



CONTAINER DEPOSIT SYSTEMS

Operations & Maintenance (O&M) Manual

Version 4.8 G2.5
May 2023

IMPORTANT SAFETY INFORMATION BEFORE OPERATING THIS EQUIPMENT

The depot owner/operator must review this safety information, and once installed; inspect, assess the machinery for hazards prior to operation.

Note: Further information on how to assess machinery (including an inspection checklist) can be found in the approved code of practice “*Managing the risks of plant in the workplace*” available online from the local WHS regulatory authority.

HAZARDS WARNING

This equipment is designed and manufactured by Container Deposit Systems (CDS) to the best available standards. As a powered and automated plant this equipment uses the following:

- Electrical system (415 VAC)
- Compressed air system (90 PSI/620 kPa)
- Powered conveyor system
- Pneumatic ejectors

- Electronic automated control system

The potential hazards include:

- Electric shock and burns
- Hearing loss and damage
- Entanglement, crushing and friction injuries
- Eye damage from projectiles

TO ENSURE SAFE OPERATION

This equipment is provided with the following safety components:

- Two emergency stop buttons to stop the conveyor.
- An electronic control system with integrated electronic fail-safe devices.
- Safety guards and sensors.
- Remote monitoring capability.
- Safe operating procedures.
- Operator training.
- General operating instructions (public)
- Hazard warning signs/stickers.

The depot owner/operator must:

- Assess this equipment for hazards in their worksite and implement measures to eliminate/minimise any risks to health and safety of workers and others.
- Ensure the machinery is only used for the purpose as described in this manual and the licence agreement.
- Ensure the equipment is supervised, operated, and maintained by trained personnel.
- Require workers to use the selected Personal Protective Equipment.
- Ensure safety guards and sensors are not removed, overridden, damaged or modified.
- Prevent public and unauthorised access to the rear (non-public) side of the machinery.
- Implement an 'Isolation and Lock out' process for accessing guarded areas.
- Inspect, maintain, clean, and repair the machinery in accordance with the instructions and precautions in this manual and the licence agreement.
- Prevent unauthorised modification or reconfiguration of the equipment.
- Comply with all other instructions and precautions in this manual and the licence agreement

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CONTAINER DEPOSIT SYSTEMS MANUAL

2 INTRODUCTION

Container Deposit Systems (CDS) was formed with the intent of harnessing technology to drive improvement in productivity, particularly within recycling depot facilities where manual handling of materials is still predominant. CDS brings decades of experience in the operation and management of beverage container recycling.

Together with our partners, CDS has an unparalleled track record of success in the areas of design, innovation, engineering, manufacturing and automation.

CDS's technology solutions are proudly developed and manufactured in Australia.

3 CDS EQUIPMENT OVERVIEW

3.1 CONTAINER DEPOSIT RETURN DEPOT (CDRD)

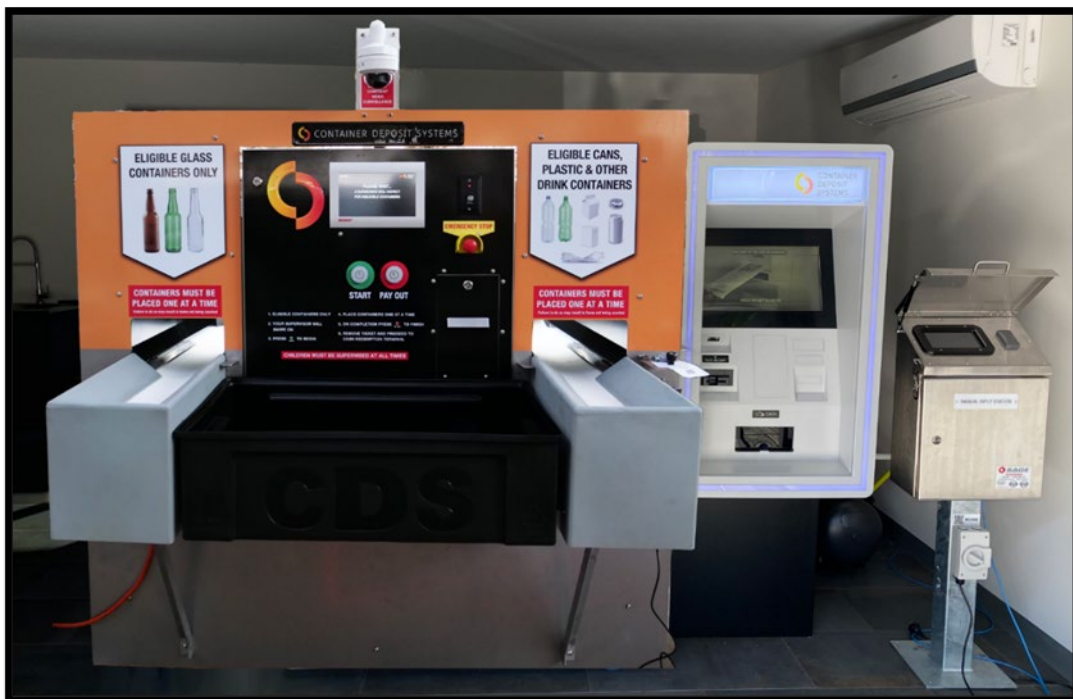


Figure 1. Equipment Overview

Container Deposit Return Depots (CDRD) employ a combination of the CDS devices shown in Figure 1. These devices have been designed to complement one another rather than to be used independently. CDRDs commonly have in

operation one Cash Redemption Terminal (CRT), one Manual Input Station (MIS) and multiple Auto Redemption Terminals (ART).

The network of CDS devices at the CDRD are connected via internet to the corresponding state scheme.

3.2 AUTO REDEMPTION TERMINAL (ART)

The Auto Redemption Terminal is a supervised self-serve machine that allows both the public and depot operators to return all eligible containers in a high speed and accurate manner. The ART has been designed to accurately count and classify all eligible containers.

It consists of two conveyor belts where the customer places only **containers that are eligible** under the container deposit scheme (refer to Figure 2):

- one belt (shown on the *left*, short belt length) is designed for glass. Referred to as the glass lane
- one belt (shown on the *right*, longer belt length) for light fraction. Referred to as mixed lane

A QR coded ticket is printed at the end of each transaction.



Figure 2. Auto Redemption Terminal

3.2.1 AUTO REDEMPTION TERMINAL SPECIFICATIONS

Containers allowed:	Eligible containers under the relevant Container Deposit Scheme
Materials allowed:	Glass on the glass lane Non-glass on the mixed lane
Speed:	1 metre per second
Scheme Reporting:	Automatic reporting to the corresponding scheme provider in time
Internal Reporting:	Grafana reporting tool in time
Printer Paper Type:	CUSTOM VKP 80 II Printers
Printer Paper Size:	80 mm x 130 mm x 25.5 mm
Interface:	Ethernet
Power supply:	5A @ 415VAC 3Ø
Dimensions:	Overall height to top of webcam - 1969mm Overall width - 1922mm Overall length - 3710mm
Options:	Bag Drop Scanner

3.3 MANUAL INPUT STATION

The MIS is intended for use alongside manual counting. It provides a secure method for staff to manually input data from customer returns.

The MIS is fitted with a touch screen where the operator can input the count of customer returns, with the ability to separate the data into the required commodities. A QR coded ticket is printed at the end of each transaction.



Figure 3. Manual Input Station

3.4 CASH REDEMPTION TERMINAL

The CRT is a secure cash dispensing terminal that offers an automated payment of returns upon presentation of a QR coded ticket from the MIS or ART.

The CRT has similar functionality to a typical bank ATM. Customers can either collect cash or have the funds deposited into their nominated bank account.

WARNING - The CRT has a safe rating for business hours only. It is designed to operate with supervision.

Note: At close of business - remove and place all cash in a 24hr secured safe. Leave the CRT security door open overnight to avoid potential damage due to a break in.



Figure 4. Cash Redemption Terminal

3.5 CONTAINER RETURN POINT – SCHEME

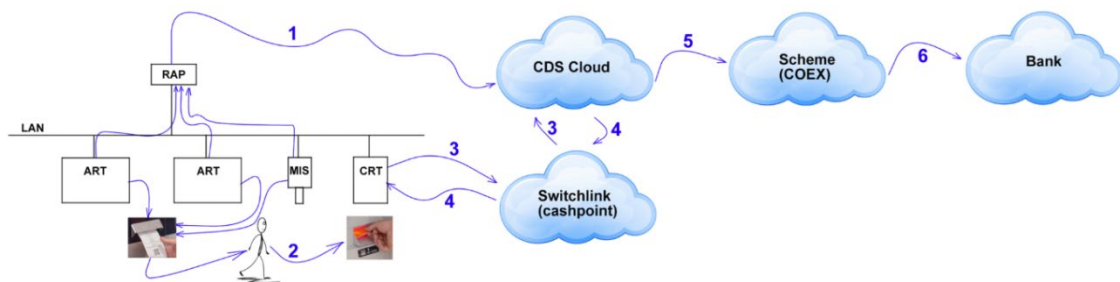


Figure 5. Customer Redemption Process

After a batch has been completed by a MIS or ART, the transaction data is sent to and stored within the CDS cloud. When a QR coded ticket from the MIS or ART is scanned at the CRT for redemption, the ticket is validated against the transaction data in the cloud. Once the ticket has been determined as valid, the transaction data is forwarded to the scheme and payment is provided to the customer.

OPERATIONS

4 AUTO REDEMPTION TERMINAL

4.1 ART DESCRIPTION

The ART features the following components:



Figure 6. Art Front Panel

CONTAINER ENTRY POINTS

There are two container entry points per ART. The left entry point is for eligible glass containers and the right entry point is for eligible non-glass containers (i.e. cans, plastic, etc)

PRODUCT TUB

The product tub is designed to hold the containers before being placed onto the ART belts. The tub is easily removed for cleaning.

RADIO FREQUENCY IDENTIFICATION (RFID) READER



RFID Card
'Allocation Number'

RFID cards are used by operators to interact with the ART and MIS devices to ensure only qualified operators manage the devices. The operator place the provided RFID card near the reader to interface with the device.

RFID cards are provided deactivated. To activate a card, contact CDS support with an allocation name and the RFID 'allocation number' (as seen in figure#). Cards can also be reassigned or deactivated by contacting CDS support.

RFID cards can be allocated between devices separately. For example, a card can be activated at ART's only and not the MIS. This is done on request, submitted in writing from appropriate authority.

10x RFID cards are provided with the initial supply of devices. A further 10x can be provided upon request. Further cards require a purchase order. Contact CDS support for these cards.

CDS recommends the following actions:

- Each operator is given and assigned a personalised RFID card for traceability and accountability.
- To carry a card, 'Card/ID holder' lanyards are recommended to prevent damage to the card.
- When a card name change is required, contact CDS support for the reassignment of the card. This improves traceability and accountability.
- When a card is damaged/non-functional/lost contact CDS support to deactivate the card.
- Ensure staff always keep their RFID card on them and not left lying around the depot. Cards should be handed into the relevant supervisor at the end of a shift.

- Site should maintain their own records for RFID card allocation/change of hands.

CDS discourages the following actions:

- DO NOT hang RFID card on the face of the MIS or ART. otherwise any member of staff/public can use the card with no traceability.
- DO NOT use cards communally between various operators, this removes all traceability and accountability.
- DO NOT Hole punch a card as this can cause damage to the chip or wire embedded in the card that acts as an antenna for the RFID reader. Damaging this wire/chip will compromise the functionality of a card.

*CDS Support: 24/7 phone line (08 8166 2829)
email (support@containerdepositsystems.com.au).

TOUCH SCREEN (HUMAN MACHINE INTERFACE (HMI))

The HMI screen displays the status on the ART. The buttons on the screen allow the operator to navigate through a variety of modes to simplify the use and maintenance of the ART as explained throughout this manual.

EMERGENCY STOP

There are two emergency stop buttons; one mounted below the Touch Screen on the front of the ART and the other mounted on the rear next to the aluminium ejection point.

The emergency stops if pressed will stop both conveyors immediately, these must only be pressed in an emergency and customers must be made aware of its function.

START AND PAY OUT BUTTON

The '**START**' and '**STOP**' buttons are used to control the belts. A batch begins when the '**START**' button is pressed and will finish when the '**STOP**' button is pressed.

PRINTER

The panel mounted printer prints a QR coded ticket at the end of each transaction. It records the refund amount of the batch and a breakdown of the containers returned.

CONTROL PANEL

The control panel houses the electronic control and communication modules.

EJECTION POINTS

The mixed lane has two pneumatic ejection points (refer to Figure 7):

- first for aluminium
- second for clear PET

Note: clean and dry air supply is required to power the pneumatic ejection nozzles

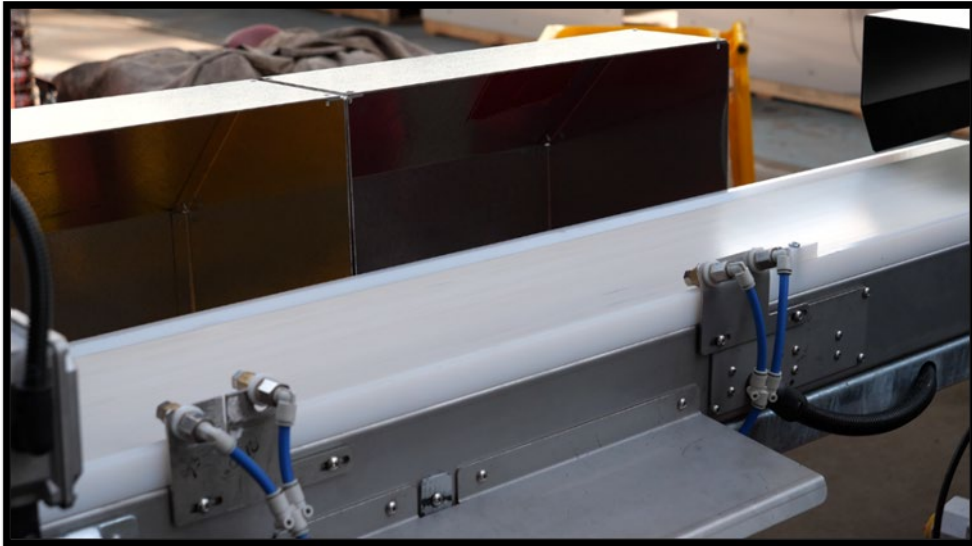


Figure 7. Mixed Lane Ejection Points

CAMERAS

There are three cameras fitted to the ART. Two of the cameras are fitted to the rear of the ART. These cameras are used for product detection and are housed in a camera box mounted over each conveyor.

The third camera is front facing, and it is used for auditing purposes. It provides a clear view of both container entry points and as such allows CDS and the depot operator to analyse exactly what is placed on each belt during transactions.



Figure 8. Audit Camera

4.2 ART TECHNOLOGY CAPABILITIES

The ART is designed to detect and classify eligible deposit containers in any condition. This capability to detect eligible containers correctly is dependent on the proper use and upkeep of the machine. This includes:

- Storage and operation of the ART is undercover and out of direct sunlight
- Conveyor belts are clean and dry when operating the machine
- Containers are placed correctly onto the conveyor belts, i.e. placed one at a time and clearly spaced apart so they are not touching

Failure to follow the instructions for correct use and upkeep may result in the machine not behaving to its full capabilities.

