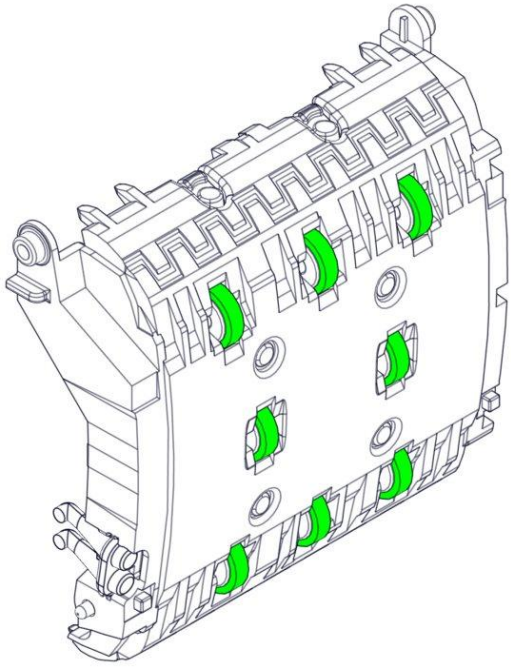
Upper Bill Path Cover

- Clean the prisms and lightpipes of the cover (both sides) with a lint-free swab or cloth



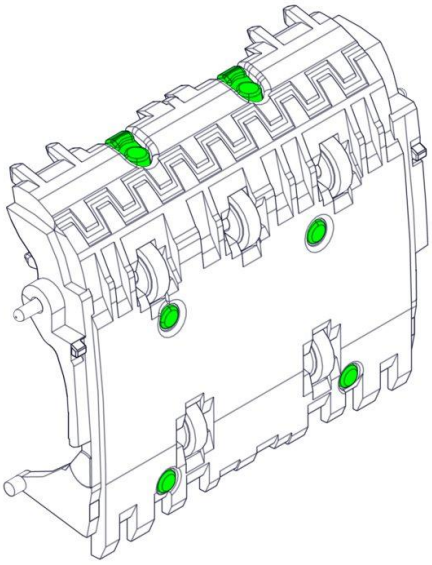


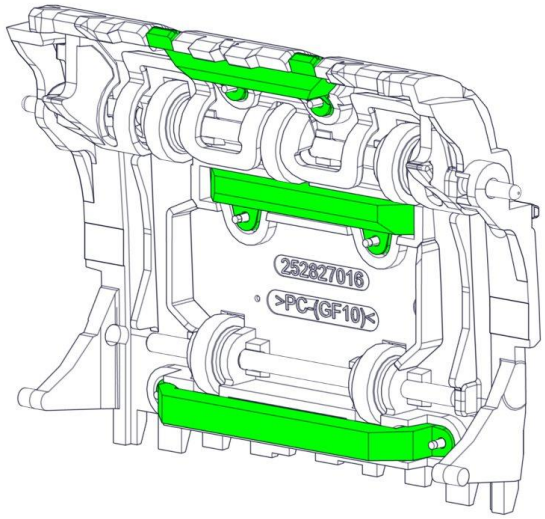
- Using a 5% Isopropyl Alcohol (IPA) solution and lint-free cloth, clean the Transport rollers of any residual build-up (8 rollers total)



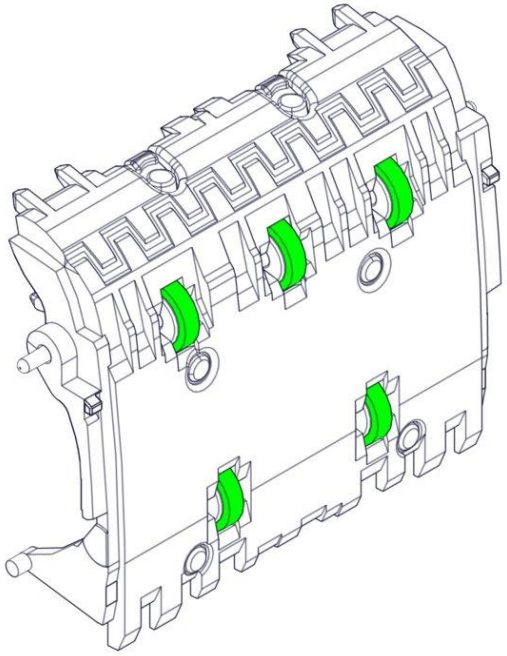
Lower Bill Path Cover

- Clean the prisms and lightpipes of the cover (both sides) with a lint-free swab or cloth



