

**WINCOR
NIXDORF**

**Self-Service
Systems**

Cash Media Dispenser Version 4

Service Manual

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Cash Media Dispenser Version 4

Service Manual

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Abbreviations

A

AGT	Output transport
ASCII	American Standard Code for Information Interchange
AZM NG	Cash-out module - new generation

B

BBA	automated teller machine which is operated by employees
-----	---

C

CEN	Comité Européen de Normalisation (European Committee for Standardization)
CG	Clock Generator
CL	Clutch
CL	Electromagnetic Clutch
CMD-V4	Cash Media Dispenser Version 4
CMD-V5	Cash Media Dispenser Version 5
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
CTS	Clear To Send

D

D-SUB	Connector series D, subminiature
DC	Direct Current
DCD	Data Carrier Detect
DCM	Direct Current Motor
DDU	Double Note Detection Unit
DES	Data Encryption Standard
DIN	German Institute for Standardization
DMA	Direct Memory Access
Dot	Refers to a printed dot
dpi	Dots per inch
DPS	Digital photosensor
DSR	Data Set Ready
DTR	Data Terminal Ready

E

EEPROM	Electrical Erasable Programmable Read Only Memory
EMA	Intruder alarm system
EU	European Union

F

FIFO	First In - First Out
FL	Frontload
FRU	Field repair unit
FW	Firmware

G		P	
GmbH	Limited liability company	PC	Personal Computer (system unit of the device)
GND	Ground	PCS	Print Contrast Sensitivity
H		PLD	
H	High	PROM	Programmable Read Only Memory
HDM	Horizontal Dispense Module	PS	Photosensor
HEX	Hexadecimal	PSD	Photosensor Dispense (sensor for dispensing process)
I		PSE	Photosensor Empty (cassette empty sensor)
IR	Infrared	PUT	Power up test
K		R	
KDIAG	Components Diagnostics	RAM	Random Access Memory
L		RI	Ring Indicator
L	Low	RL	Rearload
LED	Light-Emitting Diode	RS232	Recommended Standard 232
LS	Photosensor	RTS	Request To Send
M		RxD	Received Data
MA	Magnet	S	
N		SAT	Stacker and output transport
NRZ	Non return to zero	SELV	Safety Extra-Low Voltage
O		SM	Stepper Motor
OEM	Original Equipment Manufacturer	SNR	Serial number recognition
		ST	Connector
		SW	Software
		SW	Switch

Abbreviations

T

- TH Thermal printer
TTL Transistor-Transistor-Logic
TxD Transmitted Data

U

- UPS Uninterruptible Power Supply
USB Universal Serial Bus
UT Under-counter

V

- VCMD Vertical Cash Media Dispenser

W

- WN Wincor Nixdorf International GmbH

Introduction

This service manual has been compiled for authorized Service personnel only. The operating and installation instructions and the service manual of the base device should also be read since certain details are only described in these instructions.

Symbols used in this manual

- Text following a dash represents an item in a list.
 - " " Text in quotation marks refers to other chapters or sections in this document.
 - Text following this symbol describes actions to be performed in the specified order.
-  Text following this symbol should be given special attention in order to avoid damage and injury.
-  Text following this symbol contains general information to facilitate use of the device and help avoid operating errors.

Important Safety Instructions



Please read the following notes carefully before conducting any work on the device.

Be careful not to injure your head when the customer panel or the operating unit door are lifted up!

Be careful not to injure your head when the customer panel is raised!

Be careful not to injure your head when the operating unit door is lifted up!

Make sure no water/liquids (e.g. rain, snow, etc.) get into the open device and the exposed components, especially under adverse weather conditions, as this could pose a danger to your life.

Make sure you take suitable precautions when working on an open device (e.g. by covering components where necessary) so that fluid cannot enter the open device.

Installation note

- When installing the device or doing any work on the device make sure that the device is not connected to power.
- Remove the shipping restraints inside the unit which secure its components during transportation if necessary for the installation (see enclosed information sheet).

General safety precautions

This device complies with the relevant safety regulations for information processing equipment.

- For reasons of stability, the device must be screwed to the load-bearing substructure of the installation site or mounted on a suitable base.
- When moving the device from a cold to a warm environment, do not operate it for at least two hours to prevent possible damage caused by condensation. do not operate it for at least two hours to prevent possible damage caused by condensation.
- Use only the original packaging material to transport the device.

- Note the warning and information labels on the device.
- Unless otherwise stated, grasp the components only by the green ledge when handling them.
- The device is equipped with a safety-tested power cable. The. which must be connected only to a suitable grounded outlet.
- Always hold the plug when removing the power cable. Never pull the cable itself.
- Lay all connecting cables in such a way that they will not be stepped on or tripped over, damaged or crushed in any way.
- Have damaged power cables replaced immediately.
- Make sure that there is always free access to the sockets used or to the electrical circuit-breakers of the house installation.
- In case of an emergency (e.g. damaged housing, controls or power cables, water or foreign objects in the device), proceed as follows:

Deactivate the device immediately by:

Switching off the automatic circuit breaker or removing the fuse insert from the fuse holder in the distribution box of the building's electricity distribution cabinet.

Disconnecting the plug of the power supply cable from the grounded socket in the building installation;

Switching off the ON/OFF switch on the power distributor.

Interrupting the power connection, if there is one, between the UPS (uninterruptible power supply) and the device (see section "General power interruption").

- Never connect or disconnect data transmission lines during a thunderstorm.
- Always keep the device's vents free from obstruction to ensure proper air circulation and to prevent malfunctions resulting from overheating.
- Only use accessories and extension components that have been approved by us. Nonobservance can result in damage to the system or violations of regulation concerning safety, radio interference and ergonomic requirements.

- Note that there are only safety extra-low voltage circuits (SELV circuits) if you want to feed voltage from an external source into prepared cables to install additional electronics (e. g. EMA connection, relay panel for external features).
- Only use cleaning agents approved by WINCOR NIXDORF International GmbH for cleaning and maintenance (see chapter "Maintenance and service").

Repairs



Repair work may only be carried out by authorized personnel.

Unauthorized opening of the device or repair work carried out improperly could result in considerable danger to the user.

In case of noncompliance, WINCOR NIXDORF International GmbH excludes all liability.

Lithium batteries



The handling and the replacement should only be performed by authorized service personnel who were trained by the WINCOR NIXDORF International GmbH.

There is danger of fire or explosion if the batteries are handled improperly. It is therefore important to note the following points:

- Avoid short circuits
- Never recharge the battery
- Avoid temperatures above +100 °C (+212 °F).
- Do not try to open the battery by force
- Do not allow the battery to come in contact with water or fire

The battery should only be replaced with the same or an equivalent type recommended by WINCOR NIXDORF International GmbH (see chapter "Appendix," section "Consumables").

Dispose of used batteries in compliance with national regulations and the manufacturer's specifications.

Start-up

- i** Before operating the device, remove all parts inside of it which secure its components during transportation or check whether they have been removed (see info sheet supplied with the device).

Structure of the manual

Outline

The chapter "Introduction" describes the important safety precautions. It also gives an overview of the Cash Media Dispenser.

The in the chapter "Device Overview and operation" describes inter alia how you can replace the cash-out cassette and the reject/retract cassette and how you can fill the cash-out cassette and set the banknote size.

In the chapter "Description of the components" is a description of the essential funtions of the individual components of the Cash Media Dispenser.

The chapter "Start-up" is about the initialization of the CMD-V4.

This is followed by several chapters that describe the sensors/actuators and the courses in the CMD-V4.

In the chapter "Troubleshooting" are possible actions listed which are necessary to eliminate a malfunction properly.

The next chapter "Removal/Installation of Components" provides information on how to replace components.

The chapter "Maintenance and Service" contains information on maintenance work to be carried out regularly.

In the chapter "Appendix", the "Pin assignments" are listed.

The features of the CMD are described in the chapter "Appendix" in the section "Technical data".

Supplementary documentation

Instruction manuals in several languages are available for the operation of the base devices, which contain also a description about the CMD.

These manuals can be ordered from our print partner. They are also available in the intranet.

Usually the manufacturers' original manuals for OEM components are included in the shipment. They may contain more detailed information.

Manual release

Since production began, some components have been replaced for various reasons (e. g. progress in technology, cost reduction).

Often the hardware replacement does not result in a changed construction of the device (mechanical or electrical) or the functional integration.

In this case, the new component is added to the service manual and the previous component remains in the respective chapter.

If the integration of a new component results in changes, the corresponding chapters will be adapted (e. g. removal/installation, preventive maintenance, etc.).

Description of the device

Function and use

The most important component of a cash-out automated teller machine is the Cash Media Dispenser (CMD) or the Vertical Cash Media Dispenser (VCMD), respectively.

The CMD-V4 is the replacement for the AZM-NG. The CMD-V4 and the AZM-NG are software-compatible but not hardware-compatible.

The VCMD is the replacement for the SAT BBA UT. The VCMD and the SAT BBA UT are software-compatible but not hardware-compatible.

CMD cassettes are upwards and downwards compatible to a limited extent. They are approximately 5 mm longer and thus cannot be installed without modification in the ProCash BBA mini 3K (up to February 2003) and ProCash BBA UT with CEN safe devices. If necessary, a technical modification can be carried out on the ProCash BBA mini 3K. The old cassettes must be deployed with ProCash BBA UT with CEN safe.

In addition, optimized versions of the CMD cassettes have been developed for the VCMD in order to ensure that note dispensing proceeds smoothly from the cassettes in vertical position. These are furnished with a blue cassette lid and are thus unambiguously marked.

The CMD-V4 can also be equipped with banknote-staining cassettes. There are separate manuals available for these.

One printing cassette can also be configured in place of two cassette positions. There is a separate Service module available for this that is integrated in the respective Service manual.

This manual describes the Cash Media Dispenser Version 4 and the VCMD.

In the following are essential features of the Cash Media Dispenser listed:

- High level of functional reliability (low reject rate, double dispenses recognition)
- High level of user-friendliness and maintainability:
Electrical and mechanical adjustments were minimized
Maintenance intervals of two years or after 200.000 transactions
- All known requirements of environmentally compatible recycling and disposal were met.

The CMD can be customized in the respective device version to the needs of the users because of the different model versions (Frontload/Rearload) and because of a variable number of dispensing units (up to 6 cash-out cassettes and one reject/retract cassette).

The CMD-V4 consists of the following components depending on the features in the device:

- Stacker with or without single reject
- Serial Number Recognition (optional)
- Output transport horizontal/vertical Rearload/Frontload
- 1-cassette with single dispensing unit
- 4-cassette housing with a double dispensing unit or two double dispensing units
- CMD controller
- Cash-out cassettes (optionally with banknote staining)
- Reject / retract cassette
- Shutter



The single reject function can only be delivered in countries out of the European Union.

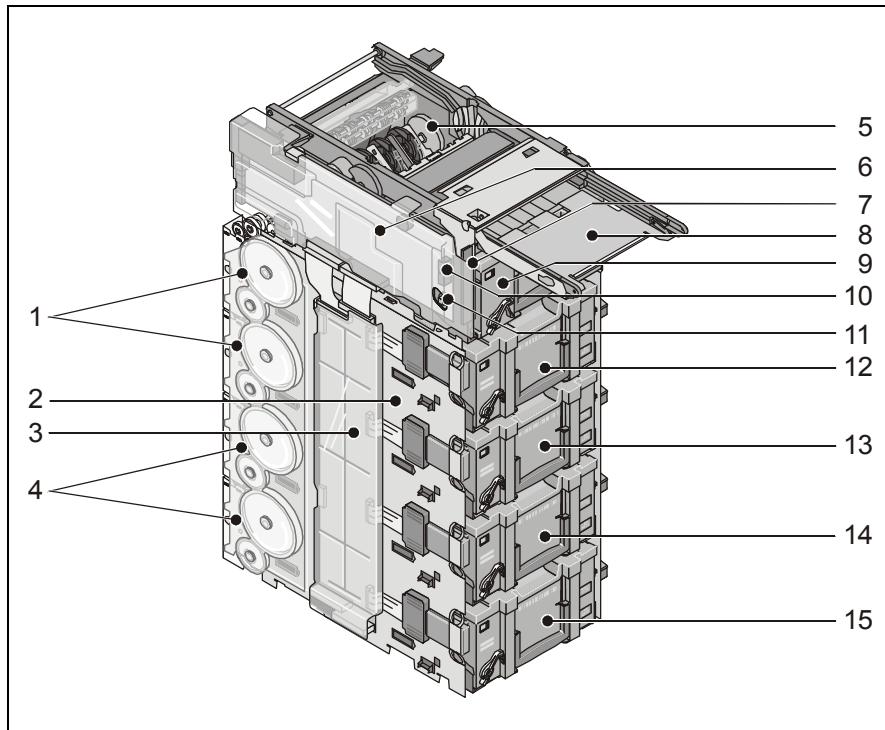
The VCMD consists of the following components depending on the features in the device:

- Stacker and output transport with single reject
- 1-cassette with single dispensing unit
- 2-cassette with double dispensing unit
- CMD controller
- Cash-out and reject cassette

Device Overview and Operation

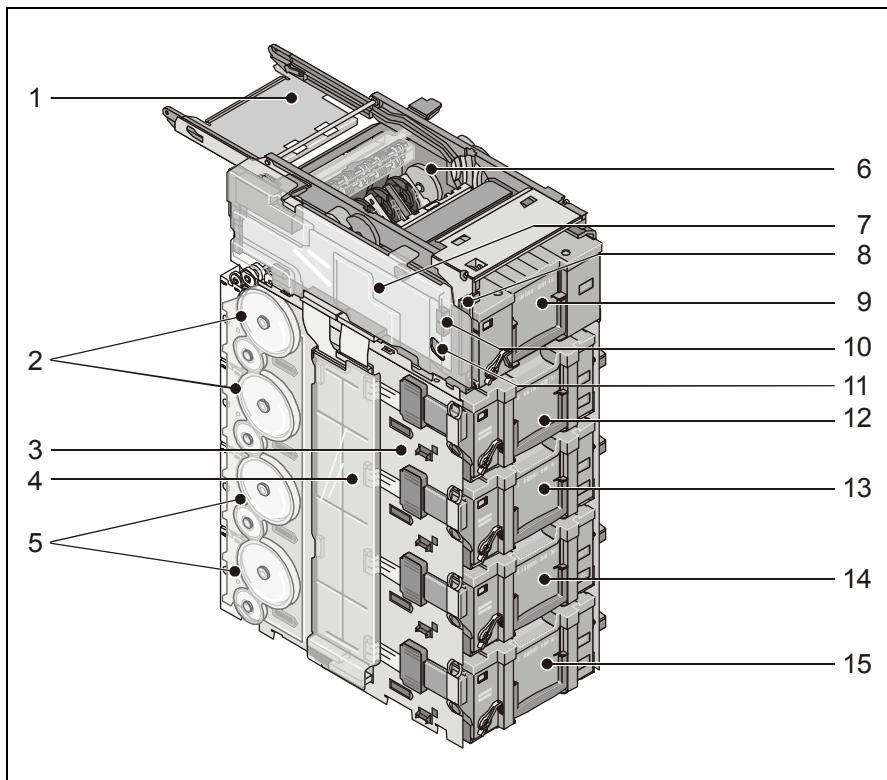
Device overview

CMD-V4 output direction horizontal Frontload



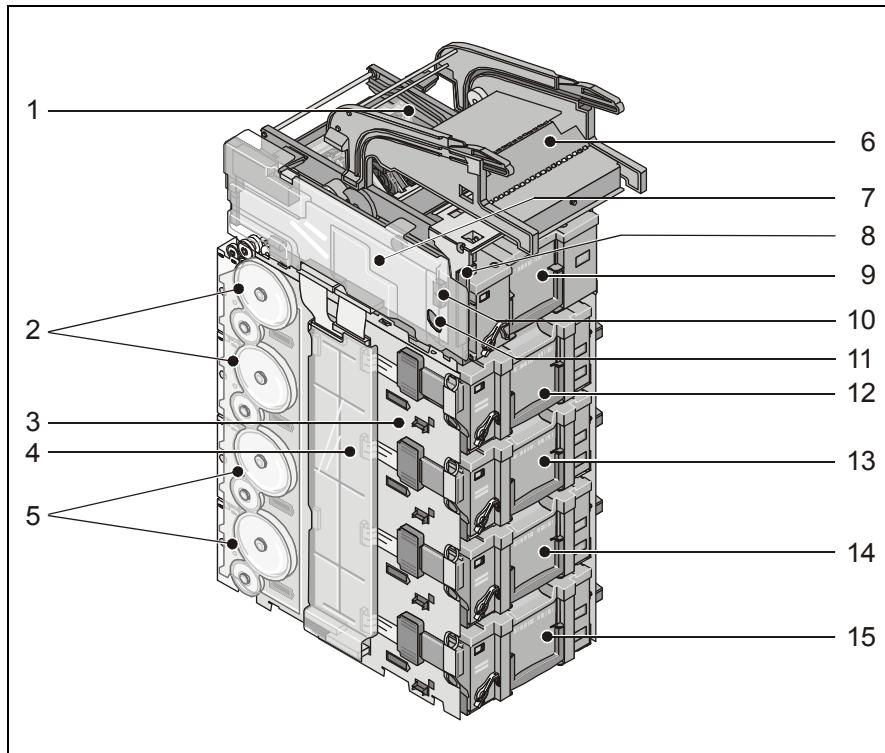
- | | |
|-----------------------------------|-----------------------------|
| 1 Double dispensing unit with DDU | 9 Reject / retract cassette |
| 2 Quadruple rack | 10 Status display |
| 3 4-cassette distributor board | 11 Function key |
| 4 Double dispensing unit | 12 Cash-out cassette 1 |
| 5 Stacker | 13 Cash-out cassette 2 |
| 6 CMD controller | 14 Cash-out cassette 3 |
| 7 Release lever | 15 Cash-out cassette 4 |
| 8 Output transport horizontal FL | |

CMD-V4 output direction horizontal Rearload



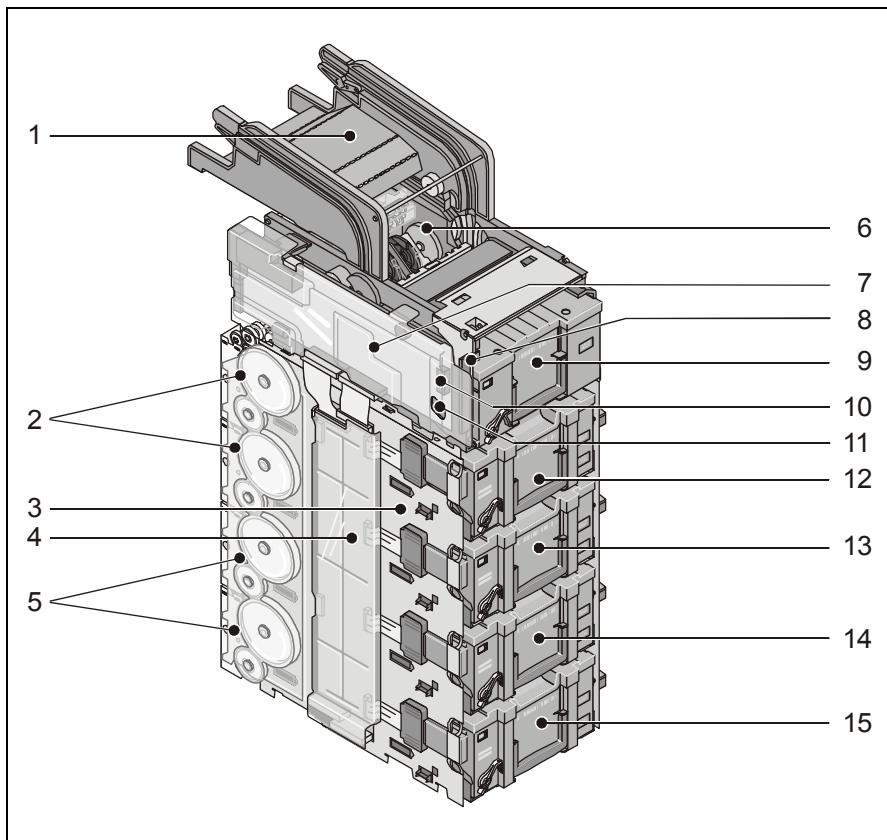
- 1 Output transport horizontal RL
- 2 Double dispensing unit with DDU
- 3 Quadruple rack
- 4 4-cassette distributor board
- 5 Double dispensing unit
- 6 Stacker
- 7 CMD controller
- 8 Release lever
- 9 Reject / retract cassette
- 10 Status display
- 11 Function key
- 12 Cash-out cassette 1
- 13 Cash-out cassette 2
- 14 Cash-out cassette 3
- 15 Cash-out cassette 4

CMD-V4 output direction vertical Frontload



- | | |
|-----------------------------------|-----------------------------|
| 1 Stacker | 9 Reject / retract cassette |
| 2 Double dispensing unit with DDU | 10 Status display |
| 3 Quadruple rack | 11 Function key |
| 4 4-cassette distributor board | 12 Cash-out cassette 1 |
| 5 Double dispensing unit | 13 Cash-out cassette 2 |
| 6 Output transport vertical FL | 14 Cash-out cassette 3 |
| 7 CMD controller | 15 Cash-out cassette 4 |
| 8 Release lever | |

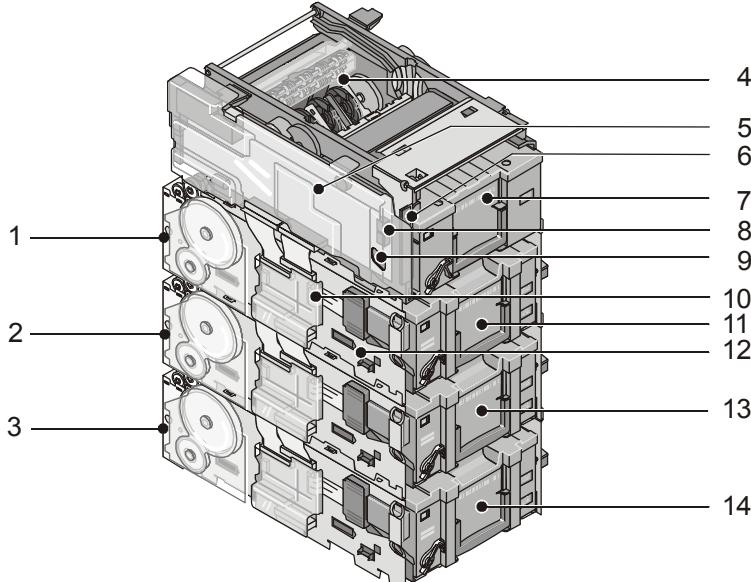
CMD-V4 output direction vertical Rearload



- | | |
|-----------------------------------|-----------------------------|
| 1 Output transport vertical RL | 9 Reject / retract cassette |
| 2 Double dispensing unit with DDU | 10 Status display |
| 3 Quadruple rack | 11 Function key |
| 4 4-cassette distributor board | 12 Cash-out cassette 1 |
| 5 Double dispensing unit | 13 Cash-out cassette 2 |
| 6 Stacker | 14 Cash-out cassette 3 |
| 7 CMD controller | 15 Cash-out cassette 4 |
| 8 Release lever | |

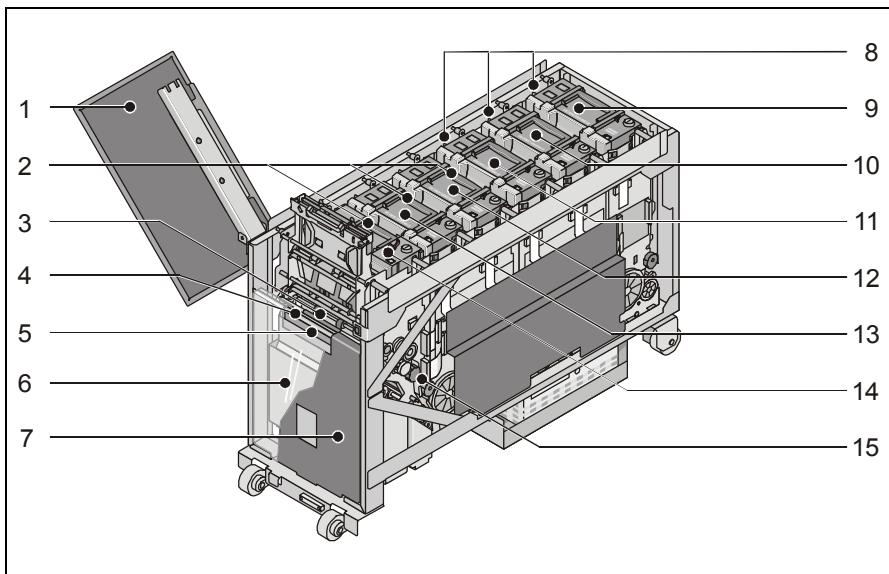
CMD-V4 1-cassette with single dispensing unit

The following illustration shows three 1-cassette housings with a single dispensing unit with double note detection unit (DDU) and two single dispensing units. The CMD-V4 with 1-cassette housing can be supplied in all of the configurations that are also available for the 4-cassette housing (see preceding illustrations).



- | | |
|-----------------------------------|---------------------------------|
| 1 Single dispensing unit with DDU | 8 Status display |
| 2 Single dispensing unit | 9 Function key |
| 3 Single dispensing unit | 10 1-cassette distributor board |
| 4 Stacker | 11 Cash-out cassette 1 |
| 5 CMD controller | 12 1-cassette housing |
| 6 Release lever | 13 Cash-out cassette 2 |
| 7 Reject / retract cassette | 14 Cash-out cassette 3 |

Vertical Cash Media Dispenser (VCMD)



- | | |
|---|------------------------------------|
| 1 Operating unit (folded up to the side) | 8 Cassette release tab(s) |
| 2 Cassette handle(s) | 9 Cash-out cassette 5 |
| 3 Release handle stacker and output transport (SAT) | 10 Cash-out cassette 4 |
| 4 VCMD handle | 11 Cash-out cassette 3 |
| 5 Locking grip handle SAT | 12 Cash-out cassette 2 |
| 6 Stacker and output transport | 13 Cash-out cassette 1 |
| 7 Safety shield | 14 Reject cassette |
| | 15 Handwheel (for troubleshooting) |

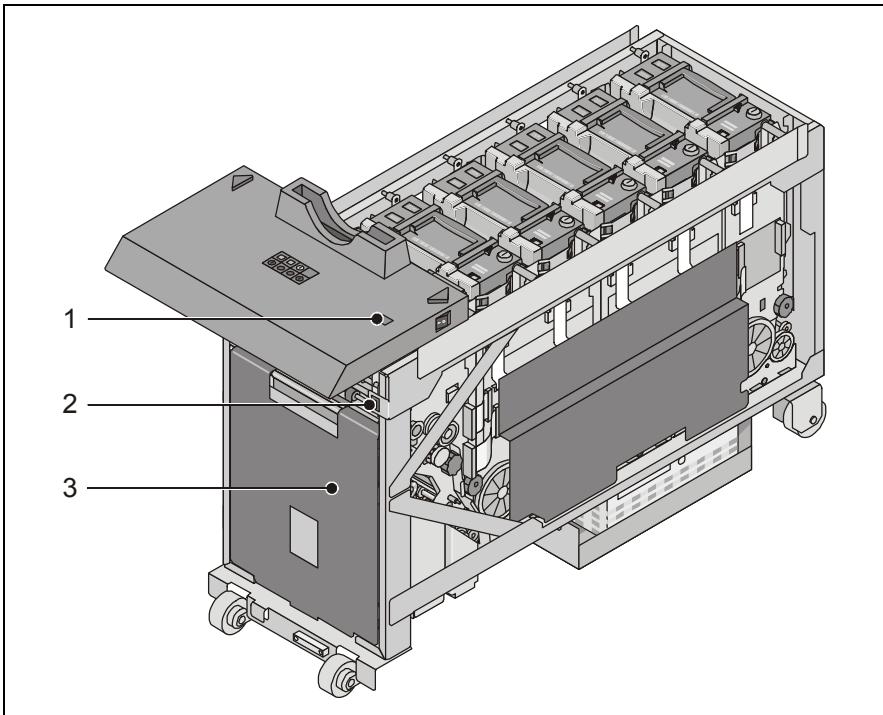
Functional components and controls

CMD-V4



- 1 Release lever
- 2 Status indicator (two 7-segment displays, first digit at the top)
- 3 Function key

VCMD



- 1 Status indicator (two 7-segment displays)
- 2 Function key
- 3 Safety shield

Serial Number Recognition

Serial number detection can be optionally configured in the CMD-V4 for specific countries. The bank note is registered by the CMD-V4 and an image of the note is transmitted to the product-specific software. This prepares the data for evaluating the serial numbers on the notes.

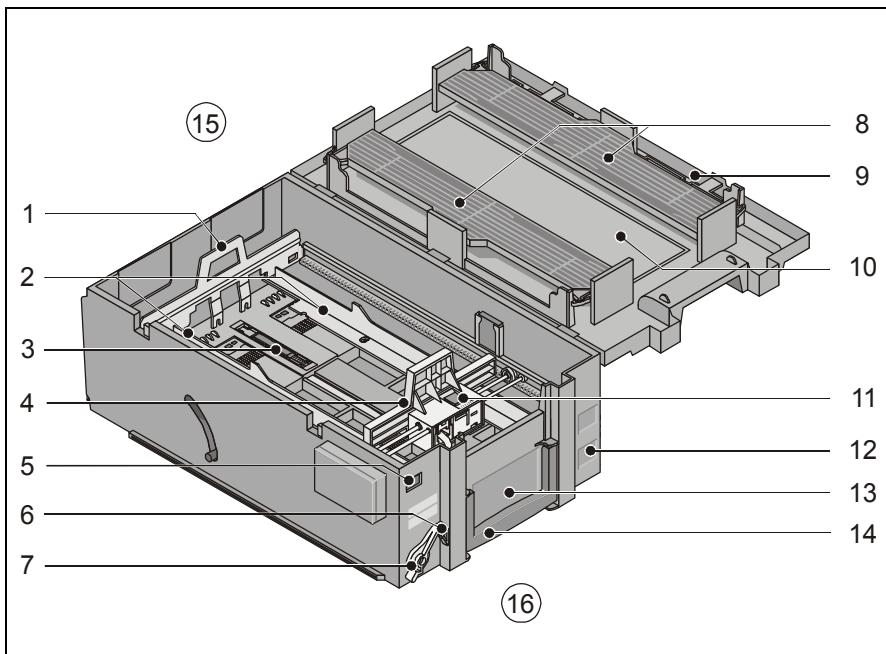
The cassettes

Cash-out cassette

The cash-out cassette is used to store banknotes for dispensing. Each cash-out cassette can only store banknotes of the same denomination.

The cash-out cassette is available in different versions.

