RETURPACK

Requirements for Return Vending Machines (RVM) with Compactor

For suppliers and third-party suppliers of return equipment for use in the deposit system administered by Returpack.

Returpack AB

CONTENTS

1. INTRODUCTION

This document aims to formally describe the requirements applicable to Return Vending Machines (hereinafter referred to as RVM) with compactor sold and installed on the Swedish market for use in the deposit system administered by Returpack.
The document is also meant to provide guidance to grocery stores, grocery chains and other potential buyers of RVMs.

The specification is limited to the requirements that are essential from an integration perspective for the deposit system administered by Returpack. In addition to the requirements of this document, there are other essential requirements of other stakeholders that a manufacturer must take into account. The regulatory requirements applicable on the market regarding the environment, health and safety are not fully specified in this document. It is the manufacturer's full responsibility to follow up and comply with these and other requirements in addition to the requirements of this document.

The document also provides guidelines to the party responsible for downloading/uploading deposit data/article files. In this document, that party will continue to be named as the RVM Operating Party ("ROP"), whether it is the RVM supplier, an independent third party or any other provider.
Finally, part of the document constitutes requirements for RVM equipment used for the processing and accounting of collected deposit containers through "industrial counting machines" and the respective supplier of such equipment.

It is the responsibility of the RVM supplier to comply with the requirements described in this document, regardless of Returpack's approval. Hidden errors, weaknesses, etc. that are not detected during Returpack's certification process or errors caused after the approval of any of the supplier's products, will always be the supplier's responsibility.

All RVMs used in Returpack's deposit system must meet the requirements set out in this document and its attachments. Returpack may, by informing interested parties, and with appropriate anticipation, introduce changes to these requirements.

In cases where a type of RVM used in Returpack's deposit system is also used in other collection systems, this document applies only to RVMs in Returpack's deposit system.

This document refers to a total of seven (7) attachments. Grocery stores, food chains and other potential buyers of RVMs undertake to comply with this document's guidelines and requirements when ordering RVMs. The content of the attachments may be amended independently of the amendment and revision of this document.

Matters related to costs and reimbursements are not governed by this document or its attachments, but in separate agreements between interested parties.
Any questions or comments on this document, or any of its attachments, may be directed to Returpack AB.

2. IDENTIFICATION AND CLASSIFICATION OF OBJECTS

The RVM shall receive, identify and handle all types of packaging that are part of Returpack's deposit system. The RVM shall also identify, receive and handle so-called privately imported aluminium or steel cans that are not part of Returpack's deposit system. Deposit compensation are not paid for privately imported cans.

The requirements to be met for a packaging to be included in the deposit system are specified in the Technical specification and marking manual, see reference (1).

If, for any reason, a packaging is rejected by the RVM, the reason for its rejection shall be reported in accordance with the procedural description, see reference (4)

2.1 Deposit items within Returpack's system

In order for the RVM to approve and receive a deposit item that is part of Returpack's system, the following identification methods within section 2.1 shall be fulfilled in accordance with:

- (2.1.1.1 or 2.1.1.2) and
- 2.1.2 and
- 2.1.3 and
- 2.1.4

2.1.1 Identification via information carriers

2.1.1.1 Identification via linear barcode

The RVM shall be able to identify packaging using barcode reading and be able to determine whether it is an approved package that is part of Returpack's return system.

The following detailed requirements apply:
The RVM shall be able to read barcodes applied to packaging according to the requirements for the placement and design of barcodes on packaging specified in Technical specification and marking manual, reference (1), and according to applicable GS1 standards in Sweden.

The return machine's barcode reader equipment must comply with iso/IEC 15423 requirements and be able to read printed symbol quality according to the minimum ISO/IEC 15416 grade 1,5. This is the level of quality that shall apply to the packaging after it has been exposed to dirt, liquid and mechanical abrasion by the consumer.

The RVM shall be able to identify the code of packages that are not rotationally cylindrical, but which otherwise comply with Technical specification and marking manual, see reference (1).

> ***The purpose of the requirement is to ensure that the barcode (1D code) can be used as a method for identifying deposit packages and that the RVM can read these with sufficient quality.***

2.1.1.2 Identification via 2D code

The return machine shall be able to detect a package included in Returpack’s return system by reading the package’s 2D code intended for its identification and interpreting the GTIN (Global Trade Information Number) from it.