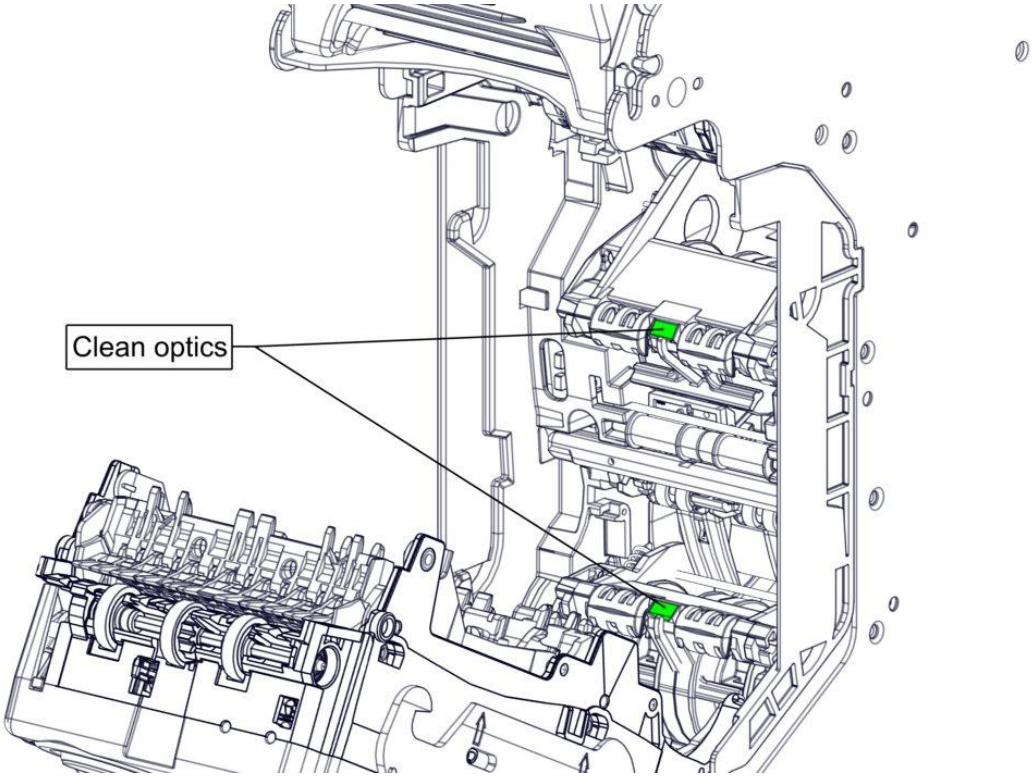


- Using a 5% Isopropyl Alcohol (IPA) solution and lint-free cloth, clean the Transport rollers of any residual build-up (5 rollers total)



5.5 Recycler Module

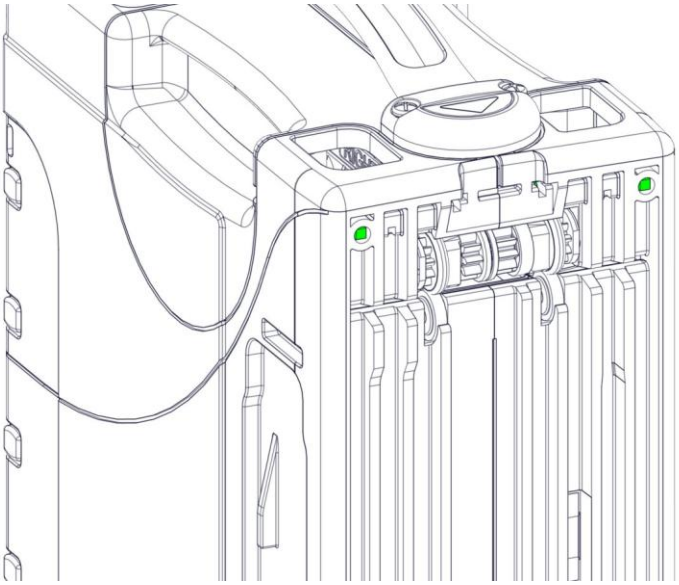
- Remove Vault and open the Transport Module
- Locate and pull down on the Recycler Drum levers (see Section 4.2)
- Clean the Inner Recycler sensor with a lint-free swab or cloth