4.3 ART SAFE OPERATING PROCEDURE (SOP)

DO NOT use this equipment unless you have been instructed in its safe use and operation and have been given permission

4.3.1 PERSONAL PROTECTIVE EQUIPMENT

When working on the ART the following PPE should be used:



4.3.2 PRE-OPERATIONAL CHECKS

- Wear the appropriate PPE
- Ensure the workspaces and walkways have no slip/trip hazards present
- Ensure the conveyors belts are clean and clear of foreign matter (broken glass, bottle caps, straws etc.)
- Ensure belts can rotate and are not glued to the conveyor bed. Syrup tends to build up in between the conveyor belt and the stainless-steel bed and can glue them together
- Clean off any visible stains and remove objects stuck to the ART conveyor belt surfaces.
- Ensure the conveyor belts are not damaged or worn
- Drain and clean the ART product tub
- Ensure the air supply is connected and pressurised
- Drain the airlines and water collection bowls. Failing to do so the ejections might be compromised and damage to the solenoid could occur
- Immediately clean up any spillages and use appropriate signage
- Ensure any external conveyors or collection boxes are clear and safe to operate
- Ensure the area has adequate lighting

4.3.3 SITE COMPLIANCE INSPECTION

Site compliance inspections are implemented to ensure the machines are maintained appropriately. A minimum of an inspection a year will be performed by CDS. The inspection sheets can be found in **Error! Reference source not found.** and **Error! Reference source not found.**

4.4 PRE-OPERATIONAL START UP PROCEDURES

The ARTs have a start-up procedure that will need to be followed before being used as follows:

- Power up the ART by switching the power isolator on as seen in Figure 9



Figure 9. Power Isolator Location

- The ART start-up status will be displayed on the screen



Figure 10. System Start up

- When the Screen requests calibration, press the **‘START’** button. The ART will automatically stop the belts when calibration has been completed

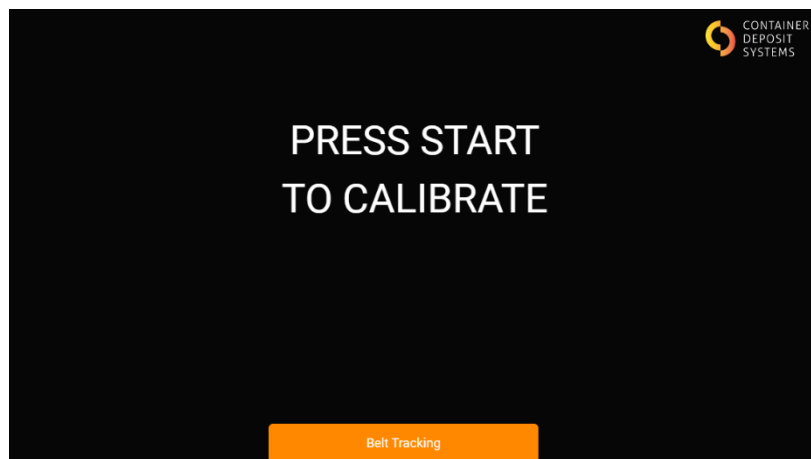


Figure 11. Press Start to calibrate

4.5 BATCH OPERATIONAL PROCEDURE

The ART is designed to be used under supervision of a trained operator and is ultimately a customer self-service device.

BEFORE STARTING A TRANSACTION:

- The operator should introduce the customer to the device and discuss the various safety hazards and risk controls including the emergency procedures

WARNING: CHILDREN UNDER 12 MUST BE SUPERVISED AT ALL TIMES

- The customer should place the eligible containers in the front product tub

- The operator should be vigilant whilst supervising customers. They must ensure the customer is only returning items that are eligible for redemption
- The operator should explain to the customer how to separate glass from light fraction accordingly and only place one eligible container at the time on the conveyor belts

TRANSACTION PROCEDURE:

- Ensure the ART is in the home screen as displayed on Figure 12. Locked Screen

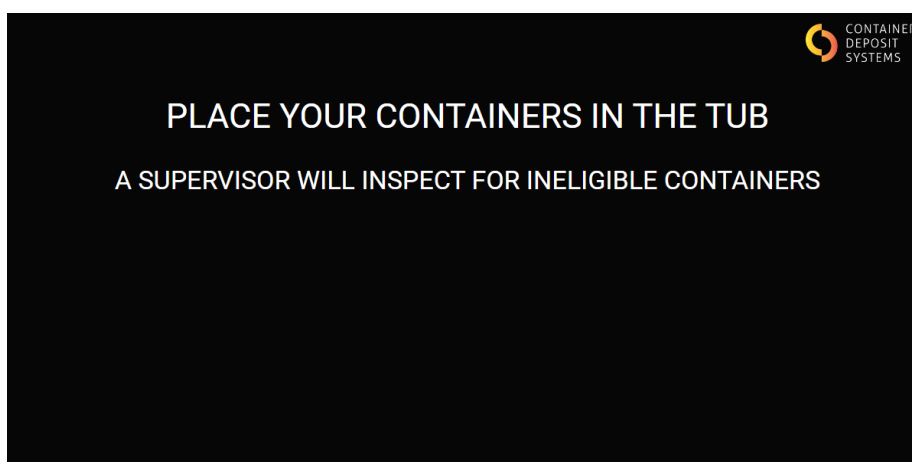


Figure 12. Locked Screen

- The operator must inspect the front tub and remove any ineligible containers
- The operator uses the RFID card to swipe the RFID reader to begin the transaction cycle.
- The screen will change to display 'Press Start to Begin' as seen on Figure 13. Press Start to Begin

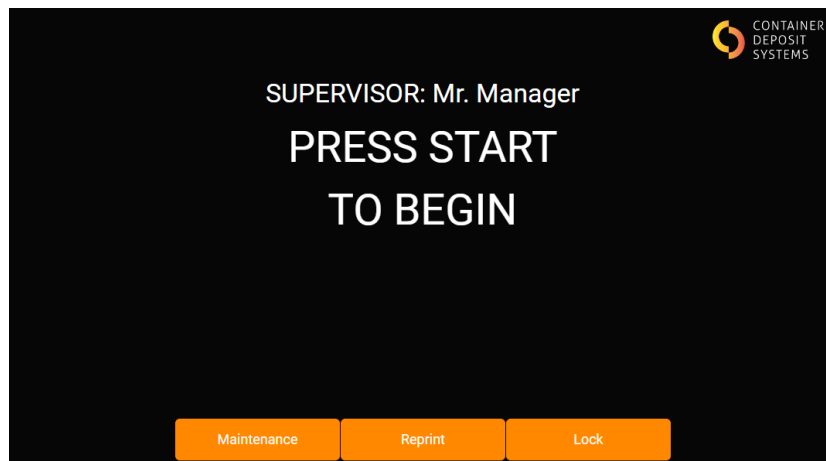


Figure 13. Press Start to Begin

- The customer presses the '**START**' button
- The customer places only eligible containers on the corresponding belts with the correct spacing. Containers will be counted on the screen as seen in Figure 14. Batch. For more information regarding the ART capabilities, refer to section 4.2. ART Technology Capabilities

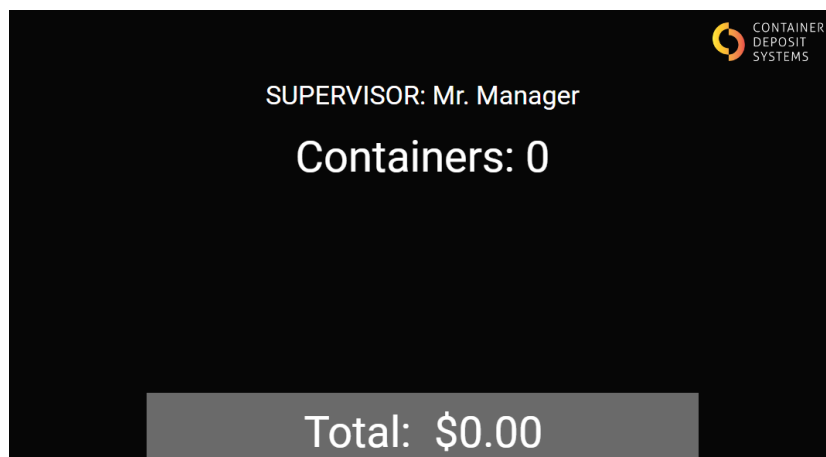


Figure 14. Batch

- The ART will pause if the number of containers reach 250. The screen will display the notification shown in Figure 15. Paused after 250 containers

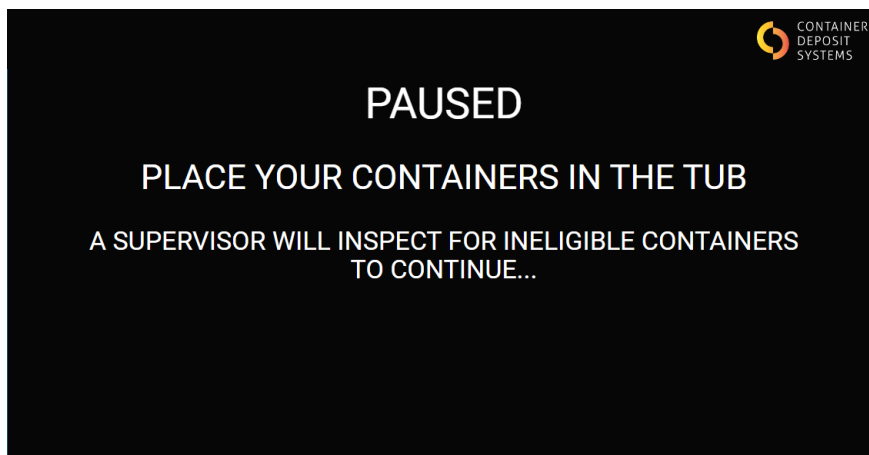


Figure 15. Paused after 250 containers

- The customer should reload the front product tub with eligible containers
- The operator must inspect the front tub and remove any ineligible container
- The operator uses the RFID card to swipe the RFID reader to resume the transaction cycle
- The screen will change to display 'Press Start to Continue as seen on Figure 16. Press Start to continue

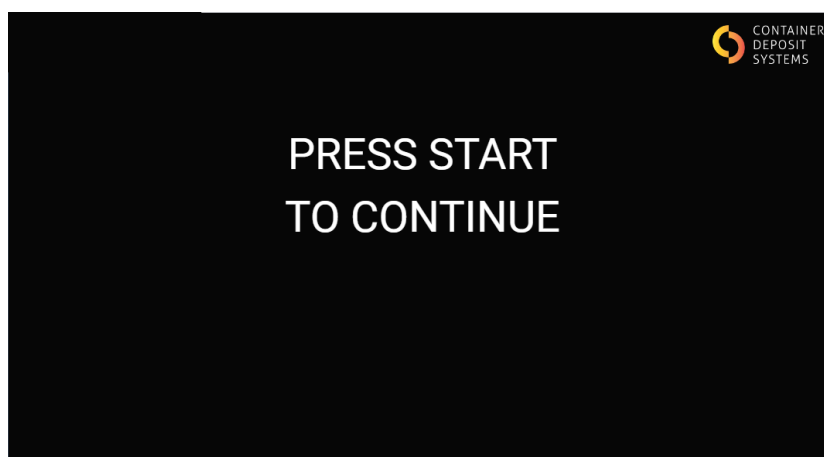


Figure 16. Press Start to continue

- The customer presses the green '**START**' button to continue
- When finished, the customer presses the red '**STOP**' button

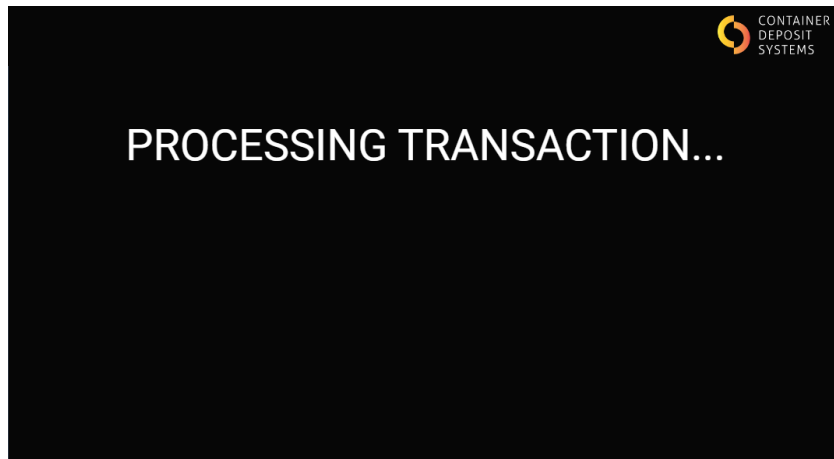


Figure 17. End of Transaction

- The belts will run the 'Automatic Belt Check' (refer to 4.5.1. Automatic Belt Check)
- Printer will print a QR coded ticket and the screen will change as seen on Figure 18. Transaction complete

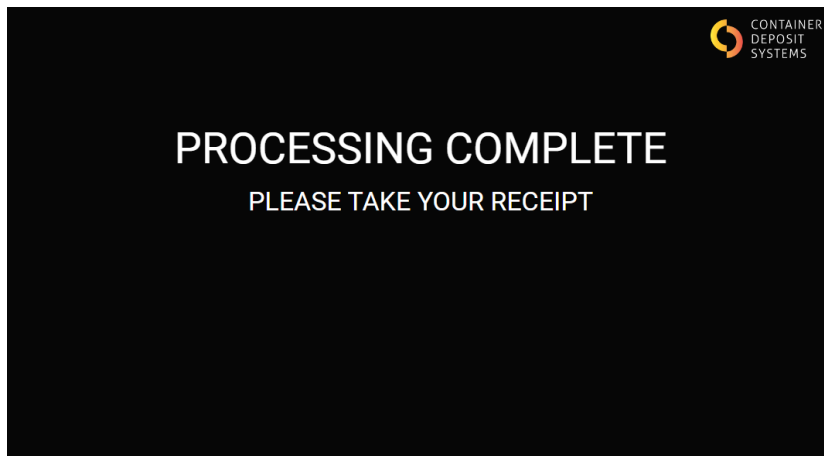


Figure 18. Transaction complete

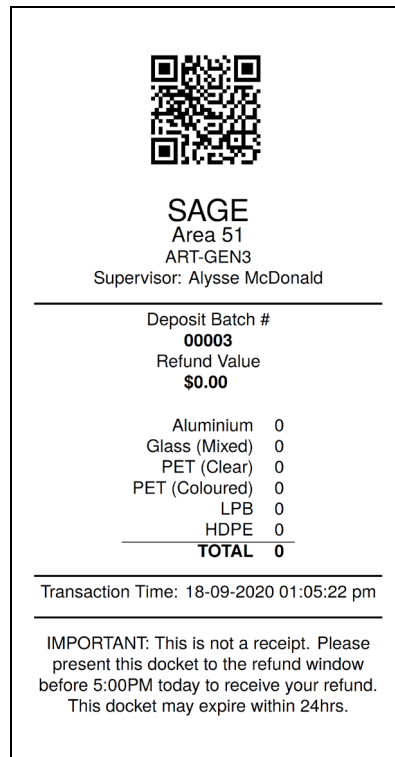


Figure 19. Ticket Printed

POST-TRANSACTION PROCEDURE:

- The customer takes the printed ticket to the CRT
- The customer scans the ticket on the slot marked ‘QR code’

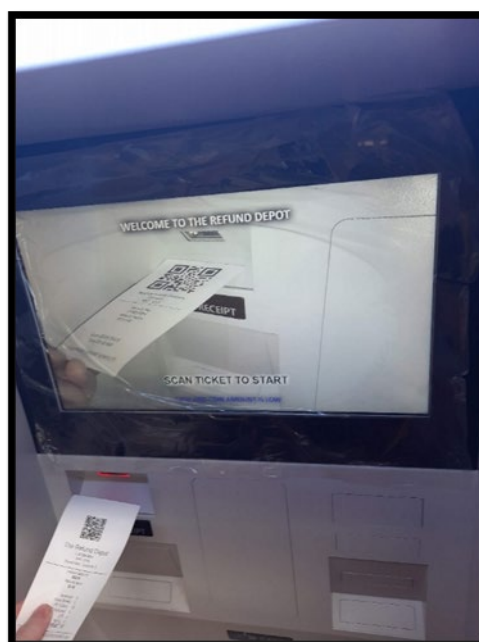


Figure 20. Scan QR Code

- The customer redeems their cash or selects scheme pay which will deposit money into their nominated bank account at the CRT

For detailed explanation about the use of the CRT refer to the Cash Redemption Terminal manual.