Cassette versions
Cash-out cassette with locking/release lever and lead-sealed
Cash-out cassette with lock and lead-sealed
Cash-out cassette with locking/release lever and lead-sealed and low cash sensor (see illustration)
Cash-out cassette with lock and lead-sealed and low cash sensor



- | | |
|--|----------------------------------|
| 1 Pull-back handle | 9 Cassette lid |
| 2 Banknote rail | 10 Refill notes |
| 3 Slide for low cash sensor
(optional) | 11 Latching button |
| 4 Pressure carriage | 12 Free space for denomination |
| 5 Blue/green tamper indicator | 13 Free space for cassette label |
| 6 Sealing device | 14 Cassette handle |
| 7 Locking / release lever or lock | 15 Dispensing side |
| 8 Inset for setting the banknote
height | 16 Side of cassette handle |

Reject / retract cassette

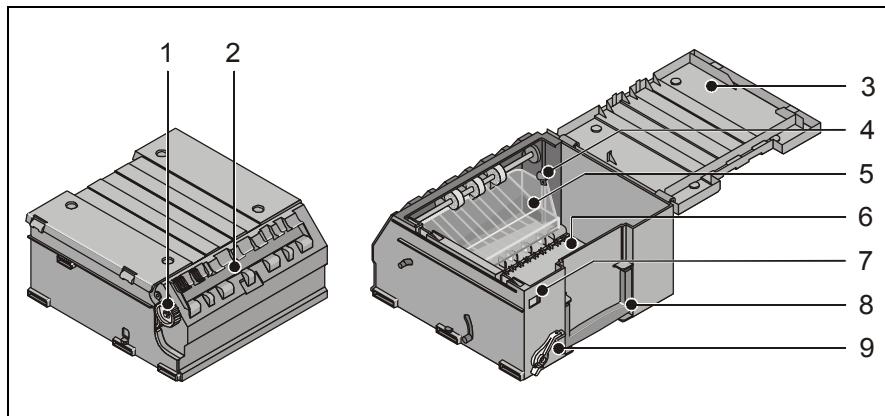
CMD-V4

Banknotes from failed or trial dispensing are generally stored in an unordered manner in the reject box of the reject/retract cassette.

Banknotes from the customer, e.g. banknotes not removed by the customer, are stored in the retract box of the reject/retract cassette.

The reject/retract cassette is available in different versions.

Cassette versions
Reject/retract cassette with locking/release lever and lead-sealed (see illustration)
Reject/retract cassette with lock and lead-sealed



- | | |
|---|---------------------------------|
| 1 Gearwheel to drive the banknote transport | 6 Reject compartment |
| 2 Note input | 7 Blue/green tamper indicator |
| 3 Cassette lid | 8 Cassette handle |
| 4 Lever for retract box | 9 Locking/release lever or lock |
| 5 Retract box | |

VCMD

i The reject cassette used with the VCMD does not have a retract box.

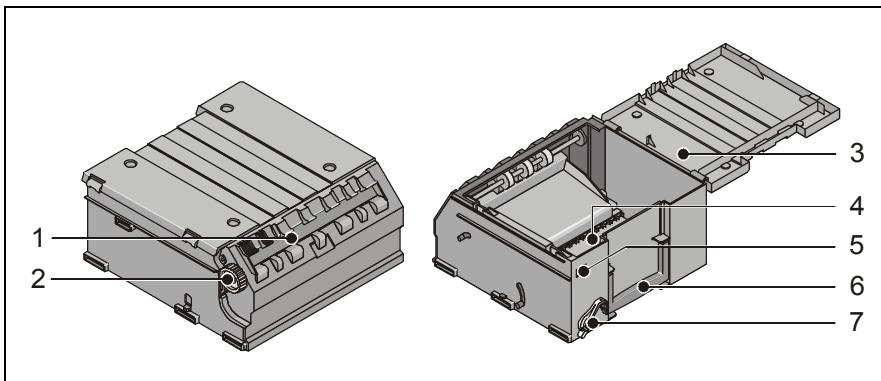
Banknotes from failed or trial dispensing are generally stored in an unordered manner in the reject box of the reject cassette.

The reject cassette is available in different versions.

Cassette versions

Reject cassette with locking / release lever and lead-sealed (see illustration)

Reject cassette with lock and lead-sealed



- 1 Note input
- 2 Gearwheel to drive the banknote transport
- 3 Cassette lid
- 4 Reject compartment

- 5 Blue/green tamper indicator
- 6 Cassette handle
- 7 Locking / release lever or lock

Avoidance of problems and damage

Safety instructions

- Make sure that cash-out or reject/retract cassettes are not damaged or dropped during storage and transport.
- In particular, make sure that the gearwheel at the front of the reject/retract cassette is not damaged during storage and transport.
- Protect the cassettes against moisture during transport.
- Do not install cassettes that have come from a cold environment until they have had enough time to acclimatize (condensation, for example, can occur).
- Never pull the cassette out while the system is in operation. This would immediately cause a banknote jam.
- Pay attention to the weight when removing and installing cassettes. A completely filled cash-out cassette weighs about 6.3 kg (13.89 lb).

Removing the cassette

CMD-V4



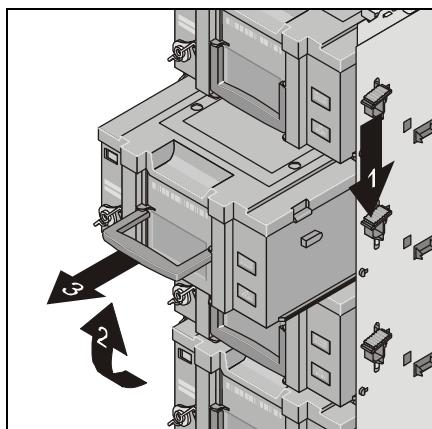
Before cassettes can be removed, the current transaction must be terminated as defined.

The procedure for removing the reject/retract cassettes and for cash-out cassettes is the same.

Before removing a cash-out cassette always remove the reject / retract cassette first.

- Activate the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").
- Open the safe door (see the operating manual of the base device).

The cassettes from the CMD-V4 can be removed as follows:



Press the green releasing tab on the right side of the cassette (1).

The released cassette is automatically pushed out of the dispenser by several centimeters.

Raise the cassette handle (2) and pull the cassette out of the CMD-V4 by the handle (3). While pulling the cassette, support it from underneath with your free hand.



When removing cassettes, do not pull them out jerkily so as not to damage them or the box guide.

VCMD

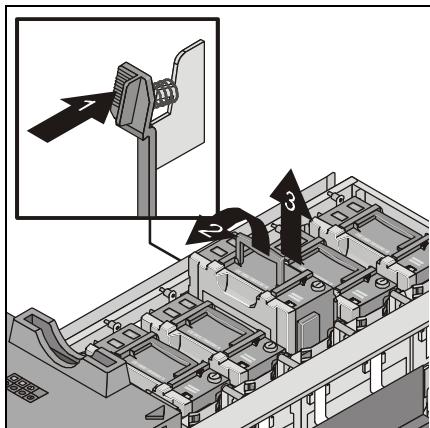
- i** Before cassettes can be removed, the current transaction must be terminated as defined.

The procedure for removing the reject/retract cassettes and for cash-out cassettes is the same.

Before removing a cash-out cassette always remove the reject / retract cassette first.

- Activate the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").
- Open the safe door and pull the VCMD out of the safe as far as possible (consult the operating manual of the basic device).

The cassettes from the VCMD can be removed as follows:



Press the respective green release tab (1).

The released cassette is automatically pushed out of the dispenser by several centimeters.

Raise the cassette handle (2) and pull the cassette out of the VCMD by the handle (3).

- i** When removing cassettes, do not pull them out jerkily so as not to damage them or the box guide.

Cassette transportation



Make sure that cassette(s) are not damaged during transport. It is therefore important to note the following instructions:

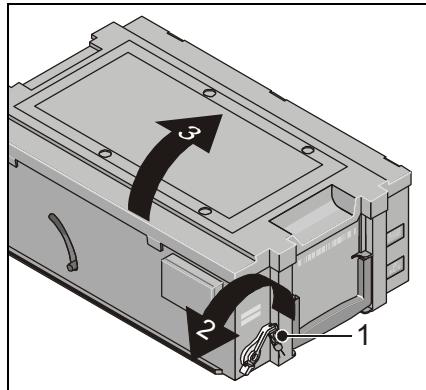
- Do not allow cassette(s) to fall
- Do not toss cassette(s)
- Transport cassette(s) only in its/their original position during transport
- Do not hurtle cassette(s) during transport (loose transport on the loading surface is not permitted)
- Do not stack excessive numbers of cassette(s) on top of one another

Opening the cassette



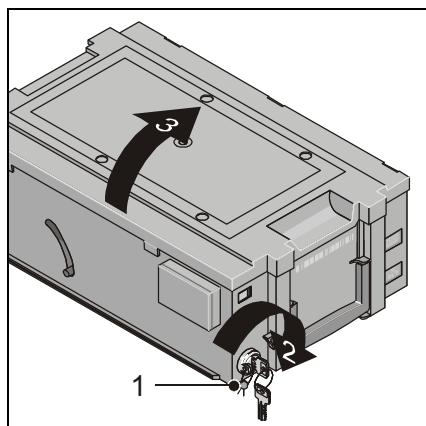
The procedure for opening cash-out cassettes and reject/retract cassettes is the same.

- Remove the cassette (see section "Removing the cassette").



Cassette without lock

Remove the sealing if there is one (1). Turn the green locking/release lever in the arrow direction (2) and lift the cassette lid in the arrow direction (3).



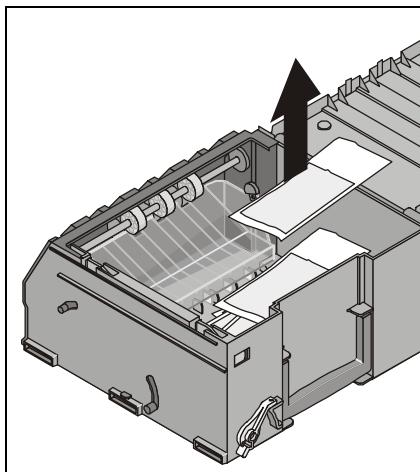
Box with sealable lock

Remove the sealing if there is one (1). Insert the cassette key into the cassette lock, turn the key to the right as far as possible (2) and lift the cassette lid in the arrow direction (3).

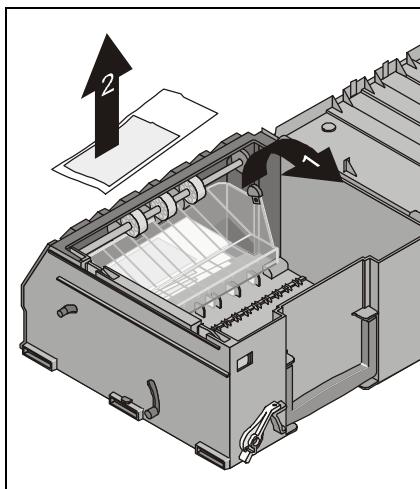
Emptying the reject/retract cassette

CMD-V4

- Remove and open the cassette (see section "Opening the cassette").



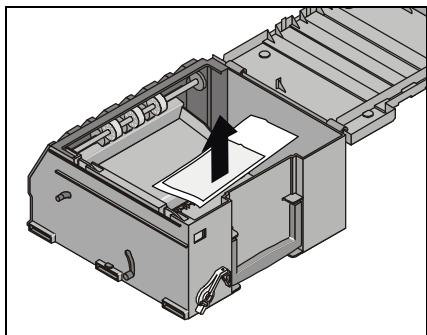
Remove the banknotes from the cassette's reject compartment.



To empty the retract box, push the green lever in the direction indicated (1) as far as possible and hold it down. You can remove the banknotes from the retract box with your other hand (2).

VCMD

- Remove and open the cassette (see section "Opening the cassette").



Remove the banknotes from the cassette's reject compartment.

Setting the low cash sensor

As an option, the cash-out cassettes can be equipped with a low cash sensor.

With this function, a microswitch reports to the connected device that the cassette contains only a certain quantity of banknotes.

To set the sensor to the desired minimum banknote quantity, proceed as follows:

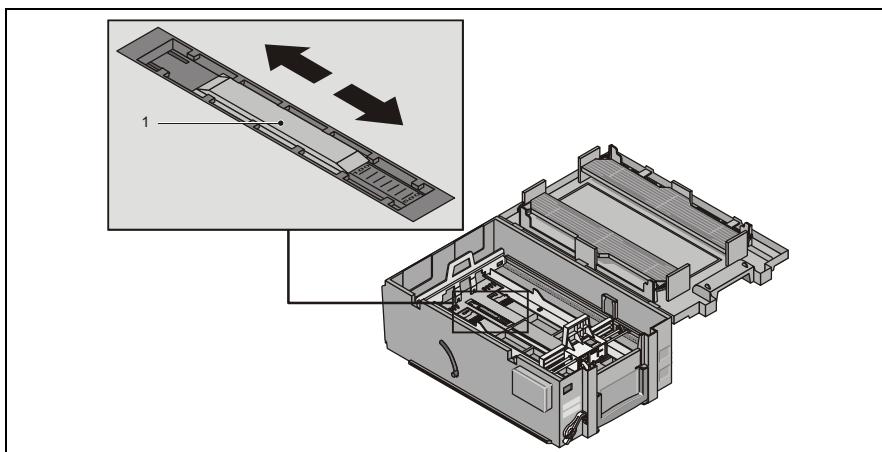
- Remove and open the cassette (see section "Opening the cassette").
- Remove any notes you may find.
- Set the slide (1) manually (see arrows) to the desired minimum banknote quantity.



The minimum banknote quantity can be set between 50 and 550 (in steps of 50) via the green mechanical slide (1).

Setting '0' means that the function is deactivated.

The example shows the setting for 100 banknotes.



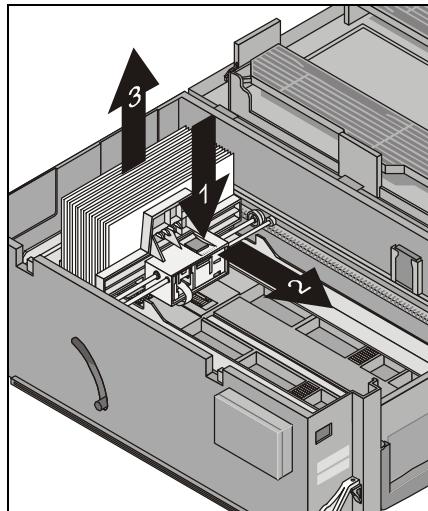
Setting the note width



The note width has to be set before the cassette is used for the first time or when a different currency or denomination is used in the cassette.

- Remove and open the cassette (see section "Opening the cassette").

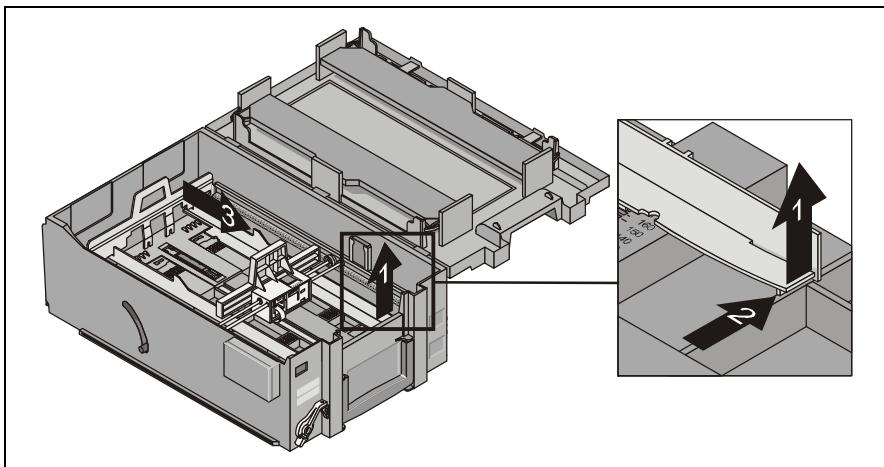
Removing the banknotes



Press the green latching button (1) while sliding the pressure carriage slightly forward at the same time to disengage the return lock.

Slide the pressure carriage up to the center (2). Remove any banknotes present (3).

Disengaging the banknote rails



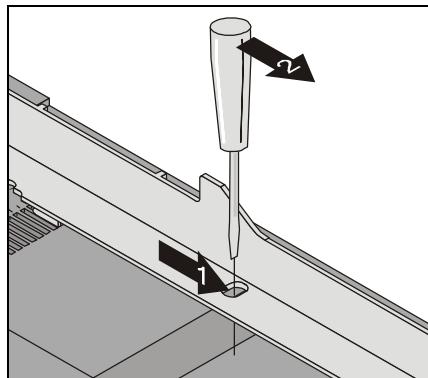
- Pull up the horizontal tab (1) at the end of the banknote rail to lift the catch (2) above the crosspiece underneath the tab. At the same time, push against the shoulder (3) with the thumb of your other hand in the direction of the cassette handle.



The left rail and the right banknote rails are removed in the same way.

Should the banknote rail be difficult to disengage, proceed as follows:

- Pull up the horizontal tab (1) at the end of the banknote rail to lift the catch (2) above the crosspiece underneath the tab (see illustration in the section "Removing the banknote rails").



Insert the tip of a screwdriver in the opening of the banknote rail (1) and use it as a lever to move the rails in the arrow direction (2).

Disengaging the banknote rail – note width less than 110 mm (4.33")

If the banknote rail is set to a banknote width of less than 110 mm (4.33"), proceed as follows:

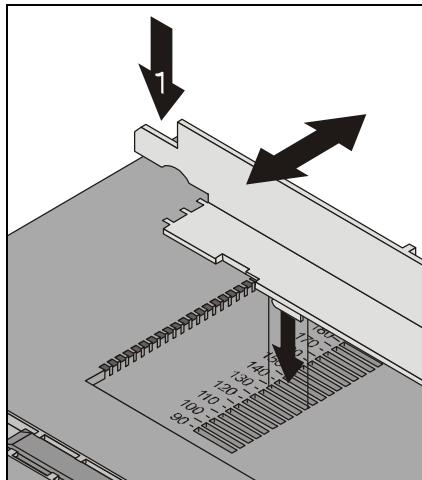
- Pull up the horizontal tab (1) at the end of the banknote rail to lift the catch (2) above the crosspiece underneath the tab. At the same time push against the nose of the rail (3) with the thumb of your other hand in the direction of the cassette handle (see section "Removing the banknote rails").
- Push the pressure carriage all the way to the other end of the cassette, i.e. the one from which the banknotes are dispensed.
- Lift the end of the banknote rail a little and press it outwards towards the side cover of the cassette. If you hold the rail in this position you can push the pressure carriage to the side of the cassette with the cassette handle.
- Pull the rail on the other side upwards.

Inserting the banknote rail

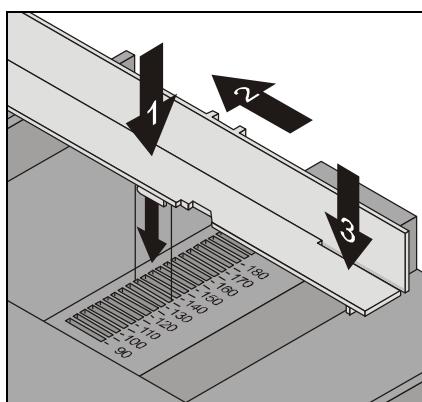


In the following representations, a note width of 133 mm (5.24") is assumed, resulting in a rail setting at 135 mm (5.31") on the scale.

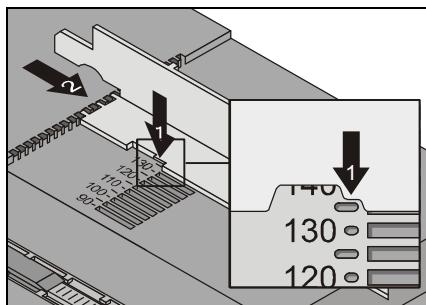
The left rail and the right banknote rails are removed in the same way.



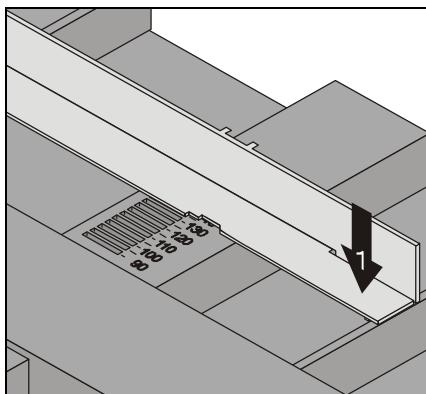
Slide the protruding end of the rail (1) under the lower edge of the pull-back handle if necessary and press the rail (on the dispensing side of the cassette) into the slot for the required banknote width.



Then push the rail into the corresponding slot on the cassette handle side. Press down on the banknote rail (1) near the scale **while pushing it** in the direction of the dispensing side (2). Now push the tab (3) down until it snaps into place.



The banknote rail is correctly inserted if the desired setting is placed in the small cutout (1) and the rail is correctly hooked in (2).



The tab of the rail (1) must lie flat on the crosspiece.



Make sure that both rails are set to the **same** note width at all four positions.

If you have no information concerning the size of the banknotes used, measure the banknotes in millimeters. Round up this value to the next higher value on the scale and insert the rail at that position.

Examples for setting the banknote rail:

Dispensing end	Side of cassette handle	
		Note width 133 mm (5.24") - banknote rail is set to 135 mm (5.31") on the scale
		Note width 137 mm (5.40") - banknote rail is set to 140 mm (5.51") on the scale

Inserting the banknote rail – note width less than 110 mm (4.33")

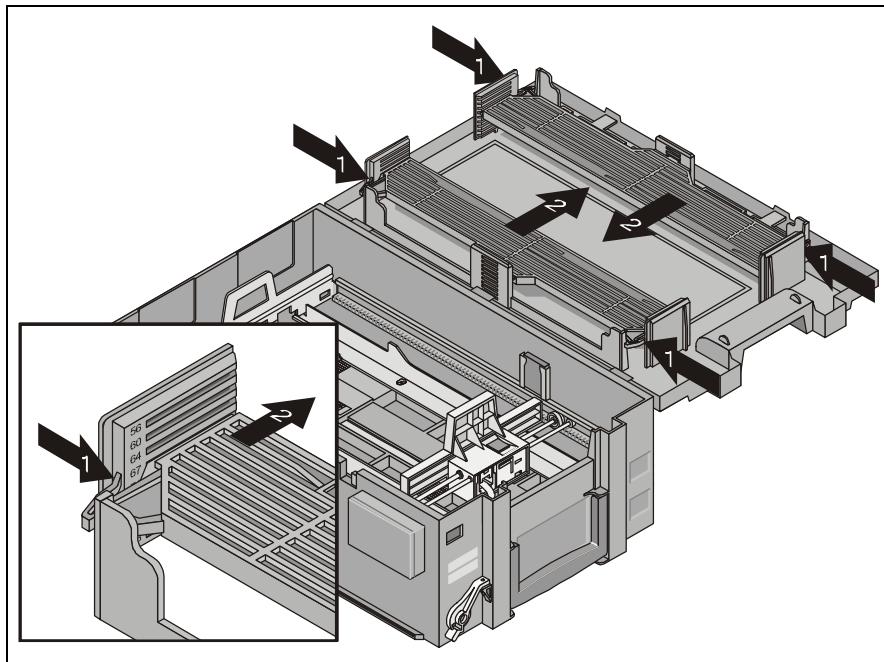
If the note width is less than 110 mm (4.33"), please proceed as follows:

- Push the pressure carriage all the way to the end of the cassette which has the cassette handle (see section "Removing the banknotes").
- Insert the banknote rail in the desired slot in front (dispensing side), and press the rail at the rear (cassette handle end) outwards to the cassette side cover.
- Press the banknote rail down in the center.
- Slide the pressure carriage carefully towards the dispensing side until it reaches the pull-back handle.
- Insert the rail at the rear. Press the tab down until it snaps into place.

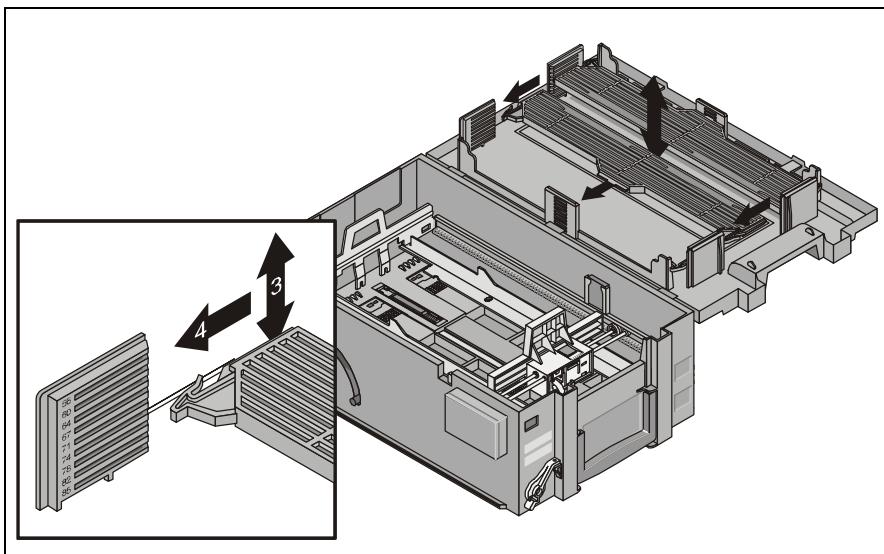


When the banknotes are inserted, there is automatically a gap between the notes and the rails.

Setting the banknote height



- Press the two catches (1) inwards and remove the inset (2) in the direction of the center of the cassette lid.



- Set the required note height (3) and push the insets back in (4) until they snap into place.



Make sure that the insets are set to the **same** height adjustment at all six positions.

If you have no information concerning the size of the banknotes used, measure the banknotes in millimeters. Round up this value in mm to the next higher value on the scale (CMD-V4) or to the next one higher than that (VCMD) and place the insert in that position.

Examples:

CMD-V4:

Note height 72 mm (2.83") - setting the insert at the scale value 74 mm (2.91")

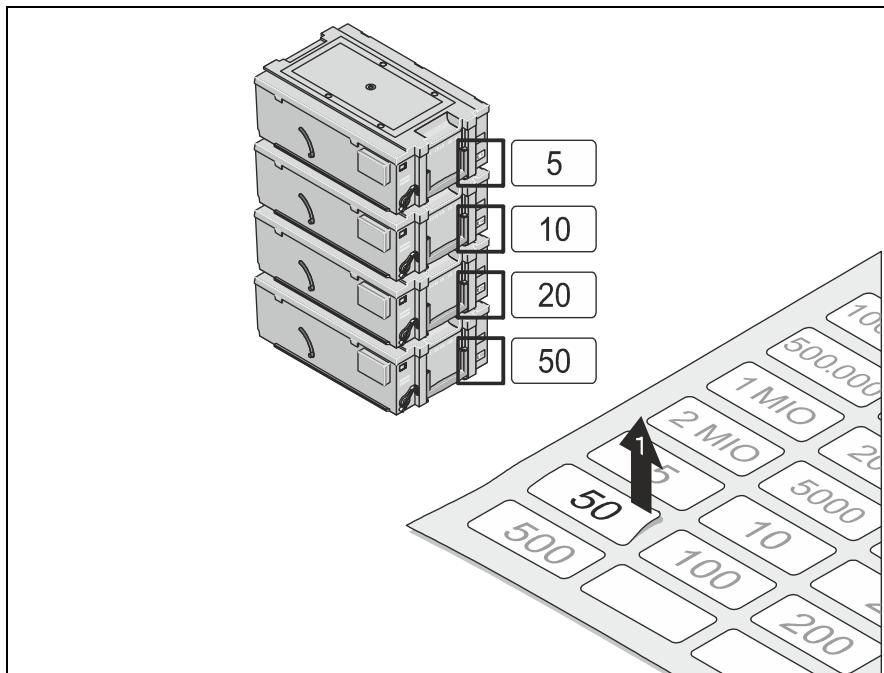
VCMD:

Note height 72 mm (2.83") - setting the insert at the scale value 78 mm (3.07")

Attaching denomination labels to CMD cassettes



The denomination labels are attached to the cash-out cassette after adjusting the width and height of the note.



- Remove the corresponding denomination labels (1) from the carrier material and attach them to the corresponding cash-out cassette (shown in the illustration here).

Filling the cash-out cassette

Replenishment of the cash-out cassettes includes the following steps:

- Preparing the cash-out cassette
- Preparing the banknote bundles
- Inserting banknote bundles



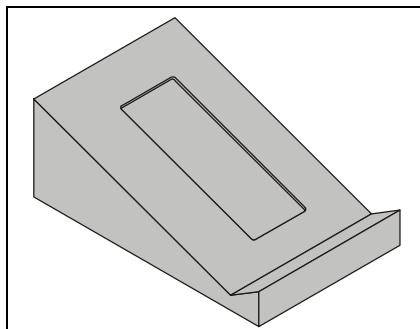
In general, all banknotes corresponding to the requirements of the national bank are suitable for use in the cash-out cassette.

The cash-out cassette must be positioned horizontally or with the cassette handle side slanted upwards, so that the return lock in the pressure carriage is not activated.

To ensure error-free dispensing, fill the cash-out cassette only with intact and carefully prepared banknote bundles which only contain notes of the same value.

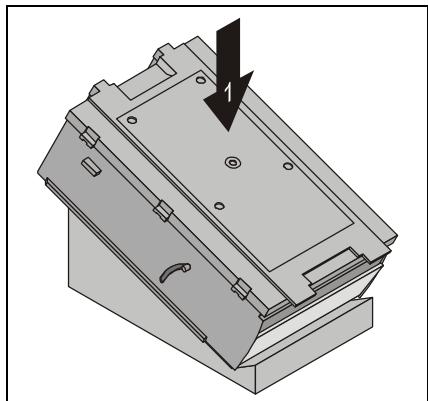
Preparing the cash-out cassette

Use the loading aid shown in the picture below to replenish the cash-out cassette.



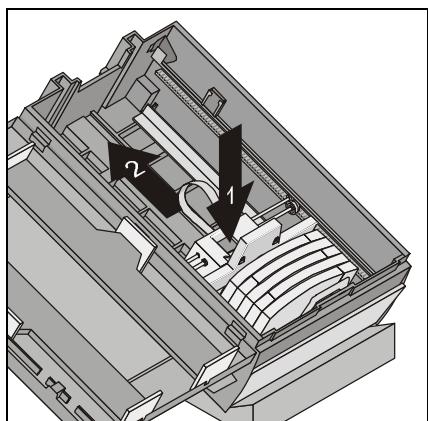
The loading aid facilitates the filling procedure and prevents that the inserted banknotes / banknote bundles fall over.

(Loading aid order number:
7595300720)



Remove the cash-out cassette from the CMD-V4 (see section "Removing the cassette").

Place the cash-out cassette (1) on the loading aid as shown in the picture, and open the cassette lid (see the section "Opening the cassette").



Press the green latching button (1) and push the pressure carriage slightly forward to disengage the return lock.

Then pull the pressure carriage back up to the to cassette edge back towards the side with the cassette handle (2).