The formats of 2D code, according to GS1 standards, that it shall be capable of reading and interpreting are:

- QR code with GS1 Digital Link syntax
- Data Matrix with GS1 Digital Link syntax
- GS1 Data Matrix

The RVM shall be able to read 2D codes applied to packaging according to the requirements for the design and placement on packaging specified in Technical specification and marking manual, reference (1), and according to applicable GS1 standards in Sweden. The presence of both a barcode and a 2D code shall not limit the return machine's ability to determine whether a package is included in Returpack's return system.

The RVM shall be able to identify the 2D code of packages that are not rotationally cylindrical, but which otherwise comply with Technical specification and marking manual, see reference (1).

This is a new requirement with a timeline; see section 14

The purpose of the requirement is to ensure that 2D code can be used as a method for identifying deposit packages and that the RVM can read these with sufficient quality.

2.1.2 Identification via Shape Recognition

The RVM shall have a function to be able to identify the shape of a container and be able to determine whether the shape of the container is correct compared to specified form data in the article file.

The minimum level of shape recognition shall be the parameters length and width. These parameters will be provided by Returpack in the article file. If the parameters of an article are missing, shape recognition does not need to be performed. The article file also contains parameters for the tolerance to be applied to the individual container, which can distinguish between different packaging types. Current tolerance classes and given ranges are listed in reference (6).

PET bottles and cans included in the deposit system shall be able to pass with a safety level of at least 95 %.

The purpose of the requirement is, in combination with other identification methods, to determine whether or not it is a correct container that is eligible for deposit.

2.1.3 Identification via metal detector

The RVM shall be equipped with a metal detector for aluminium and steel. The RVM shall be able to determine whether the object is made of these metals with 90% accuracy. The low accuracy may be allowed as identification with a metal detector is not used as the only identification method but in combination with other identification methods.

The purpose of the requirement is to reject, in combination with other identification methods, containers containing incorrect or copied EAN codes applied to the wrong type of bottles or cans for the purpose of committing fraud.

Metal detector is also an enabler for the RVM to safely receive and dispose of aluminium or steel cans that are not part of Returpack's deposit system, but which have an approved barcode according to the GS1 standard.

2.1.4 Identification of weight

The RVM shall be able to identify the weight of the items inserted into the RVM. The weight function shall be used to reject full or partially filled packages, or packages of divergent weights. Returpack recommends that packages weighing more than 100 grams shall be considered too heavy and should be rejected with a safety interval of at least 95%.

2.2 Deposit items outside Returpack's system

The RVM shall be able to receive and dispose of ‘import cans’ made of aluminium or steel that are not part of Returpack’s return system, but which have an approved barcode or 2D code in accordance with sections 2.1.1.1 and 2.1.1.2 intended for identification of the packaging. However, no deposit refund shall be issued in these cases.

Identification shall be carried out in combination with the other identification methods described under section 2.1. Regarding “Identification via shape recognition”, the RVM should use the established dimensions and shape for cans, as the length and width cannot be provided by Returpack via the article file.

Metal bottles that are not part of Returpack’s system should not be accepted. Metal bottles can vary in material thickness and therefore risk damaging the RVM.

Other packaging that is not part of Returpack's return system or that cannot be identified by the methods described shall be rejected by the RVM.

The purpose of the requirement to receive unapproved cans – imported cans – is to increase the level of service from a consumer perspective and to reduce the environmental impact.

2.3 Identification and rejection of selected items

The RVM shall have a function that makes it possible to identify and reject selected packaging/types. Some packages may be marked for rejection in accordance with information in the article register; see reference (2).

The purpose of the requirement is to ensure that it is possible to reject packaging that may damage the RVM or for any other reason is not desirable to be received at the RVM.

3. HANDLING OF CONTAINERS IN MACHINES/STORAGE ROOMS

3.1 Reception speed

The receiving speed of the RVM shall be declared by the manufacturer in accordance with the following standard measurement procedure for a normally functioning RVM.