4.5.1 AUTOMATIC BELT CHECK

When the '**STOP**' button is pressed during a batch, few automated steps that will take place:

- The belts will continue to run for a few seconds. During this process, the ART is checking the belts to ensure there are no marks or items that could cause errors
- **Note:** Ensure no container is put through the ART during this process
- If a stain or item is identified by the system, the screen will display 'X lane requires cleaning' specifying the lane, as seen on Figure 21. Mixed lane requires cleaning

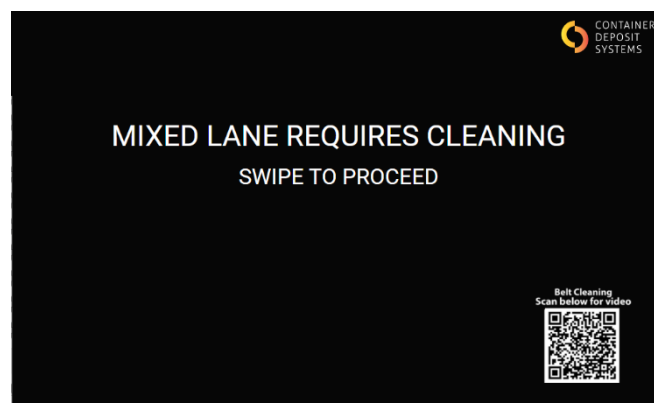
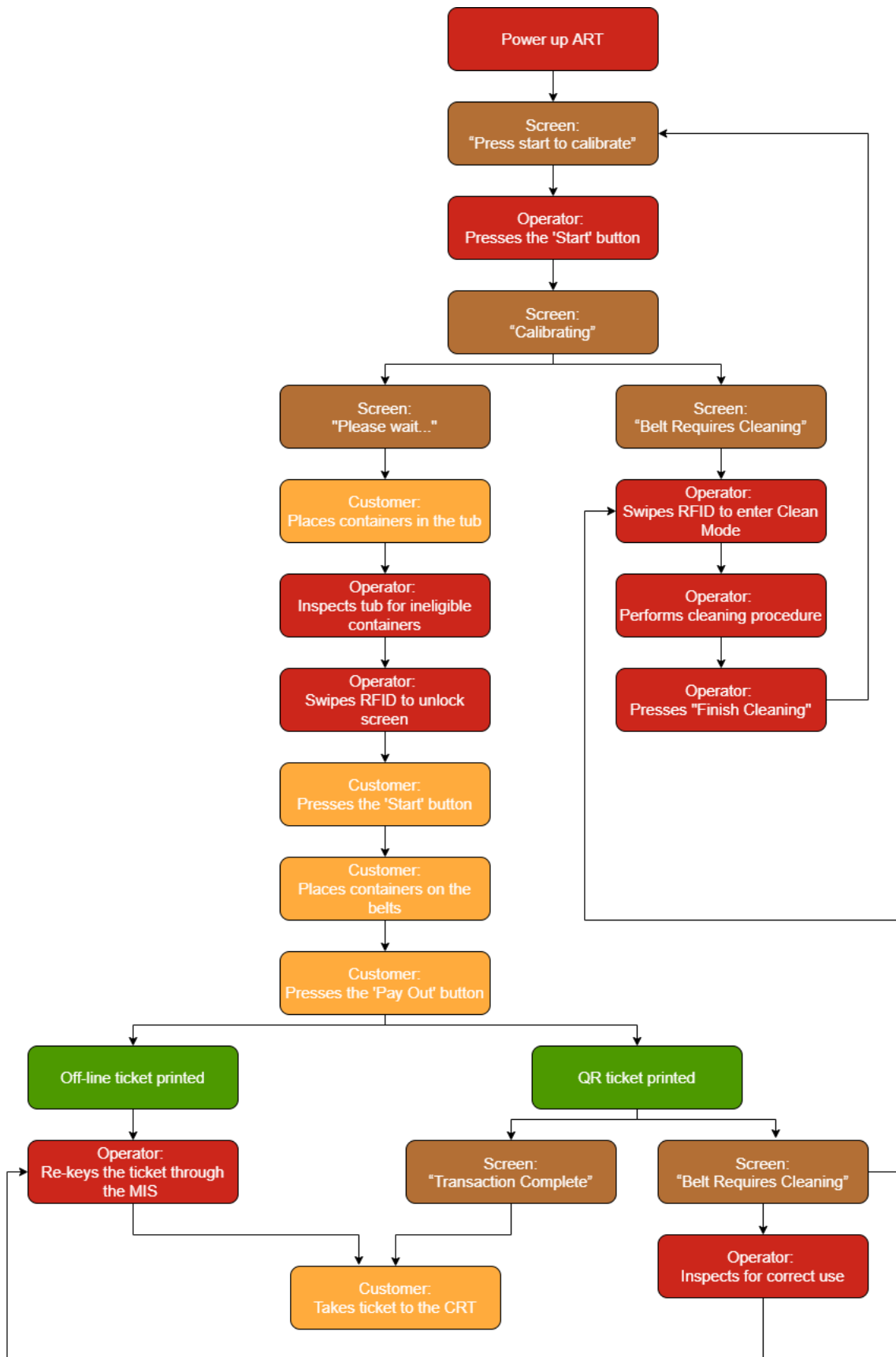


Figure 21. Mixed lane requires cleaning

The operator should swipe the RFID card to start the cleaning process. Refer to section 7.4.3. Belt Cleaning Procedure for detailed instructions on how to correctly clean the belts.

4.5.2 OPERATION FLOWCHART



4.6 PROCESSING A BAG-DROP

Container Deposit Return Depots with an appropriately configured ART can process bags of containers that have been dropped off by the customers. A barcode reader can be found on the righthand side of the ART, beside the mixed lane container entry point.



Figure 22. Barcode Reader location



Figure 23. Bag Drop scanner

To process a bag-drop, follow the steps below:

- Ensure the ART is in the home screen as displayed on Figure 24. Home Screen

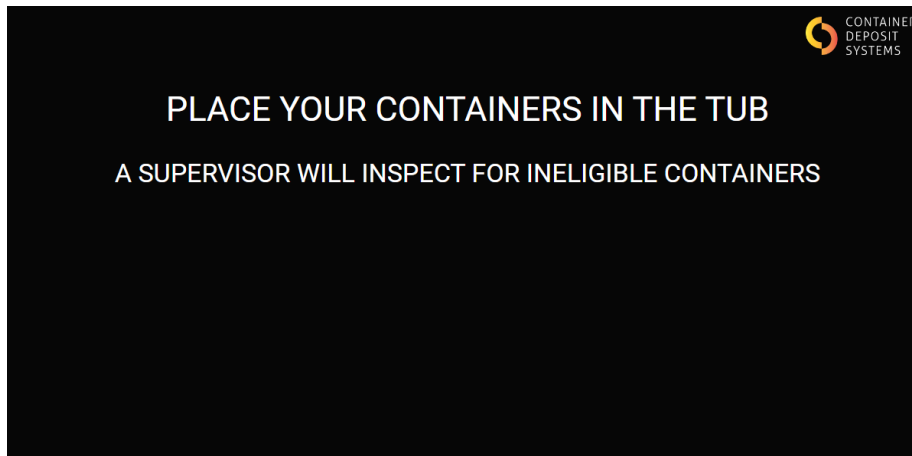


Figure 24. Home Screen

- Swipe the RFID card to unlock the screen
- Use the barcode scanner to scan the QR code on the ART located beside the barcode bracket.
- The screen will change to the Bag-Drop menu and the Site ID will be automatically entered as seen on Figure 25 Bag-Drop site ID (be aware Site ID will differ for each site)

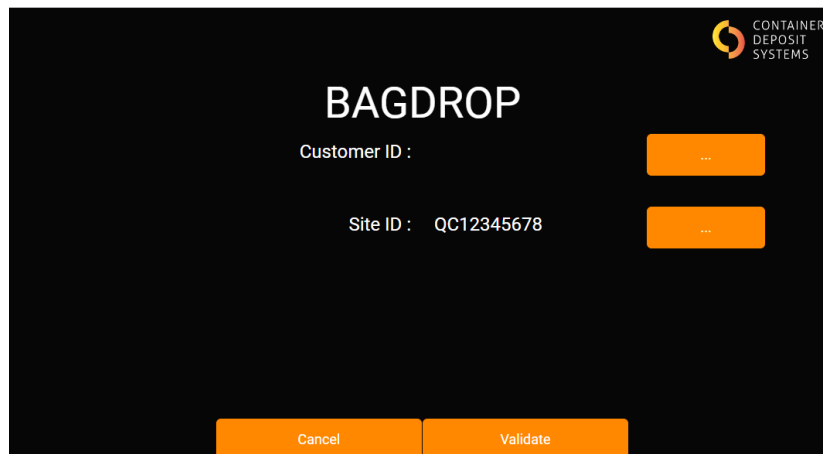


Figure 25 Bag-Drop site ID

- Enter the customer ID by:
 - Using the barcode scanner to scan the code on the customer's bag
 - or
 - Enter the customer details manually by clicking on the screen on the button '...' next to customer ID
 - Use the keypad to enter the customer number and press 'Enter'

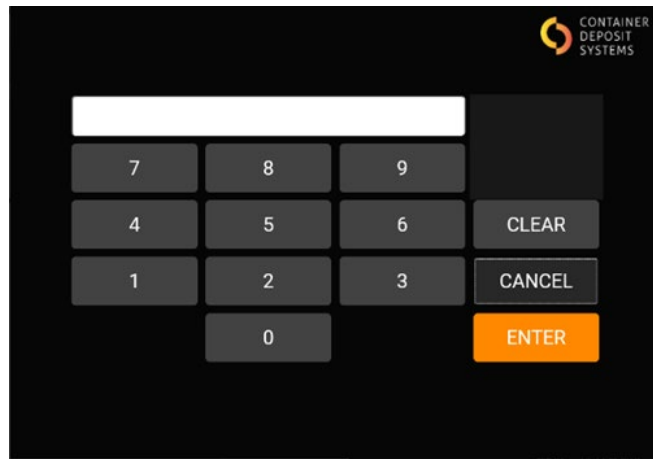


Figure 26 Bag-Drop keypad

- Ensure the site ID and customer ID are entered correctly

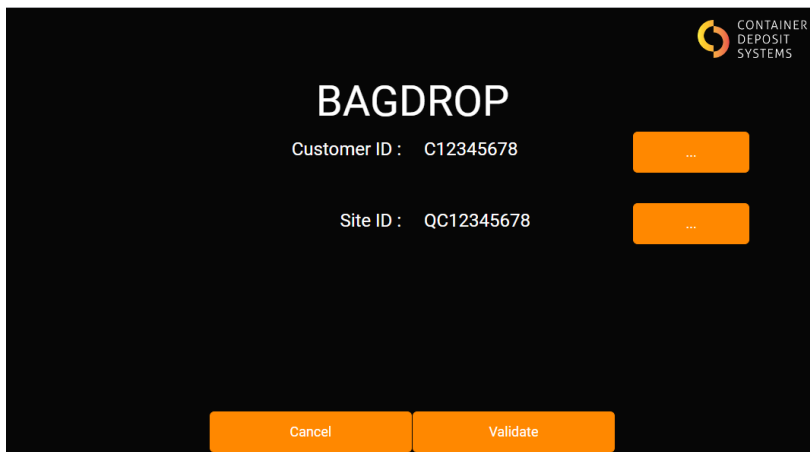


Figure 27. Bag-Drop Site and Customer ID

- Press 'Validate' at the bottom of the screen

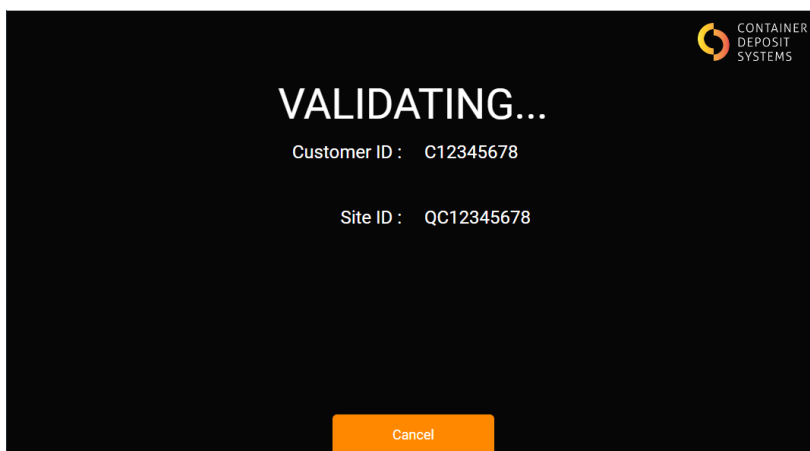


Figure 28. Bag-Drop validating

- When details are entered correctly the screen will display ‘Press Start to Begin’

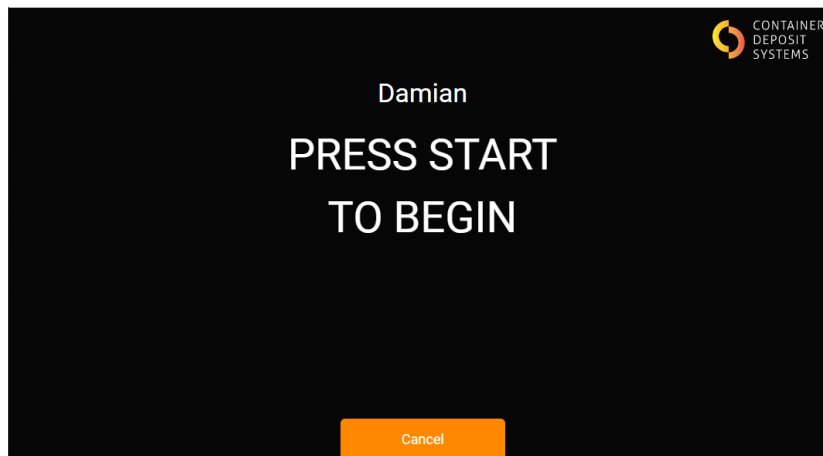


Figure 29. Home Screen

- Press the green '**START**' button
- Place only eligible containers on the corresponding belt with the correct spacing. Containers will be counted on the screen. Customer ID, Site ID and operator's name will be displayed on the screen

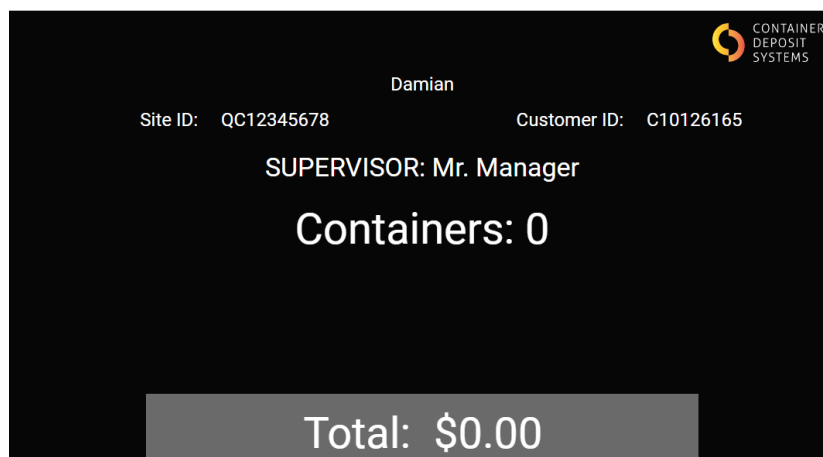


Figure 30. Bag-Drop transaction

- When finished, press the '**STOP**' button to complete the transaction
 - The batch details are automatically communicated to the corresponding state scheme and payment to the customer will be processed by the scheme
 - A receipt is printed by the ART and should be kept according to depot record requirements

Note: there is no cash payment option for bag-drop

4.7 SPECIFIC PROCEDURES

4.7.1 QR CODES

When there is a fault on the ART, a fault screen will appear. Each fault screen on the ART has a QR code to direct you to a video which can assist you to resolve the fault.