- Set the low cash sensor (if installed) to the desired minimum banknote quantity (see section "Setting the low cash sensor").
- Fill the cash-out cassette. following the instructions provided in the following sections.

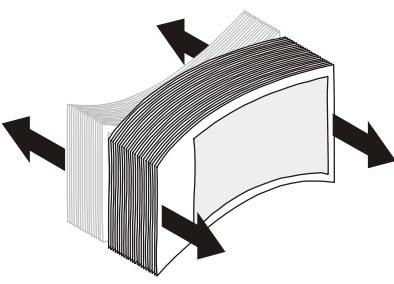
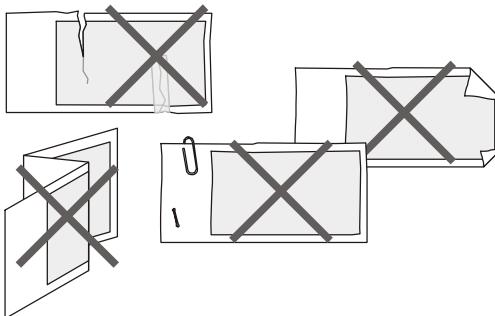
Preparing the banknote bundles

Check the banknotes for damage before you put them into the cash-out cassettes.

Sort out the damaged banknotes and/or remove clips, needles or other foreign objects.



The following banknotes should be rejected: torn, glued, folded, creased, stapled or clipped banknotes.



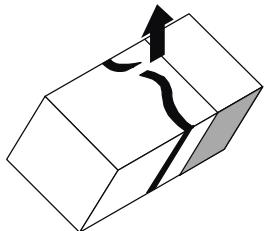
If you use new banknotes/banknote bundles, you must separate the banknotes at the cut edges. Carefully fan the banknote bundles and bend them several times in various directions.

Inserting banknote bundles

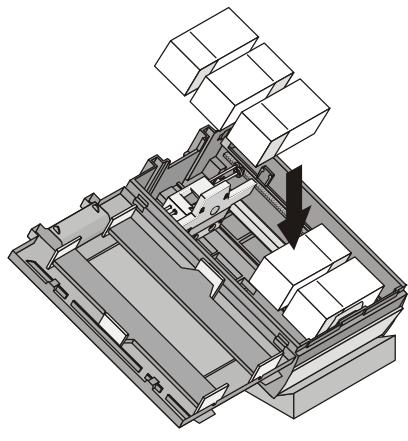


Also follow the instructions for filling the cash-out cassette on the inside of the cassette lid.

General refill notes

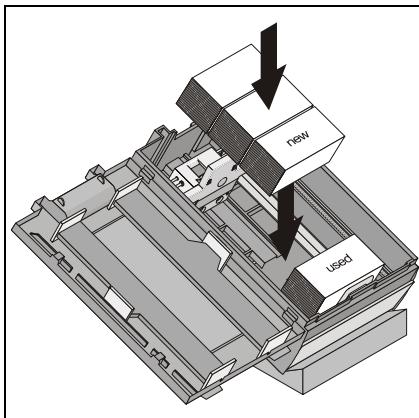


Remove any existing bank wrappers made of paper, plastic or rubber before inserting the banknote bundle.



You should always insert the banknote bundles into the cash-out cassette so that the silver strips or other raised embossing of the individual bundles are alternately pointing to the left and to the right.

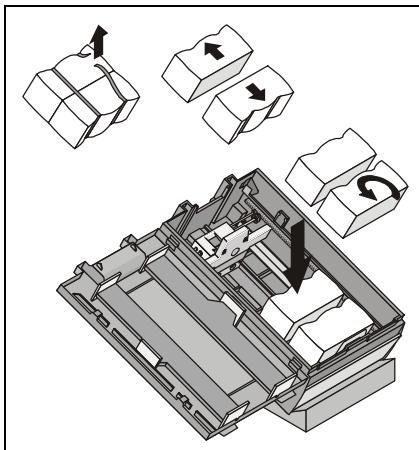
New and used banknote bundles



If you use new and used banknote bundles in one cassette, always insert the bundles with the used banknotes into the cassette first.

Then insert the bundles with the new banknotes after you separated them at the cut edges (see the section "Preparing the banknote bundles").

Deformed banknote bundles

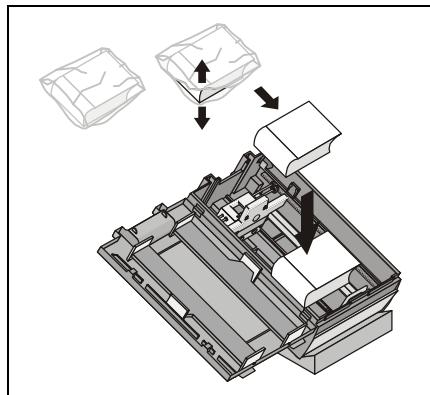


Insert banknote bundles which were deformed by packaging (bands with paper, plastic or elastic bands) as follows:

Split the banknote bundle and turn the first half of the bundle so that the bent side is pointing towards the pressure carriage.

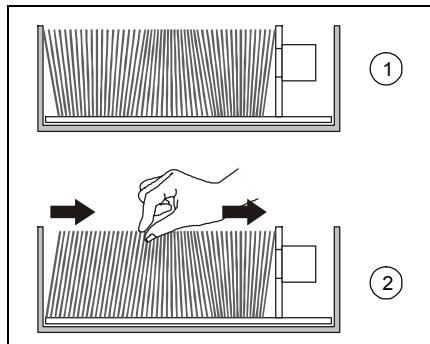
Insert the two bundle halves into the cassette as shown in this picture.

Please do not use any extremely deformed banknotes.



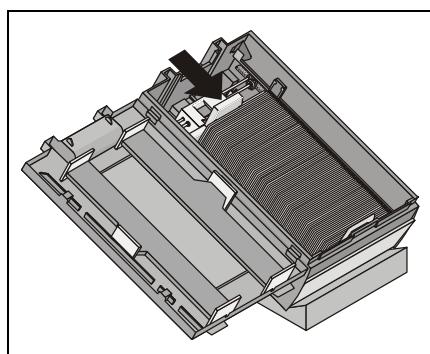
Always insert banknote bundles which are bent horizontally by their packaging into the cash-out cassette in such a way that the side of the bundle bulging out is pointing towards the pressure carriage.

Remove the banknote bundles from the packaging, fan the banknotes and put them into the cassette as shown in the picture.



The banknotes are now positioned in the cash-out cassette as shown in the illustration (1).

Stroke across the banknotes towards the pressure carriage as shown in the illustration (2).



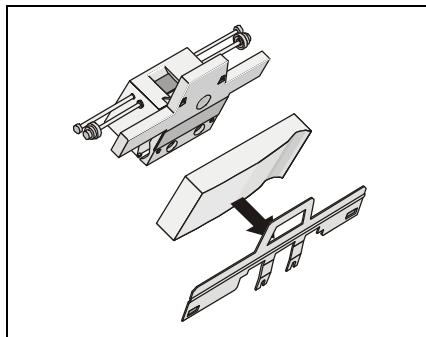
Press the green latching button on the pressure carriage, and push the carriage against the banknotes far enough to prevent them from falling over. The inserted banknotes do not need to be pressed together.

- Close the cash-out cassette and re-insert it (see section "Inserting the cassette").

Special comments for deformed banknotes

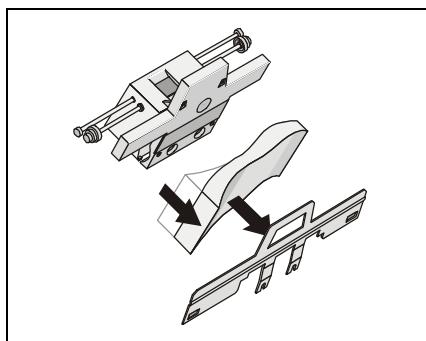
Possible deformation of banknotes

Type A: Bulge near the hologram	Type B: S-shaped bulge	Type C: Wavy-shaped bulge
		



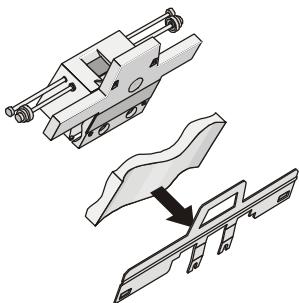
Type A:

Turn the bundle so that the deformed corner of the banknote is pointing towards the dispensing side and not towards the pressure carriage.



Type B:

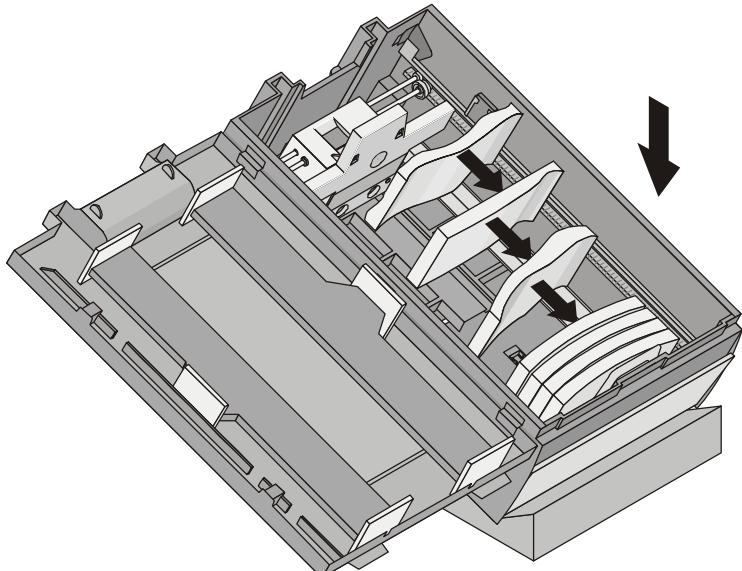
Bundles whose S shape is pronounced and exceeds 5 mm (0.2") should not be deployed. If no other banknote bundles are available, the entire bundle needs to be formed to a U shape as to be fit for use. Insert these bundles so that the deformed corners are pointing towards the cassette end from which the banknotes are dispensed and not towards the pressure carriage.

**Type C:**

If the bundle has a wavy shape as a result of being tied, turn it so that the deformed corners are pointing towards the end from which the banknotes are dispensed and not towards the pressure carriage.

The following illustration shows the sequence in which the deformed banknotes have to be inserted.

Note that the deformed corners of the banknotes must always point to the side from which the notes are dispensed. The bulging side always has to point to the pressure carriage/cassette handle side.

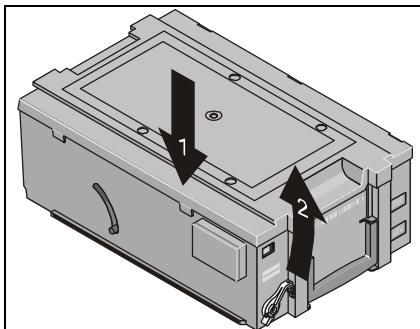


Inserting the cassette

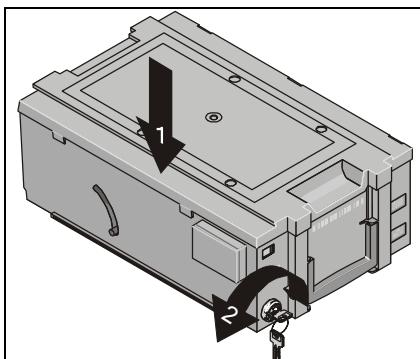


The procedure for inserting cash-out cassettes and reject/retract cassettes is the same.

Closing the cassette



If the cassette does not have a lock, you must close the cassette lid (1) and turn the green locking and release lever (2) to the left. The cassette lid then engages in the latching mechanism, and the lever (2) automatically returns to its original position.



If the cassette has a lock, close the cassette lid (1) and turn the key (2) to the left as far as possible. Pull the key from the cassette lock.

- Seal the cassette if necessary.

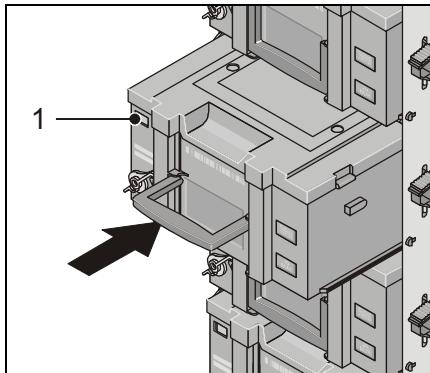
Inserting the cassette

CMD-V4

- i** Normally the tamper indicator (1) is always green. If the indicator is blue, the cassette has been tampered with or has been forced open.

To switch the tamper indicator to green, proceed as follows:

- Unlock the cassette using the key and/or turn the locking/release lever to the left.
- Turn the locking/release lever to the left or lock the cassette with the key (see section "Closing the cassette").



Push the cassette back into the CMD-V4 in one uninterrupted motion until it audibly latches into place. Wait for the single beep confirming the correct pressure build-up in the cassette.

- i** When installing cassettes, do not push them in jerkily so as not to damage them or the guide.

- If a triple signal tone sounds instead of a single tone, remove the cassette and check the contents of the cash-out cassette (see the instructions in the section "Filling the cash-out cassette"). Then try again to insert the cassette.

The acoustic warning (triple signal tone) is accompanied by a message on the status display of the controller (ZAC).

Example:

4

8

- Cash-out cassette 1

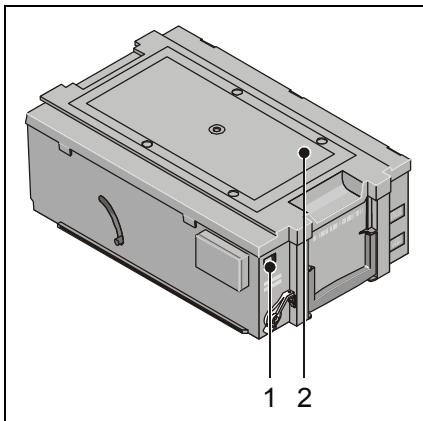
VCMD

i Only cassettes with a blue cover are suitable for the vertical operation of the VCMD.

i Normally the tamper indicator (1) is always green. If the indicator is blue, the cassette has been tampered with or has been forced open.

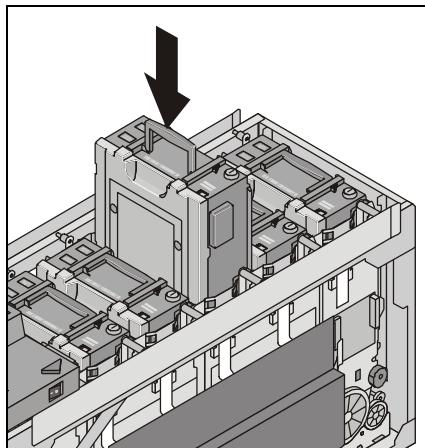
To switch the tamper indicator to green, proceed as follows:

- Unlock the cassette using the key and/or turn the locking/release lever to the left. Open the lid (see section "Opening the cassette").
- Close the cassette lid and turn the locking/release lever to the left or lock the cassette with the key (see section "Closing the cassette").



Check the cassette before using it.

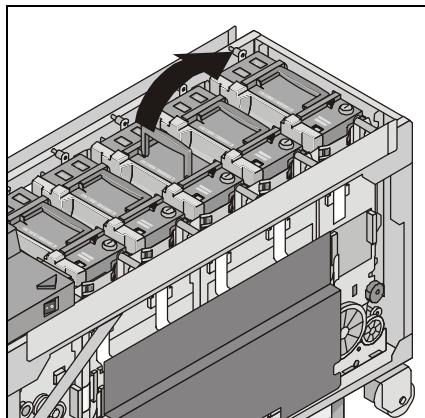
- 1 The tamper indicator must indicate 'green'
- 2 Cassette with a blue cassette lid



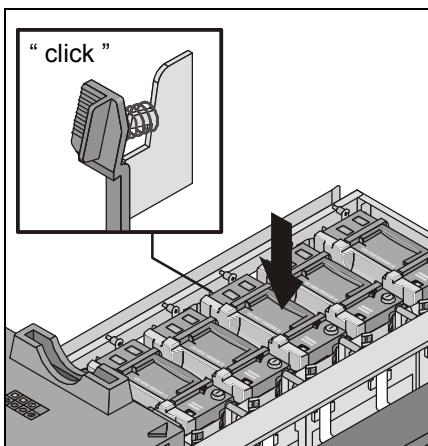
Holding the cassette grip, insert the cassette slowly and evenly into the VCMD (see arrow).



Do not jerk the cassette while inserting it and never permit it to fall into the VCMD from above!



Fold the cassette grip down in the arrow direction.



Press the cassette downward with the flat of your hand (see arrow) until the locking/unlocking key engages audibly.

- If a triple signal tone sounds instead of a single tone, remove the cassette and check the contents of the cash-out cassette (see the instructions in the section "Filling the cash-out cassette"). Then try again to insert the cassette.

The acoustic warning (triple signal tone) is accompanied by a message on the status display of the controller (ZAC).

Example:

4

8

- Cash-out cassette 1

Cassette initialization

The initialization of the cassettes is necessary in case of new types of banknotes or cassettes. With the initialization the system will be informed about the cassette number, the currency and the denomination of the banknotes. If necessary, you can enter more parameters.

Please observe the product-specific and bank requirements concerning a standard or individual change of cassettes. Please obtain this information from the bank's administration.

Determining the reference value

The reference value determination can be performed for a maximum of 40 different unknown banknotes. It is controlled by the product-specific software.

The reference value determination is required for:

- Initial start-up,
- Use of new banknote types,
- Replacement of controller or dispensing unit with measurement point.
- Activate the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").

From the specified cassette the currency characteristics, the value of the banknotes and the release date will be read out. These values are transmitted to the cassette beforehand when it is initialized. There will be as many banknotes dispensed as necessary for reference value determination. The process of determining the reference value will be terminated at the latest if the reference value cannot be determined within the maximum possible number of banknotes. The cassette status remains at <P> in this case.

After the reference value has been determined, the dispensed number of banknotes is reported back to the system.

If no reference value is determined, the status <P> is reported back to the software. No dispensing from this cassette is possible under these circumstances.

The dispensed banknotes are located in the stacking position in the clamp.

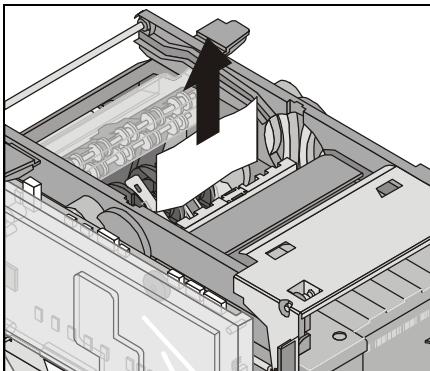
- Open the safe door (see the operating manual of the base device).

CMD-V4

- Pull the CMD-V4 as far as possible out of the safe by the green release lever (see chapter "Removal and installation", section "Pulling out/pushing in the CMD-V4").



If the release lever jams and you cannot pull out the CMD-V4, it is imperative that you consult the chapter "Troubleshooting".



Remove the dispensed banknotes from the clamp stacking position and count them.

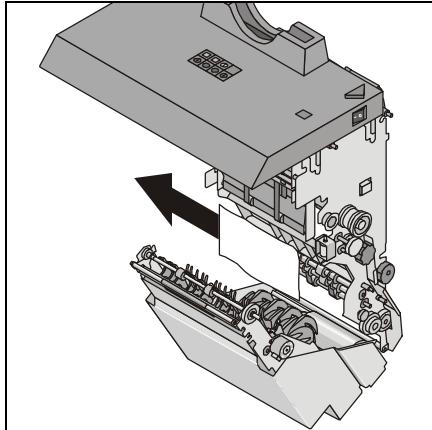
The quantity of dispensed banknotes must be the same as the one indicated by the system. If this is not the case, you will have to repeat the whole procedure for determining the reference values.

Place the counted banknotes in the clamp stacking position.

- Slide the CMD-V4 as far as possible into the safe.
- Wait until the CMD-V4 is ready.
- After the CMD-V4 has powered up, the cash in the stacking position is transported to the reject/retract cassette.
- Select the next cash-out cassettes for the reference value determination using the product-specific software or quit the function.
- Close the safe door (see the description in the basic device operating manual).

VCMD

- Pull the VCMD out of the safe as far as possible (consult the operating manual of the basic device).



Open the stacking compartment, remove the banknotes from the clamp stacking position and count them.

The quantity of dispensed banknotes must be the same as the one reported by the product-specific software. If this is not the case, you will have to repeat the whole procedure for reference value determination.

Place the counted banknotes back in the clamp stacking position.

- Slide the VCMD into the device as far as possible.
- Wait until the VCMD is ready.
- After the VCMD has powered up, the bank notes in the stacking position are transported to the reject cassette.
- Select the next cash-out cassettes for the reference value determination using the product-specific software or quit the function.
- Close the safe door (see the description in the basic device operating manual).

Function test

CMD-V4

Press the function pushbutton on the CMD controller (see also the section "Functional components and controls") to start test runs and to reset the CMD-V4. To start a test function, the CMD-V4 must be in normal operating mode. '00' or '14' is then shown on the status display.

When you press and hold the function key, '00', '1', '2', '3', '4', '5' and '6' are displayed in sequence on the status display. What these numbers mean is described in the following table. To start a particular sequence, release the key when the status display shows the relevant value.

- i** The functions described in the following sections can be performed only when the safety switch is closed (i.e. the CMD-V4 is in cash-out position). Functions '2' and '3' may be started only from normal operation (display '00' or '14') or when all transport paths are guaranteed to be clear.

VCMD

Press the function button on the VCMD controller (see also the section "Functional components and controls") to start test runs and to reset the VCMD. To start a test function, the VCMD must be in normal mode. '00' is then shown on the status display.

When you press and hold the function key, '00', '1', '2', '3', '4' and '5' are shown on the status display. What these numbers mean is described in the following table. To start a particular sequence, release the key when the status display shows the relevant value.

- i** The functions described in the following sections can be performed only when the safety switch is closed (i.e. the VCMD is in cash-out position). Functions '2' and '3' may be started only from normal mode (display '00') or when all transport routes are guaranteed to be clear.

General

Display	Function	Description of the function
0 0	Normal mode	Return to normal mode (not a function).
8 8	Reset	The CMD-V4 or VCMD is powered up while '—' is displayed on the status indicator (for approx. 10 seconds). If an error is detected which prevents or endangers the operability of the CMD-V4 or VCMD (soiled photosensors), the relevant error or a warning is displayed on the status display. This test function is identical to the power-up test when the CMD-V4 or VCMD is pushed into the dispensing position (closing the safety switch).
8 2	Overall test + RESET	In this test all mechanical CMD-V4 or VCMD components are operated one after the other. If an error is detected, it is displayed on the status display. The lifting magnets for the single reject switch and retaining shafts and the electromagnetic clutch can only be subjected to a visual function check in this case. If no errors are detected during the test, a RESET is subsequently carried out.

Display	Function	Description of the function
	Test dispensing + RESET	<p>Standard command set:</p> <p>With this test the banknote paths and the dispensing function of all inserted and filled cassettes are checked: First, one banknote each is extracted from all of the cassettes and transported to the reject compartment during the subsequent reset that takes place automatically.</p> <p>If an error occurs, it is displayed on the status display. If no errors are detected during the function, a RESET is then carried out. <nACT> is modified; <nNDV> remains unchanged.</p>
	FW version	<p>The version number is displayed in alternating mode.</p> <p>Example: From the firmware ID (read with DIL)</p> <p>\$MOD\$ 061203 1137 CMD_V4_0.BIN</p> <p>version number 1137 is displayed as follows:</p> <p>11 for 1 second 37 for 1 second dark for 1 second</p> <p>After nine attempts, the device returns to normal mode.</p>
	Clear statistics counter	<p>The resettable counters are reset to 0 and the current date of the real time clock is saved.</p>
	Deactivation of encryption	<p>If the safe door is open and DES_CLEAR_BUTTON=Y, then the encryption between the CMD-V4 and the system unit (PC) is deactivated.</p>

Description of the Components

Memory chip (EEPROM)

In order to ensure the highest level of compatibility between the individual hardware components and the firmware, the relevant components have been equipped with an EEPROM that contains information about the mechanical (FCKM) and electronic (FCKE) hardware variant. These are physically mounted to the respective component.

If the single hardware or firmware levels are incompatible, the CMD controller reports that to the product-specific software. The software decides if a firmware update or a hardware replacement is necessary.

Cassette handling

All cassette positions are checked cyclically for changes with the help of the respective pressure sensor.

If a new cassette was inserted, the dispensing pressure should be builded after that. If the dispensing pressure is not possible, you can hear an acoustic signal three times. Status code <4x> is displayed.

After this, the data of the cassette memory is read.

The following data is stored in the cassette:

- Cassette ID
The 7-digit value contains the serial number of the cassette if it gets delivered. It can be set customer-specific by the system.
- Currency characteristic
This is a 3-digit currency characteristic acc. to ISO 4217 (codes for representation of currencies and funds) e.g. EUR.
- Release date
The release date of the bank notes contains an additional 4-digit ID (YYMM of the edition). This allows the CMD-V4 or VCMD to process notes with the same nominal value but different note properties.
- Denomination
This value determines the denomination of the bank note (8-digit).

After cassettes were replaced, the new cassettes need to be confirmed by the system software. If this is not happened, the dispensing commands for the corresponding cassette positions will be rejected (the state of the cassette remains 'new inserted').

The status code <14> (Minimum configuration is missing) will be displayed unless at least one cash-out cassette and the reject cassette have been reported by the system after a replacement.

The CMD controller or VCMD controller



The controller used with the CMD-V4 (Cash Media Dispensers) is identical to that of the VCMD (Vertical Cash Media Dispensers) and will be referred to henceforth in the text as 'CMD controller'.

The CMD controller is equipped with the microprocessor 80C188 and controls the communication with the higher-order system unit as well as connected modules of the CMD-V4 or VCMD.

The data transfer between system unit and CMD-V4 or VCMD takes place either via USB or RS232C interface. The transfer parameters for the RS232C interface are determined automatically. In exceptional cases, the standard line parameters (19200,8,2,ODD) can be set using jumpers.

The USB interface behaves in full conformance with USB 1.1 Full-Speed.

RS232C interface (CMD controller 01750055781)

The process control receives the control commands from the higher-order system unit through the RS232C interface and confirms and checks the commands. If the command is approved, the program controls the mechanical device functions. Afterwards, the higher-order system unit is issued the command acknowledgement.

USB interface (CMD controller 01750074210 / 01750105679)

The short package mode is used for flow control. The national USB chip that is used supports a maximum FIFO depth of 64 bytes. If more than 64 bytes are to be transferred to or from the CMD-V4 or VCMD, the data is split into 64-byte blocks and sent separately. Any packet that contains less than 64 bytes of data is known as a short package. Only when a short package is received is the receive buffer with the receive data returned to the caller.

If the USB cable is connected to the CMD controller and enumeration has been executed with the PC host, commands can subsequently only be sent and received via USB.

After disconnecting the USB cable from the CMD controller or deactivating the PC host, the system switches back to V24, i.e. USB has higher priority than V24.

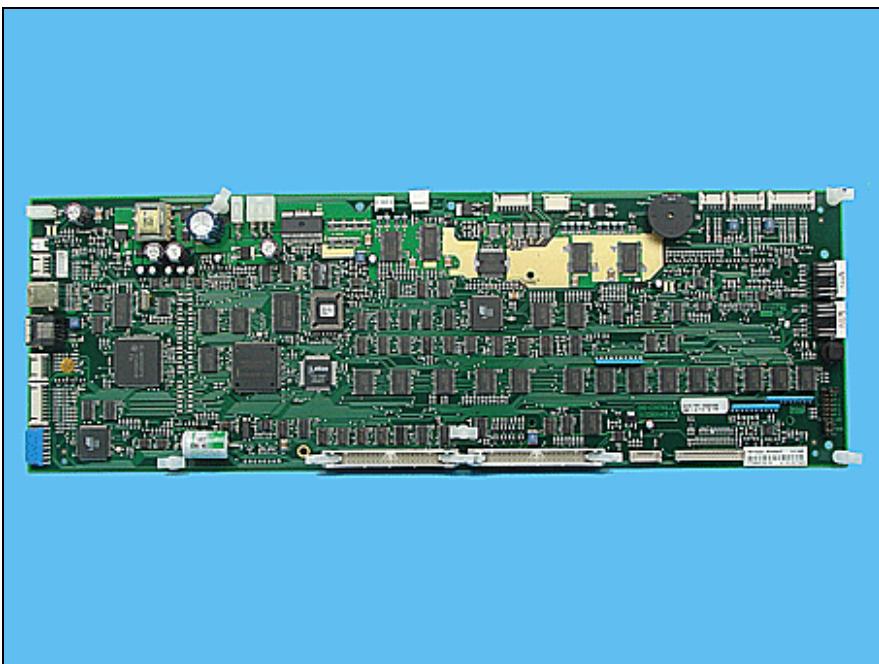
In addition to the normal job channel, there is also a debug channel, which communicates warnings and error messages from the firmware to the PC host. The debug channel is immediately activated during device enumeration (CMD-V4 or VCMD). The PC application can optionally evaluate the debug channel. The debug channel is not a service channel, i.e. it cannot be used to send data to the device.

The CMD-V4 or VCMD behaves as described in the USB specification [1] for full-speed devices.

The host (PC) is always the initiator of a transaction, i.e. the device (CMD-V4 or VCMD) will always only respond to queries from the host and never launch a transaction itself.

The controller is comprised of the following components:

Function group	Components
80C188 CPU with 20 MHz	Execution Unit Programmable Interrupt Controller Counter Timer Controller DMA Unit Chip Select Unit Bus Interfaces Unit
Memory	512 Kbyte static data RAM 512 KByte Flash-PROM (PUT/bootstrap loader)
DUART 16C552	



The above image shows the component side of the CMD controller without cover. The CMD controller controls all of the processes in the CMD-V4 or VCMD and the communication to the higher-order system unit.

The following functions are integrated on the CMD controller:

- Measurement of banknotes
- Photosensor control
- Motor control and module supervision for up to two double dispensing units and two single dispensing units.
- Cassette control

Firmware

The loadable firmware CMD_V4_0.bin is stored in a Flash-PROM. In standard mode, it is outwardly AZM-NG-compatible.

A USB-capable KDIAG is required for updating the firmware through the USB interface. In principle, updating also continues to be possible through the serial interface (insofar as the corresponding socket is available), but the USB plug must however be pulled from the controller in order to do this.



The number of dispensing units is detected automatically by the connected distributor board.