The reception rate shall be measured separately for the four cases:

A/ 50/33 cl can
B/ 50/33 cl PET containers
C/ 1.5 l PET pack
D/ Mixed containers 50/33 cl can + 50/33 cl PET containers + 1.5 l PET containers

The reception rate shall not be below 30 containers/minute in any of the cases described. What should be measured for the four cases is the number of containers that the RVM can handle in 1 minute. The start time is counted when the first item is inserted into the RVM. The final container is the last container inserted into the machine before one minute has expired. Printing of the deposit receipt or initiation of another reimbursement method is not included in the time.

3.2 Compactor function

The RVM shall contain a so-called volume reduction function, i.e., a compactor that compresses containers. The compressed containers material shall be continuous in a single line after compression. PET bottles should also be punctured so that they do not run the risk of regaining their original shape after compression. A compressed container shall not be able to be re-deposited.

> ***The purpose of the requirement is to destroy the deposit containers so that the possibility of re-depositing is eliminated and to minimize the volume of the subsequent handling and transport to Returpack's recycling centre.***

Compression methods

Always contact Returpack for questions about whether a specific compression method is allowed or not. This is especially true when developing new compression methods.

The compression shall be carried out in such a way that the subsequent handling, both in the logistic flow as well as in the recycling process, of the containers taken into care can be carried out without additional measures and costs. There are a number of compression methods that are not optimal from this aspect.

Examples of some methods that are not approved by Returpack for use in its deposit system:

- "Dose compression" of cans (cans are pressed together in its vertical direction and become a "hockey puck"), which means that the containers cannot be baled in a normal way for onward transport.
- Grinding or shredding pet bottles, which means that the deposit material is divided into small ingredients. The deposit material is contaminated and becomes difficult to recycle.
- Heat pressing of PET bottles where labels are burned into the material, and which makes it difficult to distinguish the materials from each other cost-effectively in the subsequent process.

- Methods that make it difficult to distinguish the materials from each other cost-effectively in the subsequent process. for example, certain types of "Fork pressing" may mean that the label and plastic become difficult to distinguish after compression.

Compression ratio

The compression rate of the volume reduction function shall be declared by the manufacturer and meet the following minimum requirements:

Returpack's load carrier for bulk	**Number of compressed cans**	**Number of compressed PET packages**
1200x800x1050 mm *	3500 pcs.	800 pcs.
1200x800x950 mm *	3300 pcs.	700 pcs.
1200x800x850 mm *	3000 pcs.	600 pcs.
Density	≈54 kg/m^3	≈29 kg/m^3

* Including bin grip

A mix of PET packaging must be used in measurement, where 40% consists of packages containing more than 1 litre.

The load carrier may be shaken to reduce the occupied volume of the compressed containers. However, no additional force may be applied directly to the compressed containers to reduce the total volume.

The compactor in the RVM shall maintain the same compression quality throughout its life cycle. A deterioration with a maximum of 10% of the compression rate is acceptable.

If a chain-function compactor was used, there shall be a function to prevent the chain from falling into the machine's load carrier.

Before new compactor types can be used, the RVM supplier must submit samples to Returpack on how the RVM compresses can and PET material and wait for a response from Returpack if the compression is acceptable.

3.3 Transport in RVM before compression

In order to prevent fraud, packaging that is correctly identified and generates a deposit refund must not be accessible until it has been compressed. This applies throughout the transport process through the return facility (return machine/back-end equipment).

Packaging that is correctly identified and generates a deposit refund may not be returned to the consumer.

Approved packaging that generates deposit refund shall not pass uncompressed through the return facility to end up in the collection area.

The purpose of the requirement is to minimise the risk of fraud, counteract incorrect reimbursement to consumers and provide accurate statistics to Returpack.

3.4 Load carriers

Depending on the type of RVM, it shall be able to transport and collect the disposed and compressed containers in the types of load carriers approved by Returpack.

The following types and sizes exist:

Article	Measurement
Cardboard bag for cans (5256)	500/400 x 1400 x 0.08 mm
Special Bag (2988)	680/600 x 1400 x 0.08 mm
Pallet box	1185 x 785 x 633 mm
Plastic vessel 85 cm	1200 x 800 x 850 mm
Plastic vessel 95 cm	1200 x 800 x 950 mm
Plastic vessel 105 cm	1200 x 800 x 1050 mm
Bag holder double	1200 x 800 x 830 mm

The customer's location determines the type of load carrier to be used for a specific installation. A load carrier solution for a customer shall always be agreed in dialogue between Returpack and the customer.