QR codes are also located on the maintenance screens to direct you to step-by-step instructions for the relevant maintenance required.

To access the QR code video:

- Scan the QR code with the camera on your smartphone and a link will appear

Note: On some phones, the link may not appear when scanning the code using your phone's inbuilt camera. Instead, go to the app store and download a free QR scanner app. Use this app to scan the code instead.

- Click the link to be redirected to the relevant video
- Follow the directions in the video to resolve the fault

4.7.2 ART EMERGENCY STOP RECOVERY

When an emergency stop has been pressed, a fault screen will appear.

Follow the steps below to reset the fault after an Emergency Stop button has been pressed.

- The screen will display which E-Stop has been depressed as seen on Figure 31. Front E-Stop Depressed
- Ensure the area is safe to run the belts again
- Release the E-Stop
- Press the 'Reset' button on the screen

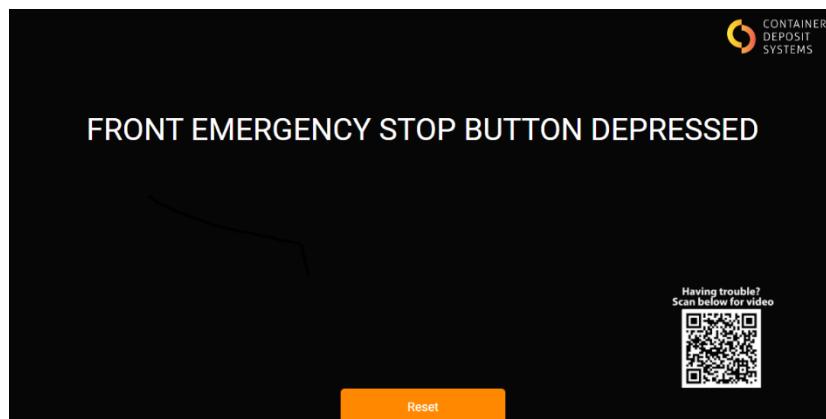


Figure 31. Front E-Stop Depressed

If an E-Stop button is pressed during a batch, a QR coded ticket will be printed and customers can redeem their return at the CRT.

4.7.3 No INTERNET CONNECTION

The ART requires internet connection when finishing a batch to be able to publish the batch information to the state scheme.

Before starting a batch, the ART will alert the operator when there is no internet connection as seen on Figure 32.

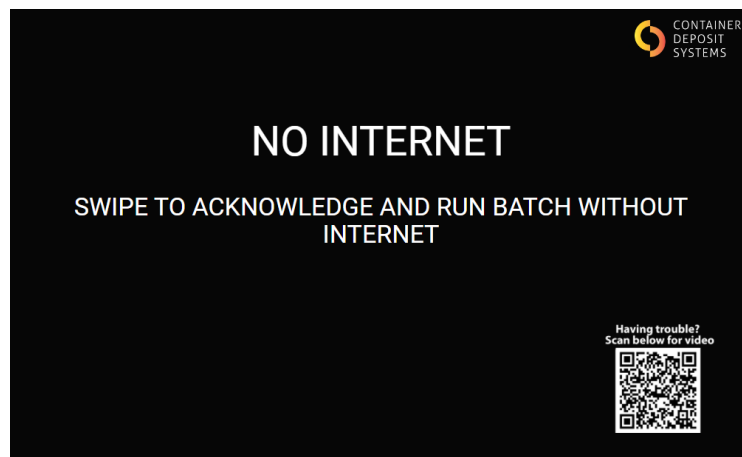


Figure 32. No internet warning

The ART can be run with no internet connection by swiping the RFID card to acknowledge the issue. Before starting a batch the screen will display a red cloud and a warning sign to alert the operator about the issue as seen in Figure 33. No internet warning.

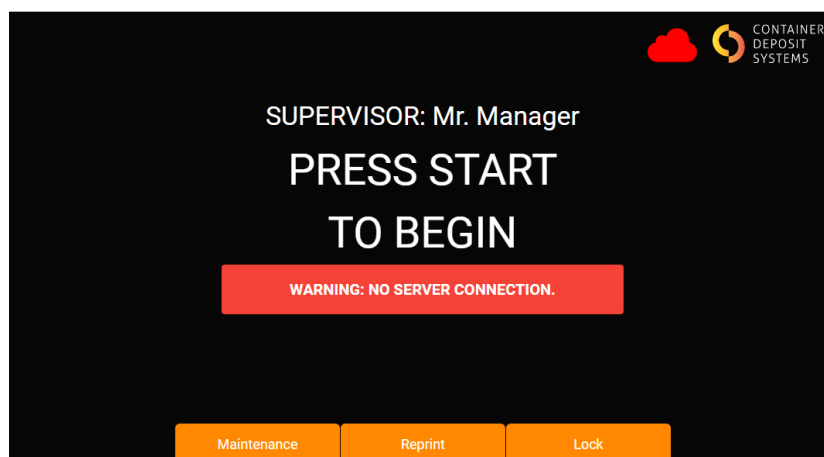


Figure 33. No internet warning

If internet connection is lost during a batch, a red cloud will be displayed on the screen, however the batch will not be interrupted.

Batches created with no internet connection will print an off-line ticket (not QR coded) as seen in Figure 34 and they will not be valid at the CRT. To create a redeemable ticket, the units can be re-keyed through the MIS.

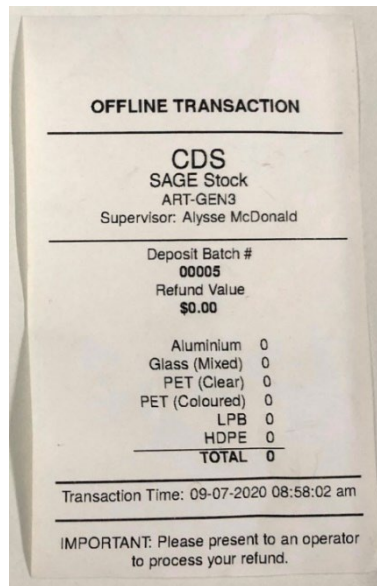


Figure 34. Off-line ticket

4.7.4 OFF-LINE MODE

The operator can manually put the ART in off-line mode by following the instructions in section 7.4.1. Off-line mode.

This can be used for internal test batches since the transaction will not be published to the corresponding state scheme.

If Off-line mode is enabled the screen will display a warning on the screen as seen on Figure 35.

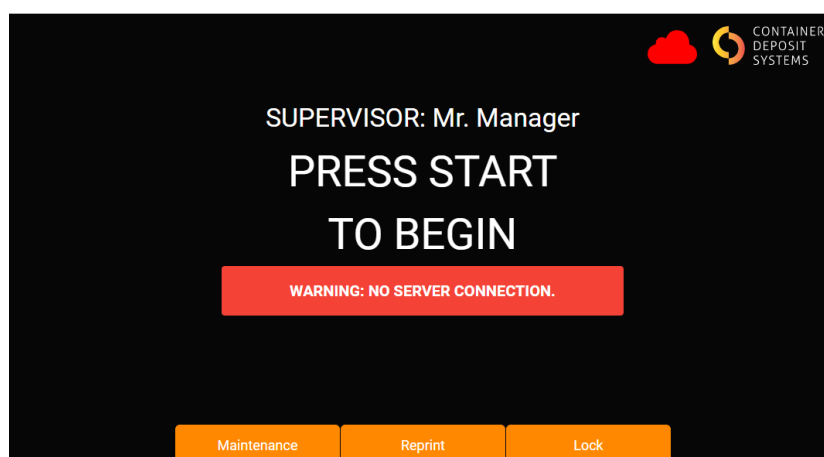


Figure 35. Off-line Warning on Screen

4.7.5 WRONG LANE DETECTION ALARM

An alarm is triggered after 5 containers have been placed on the incorrect lane and the belts will pause. Incorrect containers are considered as:

- Any glass placed on the mixed lane
- Any light-fraction placed on the glass lane

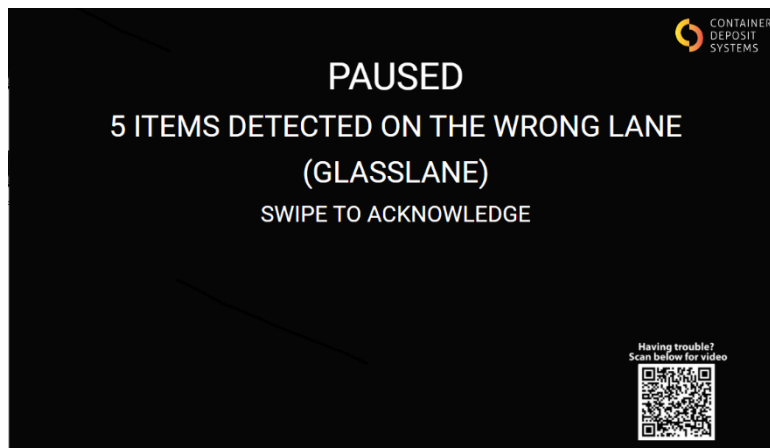


Figure 36. Screen Paused

This alarm provides an opportunity for the operator to review with the customer. After inspection, the operator can swipe the RFID card to acknowledge the wrong item detection and allow the customer to continue with the return.

Note: Having this issue come up repeatedly could indicate that the ART is misclassifying. If this is the case refer to section 11.10. Incorrect Counting or Misclassifications.

This alarm can be disabled following the steps in section 7.4.2. Wrong item detection.

If the alarm is disabled, the screen will display a warning as in Figure 37.

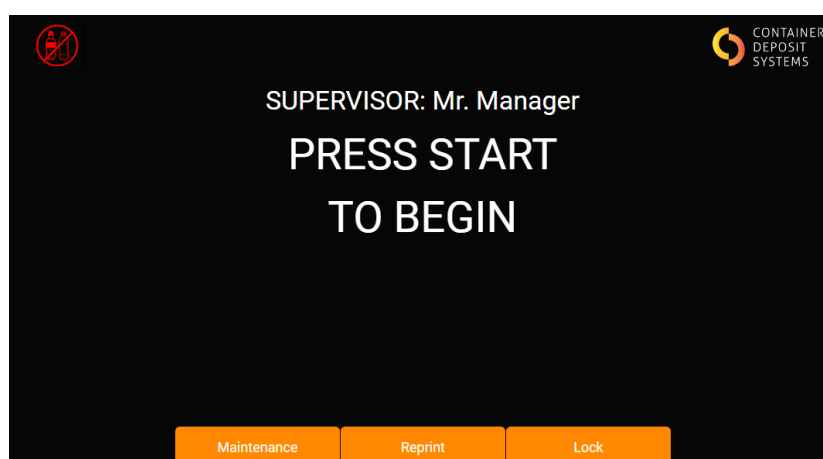


Figure 37. Wrong Item Detection Warning

4.7.6 BELT CLEANING REQUEST

If the ART displays 'X lane requires cleaning' specifying a lane, as seen in Figure 38. Mixed Lane requires cleaning, follow the steps below.

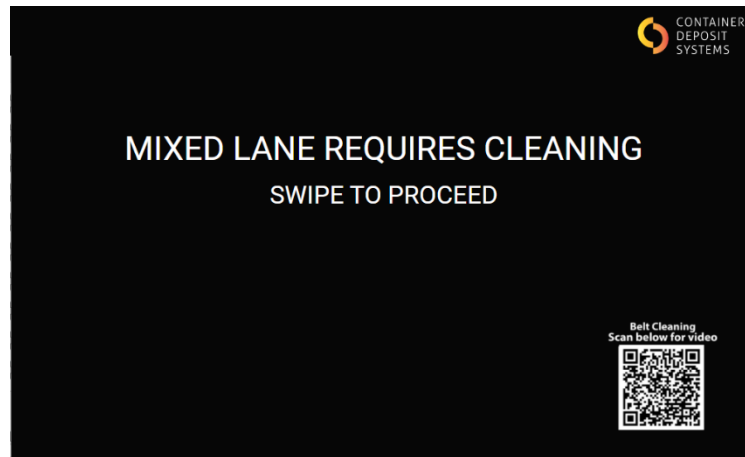


Figure 38. Mixed Lane requires cleaning

- Swipe the RFID card to start the cleaning process
- Refer to section 7.4.3. Belt Cleaning Procedure for detailed instructions on how to correctly clean the belts

4.7.7 SYSTEM TIMEOUT

The ART will timeout after 3 hours of inactivity and will request recalibration to ensure the best performance.

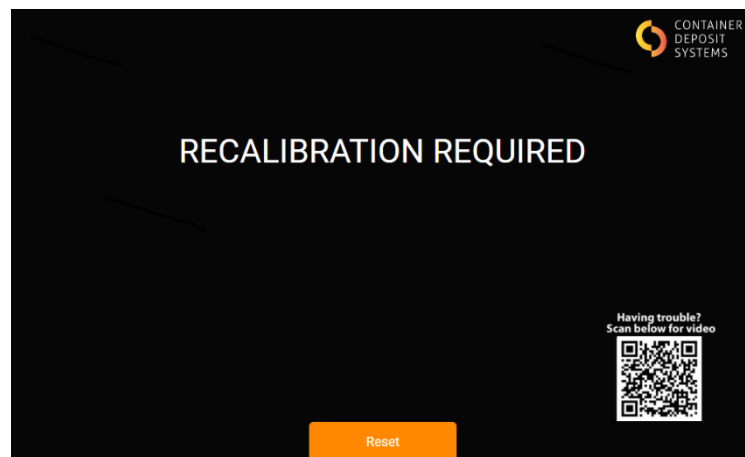


Figure 39. Recalibration Required

4.7.8 CONVEYOR COVER FAULT RECOVERY

The system is fitted with a safety switch to prevent the conveyors moving when the front covers are not in place.