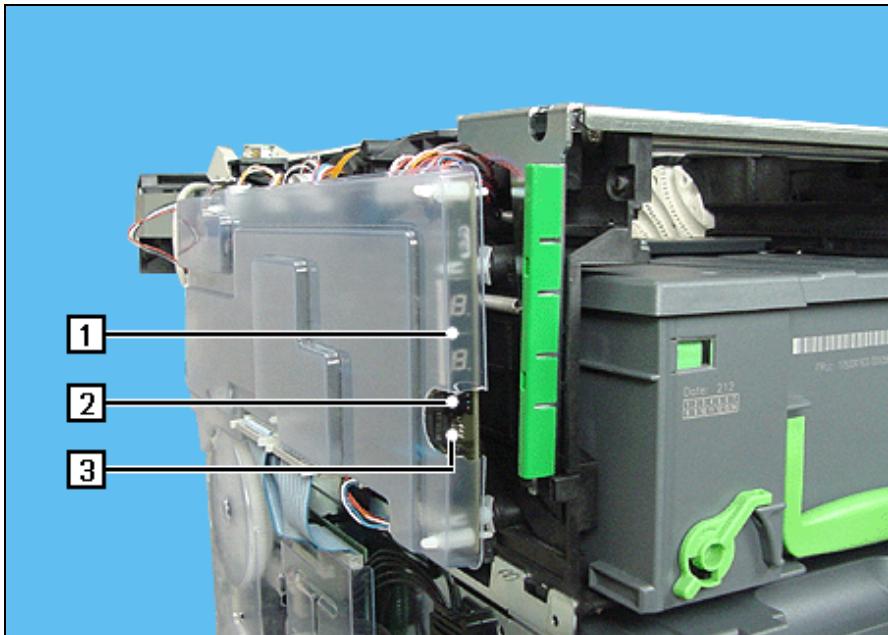
Exception: Quadruple distributor board on the 4-cassette housing equipped with only one double dispensing unit. This configuration must be configured per jumper.

The CMD controller is subdivided into the following function blocks:

- Control block
- I/O block with motor control
- Photosensor logic board
- Thickness message logic board
- Components control
- Serial interface

Position of the function groups

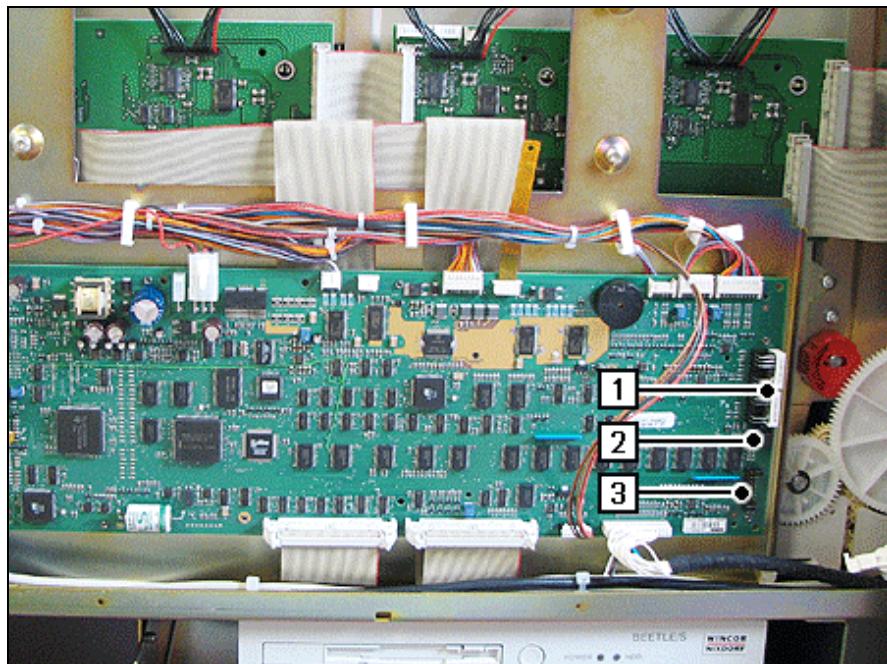
CMD-V4



- 1 Two 7-segment displays
2 Function key

- 3 Jumper field

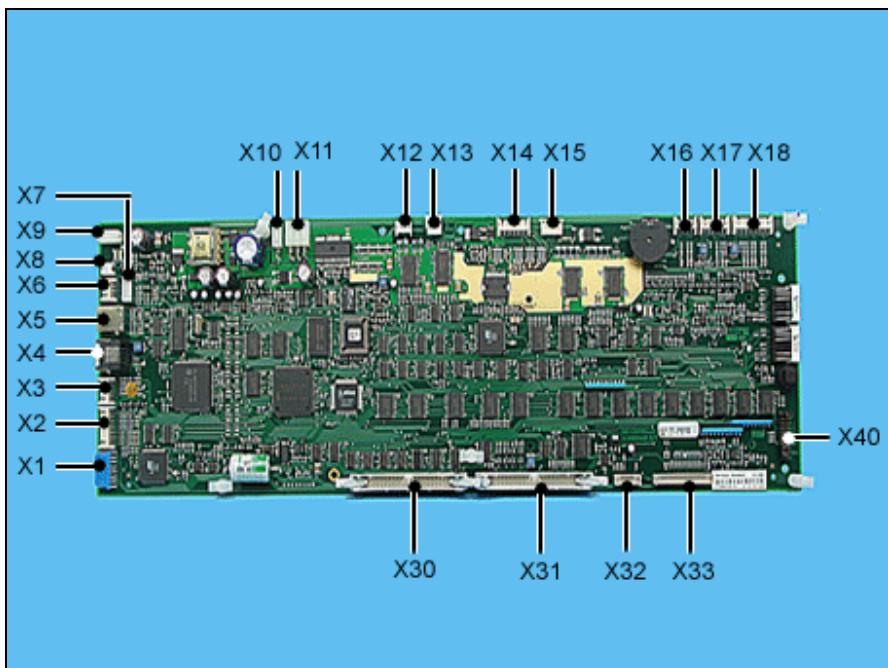
VCMD



- 1 Two 7-segment displays *
- 2 Function key *
- 3 Jumper field

* The display or the buttons can also be led through to the outside.

Connector arrangement on the CMD controller



Connector	Description
X1	Mechanical thickness sensor
X2	Shutter
X3	Transport module
X4	V.24 interface on the PC
X5	USB interface on the PC
X6	Door switch and security switch in the safe
X7	V.24 interface
X8	Special electronics module
X9	24 V voltage supply
X10	V.24 connection
X11	Motor M1
X12	Additional motor on the main drive component for Single Reject (optional)

Connector	Description
X13	Clamp motors
X14	Motor and lift magnets on the stacker / left and right side cover
X15	EEPROM on the stacker
X16	Hall sensors on the stacker
X17	Hybrid photosensors and photosensors on the Single Reject
X18	Hybrid photosensors and photosensors on the stacker / left side cover
X30	Dispensing unit
X31	Dispensing unit
X32	Hybrid photosensors and photosensors on the stacker / right side cover
X33	Position switches and extensions
X40	Jumpers

In the chapter "Pin assignment", the assignment of the pins are listed.

Logical interface

All of the commands from the higher-order system to the CMD or VCMD and answers from the CMD or VCMD to the higher-order system follow the master-slave principle. This means that the CMD or the VCMD does not send any spontaneous messages.

A command is always executed in its entirety by the CMD or VCMD and then acknowledged. If additional commands are transmitted during this time, then they will be rejected by the CMD or VCMD.

Command from higher-order system

Length	Content	ERROR
1	D	Device ID (Dispenser) (ASCII)
1	a	Command specification (ASCII)
1	a	Additional specification to the command (ASCII)
n	XX ... XX	or data if necessary (ASCII / HEXA)

Acknowledgement from CMD

Length	Content	ERROR
1	D	Device ID (Dispenser) (ASCII)
1	a	Command specification (ASCII)
1	a	Additional specification to the command (ASCII)
1	a	Status code (ASCII)
n	XX ... XX	or data if necessary (ASCII / HEXA)

Command overview

Command	Description
DAblank	Reset / Power up
DAB	Clearing
DBC	Dispense Additional
DBS	Dispense Standard
DCA	Transport: Wait for cash removal

Command	Description
DCB	Transport: Bundle Reject
DCC	Transport: Close shutter
DCE	Transport: Output cash
DCO	Transport: Open shutter
DCP	Transport: Offer cash
DCQ	Transport: Cash retract without storage
DCR	Transport: Cash retract with storage
DCT	Transport: Shutter Test
DCW	Transport: Target = Stop Over
DDblank	Cancel
DEC	Cassette status
DED	Device status
DEF	Properties
DEK	Reading firmware configuration
DFA	Confirm number of notes
DFB	Confirm no. of notes (without errors)
DFC	Confirm existing cassettes
DFD	Note parameter II
DFG	Write firmware configuration
DFI	Cassette ID (Standard)
DFL	Set minimum quantity
DFN	Number of notes
DFO	Number of notes (without check)
DFP	Note parameter I
DFR	Reset lock flag
DFT	Deleting retract counter
DFX	Write value into cassette
DFY	Read value from cassette
DFZ	'Power on' - RESET without PUT

Command	Description
DGblank	Determine reference value
DHC	Key test
DHI	Request Initial Value
DHL	Load line code
DHO	Switch encryption off
DHT	Load transport key
DHZ	Transparent ChipCard access
DIC	Software transfer: Activate booter
DID	Software transfer: Data
DIH	Software transfer: Firmware 'HASH'
DIL	Software transfer: Read firmware ID
DQA	Set the real-time clock
DQB	Read the real-time clock
DQC	Reading error statistics
DQE	Internal commands: Read error information
DQF	Internal commands: Read EEPROM
DQI	Describe stacker-EEPROM
DQJ	Read manufacturer's and controller identification
DQR	Internal commands: Read Recovery Information
DXa	Self-test commands
DYa	Test commands
DYS	Resetting internal statistics
DYR	Test commands: Read internal statistics

Booter commands

Dix	Software transfer
DEF	Read properties

Control block

The control block is comprised of:

- CPU
- Memory
- Serial interfaces
- Control functions

CPU

The CPU is comprised of one microprocessor Intel 80C188XL and one external clock generator (40 MHz).

Memory

The memories are supplied by a permanently installed battery when the power unit is switched off. This guarantees that the data or programming are preserved even when the power unit is switched off.

USB interface

USB component USBN9603 from National Semiconductor is deployed on the CMD controller. This component has one standard endpoint (EP0) and a maximum of six additional endpoints (EP1 – EP6).

 Information regarding the control procedure and the data structure can be found in the software manual for the CMD-V4.

Serial interface

The asynchronous serial interface with the associated driver/receiver components are implemented with the DUART component.

- i** Information regarding the control procedure and the data structure can be found in the software manual for the CMD-V4.

Status display

A 2-digit display (Seven Segment Display) displays the status of the CMD-V4 or VCMD.

The meaning of the status displays can be found in the chapter "Troubleshooting".

Function key

In certain cases it is advisable to check whether the CMD-V4 or VCMD is ready to operate without using further help tools.

In addition, a function button is located on the controller below the status display. When the function button is pressed, the available function range is output to the status display in a loop. To select a function, release the button when the display corresponding to the desired function is shown.

More detailed information can be found in the chapter "Device overview and operation", section "Function test".

Photosensor logic board

The photosensor logic span the generation and control of the photosensor LED transmission current and the measurement of the receive voltage of the phototransistors.

When the photosensor parameters are initiated automatically, the optimum values for transmit current and gain of the evaluation logic are determined for each photosensor. The gain for the evaluation logic can be switched in four levels.

The transmission diodes are operated with pulsed current. The reception logic evaluate only the alternating portion. This is used to reduce the influence of outside light on the receive signal.

The photosensors are queried individually, one after the other. Each photosensor is operated thereby with its individual parameters (current and gain). A continuous readjustment of these parameters takes place during ongoing operation. The parameters for the operation of the photosensors are contained in a table in the CMOS memory and are not lost when the CMD or VCMD is switched off.



An initialization takes place automatically at the time of the first start-up or after the deletion of the photosensor CMOS range when the device is switched on. It is an absolute requirement for initialization that all of the light paths of the photosensors be free. If this is not the case, then the error message <22> will appear on the status display (see chapter "Troubleshooting").

Measurement of the banknotes with the multiple-note detection unit

The multiple-note detection unit (DDU) in the CMD-V4 is located in the upper dispensing unit (or in the dispensing unit at the very front with the VCMD). The dispensed notes deflect two tracer levers equipped with magnets during the transport. The oppositely arranged hall sensors generate a signal analogous to the note thickness during this process.

The CMD controller records the banknote length and the banknote thickness of new note types with the so-called reference value determination.

With the multiple-note detection unit, it is possible to recognize good single and good double banknotes. Notes with measured values that vary too greatly from the nominal values for single or double notes are recognized as faulty and may not be issued to the customer. A faulty note is temporarily stored in the single reject switch compartment in such cases (if available). Notes that are too crooked (more than 22°) or long-fanned multiple dispenses (larger than 115°mm or 4.53") are no longer permitted to be stored in the single reject boxes. These are directly transported via the stacker wheel into the clamp and subsequently trigger a bundle reject.

In systems without a single reject function, each bad note triggers a bundle reject.

Component control

Dispensing unit control

The dispensing unit control is divided into:

- Logic for dispensing clutches, retaining spring magnets and cassette stepper motors
- Photosensors for dispensing sensors and cassette empty sensors
- Pressure measurement including cassette available sensor

The control for a maximum of two double dispensing units and two single dispensing units or for a maximum of six single dispensing units is to be found on the CMD controller. The drivers for the dispensing clutches, retaining spring magnets and cassette stepper motors are located on the quadruple distributor board for the basic version of the CMD with two double dispensing units. Two connectors are available for connecting a maximum of two additional 1-cassette distributor boards with drivers for one additional single dispensing unit each. The distributor boards with their two connectors are connected thereby to the distributor board positioned above them. This linkage enables the controller to recognize the number of distributor boards and to derive the cassette plug-in positions from them automatically.

Cassette control

Note contact pressure

The pressure is generated by a stepper motor. After the required value is achieved with a current of approx. 0.8 A, it switches to the holding current of approx. 0.3 A.

Cassette ID

Every cash-out cassette has a serial EEPROM 64 x 16 bit in the connector housing to share parameters. Only one cassette is selected during data traffic. Serial data traffic can proceed after the supply voltage is switched on for the selected EEPROM.

Control of the shutter module

An optional shutter module can be connected to the controller. The control of the shutter is integrated on the CMD controller. It is comprised of the following parts:

- Shutter motor driver
- Receiver for the two shutter sensors
- Control of the photosensors in the shutter

Safety switch

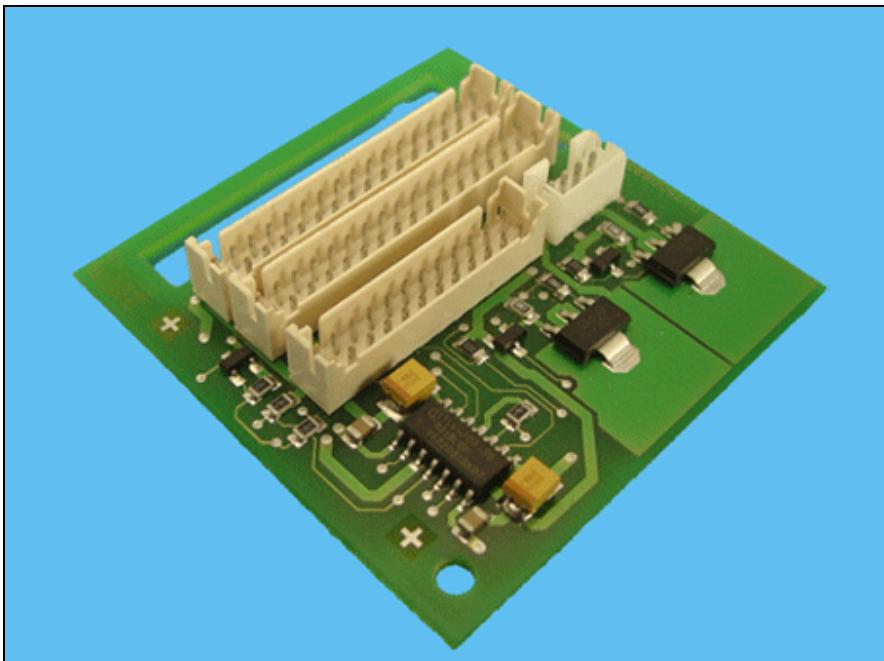
The safety switch monitors the start position of CMD; if the CMD is pulled out of the safe, it will be put out of operation.

Locking switch (CMD-V4 only)

If the dispenser is not fully inserted into the safe (status display <09>), the FW prevents the clamp moving to the vertical cash-out position by querying the locking switch. This applies only to versions with vertical output transport.

In the ProCash 5000 (mini) and ProCash 5100, the locking switch is short-circuited via the system-specific wiring.

Extension board for ProCash 5000 (mini)

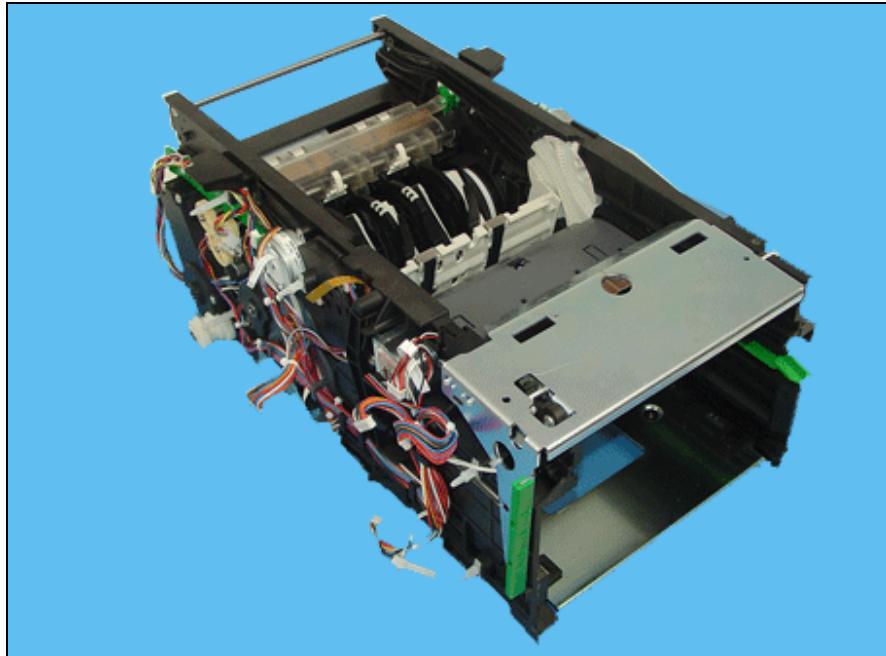


The extension board (01750068065) is used in connection with the ProCash 5000 (mini) and is used to control the additional CMD status display and the left-hand and right-hand user guidance on the operating panel. This is utilized only when the ProCash 5000 (mini) has been supplied without a system unit (PC).

The Stacker

CMD-V4

The stacker with retract function is on the upper rack. The stacker serves all output types. The configuration depends on the output transport. The single reject function is installed in countries outside of the European Union.



The stacker collects impeccable notes in the stacking position of the clamp. If the Single-Reject function is present, then rejected notes will be removed individually (a maximum of two 'bad note' per transaction). In the absence of a Single-Reject function, the rejected note will be removed by a Bundle-Reject function and placed into the Reject/Retract cassette.

A bundle output from the stacking position of the clamp is controlled by the routing disk. The clamp is closed with the help of the routing disk.

The clamp transports the bundle, guided in gear tracks, to the respective position. The drive motor for the drive system is mounted on the clamp.

The routing disk determines the path of the clamp. It aligns itself in accordance with the requirements. If the clamp reaches the customer cash-out position, the bundle is transported somewhat out of the clamp. This takes place with the help of the installed belts which are controlled by a separate drive motor on the clamp.

A bundle of notes can be transported from the customer cash-out position and into the retract box of the reject/retract cassette by the retract function. The SAT (SAT = Stacker And output Transport) can transport bundles from the stacking position to the customer cash-out position or into the reject/retract cassette or from the customer cash-out position back into the retract box of the reject/retract cassette, where they are stored unsorted. The number of storage events is counted (presuming there is a corresponding output transport).

Optionally, a bundle can be retracted and stored in the stacking position of the clamp. If this option is used, however, no further device operations are possible until the bundle is removed by an operator and the software has canceled the lock.

The drive system of the transport belts in the SAT (except for the clamp) is provided by the main motor that also drives the dispensing units.

The reject/retract can be simply be pushed into the SAT. It engages in place and is locked in the final position. The cassette position is queried by a switch. To remove the cassette, it must be released with a lever on the SAT.

The banknote path can be viewed and is accessible throughout the entire SAT.

The main motor can be swung away for the purpose of accessibility to the single reject compartment.

Stacker EEPROM for the CMD-V4

The EEPROM is physically mounted to the stacker (in the area of the stacker wheel).

The device version (e.g. single reject) is stored in it, if it cannot be stored electronically.

The information reaches the EEPROM during production.

The following information is stored in the EEPROM:

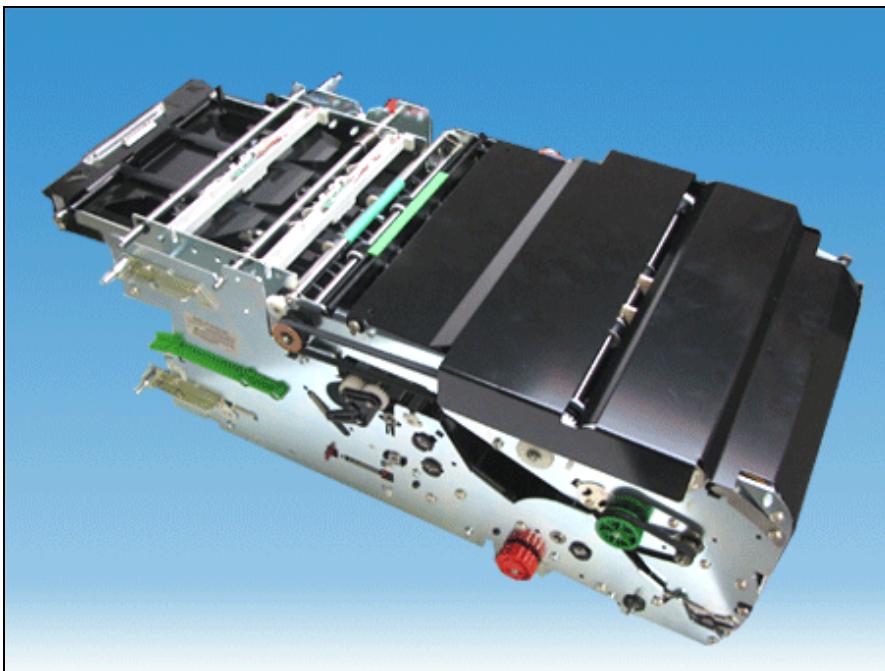
- Version of the EEPROM structure
- Checksum
- Firmware name
- Serial number
- Type
- Hardware configuration of the CMD-V4
- Single reject configuration
- Routing disks positions
- Offset routing disk



The EEPROM must always remain on the stacker.

VCMD

This device version has an altered stacker and output transport.



The function of the single reject is always available. Any questioned ('bad') note that is detected is removed by the single reject switch. All 'good' notes are made available as a bundle in the stacking compartment via the stacker wheel. The notes are transported out of the stacking compartment into the cash-out position by belt transport. After this, the notes which were placed in preparation in the standby position are issued to the customer.



The reject cassette used with the VCMD does not have a retract box.

Serial Number Recognition

Serial number detection can be optionally configured in the CMD-V4 for specific countries. The bank note is registered and an image of the note is transmitted to the product-specific software. This prepares the data for evaluating the serial numbers on the notes.

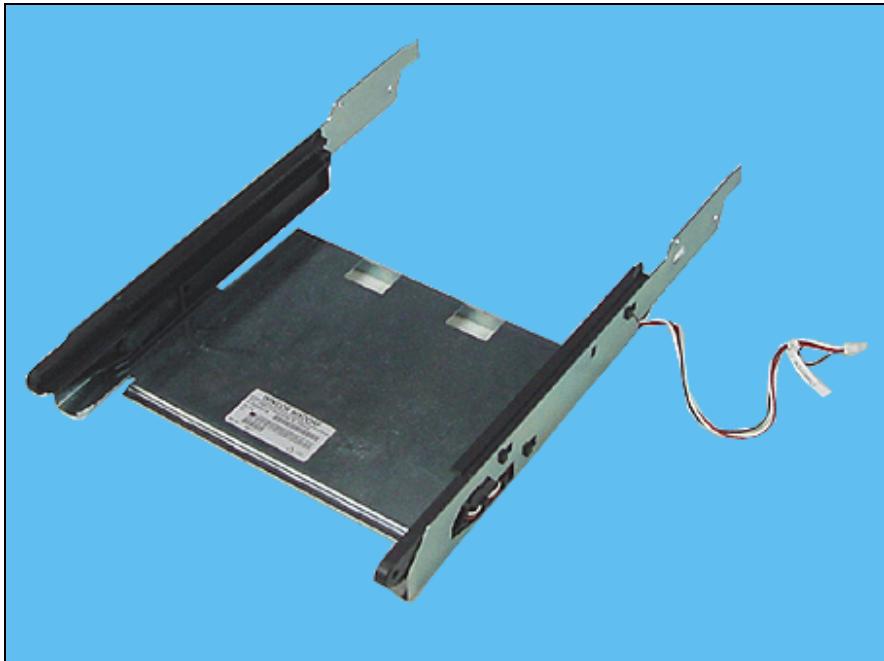
The hardware for the serial number detection is divided between two scanning rails and the logic board. The scanning rails are installed opposite one another in the stacker in the area of the bank note input. The logic board is installed on the side on the stacker. Power is supplied through the CMD-V4. The control and data linkage is carried out directly on the system unit (PC) via USB. The product-specific software controls the complete sequence of the serial number detection.



The scanning rails located opposite one another record both sides of the bank note, line by line, shortly before it enters the stacker wheel. The data are transmitted to the logic. These prepare the data and then convey it to the PC through the USB interface. The product-specific software receives the data and prepares it for further processing.

Output transport

The output transport differs, depending on the device version. The following illustration shows a output transport for a Rearload device with horizontal output. The output transport is secured to the stacker (only with horizontal output) and is controlled via the CMD controller.



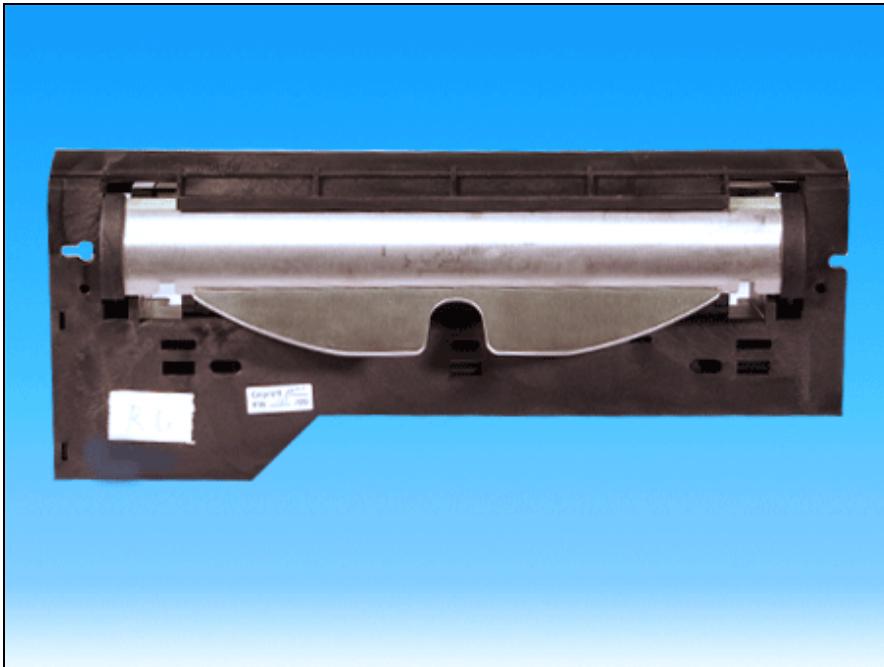
Shutter

The shutter is a bank note cover flap which is controlled with the CMD controller.



Shutter Anti Cash Trapping

The Shutter Anti Cash Trapping is a bank note cover flap which is controlled with the CMD controller. The shape of the shutter flap is intended as a mechanical measure to prevent the attachment of a trapping device in front of the bank note cover flap.



VBK shutter

The shutter is a bank note cover flap which is controlled with the CMD controller. The attachment of a trapping device in front of the bank note cover flap is intended to be detected by means of sensor systems. Two different procedures are deployed for this purpose. The first procedure depends on a transmitter positioned outside of the shutter area, the second on a distance sensor that is installed inside the shutter.



The dispensing unit

CMD-V4

With the CMD-V4, each user can select the right device configuration for his requirements by choosing between different models (Indoor/Outdoor, Frontload/Rearload) and among a variable quantity of dispensing units (1-6).

The multiple-note detection unit must be positioned in the top dispensing unit. It checks whether double or overlapping notes have been dispensed.

VCMD

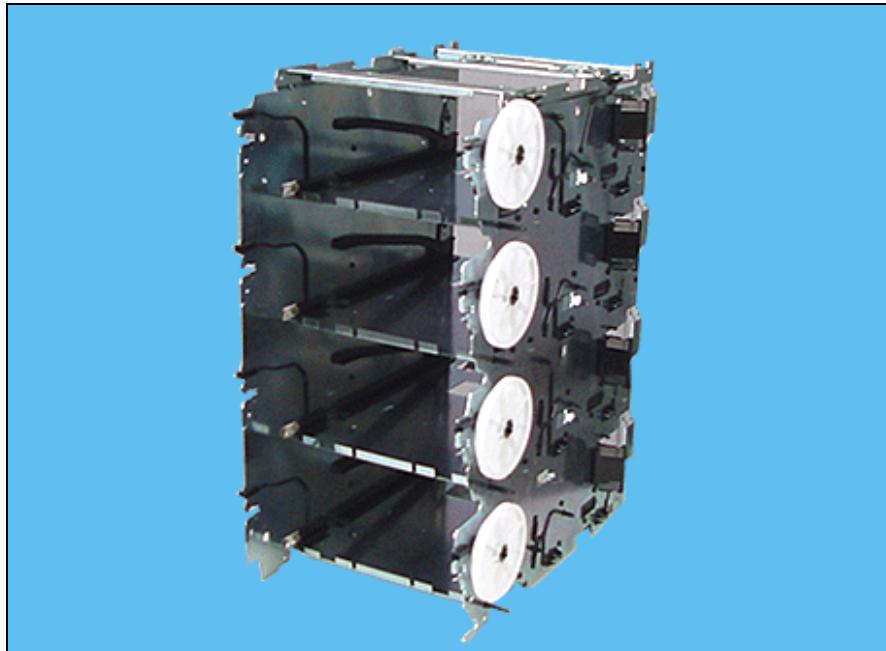
In the case of the VCMD, the selection of different devices and the variable design of the dispensing units (1-6) make it possible for the respective user to select the device version that is most suitable for him.

The multiple-note detection unit is located in the VCMD in the dispensing unit at the very front. It checks whether double or overlapping notes have been dispensed.