The purpose of the requirement is to ensure that the RVM can use the load carriers approved by Returpack.

Returpack's load carrier for bulk

New installations of return vending machines must be prepared for 105 cm high load carriers if possible. The machine supplier must, where applicable, notify Returpack as to which machine type does not meet this requirement.

The purpose of the requirement is to optimize logistics costs and reduce environmental impact.

Space between load carrier and RVM

Returpack recommends that there is a space above the load carriers to the RVM of about 100 mm for future expansions. That space shall allow the shave down of built-up material tops to fill the load carriers as much as possible.

If the RVM supplier can guarantee full load carriers with another solution and an equal level throughout the load carrier up to 100 mm from the edge of the load carrier and where the RVM has not alarmed before, that solution is approved. The condition is that the different fractions are not mixed with each other and to avoid litter outside the load carrier.

Returpack recommends that there is a space between the load carrier and the walls of the RVM of at least 40 mm. That space shall enable a device (clamp) to attach the liner to the load carrier to be mounted on the outer wall without interfering with the normal functioning of the RVM, where applicable.

3.5 Pure fractions (separated fractions)

The RVM shall be so designed that if it handles several fractions, the fractions shall also be separated at all times. It should not be possible for the fractions to mix with each other. This applies until the load carrier has been removed from the RVM.

> ***The purpose of the requirement is to facilitate sorting of the containers in Returpack's factory and thereby improve the quality of the final fraction.***

4. COMMUNICATION WITH CONSUMERS

4.1 User interface

The RVM shall be equipped with a touch screen that provides the consumer with guidance during deposits and the possibility to make the choice of deposit payment. The information shall be easy to understand and the following shall be stated as a minimum depending on the situation:

- The approval of a container
- That a container is not approved but processed
- That a container is not approved and rejected
- Deposit payment options, donation

The screen should be large enough for the text displayed to be easy to read and that several selectable options can be displayed simultaneously on the screen.

If written language is used on the screen, it must be eligible to receive in Swedish.

The information on the touch screen shall be up to date via online connection.

The touch screen shall have a sufficient resolution to display a QR code/Datamatrix (GS1 standard) that can be read by QR reader/camera on a mobile phone.

> ***The purpose of the requirement is to ensure a high level of service for the consumer***

4.2 Deposit receipt

The RVM shall produce a deposit receipt to the consumer that provides clear and accurate information in Swedish about the number of containers received and disposed of per container category submitted by the consumer and on the total deposit to be paid.

Deposits with different VAT rates shall be separately reported, i.e., the recognition of deposit objects of 12 % and 25 % VAT respectively. The entire amount of the deposit to be paid must be separately reported in a barcode on the receipt. The different VAT rates (12% and 25%) must also be printed in plain text on the deposit receipt to enable handling in a manual cash register.

The RVM shall be able to generate barcodes on the deposit receipt according to EAN-13, EAN-128 and 2D Barcode (DataMatrix & QR code).

The above does not apply in cases where the RVM has a configuration that allows a deposit receipt not to be printed (it must then be approved by Returpack).

4.3 Deposit receipt control

Most RVM owners (stores) want to use “voucher control” to prevent refunds from being paid out for the same deposit receipt more than once. The RVM shall therefore be able to integrate with an RVM owner’s cash register system, either directly between the RVM and the cash register system or between the RVM suppliers back-end system and the cash register system.

5. COMMUNICATION WITH RVM OWNERS

5.1 Bin ticket

The bin ticket described in reference (3) is the information carrier that acts as a payment basis and generates reimbursement to the machine owner in Returpack’s business system. (There are some exceptions, as described in reference (3)).

In order to ensure that the machine owner of the RVM continuously receives refunds for the deposits handled, some means shall be provided to automatically generate an electronic bin ticket for each fraction by time interval or triggered by some other event by agreement with Returpack. Bin tickets shall be saved in the RVM or in combination with its back-end system in accordance with section 6.3.
It shall also be possible to create an electronic bin ticket via a manual event.