- If the safety switch is activated the screen will appear (mixed lane shown) as in Figure 40. Conveyor cover Fault

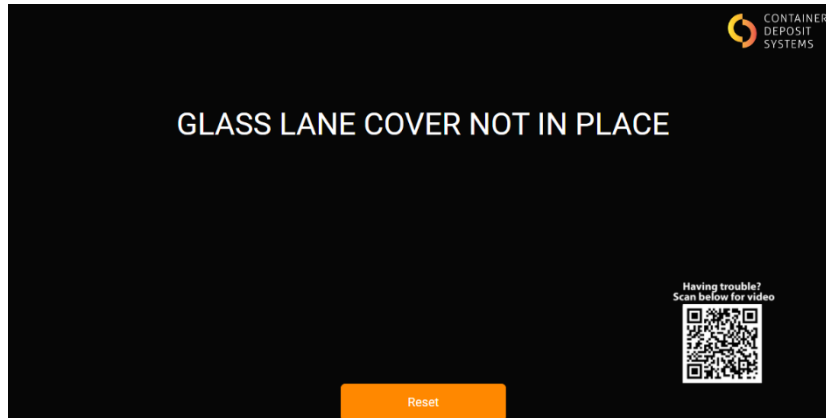


Figure 40. Conveyor cover Fault

Follow the steps below to reset the fault after a conveyor cover has been removed:

- Ensure the covers are placed correctly and latches are tightened
- Press the 'Reset' button on the screen



Figure 41. Safety Latches

4.7.9 FORCE RECALIBRATION

It is possible to force recalibration of the ART by following the steps below:

Press the '**STOP**' button for 3 seconds

- System will automatically restart as seen in Figure 10. System Start up
- When the Screen requests calibration, as seen in Figure 11, press the '**START**' button. The ART will automatically stop the belts when calibration has been completed

4.8 END OF DAY ART SHUT DOWN

Prior to shut down ensure the steps below are followed at the end of each day:

- Clean out the front product tub by removing any waste and hosing the tub down to flush unwanted liquids
- Clean the belts as specified on section 7.4.3. Belt Cleaning Procedure
- Clean the underside of the belts and conveyor beds as specified on section 7.5. Conveyor Bed Cleaning
- Clean the audit camera cover as specified on section 7.6. Audit Camera Cleaning Procedure
- Shut down power by turning the electrical isolator to the OFF position. The location of the isolator can be seen on Figure 9. Power Isolator Location

4.9 DO'S AND DON'TS

4.9.1 Do

- Assist customers when they are unsure about how the system operates
- Ensure the customers are aware of the safe operation procedures for the ART
- Follow the cleaning procedures when cleaning the belts to ensure safety
- Wear PPE at all times when cleaning and maintaining the ART
- Ensure that there are appropriate means of capturing the containers from the end of the ART conveyors
- Wear safety glasses at all times when authorised personnel require access to the rear of the ART unit.
- Install the ART in a manner that only allows members of the public to access the front of the ART unit

4.9.2 DON'T

- Do not press the emergency stop buttons unless there is a genuine emergency
- Do not put hands down the lanes or on the moving conveyor belts
- Do not attempt to perform maintenance outside of what is specified in this manual. You may be unqualified and performing other maintenance could lead to injury or damage to the machines and void the CDS hire agreement
- Do not access the front control panel and do not access the camera enclosures, as they contain sensitive equipment
- Do not clean or touch the rear cameras as this may damage the cameras. If cleaning is required, contact CDS

5 MANUAL INPUT STATION

5.1 MIS DESCRIPTION

The MIS is comprised of a touch screen, an RFID reader, a printer, and a power isolator as seen in Figure 42. Manual Input Station.



Figure 42. Manual Input Station

5.2 MIS TECHNOLOGY

Data from a manually counted batch can be entered into the MIS by a depot operator following the steps below. Please note that the MIS is designed to be used by the depot operators only (not intended for customer operation).

- Operator swipes the RFID card to unlock the screen
 - The touch screen can then be used to select from a list of eligible container types

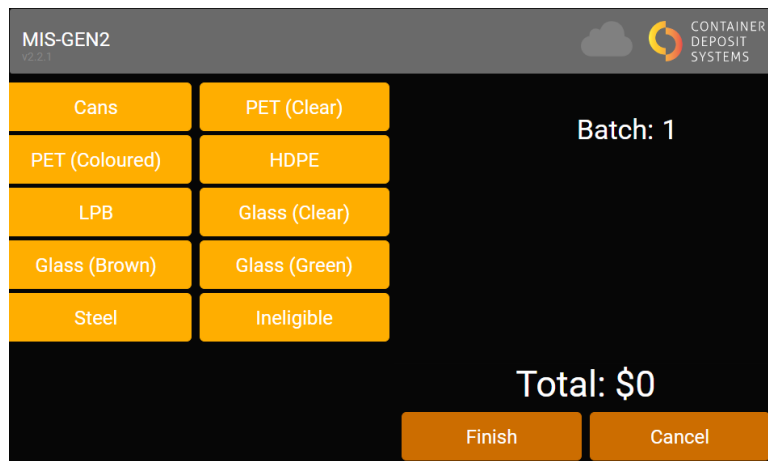


Figure 43. Select Material Type

- Select one container type at a time
- Enter the quantity to be returned and press 'Enter'

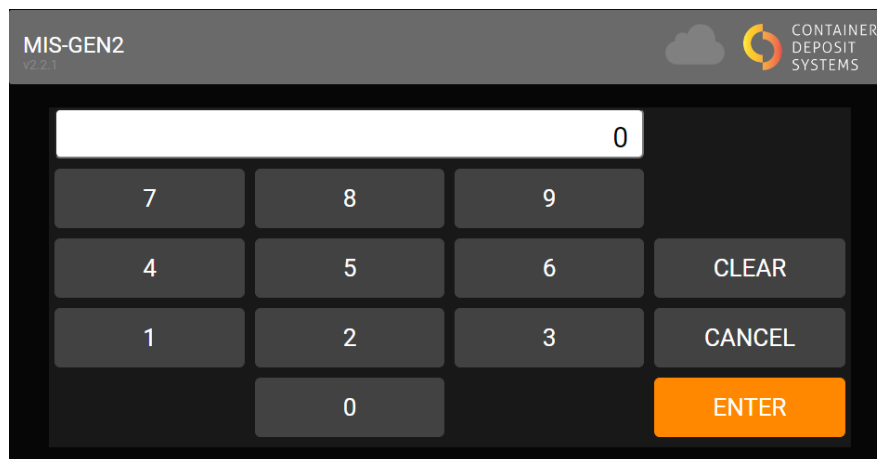


Figure 44. Enter Quantity

- Repeat the process to enter all materials to be returned
- Press finish

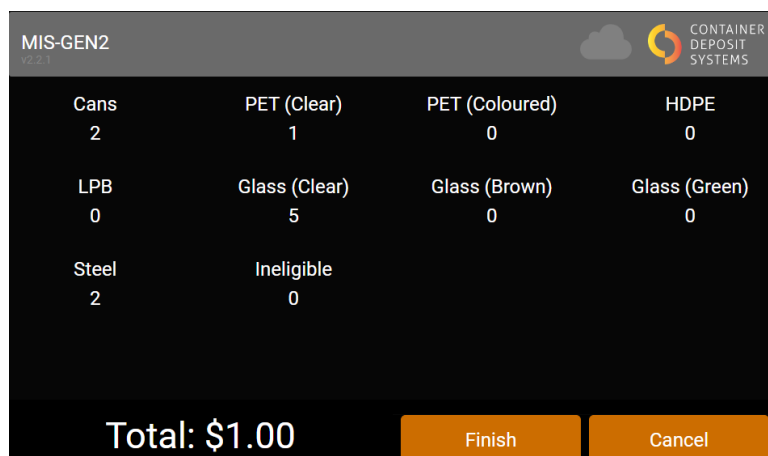


Figure 45. Overview of batch

- The MIS will automatically print a QR coded ticket
- The customer takes the printed ticket to the CRT
- The customer scans the ticket on the righthand slot marked 'QR code'

The customer redeems their cash or selects scheme pay which will deposit money into their nominated bank account at the CRT.

6 CASH REDEMPTION TERMINAL

6.1 CRT DESCRIPTION

The CRT customer interface features a touch screen, as well as slots for cash redemption, printed receipts and for scanning the QR coded ticket, as seen in Figure 46. The CRT back-end is comprised of a printer, cash dispenser and reject bin.

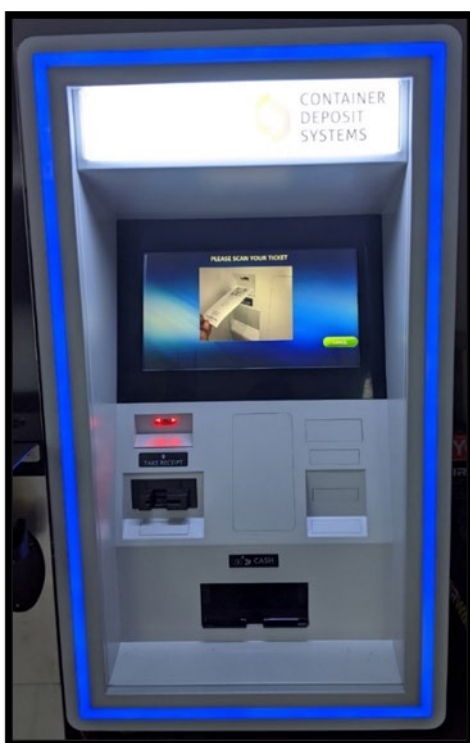


Figure 46. Cash Redemption Terminal

6.2 CRT TECHNOLOGY

To redeem a transaction processed by a MIS or ART, the printed QR coded ticket from the MIS or ART should be scanned at the QR code slot located at the front of the CRT. The CRT will validate the ticket against the corresponding data transaction within the cloud.

The CRT provides two options of payment: cash and scheme payment.

After ticket validation, the CRT will automatically dispense the correct amount of money from the cash redemption slot (unless direct bank deposit is selected) and print a receipt from the receipt slot.

For further detail regarding the CRT (including troubleshooting or maintenance information), please refer to the CRT manual.

WARNING - The CRT has a safe rating for business hours only. It is designed to operate with supervision.

Note: At close of business - remove and place all cash in a 24hr secured safe. Leave the CRT security door open overnight to avoid potential damage due to a break in.

MAINTENANCE

7 ART MAINTENANCE

7.1 INTRODUCTION

General maintenance is important to keep the ART in safe and working order. A maintenance check can lead to the identification of problems and assessment of hazards to prevent injuries.

7.2 MAINTENANCE SCHEDULES

Any damage should be logged with CDS.

A maintenance log of any work carried out should be kept and be updated by the person conducting the maintenance. A copy of the log with all maintenance history should be kept on site.

DAILY MAINTENANCE INCLUDES:

- A general visual inspection to ensure motors and belts are working correctly
- Ensuring belts are not damaged or worn and are clean
- Ensure the underside of the conveyor belts are clean. Syrup tends to build up in between the conveyor belt and the stainless-steel bed and can glue them together
- Cleaning of the front product tub
- Draining the airlines and water collection bowls. Failing to do so the ejections might be compromised and damage to the solenoid could occur

AT THE END OF EACH DAY:

- Clean out the front product tub
- Clean the belts as specified on section 7.4.3. Belt Cleaning Procedure
- Clean the underside of the belts and conveyor beds as specified on section 7.5. Conveyor Bed Cleaning

EVERY THREE MONTHS:

Grease drive end bearings following the instructions provided in section 7.7.1.
Grease Drive end Bearings

7.3 ISOLATION AND LOCK OUT PROCEDURE

WARNING - An authorised / Competent person must be in control of the Isolation and Lock Out Procedure as defined by the work health and safety regulations 2012, regulation 5.

Isolation of the ART using the Lock out procedure must be carried out when mentioned throughout the Operation and Maintenance Manual.

If more than one person is working on the ART machine, each person should attach their individual locks. A "multi lock hasp" may be required.

Note: Energy Sources - compressed air & electricity.

- Switch off power isolator (at front of ART machine, under the glass lane entry point), place lock onto the Isolator switch and secure as seen on Figure 47

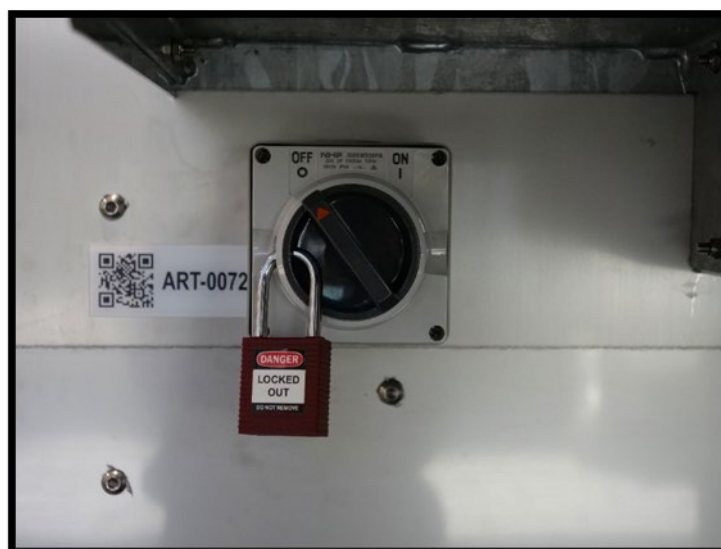


Figure 47. Power Isolator

- Test switch to ensure ART machine will not turn on

7.4 ART MAINTENANCE MODE

Access the Maintenance Mode by swiping the RFID card if the screen is locked and pressing the 'Maintenance' button at the bottom of the screen.

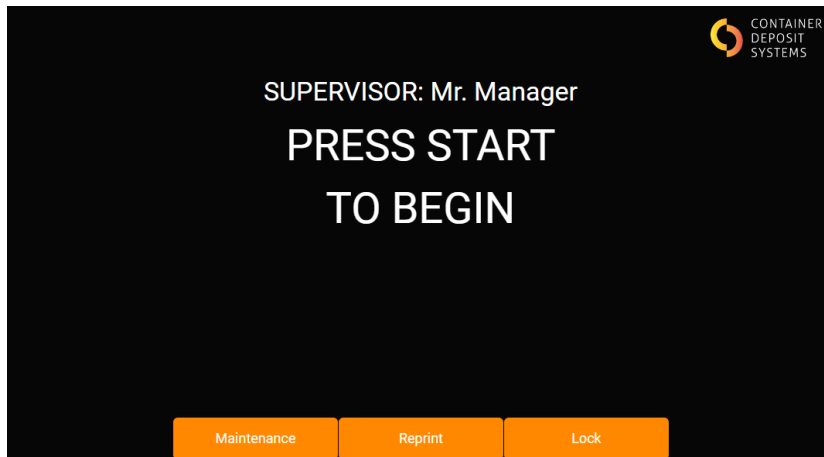


Figure 48. Home Screen unlocked

The RFID card must be swiped again to authorise access.