Racks

Each of the racks can be configured with a single dispensing unit or with a double dispensing unit. They become a operable component only in conjunction with the dispensing units.

Quadruple rack without dispensing units (CMD-V4)



4-cassette housing with double dispensing unit and 4-cassette distributor board (CMD-V4)



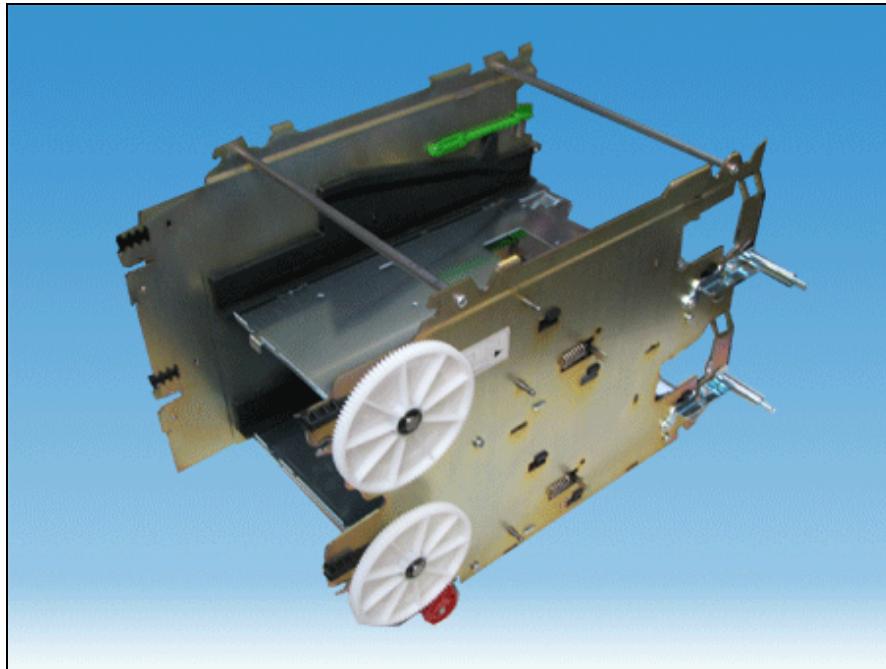
Each quadruple rack consists of four cassette mountings and at least one double dispensing unit with a multiple-note detection unit. The second double dispensing unit without a multiple-note detection unit is then used if more than two cassettes are configured.

The multiple-note detection unit must always be in the upper dispensing unit.

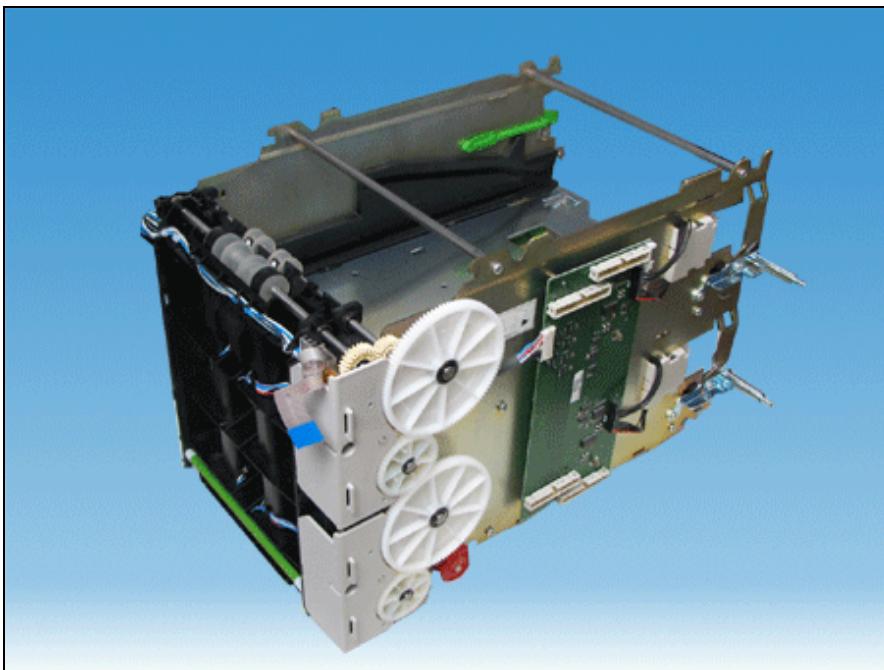
- i If only one double dispensing unit is available in a 4-cassette housing, then the jumper must be configured in accordance with the CMD controller.

The pressure of the banknotes on the extractor shaft is evaluated with a pressure sensor. The note dispensing proceeds by means of downward friction. The dispensing unit extracts only one note at a time from the cash-out cassette and transports it to the stacker. Two sequential notes have a minimum distance of 67 mm (2.64") from one another during this process. Subsequent notes are held back by a retaining shaft that is actuated by a magnet.

2-cassette housing without dispensing unit (VCMD)



2-cassette housing with one double dispensing unit and 2-cassette distributor board (VCMD)



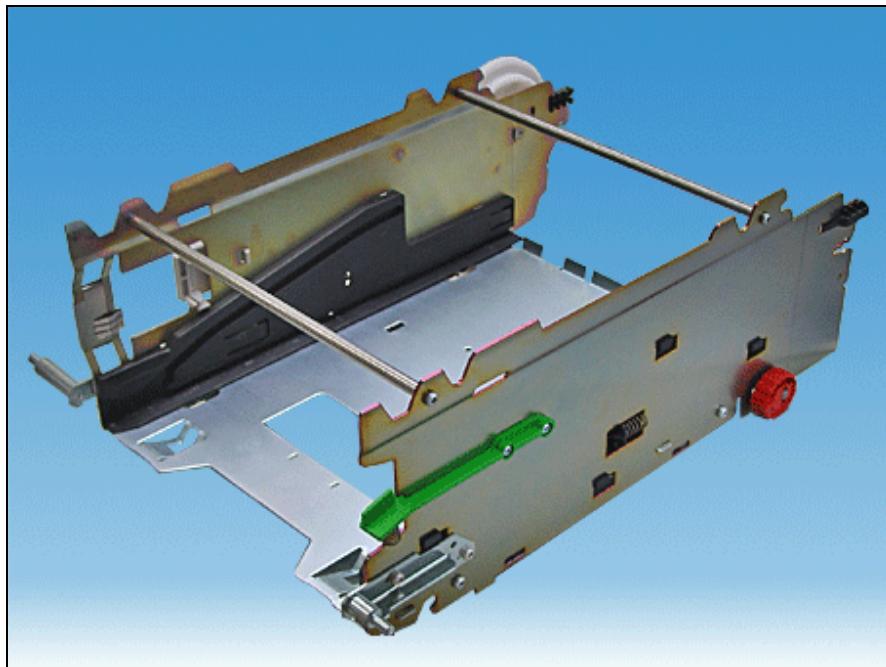
Each 2-cassette housing consists of two cassette mountings and one double dispensing unit.

The multiple-note detection unit must always be in the dispensing unit at the very front.

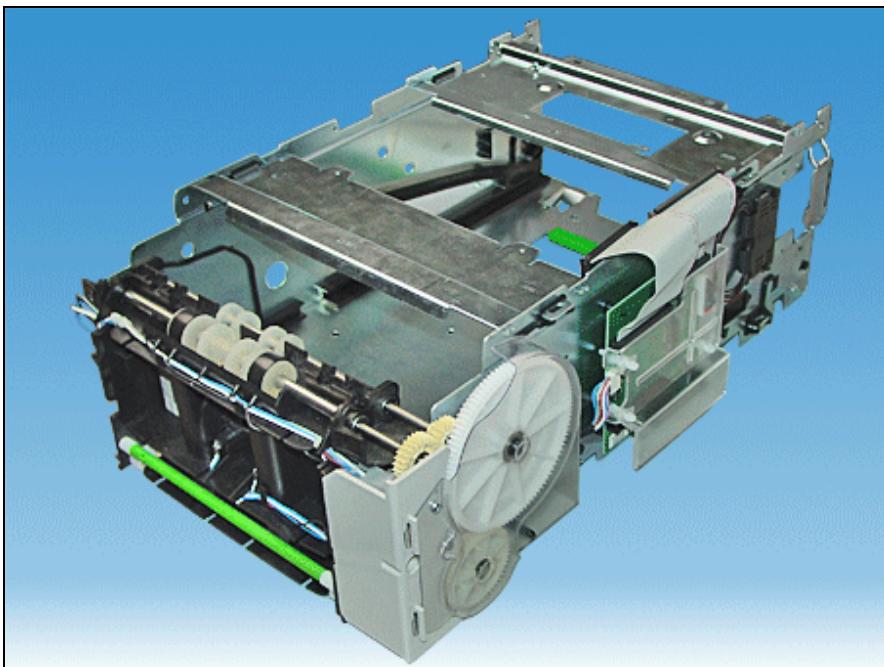
The pressure of the banknotes on the extractor shaft is evaluated with a pressure sensor. The note dispensing proceeds by means of downward friction. The dispensing unit extracts only one note at a time from the cash-out cassette and transports it to the stacker. Two sequential notes have a minimum distance of 67 mm (2.64") from one another during this process. Subsequent notes are held back by a retaining shaft that is actuated by a magnet.

A VCMD with several cassettes is achieved by lining up housings with dispensing units next to one another, whereby the dispensing unit at the very front must be the one containing the multiple-note detection unit.

1-cassette housing without dispensing unit (VCMD)



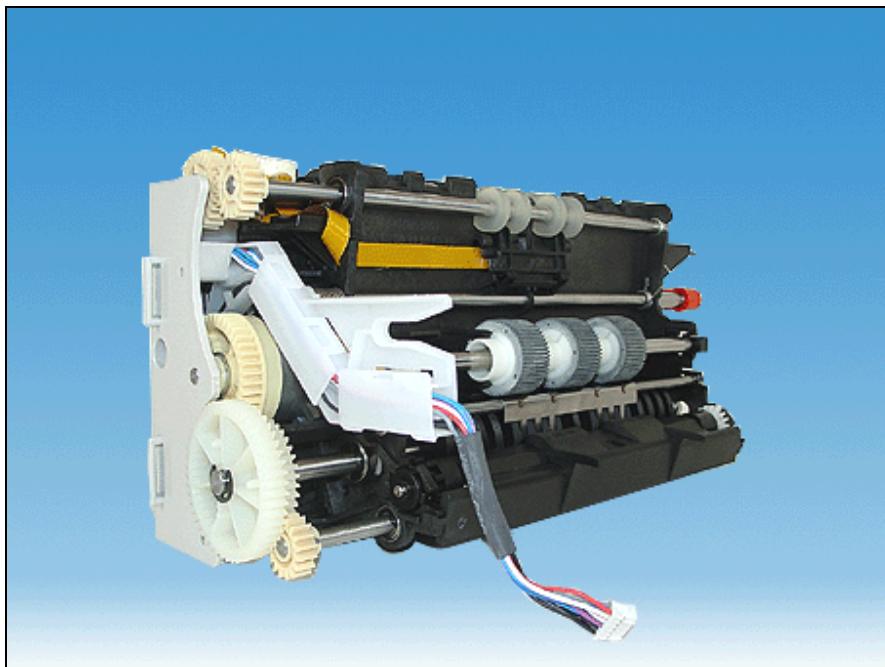
1-cassette housing with one dispensing unit (VCMD)



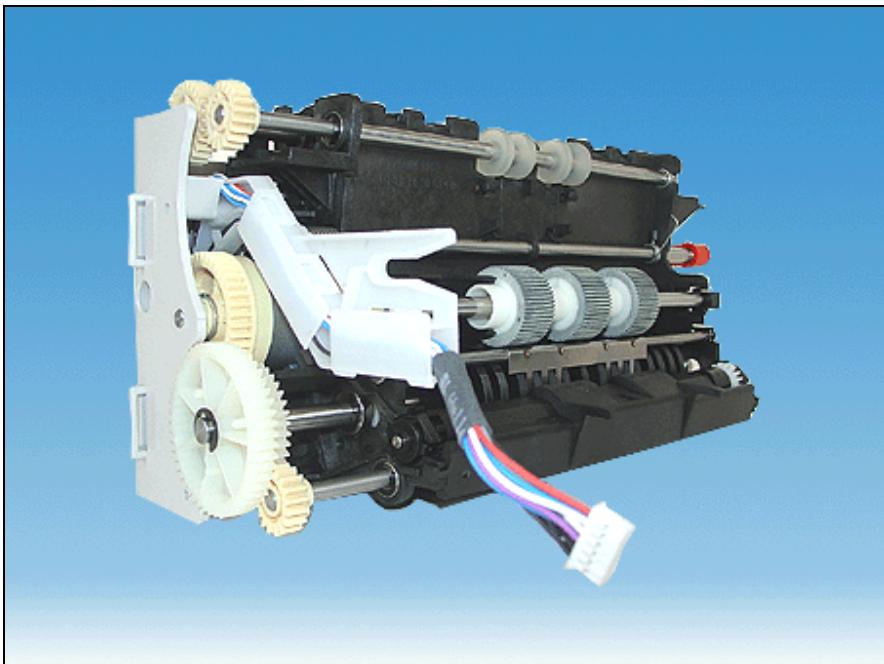
Each 1-cassette housing consists of one cassette mounting and one dispensing unit with a multiple-note detection unit.

The pressure of the banknotes on the extractor shaft is evaluated with a pressure sensor. The note dispensing proceeds by means of downward friction. The dispensing unit extracts only one note at a time from the cash-out cassette and transports it to the stacker. Two sequential notes have a minimum distance of 67 mm (2.64") from one another during this process. Subsequent notes are held back by a retaining shaft that is actuated by a magnet.

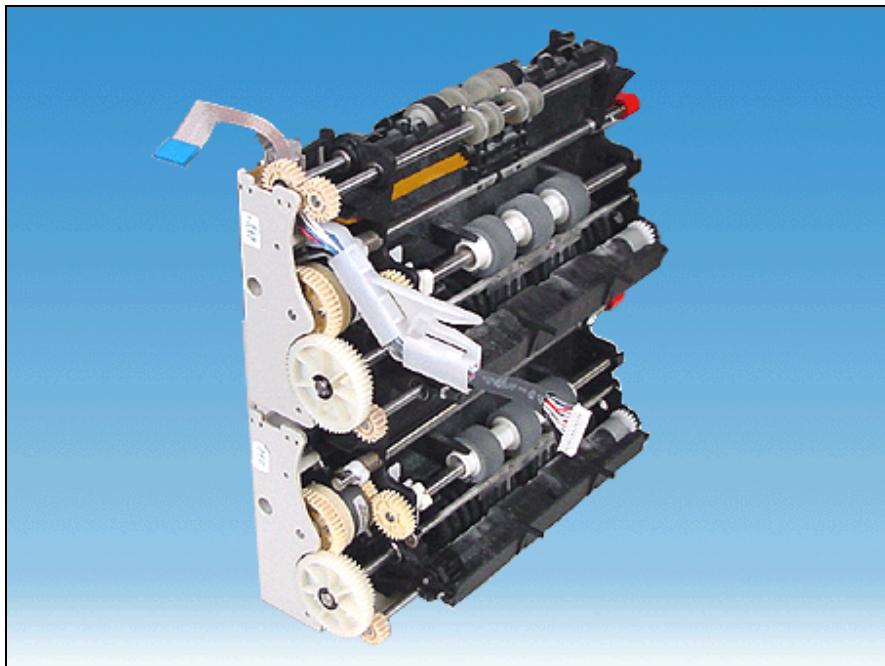
Single dispensing unit with DDU (CMD-V4 or VCMD)



Single dispensing unit without DDU (CMD-V4 or VCMD)



Double dispensing unit with DDU (CMD-V4 or VCMD)



Double dispensing unit without DDU (CMD-V4 or VCMD)



A pendulum dispensing shaft is installed for the note dispensing. The drive of the extractor shaft is provided by the central motor as well as a magnetic coupling for each extractor shaft. At one end of the extractor shaft there is a pressure sensor through which the note contact pressure and the message 'Cassette pushed in' are checked. A forward motion of the notes is brought about by an additional roller in the cassette. Preliminary separation is achieved by means of an extended inlet slope in the cassette.

The cassette can readily be pushed into the rack with dispensing unit(s). They engage in place and are locked in the final position. The cassette position is queried by the pressure sensor. The cassettes can be unlocked with the release lever on the rack.

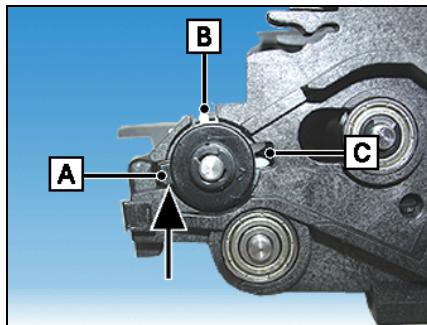
Voltages and signals from the controller to the cassette are redirected through the cassette connector.

The following components are addressed in the dispensing unit.

- Dispensing clutch
- Retaining magnet
- 'Note dispensing' photosensor
- 'Cassette empty message' photosensor
- Pressure sensor for 'Cassette pushed in' and 'Note contact pressure'

Adjustment eccentric

The adjustment eccentric is part of the dispensing unit with which the dispensing gap (V gap) can be set.



There are three settings for the eccentric: Setting A, B and C.

In new deliveries, they are always set to position A. If a replace dispensing unit is supplied, its maximum setting is B.

If the double dispenses from a single cassette in the CMD-V4 become more frequent, the V gap on the corresponding dispensing unit can be decreased by increasing both eccentrics (respectively to left and right of the shaft) by one step, e.g. from A to B. If the V gap is set too high, than no dispensing from the corresponding cassette will be possible.

Photosensors in the dispensing unit (CMD-V4 or VCMD)

The message PSE (Photosensor empty (cassette empty message)) is triggered if there are no longer any banknotes in the cassette. The photosensor ray is guided back to the receiver in the dispensing unit through a prism in the pressure carriage of the cassette.

Pressure sensor (CMD-V4 or VCMD)

The pressure sensor (PSD) provides the position as an analog value and thus the pressure of the extractor shaft. It can also be determined whether the cassette is available.

The Reject/Retract cassette (CMD-V4 or VCMD)



Only cassettes with a blue cover are suitable for the vertical operation of the VCMD.



The Reject/Retract cassette contains two separate compartments into which the notes can be brought using the software controls. The chute selection is carried out by a lift magnet in the SAT.

In order to remove the notes from the retract box, the compartment can be swung into the output position with a lever when the cassette lid is open.

The reject cassette corresponds to the greatest extent possible to the Reject/Retract cassette, except for the fact that the retract compartment is omitted at the factory. Only the reject cassette is used with the VCMD. The term Reject/Retract cassette is used for both types in the following.

The Reject/Retract cassettes are available in two different versions. Depending on the version, they can be opened with a key or by toggle. The possibility of lead-sealing is available for both versions.

A tamper indicator is located in the reject/retract cassettes. The condition of the tamper indicator can be recognized on a window in the rear panel.

If the reject/retract cassette has been manipulated, then it can no longer be deployed in the SAT. Any attempt to deploy the cassette will be stopped during the attempted deployment. A display window on the rear panel of the cassette offers information about its status:

green: cassette ready to be slid in

blue: force was used to open the cassette

The retraction mechanism is deployed at the face. The note-in takes place at the face at an angle from above. Two feed-in rollers are operated by a gearwheel on the right-hand side of the cassette which convey the individual notes or bundles into the cassette.

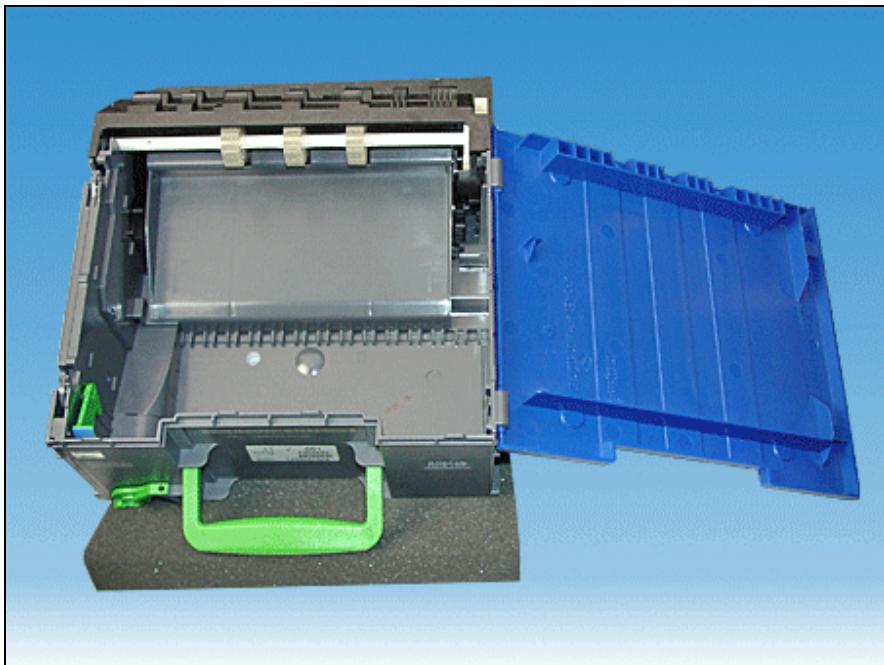
The input area of the Reject/Retract cassette is opened during deployment in the SAT by lateral plugs that are moved in the cranks in SAT. The cassette closure is formed as visor.

The cassette is locked in the final position; the reaching of this position is reported by a switch. The two cassettes are released after being unlocked manually.

Reject/Retract cassette opened (CMD-V4)



Reject cassette opened (VCMD)



The cash-out cassettes



Only cassettes with a blue cover are suitable for the vertical operation of the VCMD.

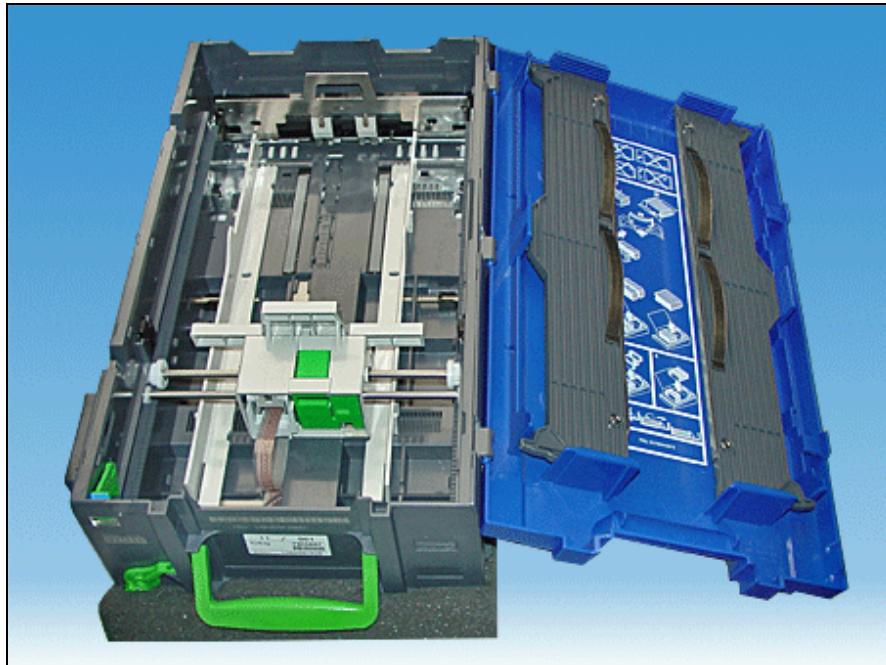
The cash-out cassette is available in two versions. The standard version is equipped with a motorized pressure carriage. The VCMD version is equipped with braking strips. The (to a certain extent abbreviated) differentiation features Standard and VCMD are used simply as a distinguishing nomenclature for the purposes of this service manual. The Sales Department uses the term cash-out cassette (Standard). Depending on the version, they can be opened with a key or by a lever.

The following cassette versions are available:

Operation	Lever	Lock	Lead seal	Tamper indicator	Ink Dye (integrated maculation - system)
Standard	X		X	X	
VCMD	X		X	X	
Standard (Security I)		X	X	X	
VCMD (Security I)		X	X	X	
Standard (Security II)		X	X	X	X

Cash-out cassette standard



Cash-out cassette opened (VCMD)

In principle, the cash-out cassettes of the CMD-V4 and the VCMD are of identical construction. The stack of notes of the cassette receive a pressure to start to the dispensing area through the vertical operation of the VCMD. Two braking strip are integrated in front of the dispensing area which reduce the pressure on the notes in combination with the pressure springs in the cover.

A tamper indicator is located in the Standard and VCMD cash-out cassettes. The condition of the tamper indicator can be recognized on a window on the cassette grip side.

The cassette is stopped during additional deployment attempts with the visor open during the deployment. If the tamper indicator shows 'green' and the visor of the cassette is closed, then the cassette can be deployed in the CMD-V4 or VCMD. Cash dispensing transactions can be carried out.

The tamper indicator can be reset by rotating the release lever or the lock. A display window on the grip side of the cassette provides information about the closing status:

green: cassette ready to be slid in

blue: cassette has been manipulated

The output area of the cash-out cassette is opened during deployment by lateral plugs that are moved in cranks in the housing.

The cassette closure is formed as visor. The pressure is applied by means of a pressure carriage operated by a stepper motor. The pressure carriage is contained in the side cover of the cassette.

The cassette number is preset at the factory at the time of shipment. It is saved in an EEPROM and can be changed per software command.

The cassette has a connector on the side cover through which the EEPROM and the stepper motor are connected. The EEPROM itself is located in the connector housing.

A gummed label for identification of the cassette can be attached in a recess of the housing on the cassette grip side (type of bank notes, cassette number, etc.).

The currency or denomination is lasered in at the time of configuration at the factory.

Start-up

Initial start-up

During the initial start-up of the CMD-V4 (Cash Media Dispenser) or of the VCMD (Vertical Cash Media Dispenser, respectively), perform the following operations in the stated sequence:

1. Set the cash-out cassettes to the bank note size if they were not preset in the factory
2. Fill the cassettes with genuine money and push them in
3. Update the banknote parameters and cassette filling data
4. Determine reference values for the various note types
5. Genuine money test



The performance of these steps is described in the chapter "Device Overview and operation."

Start-up after component replacement

You should perform the following steps if you have replaced a component in the CMD-V4 or the VCMD:

1. Initialization of the CMD-V4 or VCMD
2. Set the cash-out cassette to the bank note size if there was no presetting in the factory
(if this is necessitated by the replacement)
3. Fill the cassettes with genuine money and push them in
(If this has become necessary because of the replacement)
4. Update the banknote parameters and cassette filling data
(If this has become necessary because of the replacement)
5. Determine reference values for the various note types
(If this has become necessary because of the replacement)
6. Genuine money test



The performance of the steps two to seven is described in the chapter "Device Overview and operation."

Electric adjustments CMD-V4 or VCMD

	Photosensor initialization *	Pressure sensor initialization **	Determine reference value ***	Cassette initialization ****
Installation			X	X
Maintenance	X		X	
Stacker replaced	X			
CMD controller replaced	X	X	X	
Dispensing unit with multiple-note detection unit replaced	X	X	X	
Dispensing unit without multiple-note detection unit replaced	X	X		
Cash-out cassette replaced				X
New note type deployed			X	X
New firmware loaded				
Shutter replaced (CMD-V4 only)	X			

* Initialization of the photosensors with removed cassettes, the photosensors should not be covered (KDIAG: DXM)

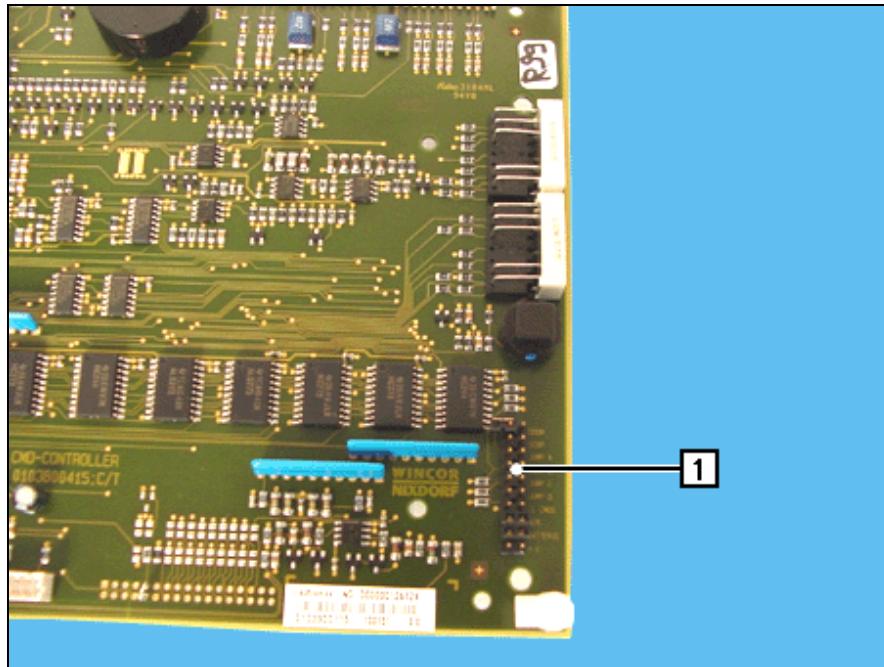
** Remove and reinsert the cassette with switched-on CMD-V4 or VCMD (running operation, no active withdrawal).

*** Reference value determination with initialized/deployed cassettes with genuine money (KDIAG menu 'Device' -> 'CMD-V4' -> 'Cassettes-Init')

**** Initialization of the cash-out cassettes (KDIAG menu 'Device' -> 'CMD-V4' -> 'Cassettes-Init')

Jumper settings on the CMD or VCMD controller

Position of the jumper field on the controller



1 Jumper field on the CMD or VCMD controller

The 10-digit jumper field beneath the status display controls the following settings:

Jumper	Designation	Open	Connected
1	DOOR	Do not heed the door switch during encryption	Heed the door switch during encryption
2	SCOP	Reserve (may not be connected)	
3	Jump A	Set standard line parameter (19200,8,2,ODD); Trigger RESET (subsequently removing jumper again)	
4	Jump B	Two double dispensing units in the 4-cassette housing	Operate a double dispensing unit in the 4-cassette housing as a 2-cassette housing (the two lower dispensing units may be absent when a 4-way distributor board is used)
5	Jump C	Reserve (not used)	
6	Jump D	Reserve (NCR emulation active)	
7	Clear CMOS	Delete CMOS; trigger RESET (subsequently removing jumper again)	
8	NEN	SE controls power-saving mode	NEN signal is generated by the CMD-V4
9	Battery	CMOS back-up battery inactive	CMOS-support battery active
10	Jump PLD	Reserve input to Programmable Logic Device	

Jumper 1 is aligned on the controller board at the top.