Since the bin tickets together contain information about all the deposits handled by the RVM, the RVM supplier must provide an opportunity for the machine owner to follow up on the payout information, checking this against the payment later received from Returpack.
This can be done by printing a physical bin ticket that corresponds to the electronic one; it could also be done in other ways, for example by providing a portal to the RVM supplier’s back-end system to which the machine owner is given access.
As a minimum requirement, it shall be possible to follow up on the following information:

- Date when the bin ticket was generated
- RVM serial number
- Serial number of the bin ticket
- Fraction code
- Total deposit value
- Deposit value of deposit paid by payment providers
- Total number of items per deposit code
- Number of items per deposit code paid out by payment providers

Information about deposit codes and fractional codes is described in reference (2).
The information about deposits paid out by payment providers is only a requirement for return machines that are connected to Returpack’s digital payment solution.
A bin ticket can only contain deposit codes for PET or aluminium packaging.

6. REGISTRY AND DATA MANAGEMENT

6.1 Article register

The RVM shall contain an article register where the necessary information per article as specified in reference (2) is registered electronically. The register shall be capable of containing at least 50 000 articles regardless of category (can and PET packaging). The contents of the article register shall also be kept when the RVM is not energised.

6.2 Transaction register

6.2.1 EAN data

The RVM shall contain a transaction counter for each article in the article register, which records the number of items approved electronically by deposit return according to reference (3). The counters for each article shall contain at least six digits. It shall also be possible to retain the contents of the register when the return machine is not energised.

6.2.2 Deposit code data

The return machine shall contain a transaction counter per deposit code, which records the number of articles approved electronically by deposit return according to reference (3). The counters for each article shall contain at least six digits. The contents of the register must also be able to be retained when the return machine is not energised.

6.3 Bin ticket register

Either individually or in combination with its back-end system, the RVM shall contain a register in which the bin tickets referred to in reference (3) are stored electronically. The register shall contain at least 100 bin tickets. It shall also be possible to retain the contents of the register when the return machine is not energised.

Information from the transaction registers for EAN data and deposit code data must be linked to a bin ticket in order to indicate which deposit return items are included in the respective emptying.

Bin tickets are reported in accordance with section 7.

> ***The purpose of the requirement is to be able to compare the statistics from the transaction counters and ensure that these are consistent.***

6.4 Statistical data

The RVM shall be able to store information about deposit receipts, rejected packages and Alarms as referred to in reference (3), and be able to report these in accordance with section 7. It shall also be possible to retain the information when the return machine is not energised.

7. CONNECTION/DATA COMMUNICATION

The RVM shall be adapted for online connection. Data transmission of article and transaction data and update of application software and touch screen shall be possible to be carried out remotely and at all times of the day. The store that owns the RVM is responsible for keeping the RVM connected.

Communication and data transmission between Returpack and the RVM is described in reference (2), (3) and (7).

The purpose of the requirement is to be able to remotely implement new functions in the RVM and to be able to communicate with the RVM without significant delay.

7.1 Access and permission control

The RVM's software, data storage devices and hardware must be protected with access and access control. Only RVM provider/ROP is allowed to hold access and permissions. This applies to both the communication interface and an operator interface for direct access of data in the RVM. Changes in data shall be traceable as to who made the change, when the change was made and what the change entailed.

The purpose of the requirement is to ensure that programs and collected data for financial reporting are not intentionally manipulated by unauthorized persons for their own gain or sabotage. The management and administration of access rights with related liability is regulated between the manufacturer, the RVM owner and Returpack in a separate agreement.

7.2 Change control

The supplier is responsible for continuously ensuring that the latest relevant version of the operating system is used.

This requirement includes continuous updates of the selected operating system to new relevant versions as well as updating existing versions with "patches" if, for example, vulnerabilities are found.

If it is not possible to make the necessary updates, the supplier shall report it to Returpack as soon as possible. The supplier and Returpack then discuss the problem in order to come up with an acceptable solution.

The purpose of the requirement is to minimize the risk of unauthorized intrusion into the RVM and surrounding systems.

8. SERVICE AND REPAIR

In the case of service and repair of a machine that entails the replacement of subcomponents in the RVM, neither the identity of the RVM nor the access control codes may be changed. Item register and transaction register shall be transferable to the new subcomponent unless the information has been lost due to destruction or lost memory.

The purpose of the requirement is to ensure that it is still possible to communicate from a central application with the RVM and that transaction information is not lost during service and repair of the RVM.

9. MEMORY CAPACITY

The RVM memory unit shall be designed in such a way that the RVM stops further deposit if the memory space is running low. The RVM shall be stopped until it has been read and provided the deposit data from the emptying receipts.