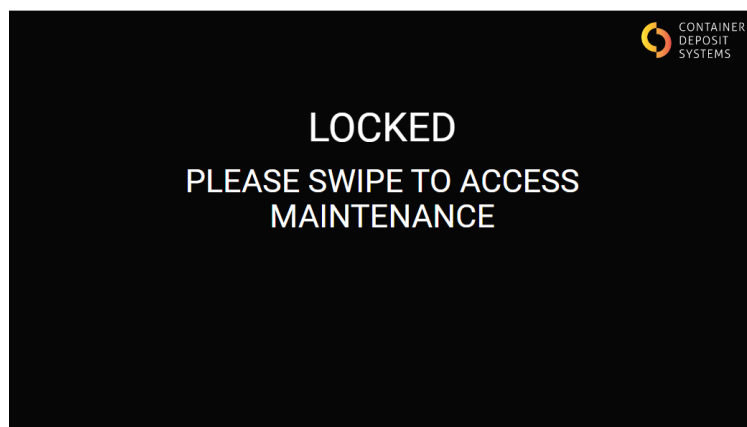


Figure 49. RFID swipe request

Figure 50 shows the maintenance home screen.

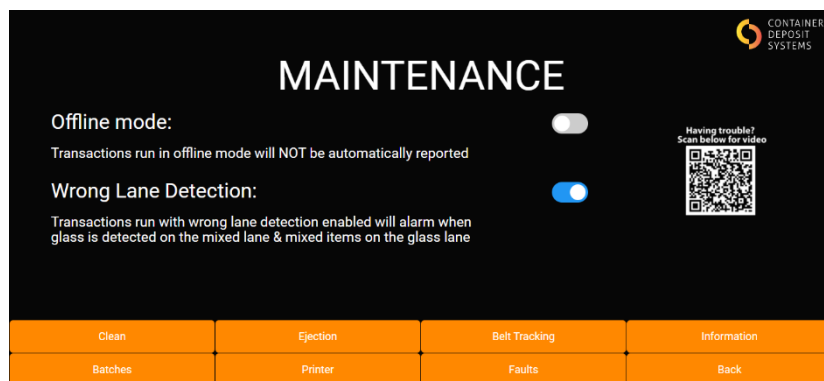


Figure 50. Maintenance home Screen

7.4.1 OFF-LINE MODE

To activate or deactivate the off-line mode, enter the maintenance screen and toggle the mode on or off.

When off-line is enabled, any transaction through an ART will print an off-line ticket and will not post details to the CDS database or the state's scheme.

For detailed explanation on this mode refer to section 4.7.4. Off-line Mode

7.4.2 WRONG ITEM DETECTION

To activate or deactivate the wrong item detection mode, enter the maintenance screen and toggle the mode on or off.

For detailed explanation on this mode refer to section 4.7.5. Wrong Lane Detection Alarm

7.4.3 BELT CLEANING PROCEDURE

The belts need to be cleaned regularly to ensure the best performance of the ART. To enter cleaning mode, press the 'Clean' button at the bottom of the Maintenance Screen.

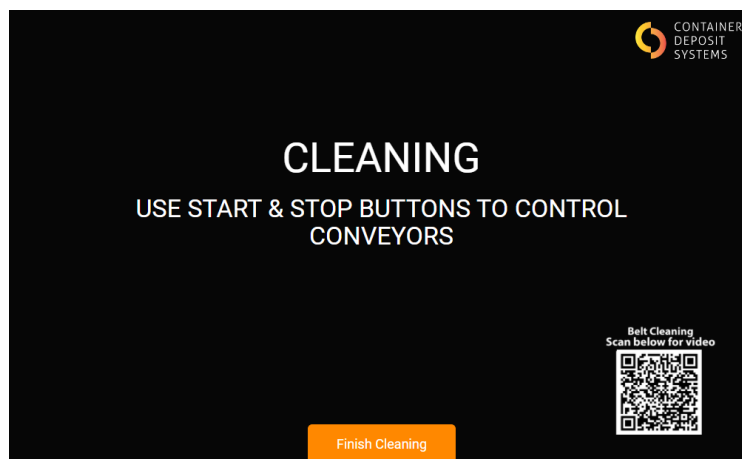


Figure 51. Cleaning mode

- Fill a bucket with mild detergent mixed with warm water
- Use only a non-abrasive cloth and a roll of paper towel
- Make sure the ART is stopped and in cleaning mode
- Wet cloth with the water from the bucket
- Wipe down the visible section of the belt and remove as much foreign matter as possible
- When the visible section of the belt is clean press the '**START**' button to move the belt and press '**PAY OUT**' when the next section is exposed

- Repeat this process until all the belt has been cleaned
- Use paper towel to wipe off any water residue from the belt. If this is not done the liquid that remains on the belt may attract more foreign matter and require the belt to be cleaned again in a much shorter period. The water can also compromise the counting and classification
- Press the 'Finish Cleaning' button on the screen and the system will restart
- Press the '**START**' button and the ART will calibrate the belts

Note: Syrup tends to build under the conveyor belt and can glue the belt to the stainless-steel conveyor bed. To avoid damaging the machine, ensure frequent cleaning and monitoring of the conveyor bed as explained on section 7.5. Conveyor Bed Cleaning.



Belt Cleaning

Scan QR code with phone camera for video.

7.4.1 EJECTION TESTING

To test the air ejection, press the 'Ejection' button on the Maintenance Screen. The ejection of Aluminium and clear PETE can be broken down into two steps. Both steps must work correctly for the ejection to be successful.

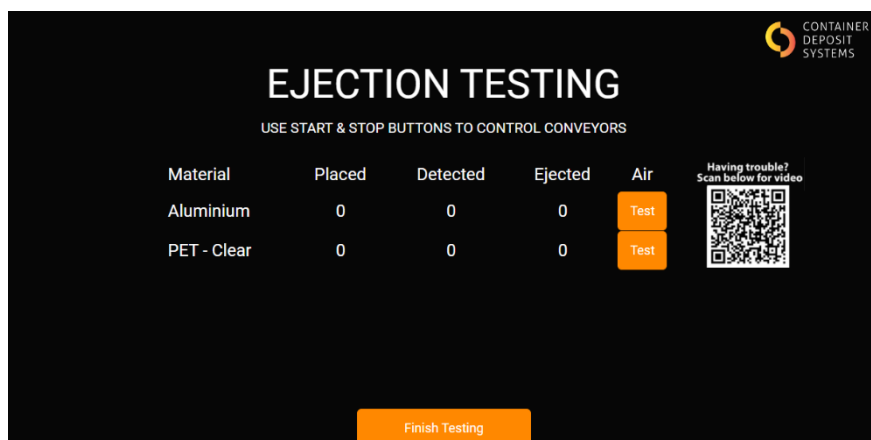


Figure 52. Ejection testing

AIR EJECTION TESTING

- Press one of the 'Test' buttons and there should be an air blast on the corresponding ejection point. Otherwise, refer to section 11.11. Failure to Separate Aluminium & Clear PET

CONTAINER DETECTION TESTING

- Press the '**START**' button
- Place on the mixed lane a single container at the time
- The 'Placed' counter corresponding to the material will increase when a container is placed on the belt. If this counter does not increase, refer to section 11.10. Incorrect Counting or Misclassifications
- The 'Detected' counter corresponding to the material will increase when a container is correctly detected for ejection. If this counter does not increase but the 'Placed' counter does, please contact Sage Service
- The 'Ejected counter corresponding to the material will increase when the ART ejects a container. If this counter does not increase but the 'Placed' counter does, please contact Sage Service

7.4.2 BELT TRACKING

Only authorised personnel are allowed to use the belt tracking mode. Do not use this mode untrained, or damage to the machine might occur.

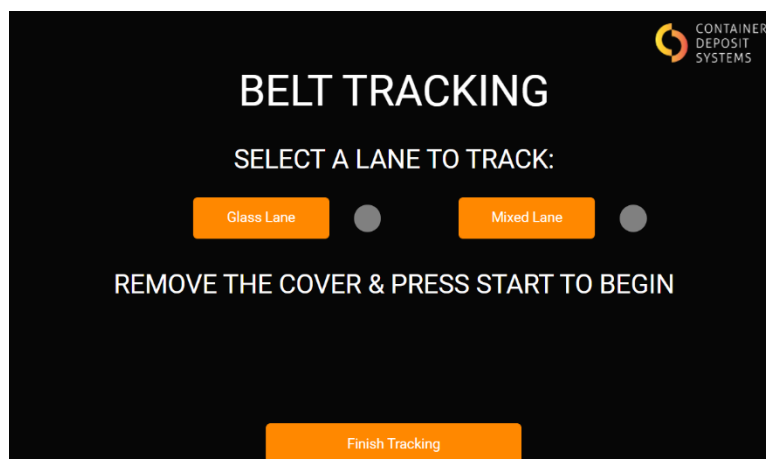


Figure 53. Belt tracking

7.4.3 INFORMATION

The information screen will enable a quick look at the condition of the ART, as seen in Figure 54. Fault information.

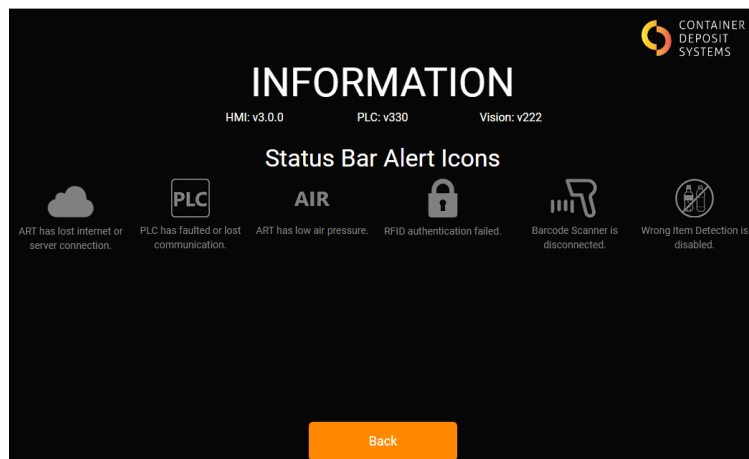


Figure 54. Fault information

7.4.4 PREVIOUS BATCHES

When selecting the ‘Batch’ button, the last three batches processed through the ART will be displayed.

PREVIOUS BATCHES		
18-04-2020 01:23:26 Online	17-04-2020 17:44:25 Online	17-04-2020 17:39:33 Offline
Glass (Brown): 0	Glass (Brown): 0	Glass (Brown): 0
Glass (Green): 0	Glass (Green): 0	Glass (Green): 0
Glass (Clear): 0	Glass (Clear): 0	Glass (Clear): 0
Cans: 0	Cans: 0	Cans: 0
PET (Clear): 0	PET (Clear): 0	PET (Clear): 2
PET (Coloured): 0	PET (Coloured): 0	PET (Coloured): 0
LPB: 0	LPB: 0	LPB: 0
HDPE: 0	HDPE: 4	HDPE: 0

Figure 55. Previous batches

7.4.5 FAULTS

When selecting the ‘Faults’ button, a history of the ART’s faults will be displayed. This is primarily to assist SAGE Service in fault finding.

Fault Counts	
Glass Vision Startup Fail: 0	Mixed Vision Startup Fail: 0
Glass Vision Comms Fail: 8	Mixed Vision Comms Fail: 9
Glass Lane Requires Cleaning: 0	Mixed Lane Requires Cleaning: 21
Glass Camera Disconnected: 0	Mixed Camera Disconnected: 0
Conveyors Failed to Start: 0	Conveyors Failed to Stop: 0
Glass Lane Safety Switch: 11	Mixed Lane Safety Switch: 11
Safety Input Fault: 2	Safety Output Fault: 0
Printing Failed: 10	Post Failed: 2
Front E-Stop: 34	Rear E-Stop: 9
External E-Stop: 0	Low Air Pressure: 0
Restarts: 7	

Figure 56. Fault counts

7.4.6 PRINTER INFORMATION

Select the 'Printer' button to display the status of the printer. The 'Refresh Status' button can be used to ensure the issue has been resolved.

The 'Reprint' button will print the ticket for the last batch processed through the ART.

The QR code will display a video with instructions on how to clean the printer.

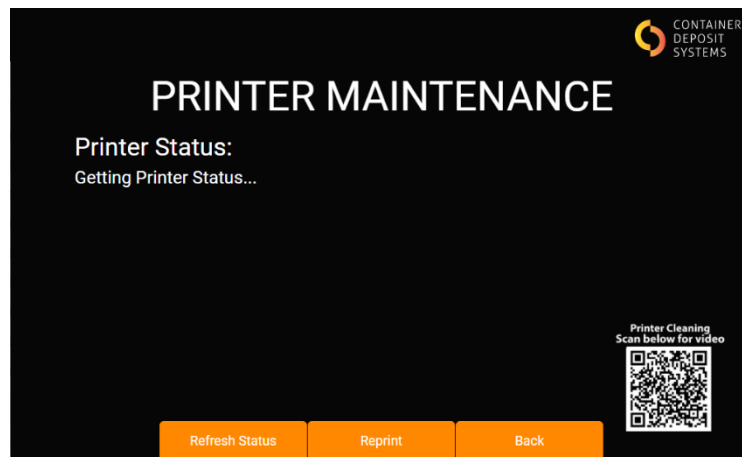


Figure 57. Printer Information

7.5 CONVEYOR BED CLEANING PROCEDURE

Syrup tends to build under the conveyor belt and can glue the belt to the stainless-steel conveyor bed. To avoid damaging the machine, ensure frequent cleaning and monitoring of the conveyor bed as explained below.