Default settings

Jumper connected

NEN

Battery

Jumper connected on one side (on one PIN only)

DOOR (option for activating DOOR)

Setting the cassettes to the banknote size

Read in this connection the sections "Setting note width" and "Setting note height" in the chapter "Device overview and operation".

Fill the cassettes with genuine money and push them in

After the device was switched on and no error occurred, the cash-out cassettes need to be filled with genuine money. Read chapter "Device Overview and operation", section "Filling the cash-out cassette".

Update the banknote parameters and cassette filling data

Please refer to chapter "Device Overview and operation", section "Cassette initialization", to obtain information about this.

Determine reference values for the various note types

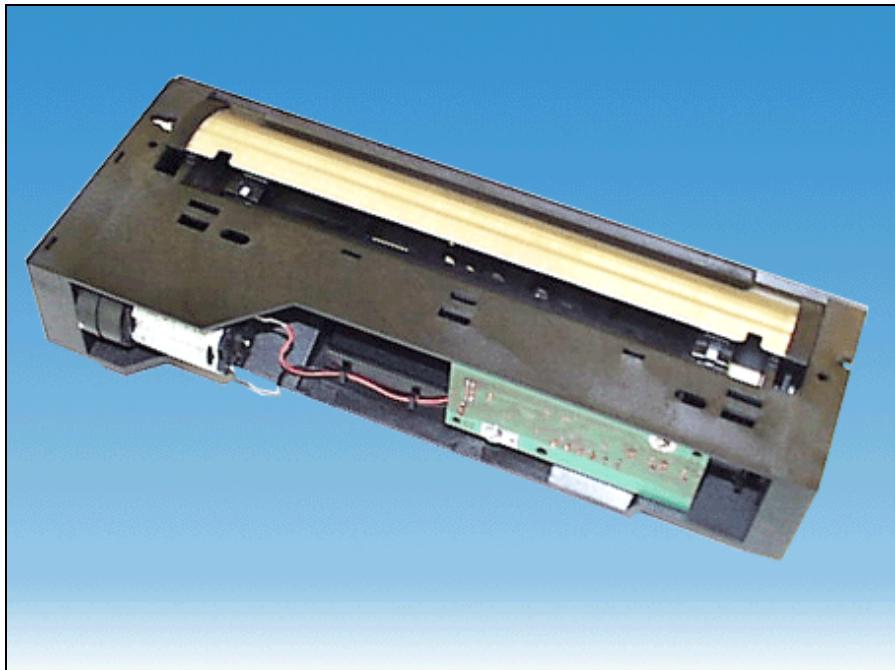
A description of this can be found in the chapter "Device Overview and operation", section "Determining the reference value".

Genuine money test

To do so, please read chapter "Device Overview and operation", section "Function test."

Shutter CMD horizontal

Shutter CMD V4 horizontal RL	01750053690
Shutter CMD V4 horizontal FL	01750056960
Shutter horiz. 8x CMD RL	01750166395
Shutter horiz. 8x CMD FL	01750166396
Shutter horiz. VBK 8x CMD RL	01750187300
Shutter_CMD_V4_horiz._RL_VBK	01750192728
Shutter_CMD-V4_horiz._FL_VBK	01750193245



Installation

The shutter closes the cash output area of the Cash Media Dispenser (CMD) component and consists of the following components:

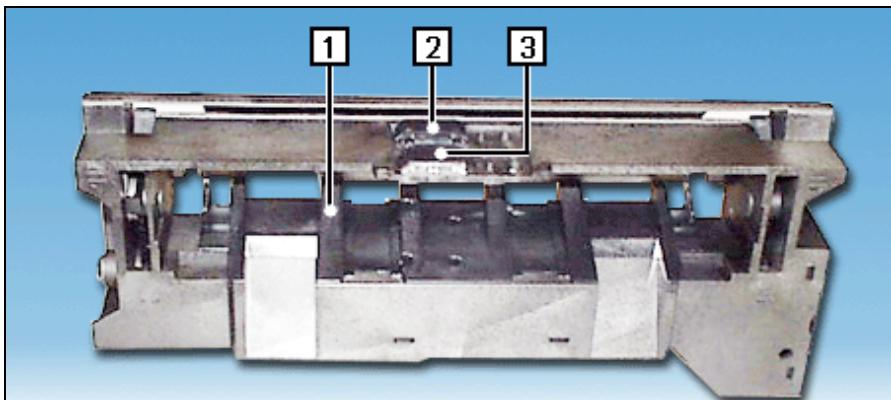
- Shutter flap
- Drive mechanism with DC motor, gear mechanism and interlock mechanism
- 1 photo sensor for the provisioning of a note bundle to the output
- 1 photo sensor for the monitoring of the money withdrawal
- Connector board with two hybrid photo sensors to control of the shutter flap

Both versions (Frontload and Rearload) differ only in the so called 'ramp' in the cash path and in the position of the photo sensors PS 27 and PS 28.

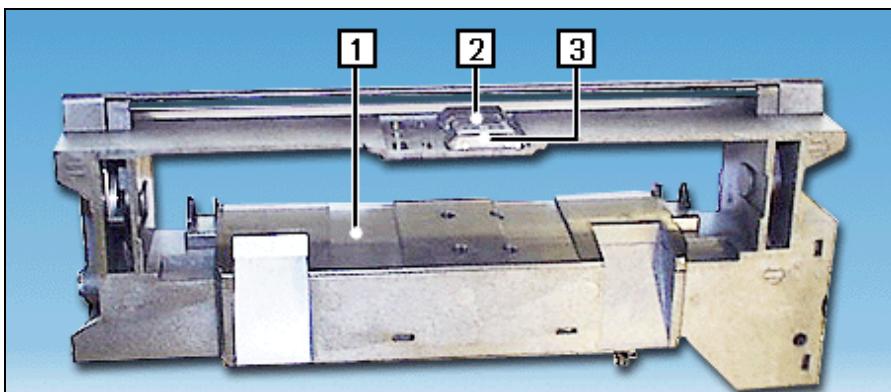
Views

CMD-V4 shutter

Rearload version view



Frontload version view



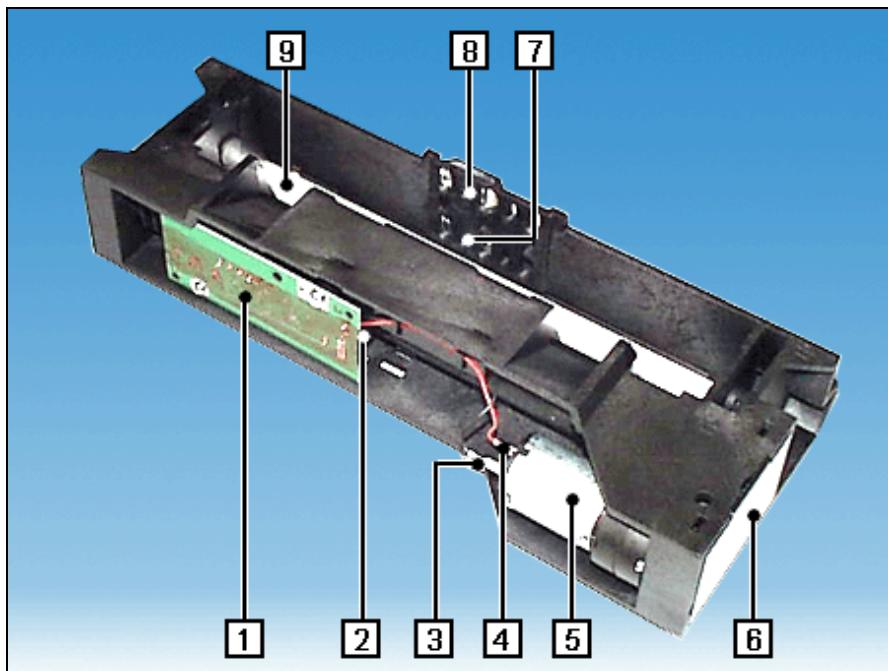
1 Ramp

2 Prism for the PS 27

3 Prism for the PS 28

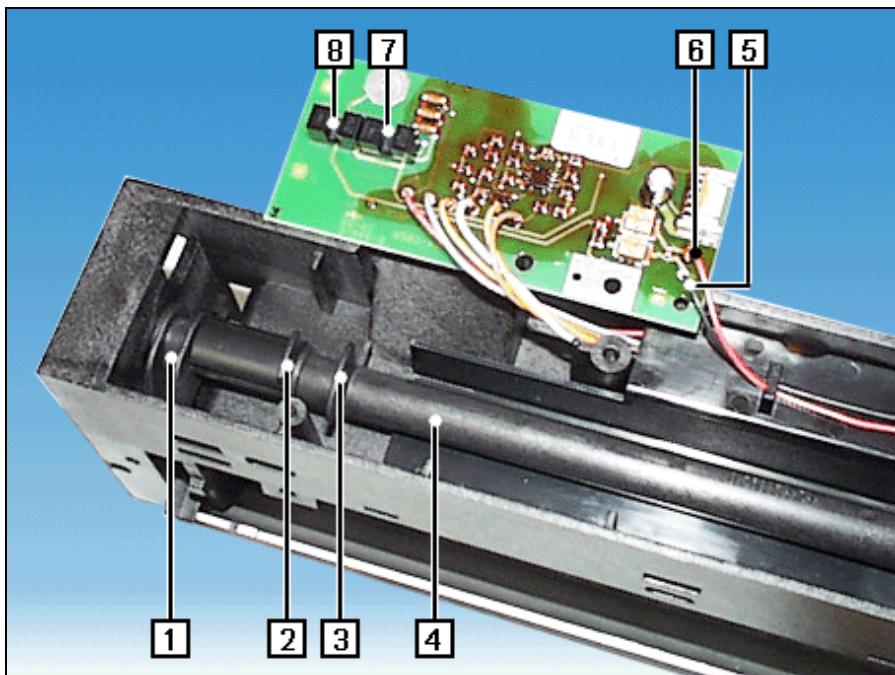


The structure of the shutter is shown with the Rearload version as an example. The shutter structure is exactly the same in the Frontload version.



- 1 Electronics board
- 2 Connection plug
- 3 Motor connection (-)
- 4 Motor connection (+)
- 5 DC motor

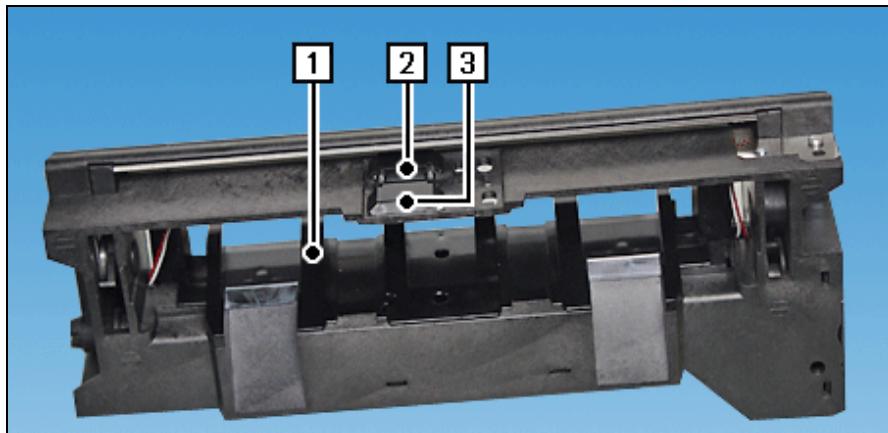
- 6 Gear mechanism cover
- 7 Prism for the PS 27
- 8 Prism for the PS 28
- 9 Shutter flap



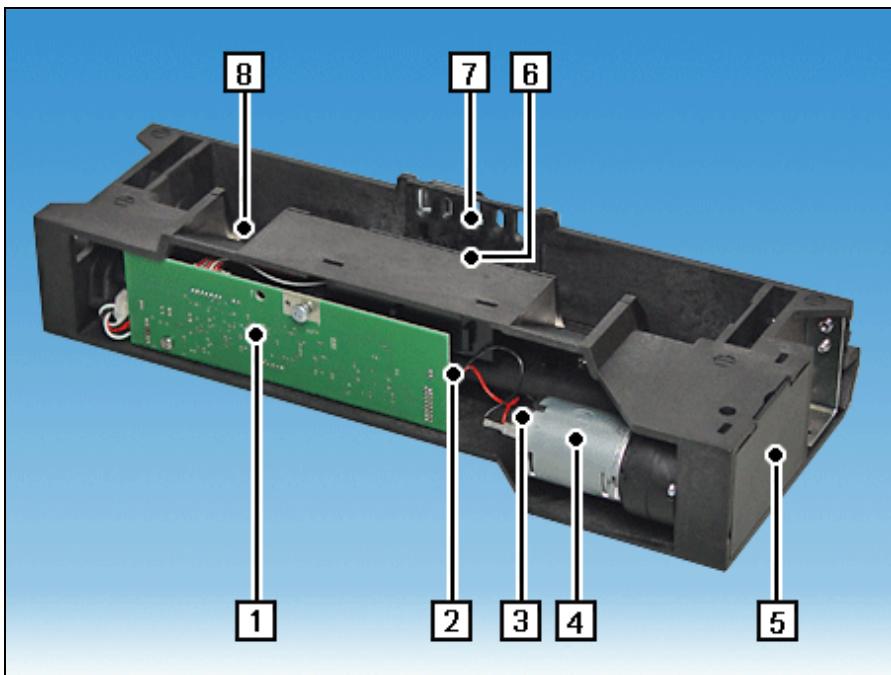
- | | |
|---|-----------------------------|
| 1 Moving and latching mechanism
(left) | 5 Motor connection (-) |
| 2 Switching flag for DPS 11 | 6 Motor connection (+) |
| 3 Switching flag for DPS 10 | 7 Hybrid photosensor DPS 10 |
| 4 Drive shaft for shutter flap | 8 Hybrid photosensor DPS 11 |

CMD-V5 shutter

Rearload version view



i The structure of the shutter is shown with the Rearload version as an example. The shutter structure is exactly the same in the Frontload version.

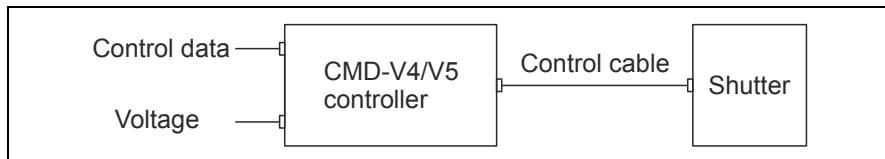


- 1 Electronics board
- 2 Connection plug
- 3 Motor connection
- 4 DC motor

- 5 Gear mechanism cover
- 6 Prism for the PS 27
- 7 Prism for the PS 28
- 8 Shutter flap

Function

The shutter is controlled by the firmware of the CMD-V4/V5 controller and is triggered by the application software.



The firmware evaluates the signals of the photo sensors PS 27 and PS 28 as well as the hybrid photosensors DPS 10 and DPS 11 and controls the motor.

Photo sensor	Function
PS 27	Monitoring the banknote removal
PS 28	Clamp stop position to the banknote removal area
DPS 10 / DPS 11	Position of the drive shaft for the shutter flap



The designation of the photosensor and the electronic signal are different (see the table in the section "Pin assignment").

The motor-driven shaft has a driving cam on the left and on the right side. They are constructed in such a way that the shutter is locked by the catches on the shutter flap bearings when the shutter is closed.

Shutter and drive mechanism are not directly connected.

When the driving cams turn, the shutter is forced open.

To close the shutter, the cam shaft turns the driving cams back but it is the spring that actually closes the shutter flap.

The latching mechanism of the shutter flap can only be performed if the flap is completely close beforehand.

This construction excludes the risk of injury for the user.

Banknote removal area CMD-V4

If the application triggers the command to dispense the banknotes, the shutter flap opens completely at first via the firmware. After the transportation of the banknotes into the removal position, the shutter flap closes slightly depending on the thickness of the banknote bundle. The thickness of the banknote bundle is evaluated by the thickness measurement in the CMD. The evaluated value functions as a temporary control of the drive motor.

After the withdrawal of the banknotes the shutter flap is opened completely by the firmware and the drive belts in the transport clamp are shortly running backwards. After that the shutter flap closes completely and locks, if there are not any external influences which get in the way.

Error code 28

If the locking procedure does not proceed in 1 second, the firmware turns off the motor, signals an error code (displays error code 28 on the CMD-V4 controller) and messages the malfunction to the application.

Error code 29 (manipulation protection)

If the closing shutter flap covers photo sensor PS 27, the error code 29 is shown on the display. The firmware tries anyway to close the shutter flap. If this is not possible during 1 second, the motor gets switched off.

Banknote removal area CMD-V5

The banknote removal in a system with a CMD-V5 is controlled by the application.

Meaning of the hybrid photosensors

DPS 10	DPS 11	ERROR
Open	covered	Shutter flap is completely open (position OPEN)
covered	covered	Shutter flap is opened (Position between OPEN and BANKNOTE DISPENSING)
covered	Open	The shutter flap is in the locking phase
Open	Open	Shutter flap is closed and locked (position CLOSED)

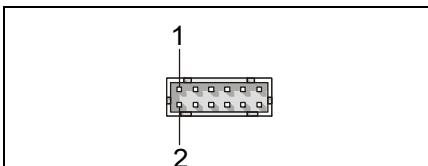
Signal level at the plug:

covered = 1 (H) = + 12 V

open = 0 (L) = 0 V

The level of the DPS 10 and DPS 11 are 0 V and 5 V, if the shutter electronics is connected to a CMD controller. If not, the measurement is not possible.

Pin assignment



Type of connector:
JST PHD 12M

Contact	Designation	Note
1		not used
2		not used
3	+ 12 V	
4	GND	
5	Motor (+)	Motor connection (+)
6	Motor (-)	Motor connection (-)
7	DPS 10	
8	DPS 11	
9	PS 27	
10	PS 28	
11	Transmit current PS 27 and PS 28	
12		not used

Firmware designation	Electronic signal
PS 27	LS 26
PS 28	LS 29

Maintenance

The shutter does not require preventive maintenance under normal operating conditions.

Technical Data

Dimensions:

Height: 128 mm (5.04")

Width: 304 mm (11.97")

Depth: 67 mm (2.64")

Weight: 820 g (1809 lb)

Shutter CMD horizontal

Designation	Part Number	Image
Shutter CMD V4 horizontal FL	01750082602	1
Shutter CMD V4 horizontal RL	01750082603	1
Shutter CMD V4 horizontal FL assy. w	01750085287	1
Shutter CMD V4 RL w assy.	01750128413	1
Shutter CMD V4 horizontal FL rail	01750136010	2
Shutter CMD V4 horizontal RL rail	01750136011	2
Shutter CMD V4 PC1521xe FL assy.	01750139331	1
Shutter CMD V4 FL weather. bent rail	01750178259	2
Shutter horiz. VBK 8x PC1500 FL	01750195729	1
Shutter CMD V4 RL weather. bent rail	01750195754	2
Shutter_PC1500xe_RL_VBK	01750205850	1
Shutter_horiz.VBK_8x_PC1500_FL_weather	01750210348	1
Shutter_horiz.VBK_8x_PC1500_RL_weather	01750210349	1

The following pictures are symbols for versions of the previously listed shutters. The characteristics of the individual shutters are not directly visible.

Illustration 1 Shutter CMD



Illustration 2 Shutter CMD rail



Installation

The shutter closes the cash output area of the Cash Media Dispenser (CMD) component and consists of the following components:

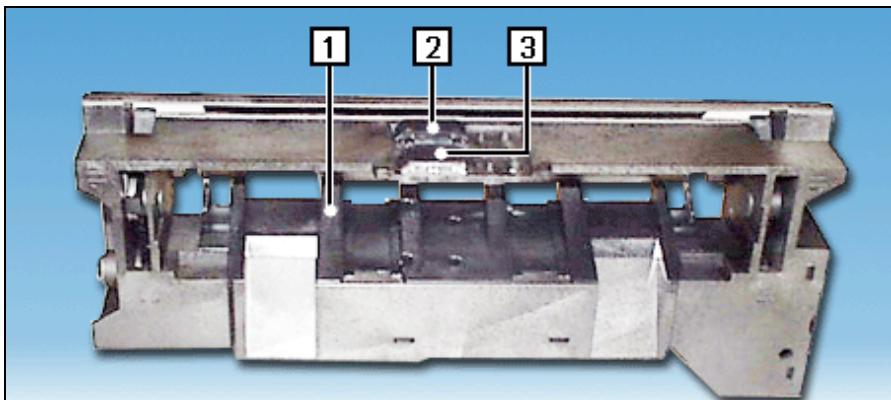
- Shutter flap (with or without rail)
- Drive mechanism with DC motor, gear mechanism and interlock mechanism
- 1 photo sensor for the provisioning of a note bundle to the output
- 1 photo sensor for the monitoring of the money withdrawal
- 2 sensors for the trapping device detection (VBK version only)
- Connector board with two hybrid photo sensors to control of the shutter flap

Both versions (Frontload and Rearload) differ only in the so called 'ramp' in the cash path and in the position of the photo sensors PS 27 and PS 28.

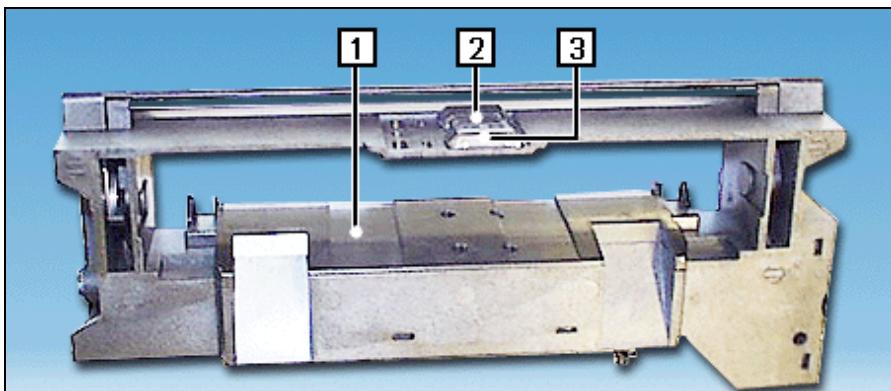
Views

CMD-V4 shutter

Rearload version view



Frontload version view



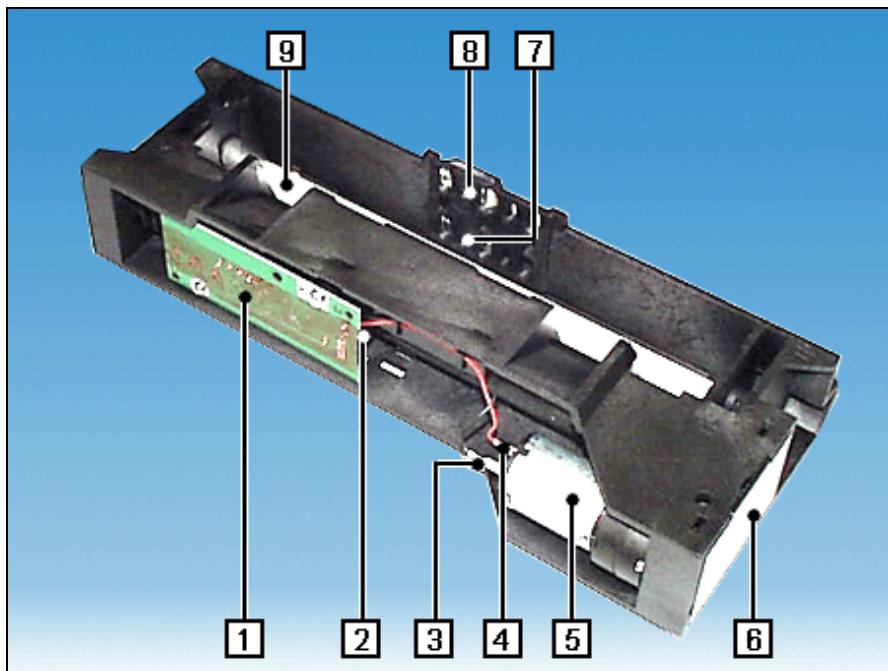
1 Ramp

2 Prism for the PS 27

3 Prism for the PS 28

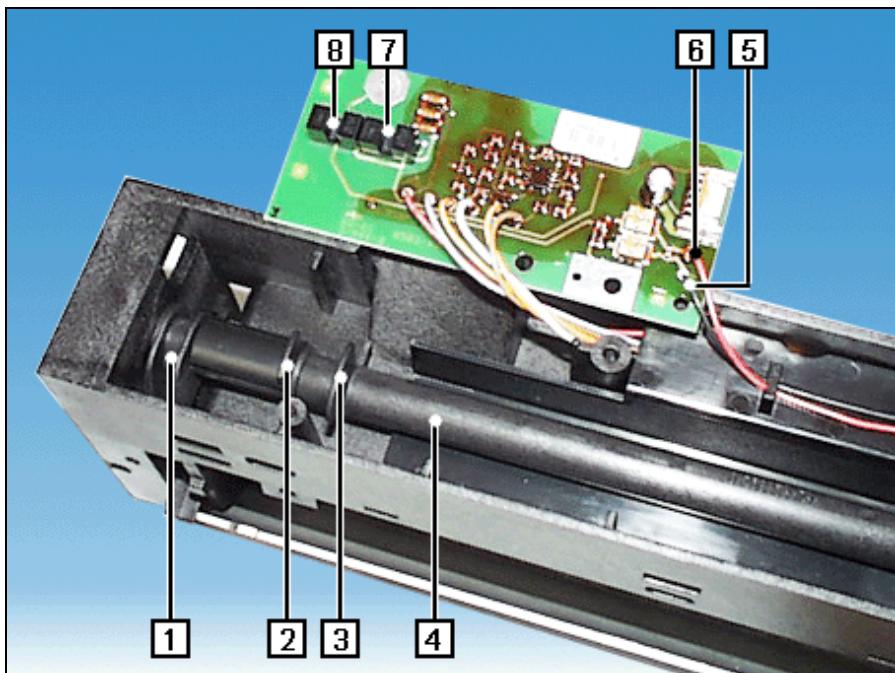


The structure of the shutter is shown with the Rearload version as an example. The shutter structure is exactly the same in the Frontload version.



- 1 Electronics board
- 2 Connection plug
- 3 Motor connection (-)
- 4 Motor connection (+)
- 5 DC motor

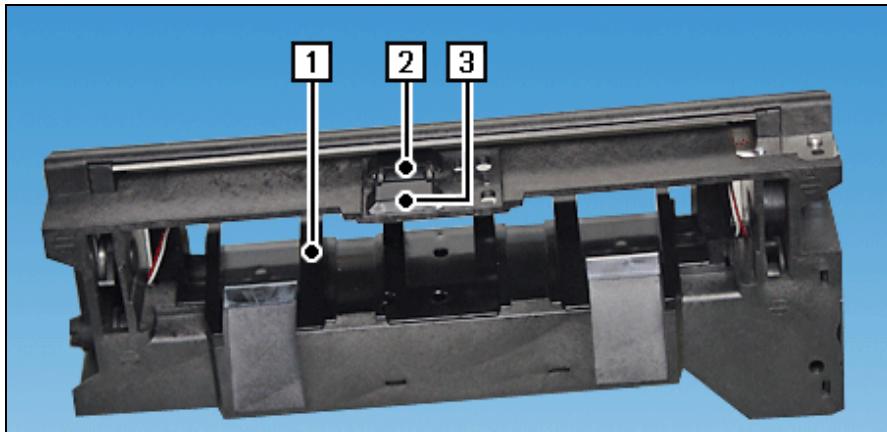
- 6 Gear mechanism cover
- 7 Prism for the PS 27
- 8 Prism for the PS 28
- 9 Shutter flap



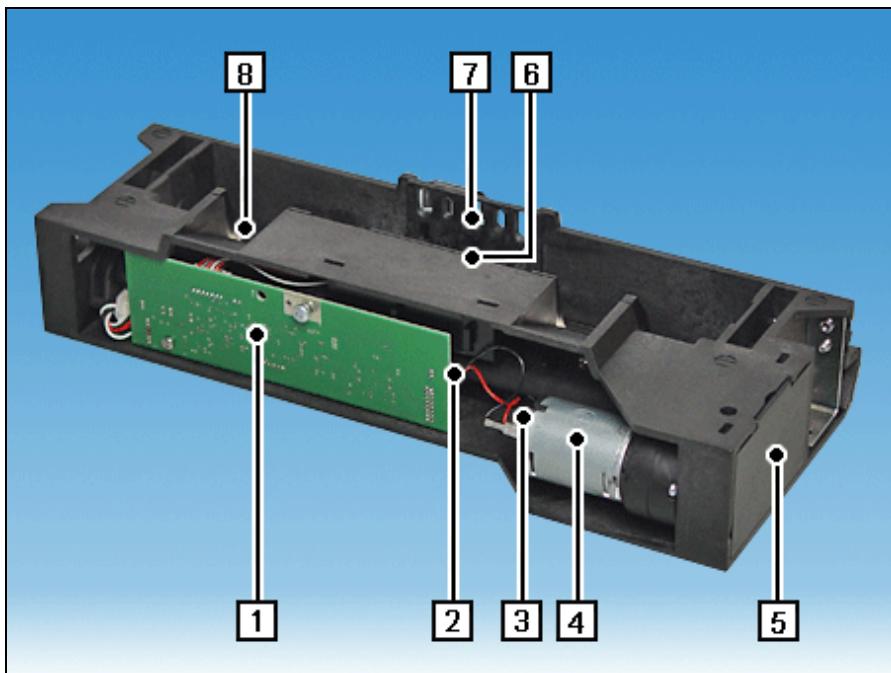
- | | |
|---|-----------------------------|
| 1 Moving and latching mechanism
(left) | 5 Motor connection (-) |
| 2 Switching flag for DPS 11 | 6 Motor connection (+) |
| 3 Switching flag for DPS 10 | 7 Hybrid photosensor DPS 10 |
| 4 Drive shaft for shutter flap | 8 Hybrid photosensor DPS 11 |

CMD-V5 shutter

Rearload version view



i The structure of the shutter is shown with the Rearload version as an example. The shutter structure is exactly the same in the Frontload version.

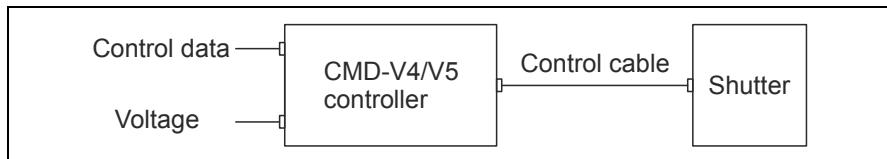


- 1 Electronics board
- 2 Connection plug
- 3 Motor connection
- 4 DC motor

- 5 Gear mechanism cover
- 6 Prism for the PS 27
- 7 Prism for the PS 28
- 8 Shutter flap

Function

The shutter is controlled by the firmware of the CMD-V4/V5 controller and is triggered by the application software.



The firmware evaluates the signals of the photo sensors PS 27 and PS 28 as well as the hybrid photosensors DPS 10 and DPS 11 and controls the motor.