The purpose of the requirement is to ensure data quality from the RVM.

10. CERTIFICATION AND APPROVAL

When a machine supplier/manufacturer of a RVM intends to install and use a new and not previously approved RVM model, Returpack must be notified no later than six months before the RVM is available for sale. A representative of Returpack must, together with the machine supplier/manufacturer, participate in testing the functions of the RVM in accordance with the procedures set up, see reference (5).

When Returpack and the machine supplier/manufacturer has thus confirmed that the requirements of the specification and other regulatory requirements are met, the RVM is technically approved for use in Returpack's deposit system.

It is the responsibility of the machine supplier to comply with the requirements described in this document, regardless of Returpack's approval. Hidden errors, weaknesses, etc. that are not detected during Returpack's certification process or errors caused after the approval of any of the supplier's products, will always be the supplier's responsibility.

If the machine supplier/manufacturer develops new models or variants of existing RVM models, a new check shall be carried out as above.

11. ENVIRONMENTAL REQUIREMENTS

The RVM shall, as far as possible, be constructed taking into account the life cycle perspective.
As a minimum, the following standards and initiatives shall be taken into account:

The Machinery Directive

EU Directive 2006/42/EC , (replaces EU Directive 98/37/EC).
The Directive covers, inter alia, the laying down of requirements to avoid accidents in industrial machinery during the design, manufacture, operation and maintenance of machinery. In Sweden, the Swedish Work Environment Authority has supervision of the Machinery Directive that has been adopted into Swedish law through the Regulations on Machines (AFS 2008:3)

The Low Voltage Directive

(2014/35/EU) is an EU directive that states that "people, property and pets should be protected from damage caused by electrical products."
It is a modification of the older Low Voltage Directive 2006/95/EC of August 2007

The EMC Directive

(2014/30/EU) is an EU directive on electromagnetic compatibility in Europe.

ISO EN 12100:2010 Swedish Standard

In order to determine how dangerous a machine is, a risk assessment must be carried out. The assessment of risks should be carried out according to a set standard. It has the designation SS-EN ISO 12100:2010 Machine Safety - General Design Principles - Risk Assessment and Risk Reduction.

ISO 13857:2008 Swedish Standard

Machine Safety - Safety distance to prevent arms and legs from reaching into risk areas (ISO 13857:2008)
This international standard sets values for safety distances, in both industrial and non-industrial environments, to prevent the risk areas of machinery from being reached.
The safety distances are applicable for protective structures. It also contains information on distances to prevent free access with legs and feet.

ISO EN 7010:2012 Swedish Standard

Graphic symbols - Warning colours and warning signs

ISO EN 20607:2019 Swedish Standard

Machine Safety - Instructions for use - General principles

EN 60204-1:2018 Swedish Standard

Swedish standard for machinery's electrical equipment with regard to safety is applicable according to the European standard

ISO 9001 Certification of Quality Management systems

ISO14001 Certification of Environmental Management systems

WEEE, EU Directive for the Management of Electrical and Electronic Waste.

RoHS

EU directives prohibiting or restricting the use of certain heavy metals and flame retardants in electrical and electronic products on the market.

REACH EU

EU directive on the restriction of chemicals

Plastics and metals must be labelled in the machine to facilitate recycling.

Bisphenol-free receipt paper should be used.

All electronics should be classified as consumer electronics and not contain any heavy metals.

No hazardous chemicals such as cyanide and chromium may be used in galvanizing.

Powder coating should be used as it is preferable from an environmental point of view to spray-painting.

Energy consumption should be minimized by increased focus during product development and through software changes to automatic standby, shut-down and wake-up schedules so that they are adapted to store opening hours.

When the life of the RVM has come to an end, it shall be recovered by the machine supplier, who is responsible for ensuring that the materials(s) are recycled as far as possible. Old spare parts should also be recycled if possible.