- Carry out Isolation and Lockout Procedure as explained on section 7.3. Isolation and Lock out Procedure
- Remove the product tub
- Loosen the two conveyor cover clamping levers under the conveyor cover, one at the rear and one in the front

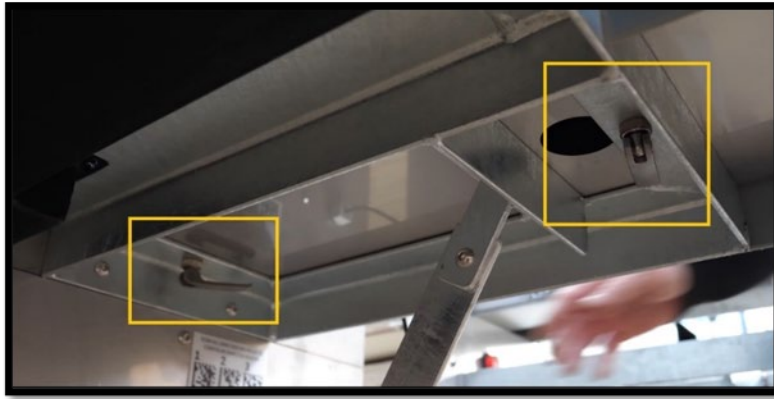


Figure 58. Locked conveyor cover clamping levers



Figure 59. Unlocked conveyor cover clamping levers

- Slide the cover out and lift cover off



Figure 60. Lifting conveyor cover

- Fill a bucket with mild detergent mixed with warm water
- Use only a non-abrasive cloth
- Wet a cloth with the water from the bucket
- Wipe down the stainless-steel conveyor bed
- Wipe down the underside of the conveyor belt



Figure 61. Conveyor Bed Cleaning

- When a section is clean, pull the belt towards you (using both hands) to expose the next section. Repeat this process until the underside of the belt is clean
- Wipe down the mixed lane conveyor bed over the ejection points
- Wipe down the underside of the conveyor belt



Figure 62. Mixed lane cleaning

- Reinstall the conveyor cover ensuring it is fitted over the guides shown on Figure 63

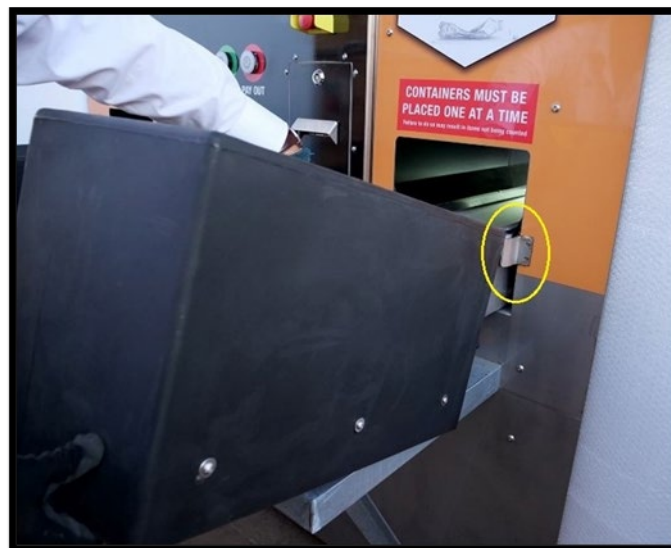


Figure 63. Conveyor cover guide

- Lock the conveyor cover clamping levers as seen on Figure 58
- The system is fitted with a safety switch to prevent the conveyors moving while cleaning is being carried out. The conveyor covers must be reinstalled to be able to run the ART

If the safety switch is activated the screen will appear (mixed lane shown) as in Figure 64.

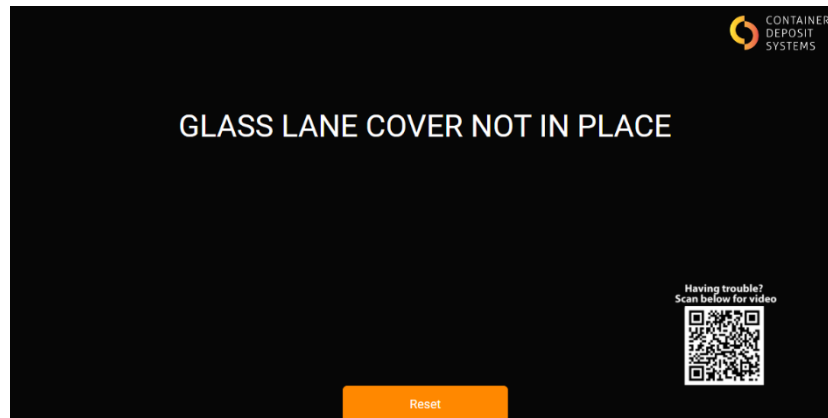


Figure 64. Conveyor Cover Fault

- Press the 'Reset' button to reset the fault



Conveyor Bed Cleaning

Scan QR code with phone camera for video.

7.6 AUDIT CAMERA CLEANING PROCEDURE

The audit camera cover must be cleaned regularly, failing to do so might result in the audit process not being viable.

Follow the instructions below to successfully clean the audit camera cover:

- Use only a non-abrasive cloth
- Wet a cloth with the water and mild detergent
- Wipe down the glass cover of the camera
- For best results dry the cover with a microfiber cloth



Figure 65. Audit Camera

Note: Do not open the camera enclosure or damage to the camera may occur resulting in operator repair costs

7.7 CONVEYOR MECHANICAL MAINTENANCE

7.7.1 GREASE DRIVE END BEARINGS

Every three months the drive end bearings need to be greased using an appropriate grease gun.

- Carry out Isolation and Lockout Procedure as explained on section 7.3. Isolation and Lock out Procedure
- Apply small amount of grease to each grease nipple on each bearing housing using a general high temperature grease



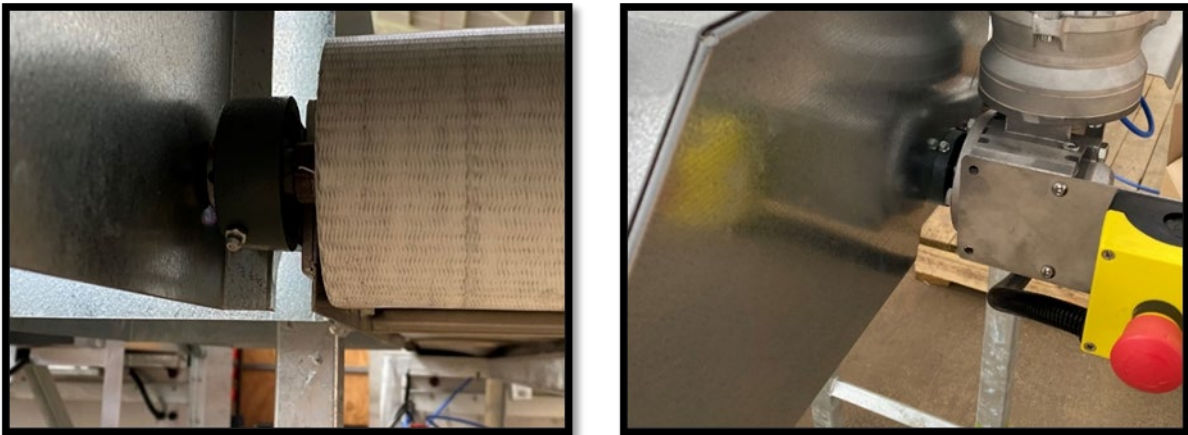


Figure 66. Greasing the Drive End Bearings

8 MIS MAINTENANCE

The MIS needs to be cleaned regularly to ensure the best performance.

- Fill a bucket with mild detergent mixed with warm water
- Use only a non-abrasive cloth and a roll of paper towel
- Make sure the MIS is not in any form of transaction mode.
- Wet cloth with the water from the bucket
- Wipe down the screen and surrounding body and remove as much foreign matter as possible
- Ensure not to use too much water as to harm the electronics.

Use paper towel to wipe off any water residue from the MIS. If this is not done the liquid that remains on the belt may attract more foreign matter and require the MIS to be cleaned again in a much shorter period. The water can also compromise the screen.

9



MIS Cleaning

Scan QR code with phone camera for video.

10 PRINTER MAINTENANCE

Both the ART and MIS use the same printer. For maintenance regarding the CRT printer refer to the Cash Redemption Terminal manual.

To maintain the optimum performance of the printer and to prevent issues, periodic maintenance must be carried out.

10.1 PRINTER CLEANING

The manufacturer of the printer recommends that the printer head is cleaned every 3 months or 500,000 lines of printing. Remember to clean the printer on each ART and MIS. The print quality may be affected otherwise.

When performing maintenance, always turn off the power, and take the appropriate measures to prevent static electricity.

Prepare the printer for cleaning by:

- Unlocking and opening the printer door
- Using the top **green** handle slide printer body out of the ART machine
- Turning the printer “off” at the switch on the rear/left hand side of the printer as shown in Figure 67



Figure 67. Printer

- Open the front of the printer with the green release lever seen in Figure 68

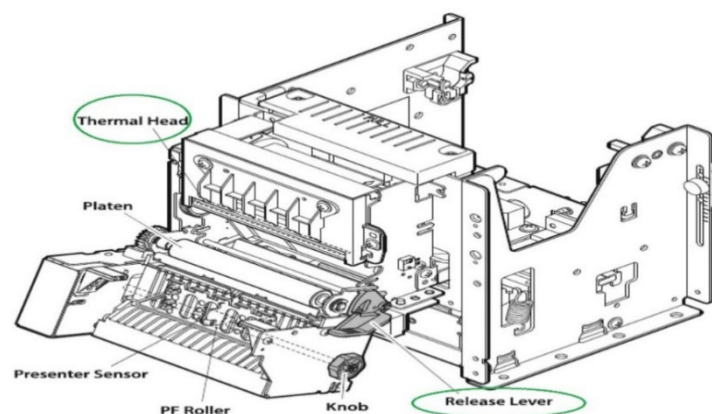


Figure 68. Printer thermal head cleaning

Follow the four cleaning procedures explained below:

10.1.1 THERMAL HEAD CLEANING PROCEDURE

- Damp a cotton swab with an alcohol based cleaner (such as ethanol or methanol)
- Wipe the heating elements gently. Do not apply excessive force when doing so
- When the cleaning is complete, ensure the alcohol has completely evaporated before closing the platen unit

10.1.2 PLATEN CLEANING PROCEDURE

- Damp a cotton swab with an alcohol based cleaner (such as ethanol or methanol)
- Wipe the platen while slowly turning it with the black knob on the left hand side as seen in Figure 69
- Completely wipe away all the paper dust on the rubber platen

Note: If the platen is not clean, paper feed issues might occur

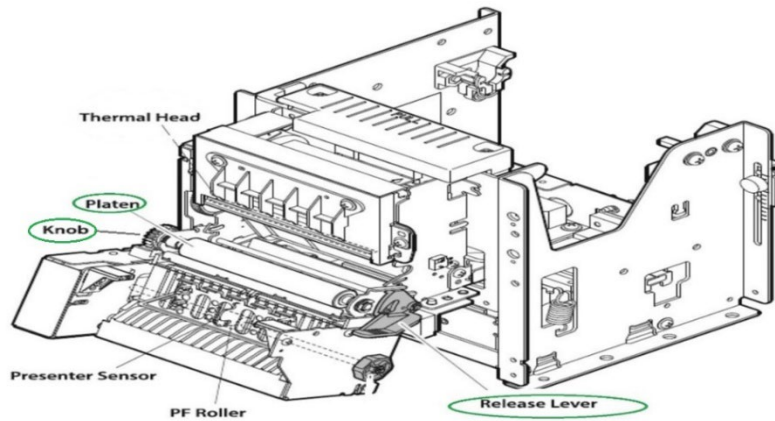


Figure 69. Printer platen cleaning

10.1.3 PRESENTER SENSOR AND PERIPHERAL CLEANING PROCEDURE

- Remove any dirt, dust, or paper cuttings that may be adhering to the presenter sensor or the vicinity
- Lift plastic guide as seen on Figure 70



Figure 70. Printer presenter sensor cleaning

- Use a soft, dry cotton cloth, swap or brush to clean. Do not apply excessive force when doing so
- Reposition the plastic guide back in place
- Locate the Presenter, PE/BM and NE sensors as per Figure 71
- Using dry compressed air gently blow excess paper dust built up from sensor areas

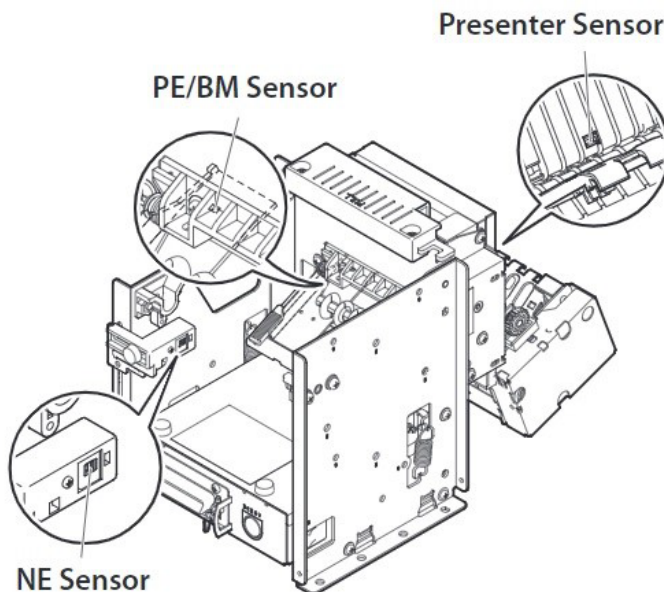


Figure 71. Printer Roller Cleaning

- Close the front of the printer

10.1.4 PF ROLLER CLEANING PROCEDURE

- Locate the small PF roller under the printer head as seen on Figure 72
- Damp a soft cloth with an alcohol-based solvent (such as ethanol or methanol)
- Clean the roller while slowly turning it using the **green** knob. Do not apply excessive force when doing so
- Wipe the heating elements gently

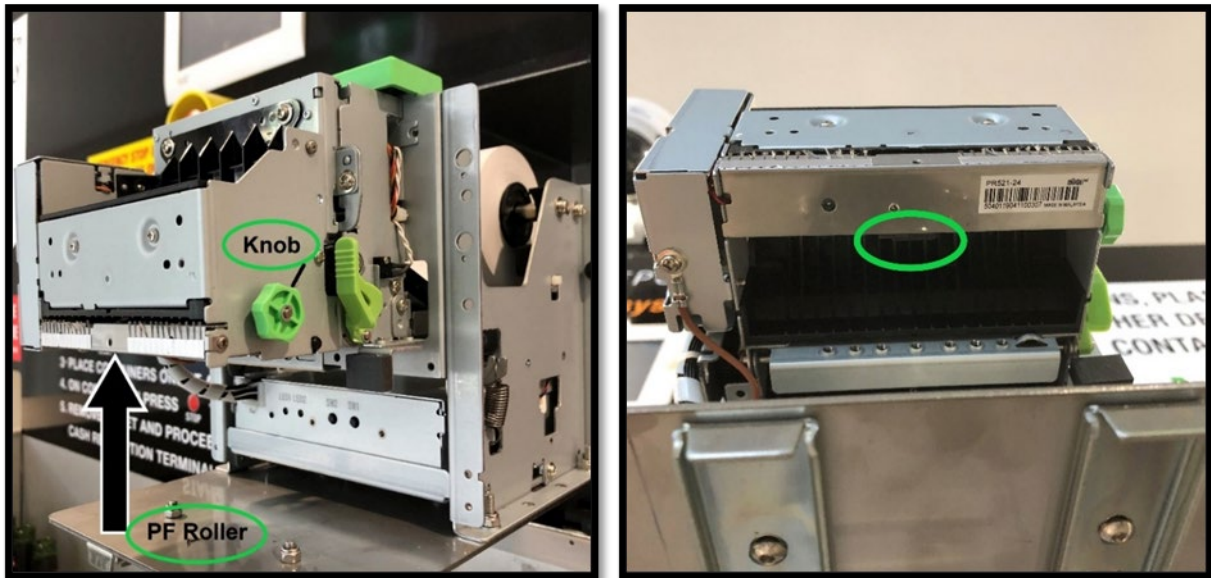


Figure 72. Printer Roller Cleaning



Printer Cleaning

Scan QR code with phone camera for video.