Photo sensor	Function
PS 27	Monitoring the banknote removal
PS 28	Clamp stop position to the banknote removal area
DPS 10 / DPS 11	Position of the drive shaft for the shutter flap



The designation of the photosensor and the electronic signal are different (see the table in the section "Pin assignment").

The motor-driven shaft has a driving cam on the left and on the right side. They are constructed in such a way that the shutter is locked by the catches on the shutter flap bearings when the shutter is closed.

Shutter and drive mechanism are not directly connected.

When the driving cams turn, the shutter is forced open.

To close the shutter, the cam shaft turns the driving cams back but it is the spring that actually closes the shutter flap.

The latching mechanism of the shutter flap can only be performed if the flap is completely close beforehand.

This construction excludes the risk of injury for the user.

Banknote removal area CMD-V4

If the application triggers the command to dispense the banknotes, the shutter flap opens completely at first via the firmware. After the transportation of the banknotes into the removal position, the shutter flap closes slightly depending on the thickness of the banknote bundle. The thickness of the banknote bundle is evaluated by the thickness measurement in the CMD. The evaluated value functions as a temporary control of the drive motor.

After the withdrawal of the banknotes the shutter flap is opened completely by the firmware and the drive belts in the transport clamp are shortly running backwards. After that the shutter flap closes completely and locks, if there are not any external influences which get in the way.

Error code 28

If the locking procedure does not proceed in 1 second, the firmware turns off the motor, signals an error code (displays error code 28 on the CMD-V4 controller) and messages the malfunction to the application.

Error code 29 (manipulation protection)

If the closing shutter flap covers photo sensor PS 27, the error code 29 is shown on the display. The firmware tries anyway to close the shutter flap. If this is not possible during 1 second, the motor gets switched off.

Banknote removal area CMD-V5

The banknote removal in a system with a CMD-V5 is controlled by the application.

Meaning of the hybrid photosensors

DPS 10	DPS 11	ERROR
Open	covered	Shutter flap is completely open (position OPEN)
covered	covered	Shutter flap is opened (Position between OPEN and BANKNOTE DISPENSING)
covered	Open	The shutter flap is in the locking phase
Open	Open	Shutter flap is closed and locked (position CLOSED)

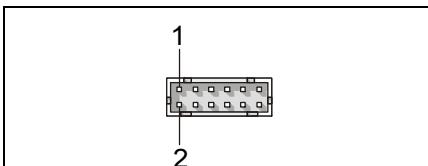
Signal level at the plug:

covered = 1 (H) = + 12 V

open = 0 (L) = 0 V

The level of the DPS 10 and DPS 11 are 0 V and 5 V, if the shutter electronics is connected to a CMD controller. If not, the measurement is not possible.

Pin assignment



Type of connector:
JST PHD 12M

Contact	Designation	Note
1		not used
2		not used
3	+ 12 V	
4	GND	
5	Motor (+)	Motor connection (+)
6	Motor (-)	Motor connection (-)
7	DPS 10	
8	DPS 11	
9	PS 27	
10	PS 28	
11	Transmit current PS 27 and PS 28	
12		not used

Firmware designation	Electronic signal
PS 27	LS 26
PS 28	LS 29

Maintenance

The shutter does not require preventive maintenance under normal operating conditions.

Technical Data

Dimensions:

Height: 128 mm (5.04")

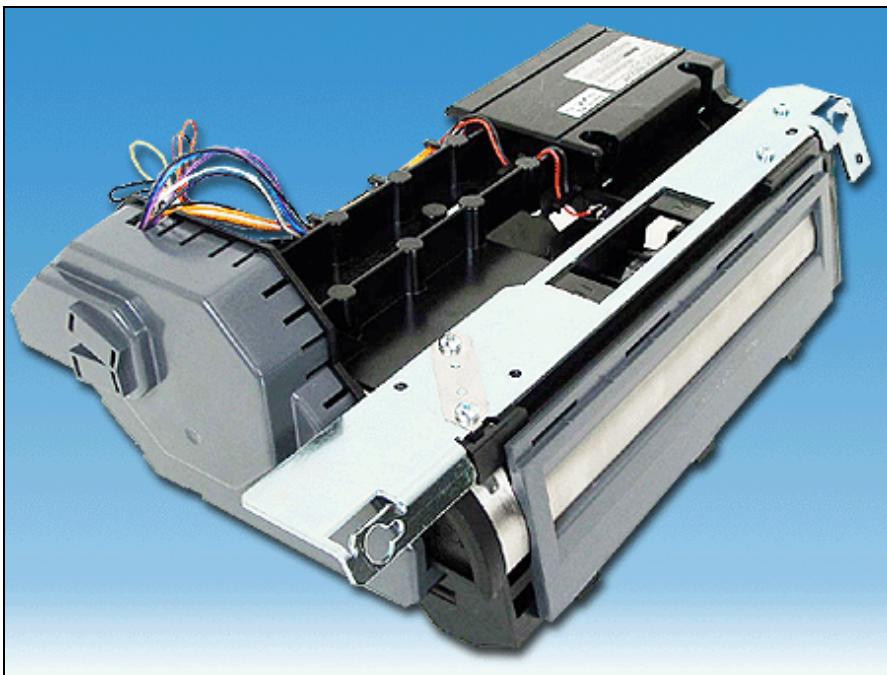
Width: 304 mm (11.97")

Depth: 67 mm (2.64")

Weight: 820 g (1809 lb)

Shutter CMD vertical

Shutter CMD V4 vertical RL	01750045330
Shutter CMD V4 vertical FL	01750054768
Shutter 8x CMD FL	01750157286
Shutter 8x CMD RL	01750159971
Shutter protection 8x CMD FL	01750184934
Shutter protection 8x CMD RL	01750184935

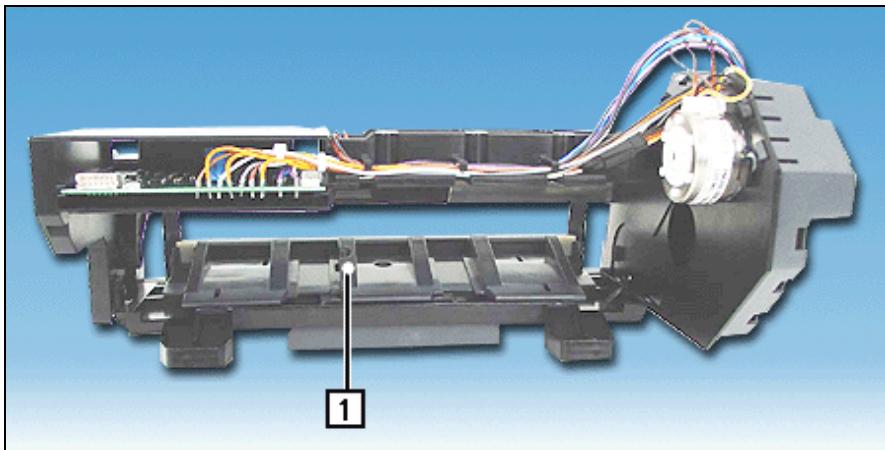
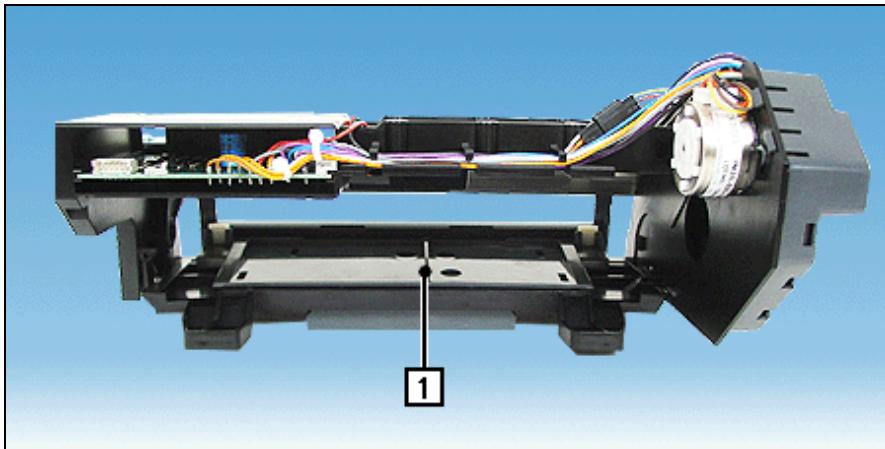


Structure

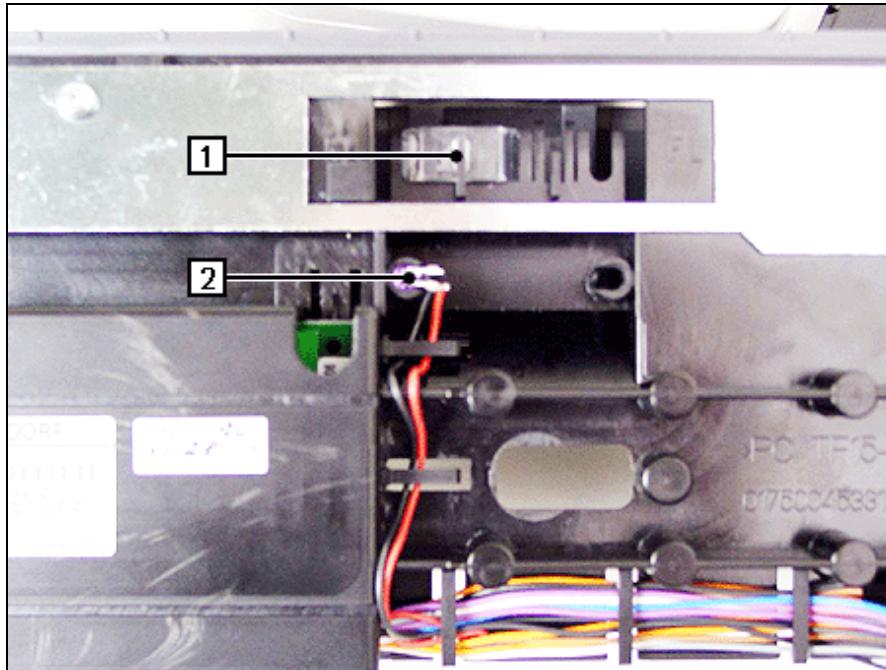
The shutter closes the cash output area of the Cash Media Dispenser (CMD) component and consists of the following components:

- Shutter flap
- Drive mechanism with stepper motor, gear mechanism, interlock mechanism and two hybrid photo sensors (DPS 10 and DPS 11) for monitoring the flap position.
- 1 photo sensor (PS 28) for the provisioning of a note bundle to the output
- 1 photo sensor (PS 27) for the monitoring of the money withdrawal
- Connector board for controlling the shutter flap

Both versions (Frontload and Rearload) differ only in the so called 'ramp' in the cash path and in the position of the photo sensors PS 27 and PS 28.

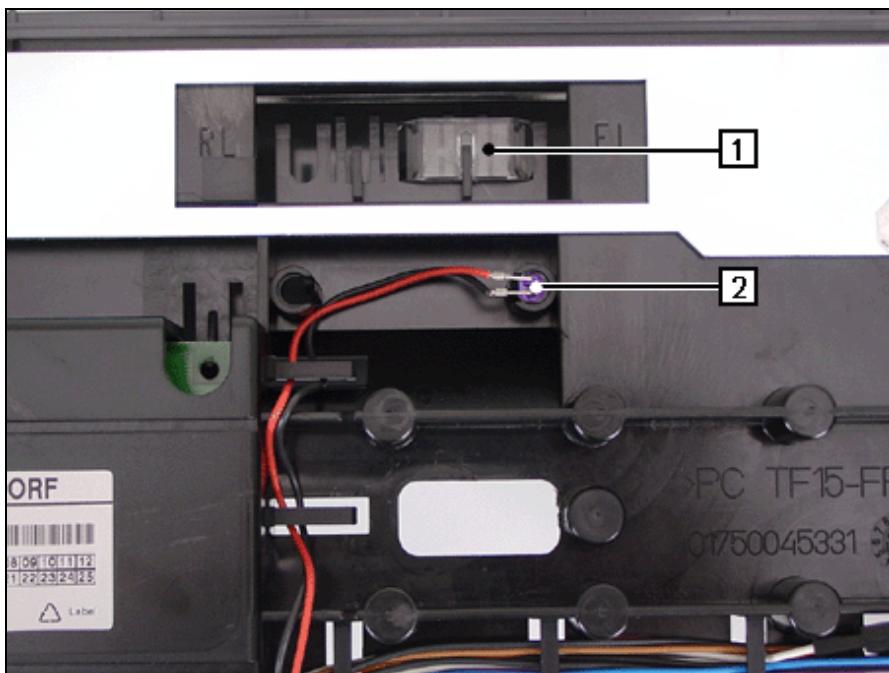
Rearload version rear view**Frontload version front view**

1 Ramp

Position of the photo sensors Rearload version

1 Prism for photo sensor PS 27

2 Photo sensor PS 28

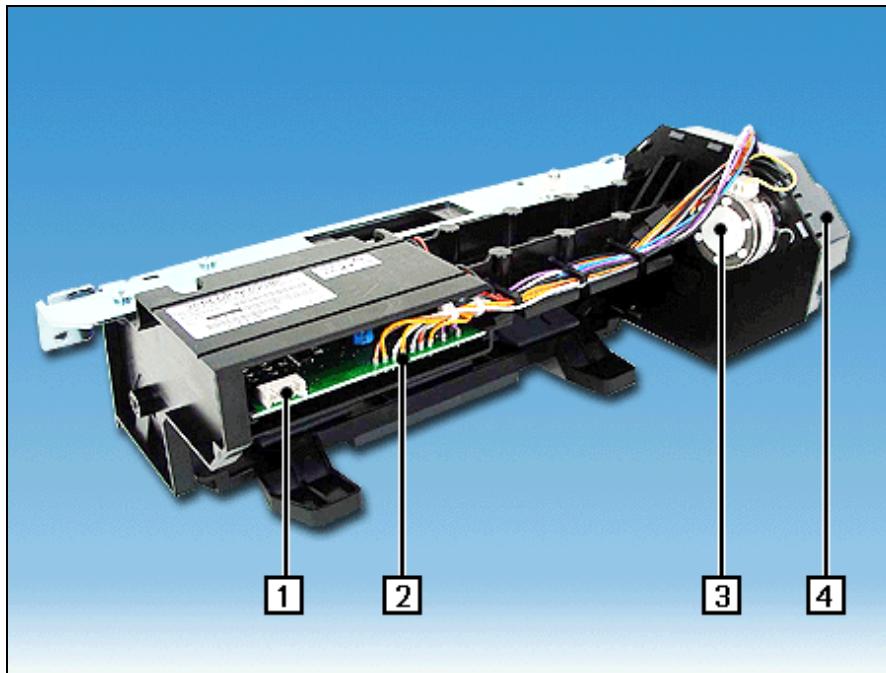
Position of the photo sensors Frontload version

1 Prism for photo sensor PS 27

2 Photo sensor PS 28

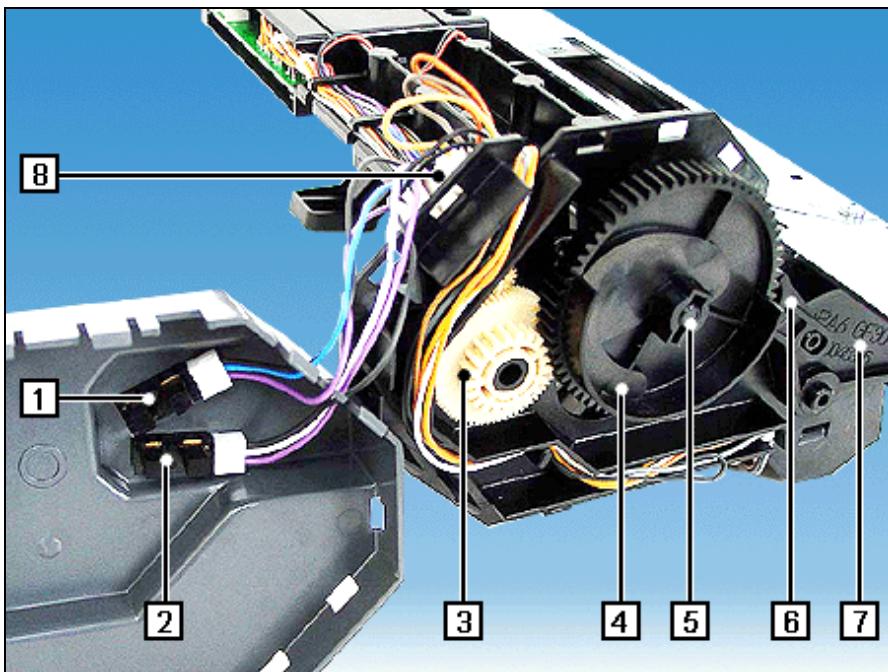


The additional structure of the shutter is shown with the Rearload version as an example. The shutter structure is exactly the same in the Frontload version.



1 Connection plug
2 Electronics board

3 Stepper motor
4 Gear mechanism cover

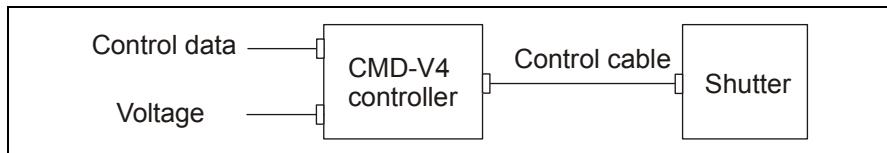


- 1 Hybrid photo sensor DPS 11
- 2 Hybrid photo sensor DPS 10
- 3 Twin gear wheel
- 4 Switch actuator DPS 11 and DPS 10 at the cam disk

- 5 Cam disk
- 6 Lever
- 7 Side piece flap
- 8 Stepper motor

Function

The shutter is controlled by the firmware of the CMD-V4/V5 controller and is triggered by the application software.



The firmware evaluates the signals of the photo sensors PS 27 and PS 28 as well as the hybrid photo sensors DPS 10 and DPS 11 and controls the motor.

Photo sensor	Function
PS 27	Monitoring the cash dispensing
PS 28	Stop position of the gripper to the cash output
DPS 10 / DPS 11	Position of the drive shaft for the shutter flap



The designation of the photo sensor and the electronic signal are different (see the table in the section "Pin assignment").

Shutter and drive mechanism are directly connected. When a cam disk turns, the shutter is forced to open or close. There is no risk for injury because the driving forces of the stepper motor are so low.

The latching mechanism of the shutter flap is performed automatically, if it is completely closed.

Cash dispensing CMD-V4

If the application triggers the command to dispense the money, the shutter flap opens completely at first via the firmware. After the transportation of the money into the removal position, the shutter flap closes slightly depending on the thickness of the banknote bundle. The thickness of the banknote bundle is evaluated by the thickness measurement in the CMD V4. The evaluated value functions as a temporary control of the drive motor.

After the withdrawal of the money the shutter flap is opened completely by the firmware and the drive belts in the transport clamp are shortly running backwards. After that the shutter flap closes completely and locks, if there are not any external influences which get in the way.

Error code 28

If the locking procedure does not proceed in 1 second, the firmware turns off the motor, signals an error code (displays error code 28 on the CMD-V4 controller) and messages the malfunction to the application.

Error code 29 (manipulation protection)

If the closing shutter flap covers photo sensor PS 27, the error code 29 is shown on the display. The firmware tries anyway to close the shutter flap. If this is not possible during 1 second, the motor gets switched off.

Cash dispensing CMD-V5

The cash withdrawal in a system with a CMD-V5 is controlled by the application.

Meaning of the hybrid photo sensors

DPS 10	DPS 11	Meaning
open	covered	Shutter flap is completely open (position OPEN)
covered	covered	Shutter flap is opened (Position between OPEN and CASH DISPENSING)
covered	open	The shutter flap is in the locking phase. Because of the slowing-down time which is contained in the firmware, it is guaranteed that the shutter flap is completely closed and locked (position CLOSED).

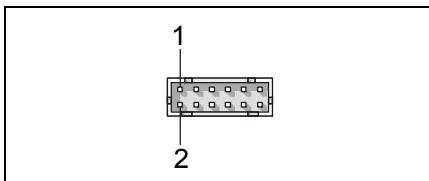
Signal level at the plug:

open = 1 (H) = + 12 V

covered = 0 (L) = 0 V

The level of the DPS 10 and DPS 11 are 0 V and 5 V, if the shutter electronics is connected to a CMD controller. If not, the measurement is not possible.

Pin assignment



Type of connector:
JST PHD 12M

Pin	Description	Remarks
1	+ 24 V	
2	GND	Load for + 24 V
3	+ 12 V	
4	GND	
5	Motor (+)	Stepper motor On / Off *1)
6	Motor (-)	Rotation direction of the stepper motor forwards / backwards *1)
7	DPS 10	
8	DPS 11	
9	PS 27	
10	PS 28	
11	Transmit current PS 27 and PS 28	
12		not used

- *1) These two signals from the CMD V4/V5 controller are processed through a clock generator on the controller card of the shutter into clock signals for the stepper motor.

Firmware description	Electronic signal
PS 27	LS 27
PS 28	LS 28

Maintenance

The shutter does not require preventive maintenance under normal operating conditions.

Technical data

Dimensions:

Height: 127 mm (5")

Width: 337 mm (13.3")

Depth: 185 mm (7.28")

Weight: 1020 g (2250 lb)

Ink Staining System

The cash media dispenser (CMD-V4) can be equipped with two different ink staining systems.

If an ink staining system is installed read the respective service manual which is supplied with the device:

- Ink staining system SQS: 01750094340
- Ink staining system Villiger: 01750094337

Ink Staining System

Printing Cassette (TH60)

Printing cassette (TH60)	01750092160
Printing cassette (TH60)	01750109482

The printing cassette is an optional component of the CMDV4 and is used to print documents and labels. It is part of a dual dispenser module.

The TH60 is a thermal printing unit with an integrated paper cutter, and is installed in the printing cassette. It is a compact unit for direct printing on thermal paper.

The TH60 features a thermal printing unit that is 160 mm (6.3") wide and operates at 8 dots/mm.

Paper is fed by two stepper motors.

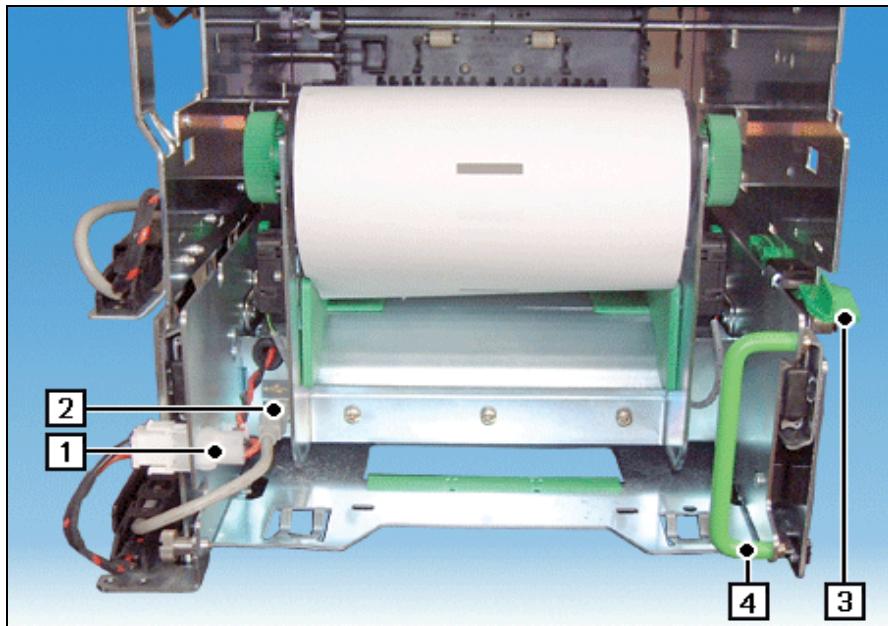
Various sensors and switches control this operation.

One sensor identifies the black mark that is on the back of the thermal paper.

The TH60 controller uses a temperature sensor to monitor the thermal line.

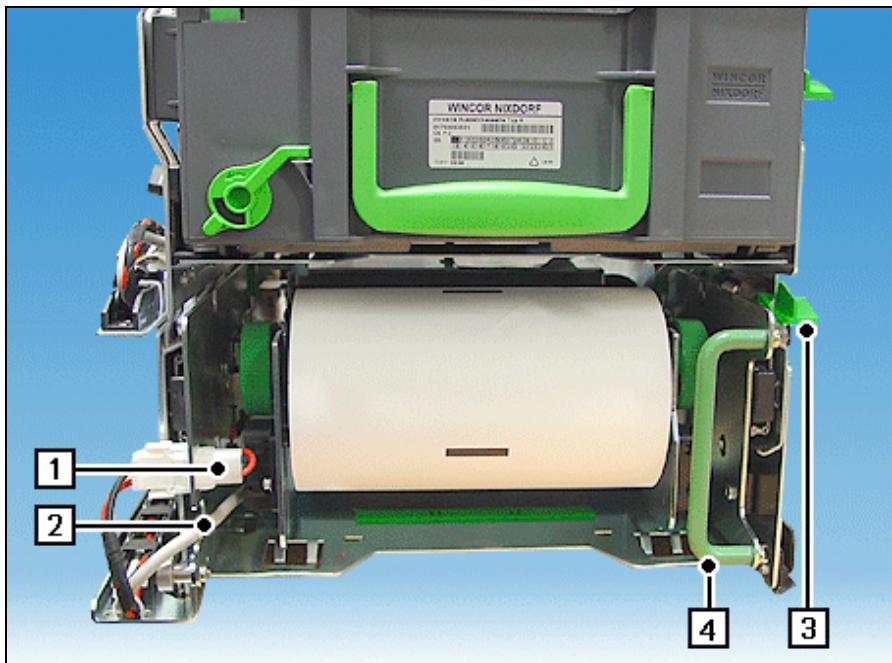
This description supplements the CMDV4 manual.

View of printing cassette (large paper roll)



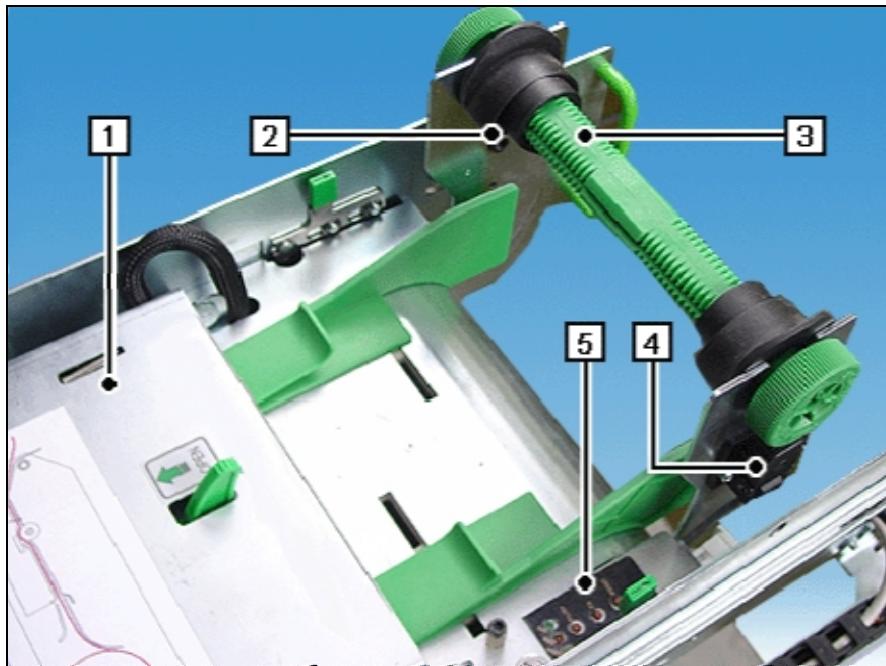
- 1 24 V power supply
- 2 USB port
- 3 Locking/unlocking lever
- 4 Handle to pull out/push in the printing cassette

View of printing cassette (small paper roll)



- 1 24 V power supply
- 2 USB port
- 3 Locking/unlocking lever
- 4 Handle to pull out/push in the printing cassette

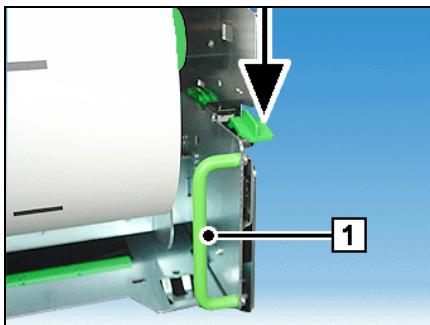
Components and controls



- 1 Thermal printing unit with paper cutter
- 2 Paper-nearly-out receiver
- 3 Paper roll holder
- 4 Paper-nearly-out transmitter
- 5 Keypad

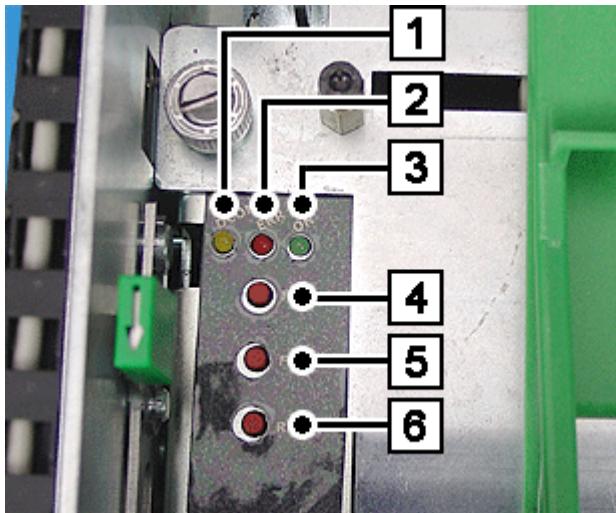
Pulling out the printing cassette

- Launch the product-specific software (see chapter “Basic Operation”, section “Calling the product-specific software” in the operating manual).
- Open the safe door (see chapter “Basic Operation”, section “Opening/closing the safe door (with factory setting)” or “Opening/closing the safe door (with customized lock)” in the operating manual).



Press the green unlocking lever down (see arrow), and pull the printing cassette out of the CMD V4 using the green handle (1).

Keypad



- 1 Yellow status LED
- 2 Red status LED
- 3 Green status LED

- 4 F1 key - paper feed
- 5 F2 key
- 6 RESET key

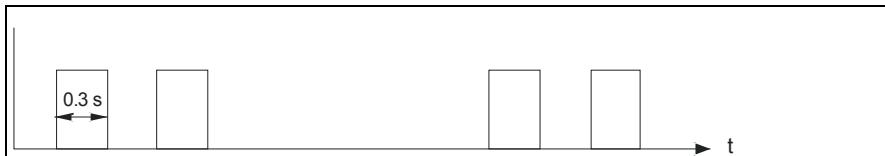
Errors/faults

The yellow or red status LED flashes if an error occurs. This does not include faults that cause the controller to stop functioning.