The recycler tape has been removed from the image to provide better clarity

5.6 Cashbox Module

- Remove the Cashbox module from the Chassis
- Inspect and clean the two Cashbox presence sensors, using a lint-free swab or cloth and 5% Isopropyl Alcohol (IPA) solution



6. UPDATING SOFTWARE

Every new SCR Advance™ Recycler supplied from CPI contains “blank” (or vanilla) software. As such, it will not function in normal operational conditions. Software for the device (application code and required variant/billset) must to be programmed prior to use. There are three methods in which to perform software updates:

1. Cashflow™ STS software tool
2. Field programming module called PPM Advance™
3. Protocol specific commands via software packages trough Serial (RS232) or USB (optional) interface

Please note that an un-programmed unit will not communicate via serial interface. The MMI panel will illuminate all 3 LEDs and flash simultaneously.

6.1 Using Cashflow™ STS Tool for Software Update

Cashflow STS support tool version 7.10 or higher is required for updating SCR Advance™ Recycler software. This tool also requires a license key, which can be obtained from the CPI Technical Support team, upon request. More information about the Cashflow STS installation can be found in STS User Manual.

Ensure that the correct USB drivers are installed for the SCR Advance™ Recycler prior to use. Connect to the device via the front USB port on the Acceptor. Successful connection will reveal a highlighted “Read” button and the unit Serial Number will populate on the lower portion of the window (Image 49)