12. ABBREVIATIONS

Datamatrix	Information carriers that are two-dimensional in matrix format.
EAN	European Article Numbering.
GS1	Organization that develops standards for goods and information flows.
IEC	International Electrotechnical Commission.
ISO 9001	Certification of Quality Management systems
ISO14001	Certification of Environmental Management systems
PET	Polyethylene terephthalate.
QR-Code	Quick Response Code.
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals, EU Directive for the production and safe use of chemicals.
RoHS	Restriction of Hazardous Substances, EU directive prohibiting or restricting the use of certain heavy metals and flame retardants in electrical and electronic products.
RVM	Reverse Vending Machine.
UNGC	(UN Global Compact) UN initiative to encourage companies to develop policies on sustainability and social responsibility. It is a framework with ten principles in human rights, labour, the environment and anti-corruption.
WEEE	Waste Electrical and Electronic Equipment, EU directive for the management of electrical and electronic waste.

13. REFERENCES

1. Technical specification and marking manual
2. Specification, ArticleData-XML
3. Specification, DepositData-XML
4. Procedure description for machine suppliers
5. RVMS Checklist Certification
6. Article Register, Tolerance classes
7. Description of ClearingService

14. NEW/FUTURE REQUIREMENTS WITH A TIMELINE

No	Property	Chapter	Certification date	Sales stop
1.	Identification via 2D code	2.1.1.2	2024-01-01	2024-12-31

Certification date - The requirement shall be met for all new RVM models certified from this date.

Sales stop - The requirement must be met on all RVMs sold and installed on the Swedish market from this date.

15. VERSION HISTORY OF THE REQUIREMENT SPECIFICATION

Version/Date	Change
1.2/2004-06-03	Requirement documentation with recommendations
2.0/2009-07-31	New requirements
2.1/2010-10-01	Adjusted requirements after referral round
2.2/2012-06-26	New chapter structure, new and adjusted requirements
2.3/2012-09-19	Update after external review
3.0/2012-11-01	Publishing on the website
3.1/2014-03-14	New and adjusted requirements
3.2/2014-04-08	Adjustments after internal review. New and changed requirements.
3.3/2014-04-22	Changes after internal review regarding, among other things, environmental requirements.
3.4/2014-08-15	Update after internal review, the touch screen requirement changed.
3.5/2014-09-17	Update after external review; requirement 4.3.2 Swedish shall be elective, but more languages may be used, requirement 4.3.3 regarding the accounting of VAT on the receipt.
3.6/2014-09-22	The certification date 0 and date of the sales stop 0 added.
4.0/2014-09-29	Publishing on the website
From 2015-01-01	Tolerance classes (Sales stop 2015-01-01) Touch screen requirements (Sales stop 2015-01-01) Receipt, barcode (Sales stop 2015-01-01) Emptying receipt, add-on Connectivity, new requirement that replaces previous requirements deposit codes, fraction codes and monetary units as well as requirements for the machine's application software. (Sales stop 2015-01-01) Direct reading (Sales stop 2017-01-01) The requirement specification now applies only to compressing RVMs New environmental requirements (Sales stop 2017-01-01)
2021-10	Document revised layout-wise. Section 1. Introduction, new Section 2. Deposit object detection, updated Section 2.1. Identification via linear barcode, updated Section 2.2. Identification via 2D code (DataMatrix & QR code), new Section 2.3. Identification via Shape Recognition, updated Section 2.4. Identification via metal detector, new Section 2.5. Identification of containers outside Returpack's deposit system, updated Section 2.6. Identification of non-cylindrical deposit containers, updated Section 2.7. Identification of liquid-filled containers, updated Section 2.8. Identification and rejection of selected deposit containers, updated Section 3.2. Compression function, updated (chains) Section 3.4. Load carrier, updated Section 4.1. User interface, updated Section 5.1. Emptying receipt, updated

	Section 5.1. Printing emptying receipts from the back of the RVM, removed. Section 6.1. Article Register, updated Section 7.2. Change control, new Section 12. Environmental requirements, updated Section 13. References, updated Section 14. New/Future requirements with a timeline, new Section Deposit receipt control removed as there is no uniform standard in retail for this feature.
2023-11	Section 2, Changed the section's chapter division and added/merged/reformulated requirements in order to clarify what is required for approval of objects for deposit return. Updated requirement for identification via 2D code. Sections 3.2 & 3.4, additional load carrier added, 3.3 revised Section 4.3, New requirement Section 5.1, Requirements for generation and follow-up of bin tickets adjusted. Section 6, Clarified/added requirements to reflect records and data management in line with the way it works. Section 10, revised Section 13, revised Section 14, revised Section 15, revised