10.2 PRINTER PROCEDURES

10.2.1 PRINTER PAPER SPECIFICATION

The paper used in this printer are:

- Thermal Paper Rolls for CUSTOM VKP 80 II Printers Size: 80 mm x 130 mm x 25.5 mm

10.2.2 PRINTER PAPER CHANGE

If paper needs refilling, refer to the instructions below:

- Unlock and open the printer door
- Using the top green handle, slide printer body out of the ART machine
- Remove empty paper roller spool
- Assembly the new paper roll onto the spool ensuring it is the right way around as shown in Figure 73

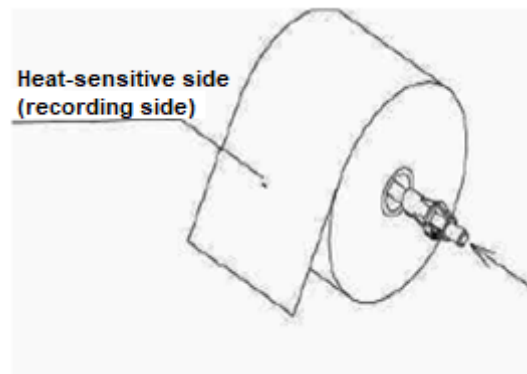


Figure 73. Printer paper

- Cut new paper roll end correctly to prevent paper jam, as shown in Figure 74

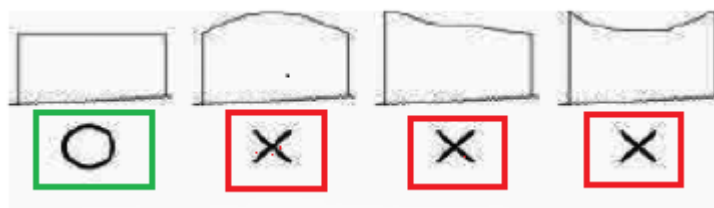


Figure 74. Printer paper cut

Lift the top green handle vertically up and then pull the front of the printer unit forward, as shown in Figure 75

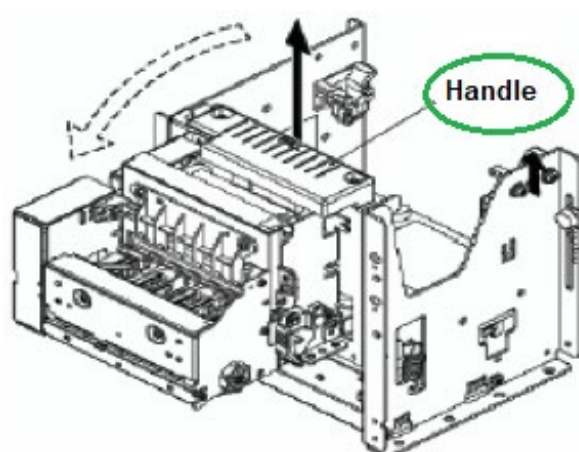


Figure 75. Printer handle lift

- Insert the new paper roll into its position. Ensure the paper feed direction over the spool matches the direction shown in Figure 76

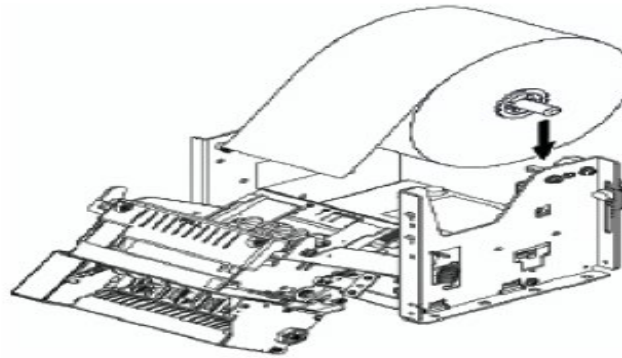


Figure 76. Printer paper direction

- Slide the cut end of the paper roll into the paper inlet under the white plastic damper roller, as shown in Figure 77
- The printer will automatically pull the paper through to the front and cut it into place

Note: If the printer does not automatically pull the paper through, ensure the printer is turned on

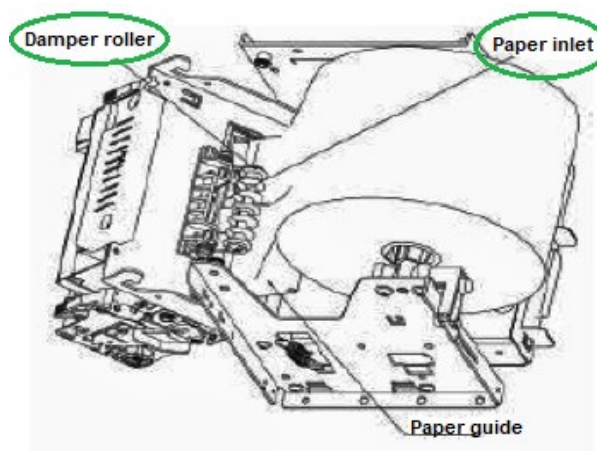


Figure 77. Paper roll feed

- Reposition the front of the printer back into its position by using the top green handle
- Using the top green handle slide printer body back into the ART machine
- Close and lock the door
- To ensure the printer is working correctly, press the 'Reprint' button on the screen or simulate a batch with no containers

Note: If the roll has paper but the printer still will not print, follow the steps below

- Ensure the paper is not obstructed by unlocking the printer door and sliding the printer body out
- Check to see if the paper is jammed, if it is, follow the instructions in section 10.2.3. Handling Printer Paper Jams

Caution: Never pull on the jammed paper unnecessary while the platen unit is closed, damage to the drive system parts might occur

10.2.3 HANDLING PRINTER PAPER JAMS

If recording paper should become jammed, to remove jammed paper, refer to the instructions below:

- Using the top **green** handle slide printer body out of the ART machine
- Turn the printer “off” at the switch on the rear/left hand side of the printer as shown in Figure 67
- Open the platen unit using the **green** release lever, as shown in Figure 78

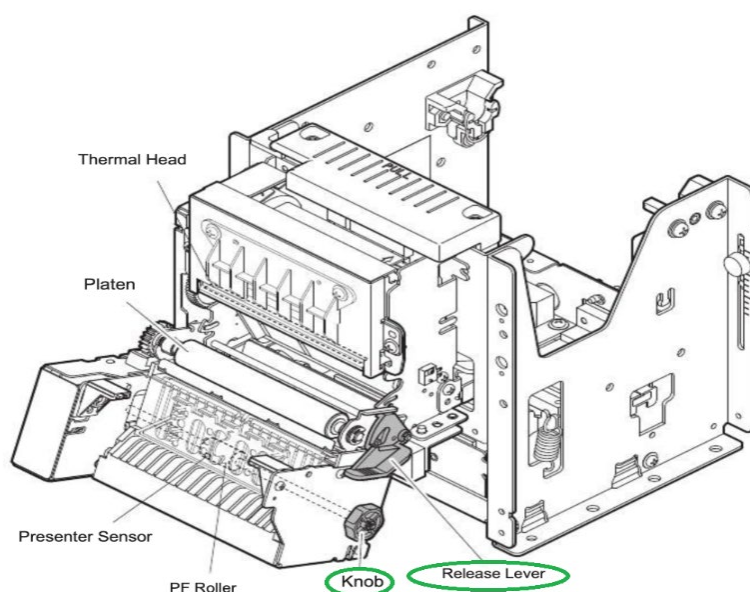


Figure 78. Printer

- Rotate the **green** knob to remove the jammed paper, as shown in Figure 78
- Use a tip of pen to roll the emergency knob in the direction of the arrow, as shown in Figure 79. This should remove any jam caused by paper or debris

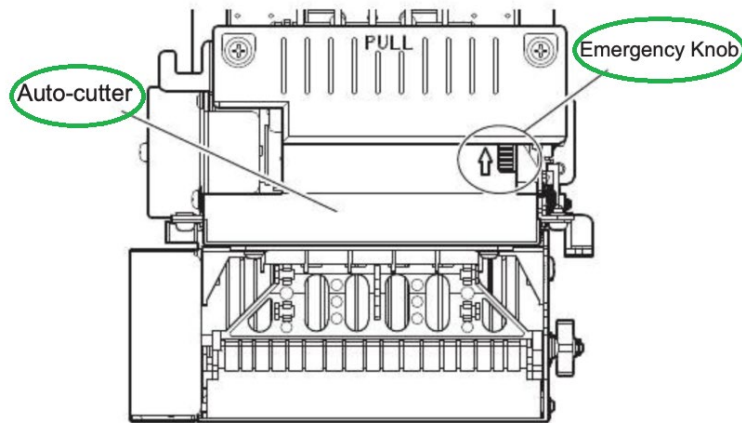


Figure 79. Printer Auto Cutter Release

- Close the platen unit
- Turn printer back “on” at the switch on the rear/left hand side of the printer
- Re-feed paper as explained in section 10.2.2. Printer Paper Change

Caution:

- When removing the jammed paper, never move your hands near the tear bar on the auto-cutter
- When opening or closing the rotating mechanisms, be aware of any pinch points

10.2.4 RELEASING THE CUTTER LOCK

To release the auto-cutter lock, refer to the steps below:

- Turn the printer “off” at the switch on the rear/left hand side of the printer as seen in Figure 67
- Tweezers, a screwdriver or ball-point pen should be used
- Rotate the emergency knob in the direction of the arrow on the top of the auto-cutter unit case to return the cutter blades to their home position, as shown in Figure 79
- Remove the jammed paper and ensure auto-cutter is clear
- Turn printer back “on” at the switch on the rear/left hand side of the printer

Caution:

- When removing the jammed paper, hands must stay away from the tear bar on the auto-cutter
- When opening or closing the rotating mechanisms, be aware of any pinch points

TROUBLESHOOTING

11 TROUBLESHOOTING

Before calling and incurring unnecessary costs and loss of operating time, please go through this simple check list

11.1 'BELT REQUIRES CLEANING' DISPLAYED ON SCREEN

- Swipe the RFID to enter Cleaning Mode
- Clean and dry the requested belt as explained on section 7.4.3. Belt Cleaning Procedure

11.2 FAILURE TO PRINT TICKETS

- Check printer has paper
- Check the paper is not jammed
- Remove paper and restart the printer

Refer to printer process outlined in section 10.2. Printer Procedures

Note: Tickets can be reprinted by pressing the reprint button on the screen

11.3 POOR PRINT QUALITY

Clean the printer head as outlined on section 10.1. Printer Cleaning

11.4 ART OR MIS CONTINUOUSLY OR RANDOMLY REPRINTING TICKETS

The screen may be dirty and detecting false input signals.

- Clean the screen with soft damp cloth
- Ensure there is no dirt or moisture build up around the edge of the screen
- Dry the screen and ensure there are no streaks or marks

11.5 ART OR MIS SCREEN NOT DETECTING BUTTONS PRESSED

The screen may be dirty and have trouble detecting an input signal.

- Clean the screen with soft damp cloth
- Ensure there is no dirt or moisture build up around the edge of the screen
- Dry the screen and ensure there are no streaks or marks

11.6 NO INTERNET CONNECTION

Internet connection is indicated as a cloud symbol on the ART screen.

GREY Cloud = connection OR RED Cloud = no connection

- Restart the Remote Access Point (RAP) by turning it off, waiting for 5 minutes and then turning it on again



Figure 80. Remote Access Point

Refer to section 4.7.3. No Internet Connection for further information.
If the problem persists, contact SAGE Service.

11.7 'OFF-LINE' TICKET PRINTED

This happens when the ART has no internet connection

- Manually enter the same container count printed on the off-line ticket into the MIS to print a valid ticket

Refer to section 4.7.3. No Internet Connection for further information

Note: Internet connection is indicated as a cloud symbol on the ART screen, which is GREY for connection or RED for no connection.

11.8 BELT DOESN'T MOVE ON 'START UP'

Ensure belts are not glued to the conveyor bed and they can be freely moved by hand.

If an E-stop is depressed or if a front cover is not properly latched the belts will not start moving.

The screen will specify where the trigger is and will allow to reset the fault by pressing 'Reset' at the bottom of the screen.

For E-Stop errors refer to section 4.7.2. ART Emergency Stop Recovery

11.9 'TIMEOUT' DISPLAYED ON SCREEN

- Restart the ART ONLY ONCE. To do this:
 - Turn main isolator OFF
 - Wait 2 Minutes (Restarting too quickly will not allow enough time for the control system to shutdown correctly)
 - Turn main isolator back ON



Figure 81. ART Isolator

WARNING: Continuously restarting the ART can cause major damage to the system, which will be at a cost to the client.

11.10 INCORRECT COUNTING OR MISCLASSIFICATIONS

- Ensure no sunlight is shining directly under the camera box
- Ensure the containers are placed one at the time on the belt as explained on section 4.2. ART Technology Capabilities
- Ensure the belts are dry
- Clean the belts as outlined on section 7.4.3. Belt Cleaning Procedure
- If the belts are clean, recalibration might be needed
 - Press the '**PAY OUT**' button for 3 seconds
 - System will automatically restart as seen in Figure 10
 - When the Screen requests calibration, as seen in Figure 11, press the '**START**' button. The ART will automatically stop the belts when calibration has been completed

11.11 FAILURE TO SEPARATE ALUMINIUM & CLEAR PET

- Ensure the air compressor is turned on and working

- Ensure the air pressure is set at the minimum required of 90PSI / 6.2 bar on the compressor
 - Ensure the filter/regulator bowl is drained (no water).
 - Ensure all air lines are connected correctly including the ejection nozzles.
- Each air solenoid has an indicator LED that is illuminated when the solenoid is electrically activated. The LED will only illuminate for a very short time during each ejection. If the solenoid is illuminated and there is no air blast, this confirms there is an air supply issue.
- Test the air ejection as explained in section 7.4.1. Ejection testing

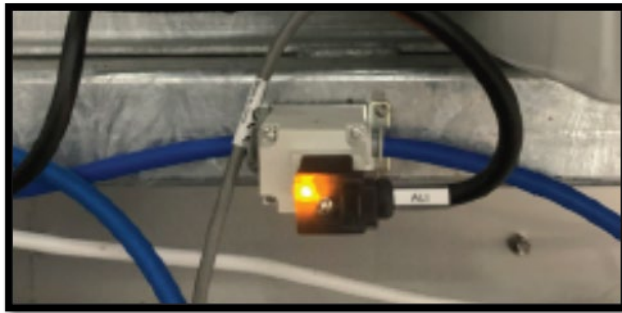


Figure 82. Air Solenoid Activated

11.12 CRT SHORT PAYING OR NOT PAYING

When a 'QR' coded ticket is validated at the CRT, but it does not have sufficient money to pay the customer, follow the steps below:

- The CRT will print a receipt stating the amount short paid
- Manually pay the customer the reminder amount stated on the receipt
- Refill the CRT

Note: Every transaction validated at the CRT will be posted to the state scheme. Do not re-enter this transaction through the MIS, otherwise the transaction will be duplicated.

11.13 CRT TROUBLESHOOTING

Refer to the Cash Redemption Terminal manual for troubleshooting instructions

11.14 POWER OUTAGE

If the ART loses power while a batch is being process, follow the steps below:

- If a refund amount is unknown, a batch audit can be requested to CDS to ensure the correct refund is given to the customer.

- Once the batch count has been confirmed, manually enter the correct container count into the MIS to print a valid ticket

If further assistance is required, please contact CDS SUPPORT on

08 8166 2829