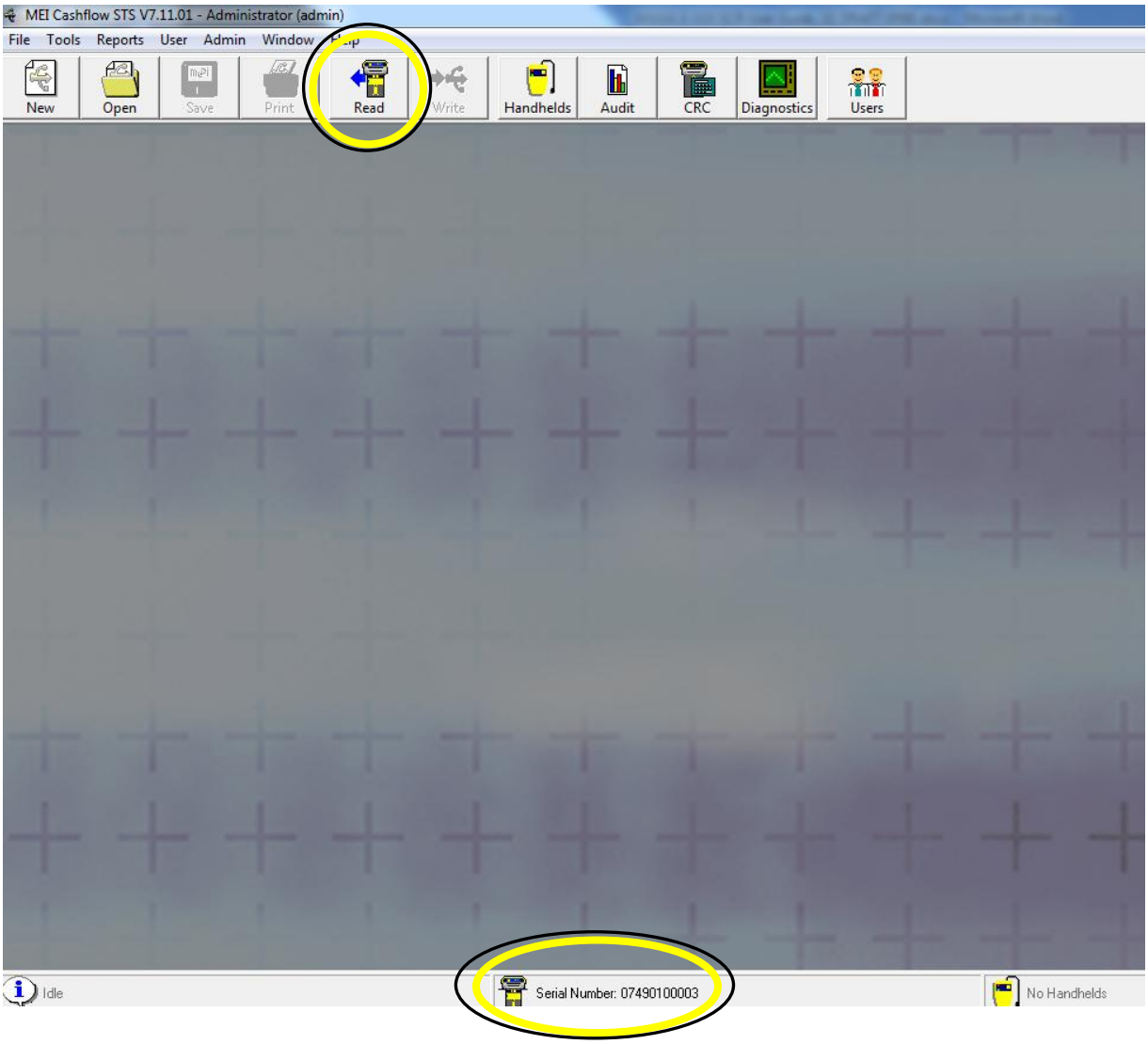


Image 49

The STS Tool will not connect to the device via the EBDS/Serial connection. It exclusively uses the front USB port for service operation.

Once connection to the SCR Advance™ Recycler device is established, select and click on the “Read” button to check the software and configuration.

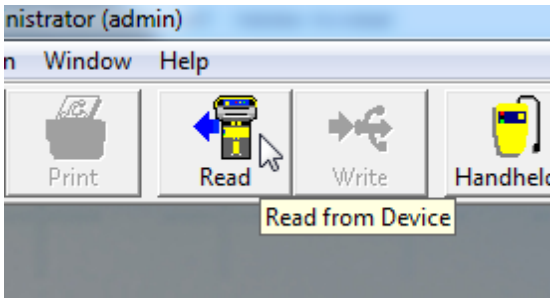


Image 50

Image 51

SCR Advance Recycler Application Code and Variant (Billset) can be applied under the “Modules” section.

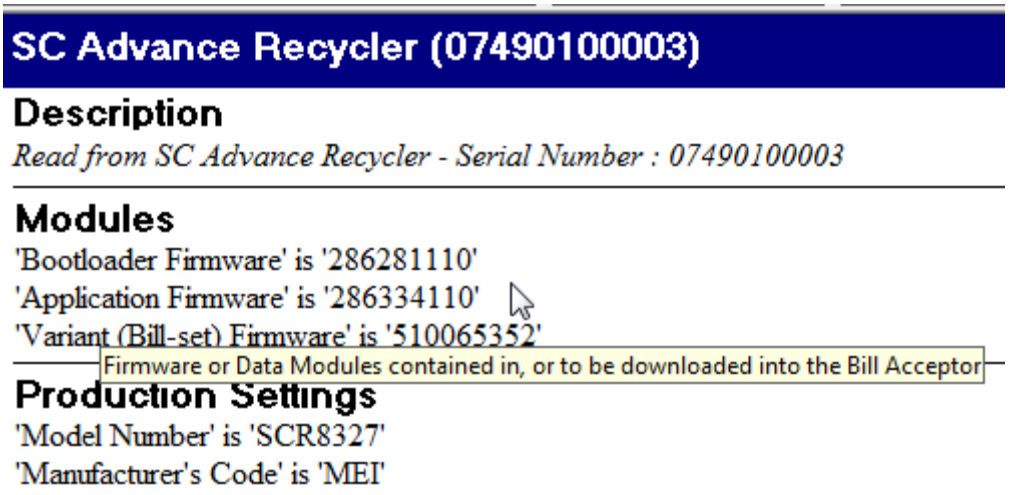


Image 52

Bootloader Firmware should never be updated.

To update the application firmware or variant, click on the “Edit” button on the far-right section of the screen, under the “Modules” section. By selecting the “Include/Change settings” box, a different software version can be applied. Select “Load” to initiate a Windows browser search for the desired files.

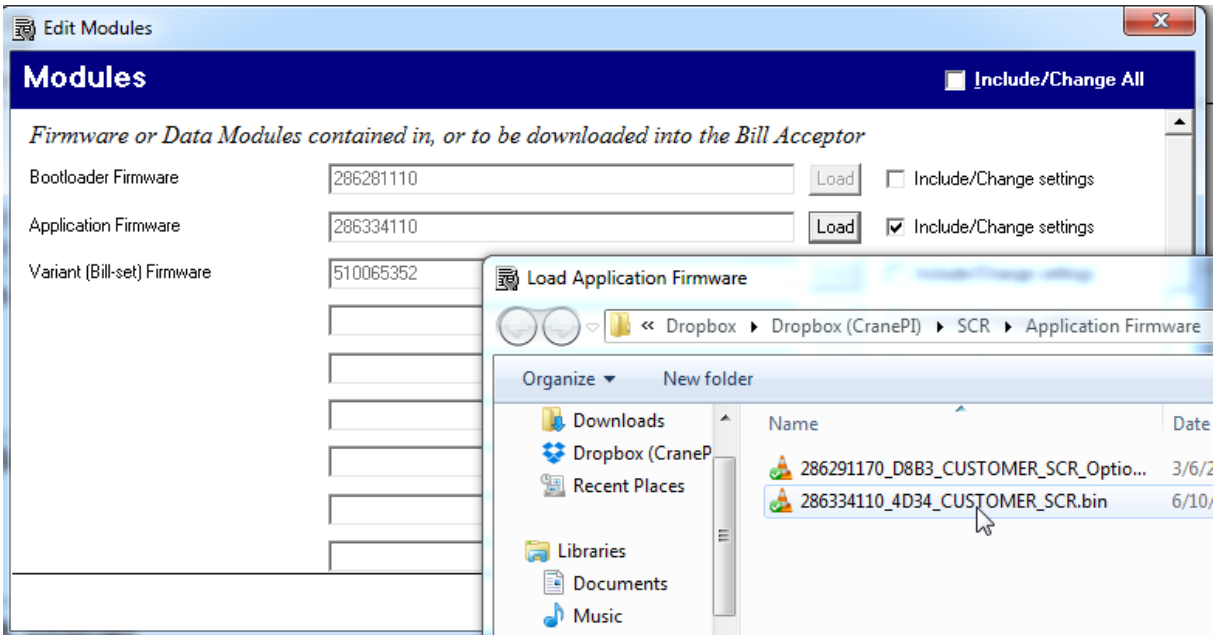


Image 53

Validate that the “User Interface” is set to “REBDS” within the “Customer Configuration” section. Test mode will result in improper communication with the host machine.

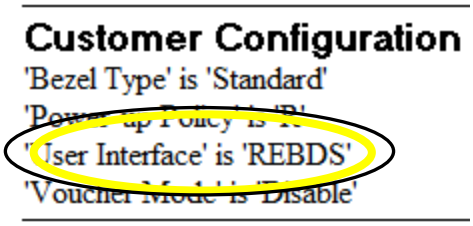


Image 54

Any changes made will be reflected in the home screen via a **BOLD HIGHLIGHT**.

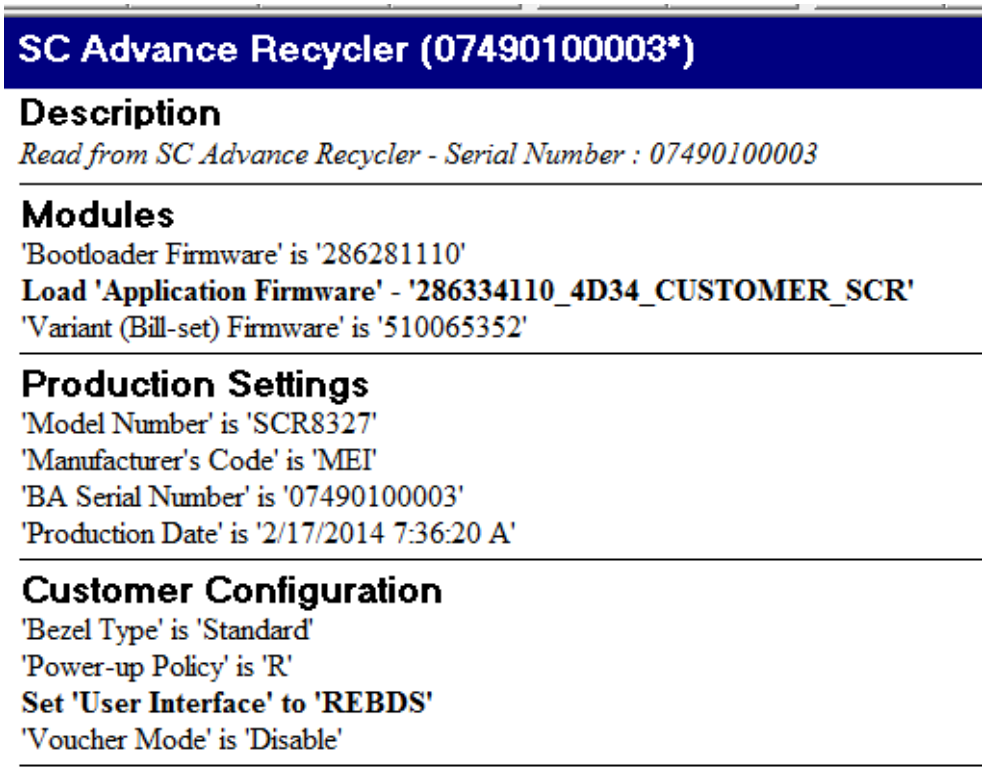


Image 55

When ready, these changes can be written to the device by selecting the “Write” button near the top of the screen.

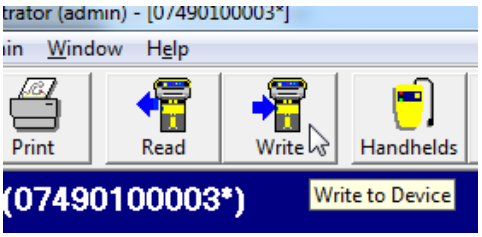


Image 56

Image 57

For more information on how to update software or configuration settings, please see the STS User Manual or integrated HELP section of the program.

6.2 Using PPM Advance for Software Update

The SCR Advance™ Recycler software can also be updated using the PPM Advance™. The application firmware, variant and/or configuration file(s) can be loaded to the handheld device and delivered remotely with the need for a PC. For a detailed description on how to load the required files into PPM Advance™ memory, please refer to the PPM Advance User Manual. This document can be requested by contacting CPI Technical Support.

Before starting the software update procedure, ensure that the unit is connected via the front USB service port to using a standard USB A-to-B cable. When navigating through the PPM Advance™ device screen, select “BA Update” menu and “SC Recycler” submenu to select the software file(s) for update. Press (OK) button to send the file(s) to the device.

The PPM Advance firmware version must be 1.03 or higher to function with the SCR Advance Recycler. If required, an update can be performed using Cashflow™ STS version 7.10 or higher.

6.3 Using Serial Protocol for Software Update

The software can be updated via a special set of protocol commands, which can be integrated into the host machine’s application. This method can be accomplished by use of one of the existing API libraries or direct protocol integration.

For more information please refer to Protocol Integration Manual and Protocol Specification which can be requested from the CPI Technical Support Team.