Status indications

The yellow or red status LED flashes if an error occurs, for example flashing briefly twice in succession. The LED is then switched off for 0.5 second, and the cycle is repeated (see the diagram "Example of a 2-flash indication").

Example of a 2-flash indication



Yellow status LED

This LED indicates the status of data communication.

Flash cycle	Cause	Action
1	Data reception	
2	Communication error	
3	Data communication not completed	
4	USB port error	

Green status LED

This LED indicates the general device status.

Flash cycle	Cause	Action
0	Printer is ready	
2	Document is in the output unit	Remove the document

Red status LED

This LED indicates the general error status of the printing cassette.

Flash cycle	Cause	Action
1	End of paper	Insert a new paper roll (see chapter "Printing Cassette", section "Replacing the paper roll" in the operating manual).
2	Near end of paper	The paper roll must be replaced soon.
3	Paper jam	Eliminate the paper jam (see chapter "Printing Cassette", section "Removing a paper jam" in the operating manual).
4	Fault in cutter	Check the blades. If the fault remains, replace the printing cassette (see the section "Installing/removing components").
5	Thermal line raised	Close the thermal line (see chapter "Printing Cassette", section "Removing a paper jam" in the operating manual).
6	Power supply fault	Check the power supply unit or the controller. If the fault remains, replace the printing cassette (see the "Installing/removing components" section).
7	Overheating	Switch the device off and let it cool down.
8	Memory error	Replace the printing cassette (see the section "Installing/removing components").
9	EEPROM error	Replace the printing cassette (see the section "Installing/removing components").

Key functions

The following key functions are available to test the printing unit.

- Paper feed – press the F1 key
- Trial printout (fonts) – press the F1 and RESET keys, then release RESET while continuing to hold F1 down.
- Setup menu and printout of setup report – press the F2 and RESET keys, then release RESET while continuing to hold F2 down.

Paper feed

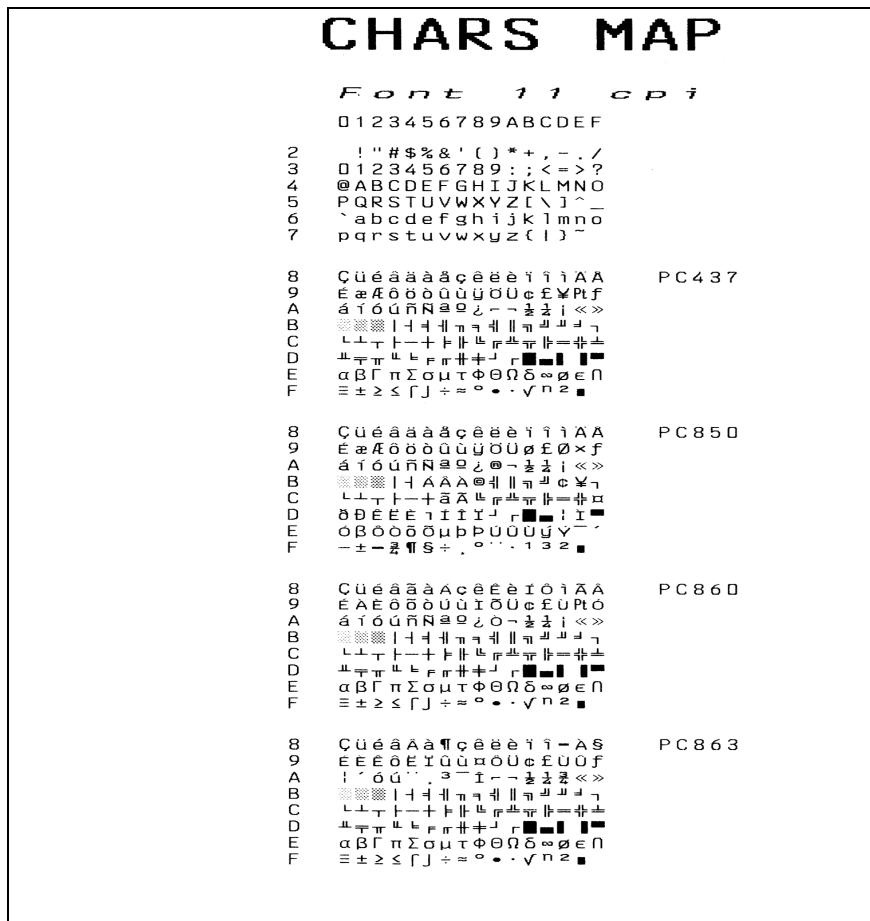
- Press the paper feed key (F1). The printer feeds the paper and then cuts it.

Trial printout

- Press the RESET and F1 keys at the same time. Release RESET while continuing to hold F1 down for several seconds. The printer outputs a trial printout showing the fonts.



It is advisable to use normal thermal paper with a width of 150 mm / 5.91" for the trial printout.



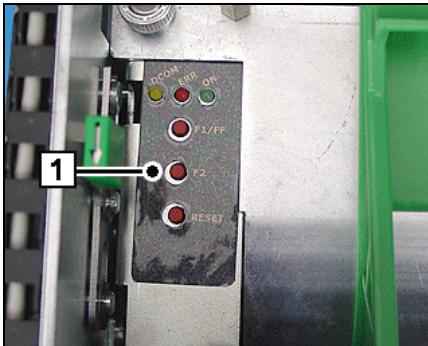
Ending the key function

- Press the RESET key to exit the key function.

Setup menu

i Only print the setup menu on thermal paper because printing extends beyond the margin when labels are used.

The status report is triggered as follows.



F2 key (1)

Press the RESET and F2 keys at the same time. Release RESET while holding F2 down for several seconds.

WINCOR - NIXDORF

WINCOR -- NIXDORF

TH60 Print-Cassette - rel 1.20

PRINTER SETUP

INTERFACE..... USB UNPLUGGED
PROGRAM MEMORY TEST.... OK
DYNAMIC RAM TEST..... OK
EEPROM TEST..... OK
CUTTER TEST..... OK
HEAD VOLTAGE [V] = 24,10
HEAD TEMPERATURE [°C] = 23
POWER ON COUNTER = 14
PAPER PRINTED [cm] = 280
PAPER EJECTED [cm] = 208
CUT COUNTER = 9
TICKET LENGTH [dots] = 430
TICKET EJECTION STEP = 80

USB Address Number. . : 0
Speed / Quality . . . : Normal
Notch Alignment . . . : Black marker
Notch Threshold . . . : 1,75V
Notch Distance [dot] : 000
Paper Threshold . . . : 2,5V
PaperEnd Buffer Clear : Enabled
Print Density . . . : 0 %

[F2] key to enter setup

[F1] key to skip setup

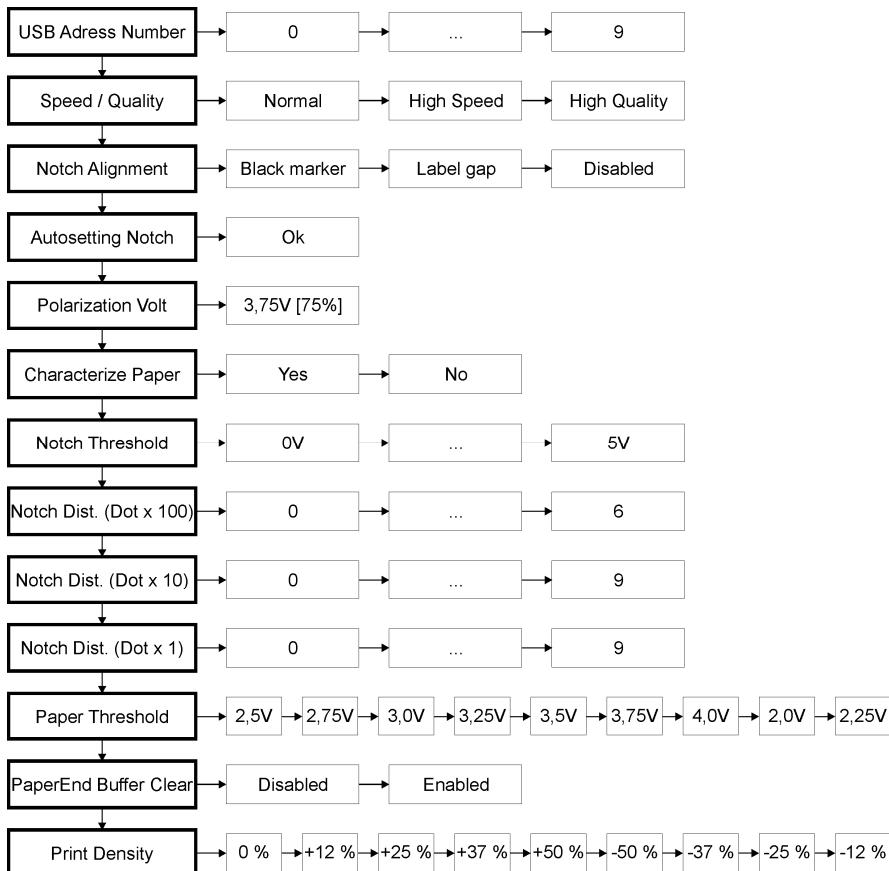
- You can select and change the menu items via the F2 key.



The settings are saved automatically; they cannot be rejected. If an input error is made, the menu item must be selected again and changed.

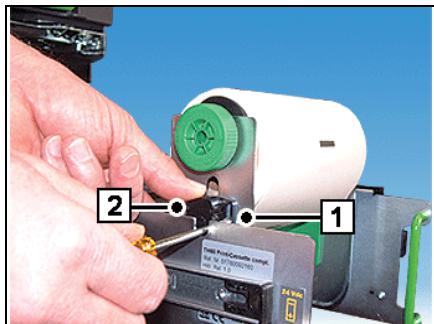
- You can go to the next menu item with the F1 key.
- You can end menu settings at any time by pressing RESET.

Menu structure



Adjusting the paper-nearly-out sensor

- Pull the printing cassette out of the CMDV4 (see the “Pulling out the printing cassette” section).

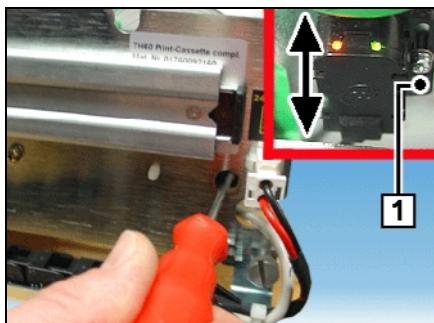


Large roll:

Undo the screw (1) on the right side of the paper-nearly-out sensor (2).
Push the paper-nearly-out sensor up or down.

Up = Respond later

Down = Respond earlier



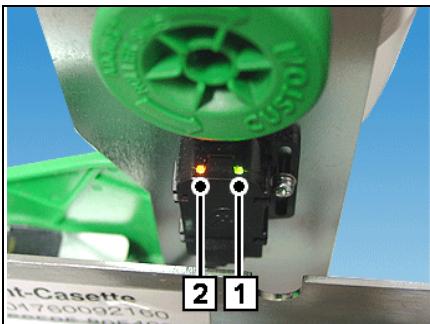
Small roll:

Undo the screw (1) on the right side of the paper-nearly-out sensor.
Push the paper-nearly-out sensor up or down.

Up = Respond later

Down = Respond earlier

Status LEDs



LEDs:

Green (1) on = OK, there is enough paper.

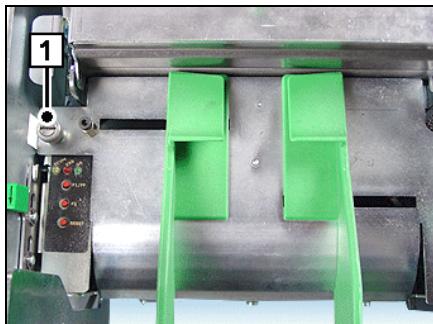
Yellow (2) also on = The paper is running out.

A message is sent to the application.

Installing/removing components

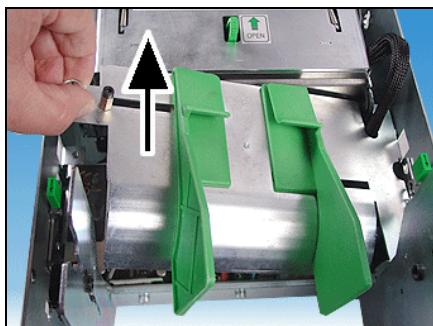
Thermal line with blade

- Pull the printing cassette out of the CMDV4 (see the section “Pulling out the printing cassette”).
- Switch the Cash Media Dispenser Version 4 off (see chapter “Basic Operation”, section “Switching off the device” in the operating manual), and unplug the power plug.

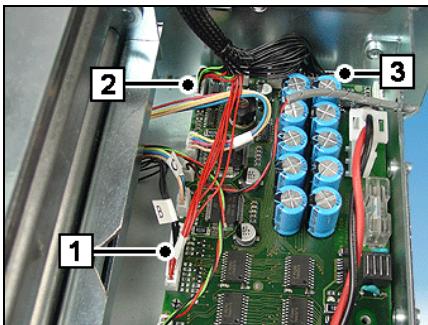


Undo the screw (1)

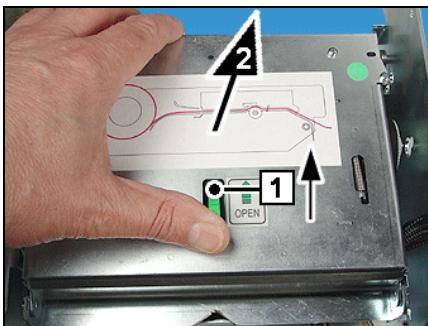
Push the paper guides completely together.



Remove the controller cover from the stay bolt by lifting it at a slant (see arrow).

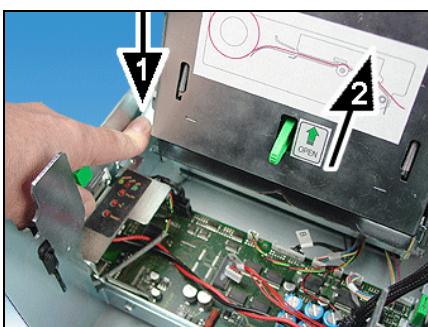


Detach connectors (1) to (3).



Press the retaining lever (1) in the direction of the arrow.

Tilt the thermal array upward in the direction of the arrow (2).



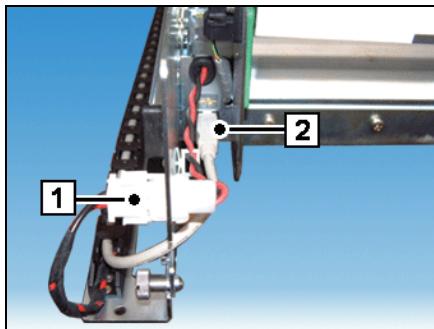
Press the retaining lever (1) in the direction of the arrow.

Lift the thermal array out.

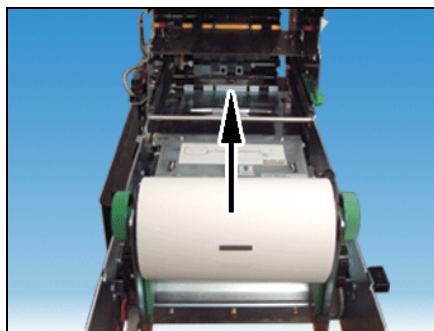
- Installation is in reverse order for removal.

Removing the printing cassette

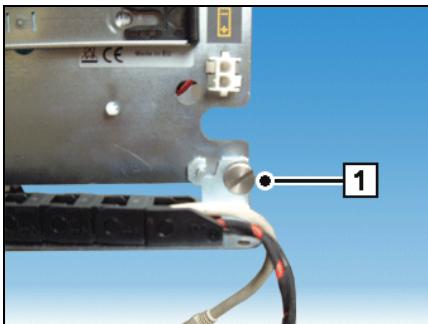
- Pull the printing cassette out of the CMDV4 (see the section “Pulling out the printing cassette”).
- Switch the Cash Media Dispenser Version 4 off (see chapter “Basic Operation”, section “Switching off the device” in the operating manual), and unplug the power plug of the Cash Media Dispenser Version 4.



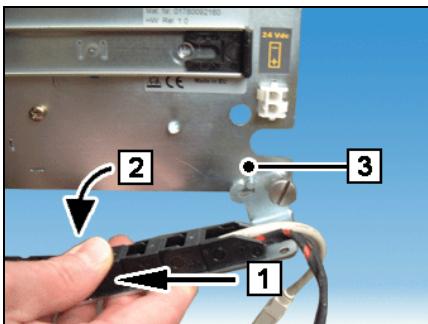
Detach connectors (1) and (2).



Lift the paper roll out (see arrow).



Loosen the knurled screw (1) by a few turns.

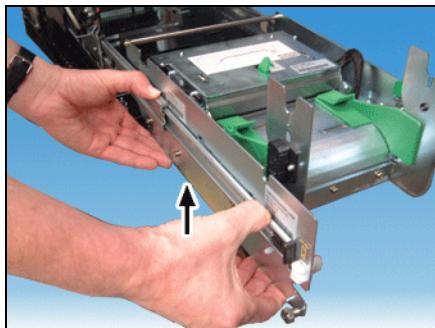


Push the cable chain with the retaining bracket in the direction of the arrow (1).

Turn the cable chain out of the retaining mechanism (3) in the direction of the arrow (2), and detach it.



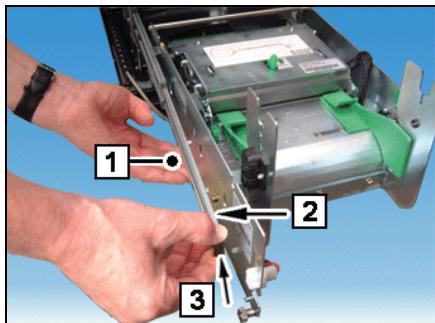
Press the locking levers (1) and (2) in the direction of the arrow as far as possible.



Hold the telescopic runner tight with your thumbs.

Press the printing cassette upward out of the retaining mechanism in the direction of the arrow

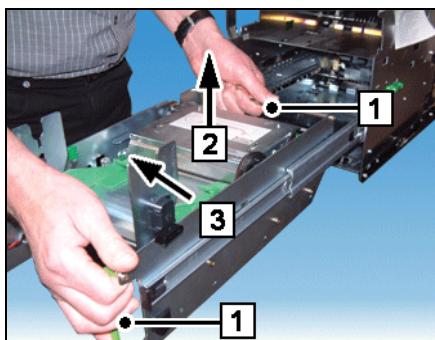
and ...



... support the printing cassette (1).

Pull the telescopic runner away from the printer in the direction of the arrow (2).

Push the telescopic runner into its holder in the direction of the arrow (3) as far as possible.



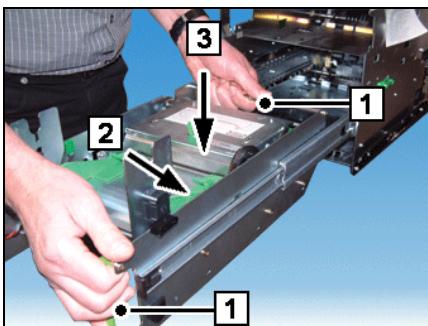
Lift the printing cassette by its two handles (1) in the direction of the arrow (2), and remove it in the direction of the arrow (3).

Installing the printing cassette



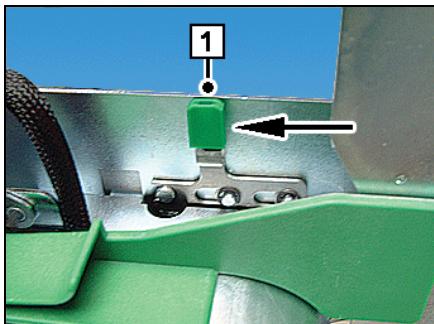
i When installing the new printing cassette, make sure that the locking levers (1) and (2) have been pushed in the direction of the arrow as far as possible.

- Pull the right-hand telescopic runner completely out of the Cash Media Dispenser Version 4.

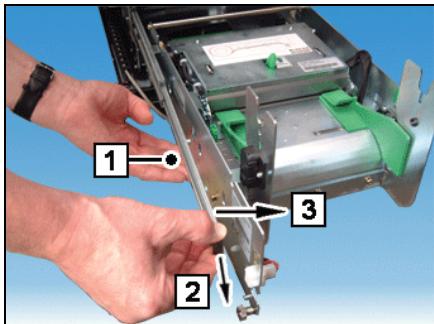


Lift the printing cassette by its two handles (1) in the direction of the arrow (2), and place it on the existing locating bolts.

Carefully lower the printing cassette in the direction of the arrow (3).



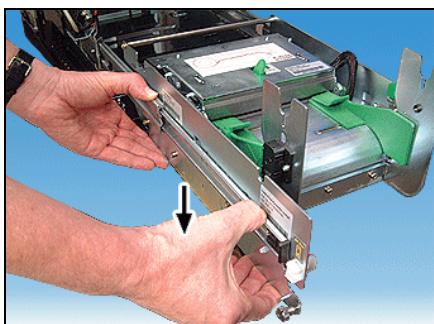
Push the right-hand locking lever (1) in the direction of the arrow as far as possible.



Support the printing cassette (1).

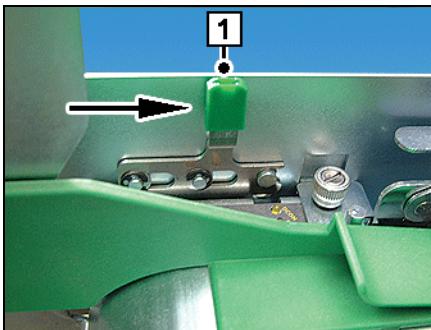
Pull the telescopic runner in the direction of the arrow (2) as far as possible.

Push the telescopic runner on to the locating pins in the direction of the arrow (3).

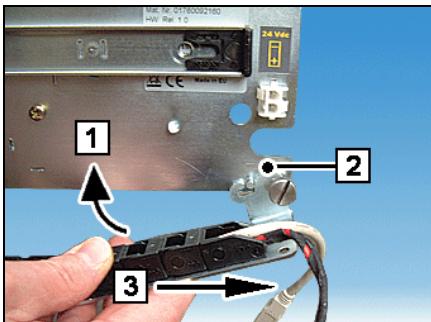


Hold the telescopic runner tight with your thumbs.

Press the printing cassette upward out of the retaining mechanism in the direction of the arrow



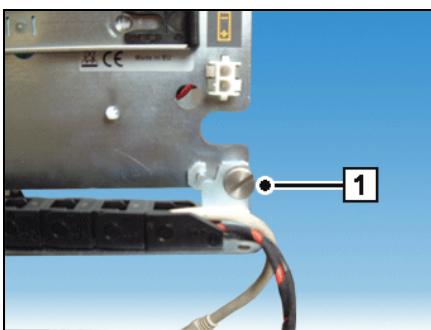
Push the left-hand locking lever (1) in the direction of the arrow as far as possible.



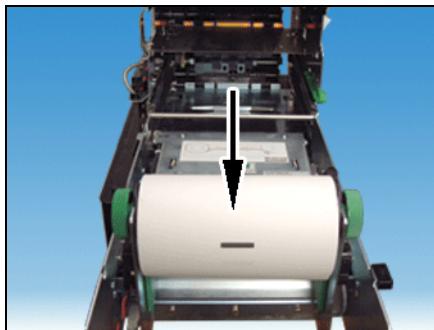
Twist the cable chain around the retaining mechanism (2) in the direction of the arrow (1).

Push the cable chain with the retaining bracket in the direction of the arrow (3)

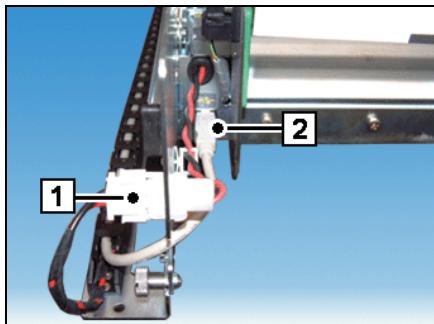
and ...



... tighten the knurled screw (1) again.



Now reinsert the paper roll in the direction of the arrow.



Re-attach connectors (1) and (2).

- Insert the power plug in the device socket, and switch the Cash Media Dispenser Version 4 on.
- Push the printing cassette into the CMDV4 until it locks into place.
- Close the Cash Media Dispenser Version 4.

Technical data

Power supply

Power supply: 24 V DC ± 10%
Connector: AMP Mod I 2-pin

Power consumption

Stand-by 24 V DC: approx. 0.2 A
Operating mode 24 V DC: approx. 9.0 A
Peak current 24 V DC: approx. 20 A

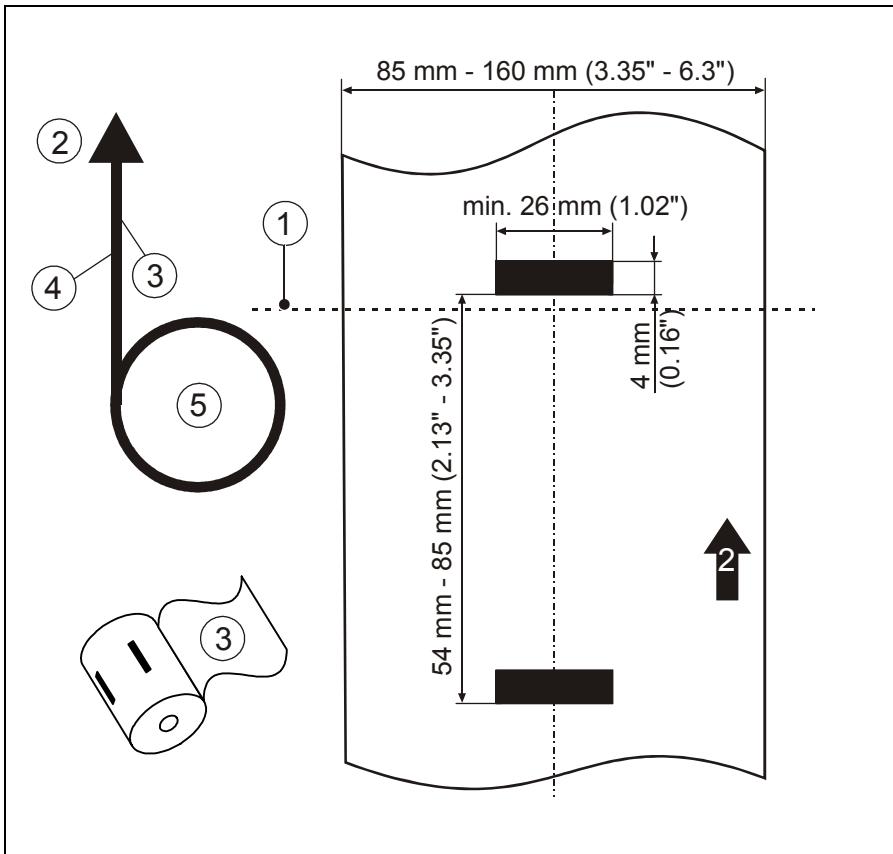
Printing data

Printing method: direct thermal printing
Resolution: 8 dots/mm or 200 DPI

Thermal paper specifications

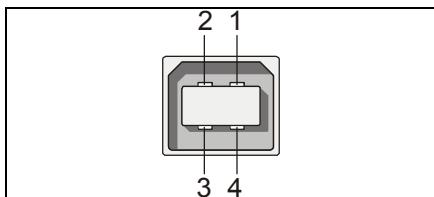
Paper width	85 mm - 160 mm ± 1 mm (3.35 - 6.3" ± 0.04")
Paper thickness	0.08 - 0.16 mm (0.003 - 0.01")
Paper weight	100 g/m ² - 120 g/m ² (26.67 lb - 32 lb)
Paper smoothness at front	min. 300 Bekk sec.
Paper smoothness at back	max. 200 Bekk sec.
Evenness of side walls of paper roll	±1 mm (± 0.04")
Thermal coating	on the inside
Outer diameter of large paper roll	up to 180 mm (7.09")
Outer diameter of small paper roll	up to 120 mm (4.72")
Inner diameter of roll core	50 + 1 mm (1.97" + 0.04")
Roll core material	plastic or cardboard
Thickness of roll core wall	min. 2 mm + 1 mm (min. 0.08" + 0.04")
End of paper	The end must not be glued to the roll core.
Mark position	on the back, in the middle
Mark color	black (not colored)
Mark height	min. 4 mm + 0.5 mm (min. 0.16" + 0.02")
Mark width	min. 26 mm + 0.5 mm (min. 1.02" + 0.02")
Mark spacing	min. 54 mm - max. 85 mm (min. 2.13" - max. 3.35")
Mark reflection	> 70% acc. to DIN 53145 part 1
Mark PCS value	> 70% acc. to DIN 66 236
Opacity	> 85% acc. to DIN 53 146
Paper quality	OJI KF 50-HDA

Rear of paper web



- 1 Cutting edge
- 2 Unroll direction
- 3 Inner surface of paper web (heat-sensitive)
- 4 Reverse of paper (mark position)
- 5 Paper roll

USB pin assignment

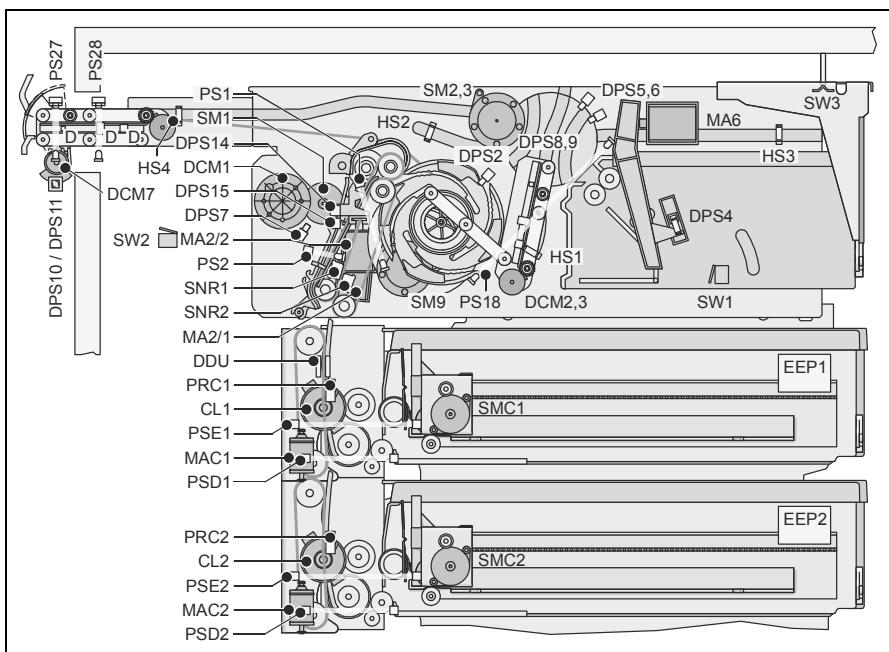


Type of connector:
USB 4-pin

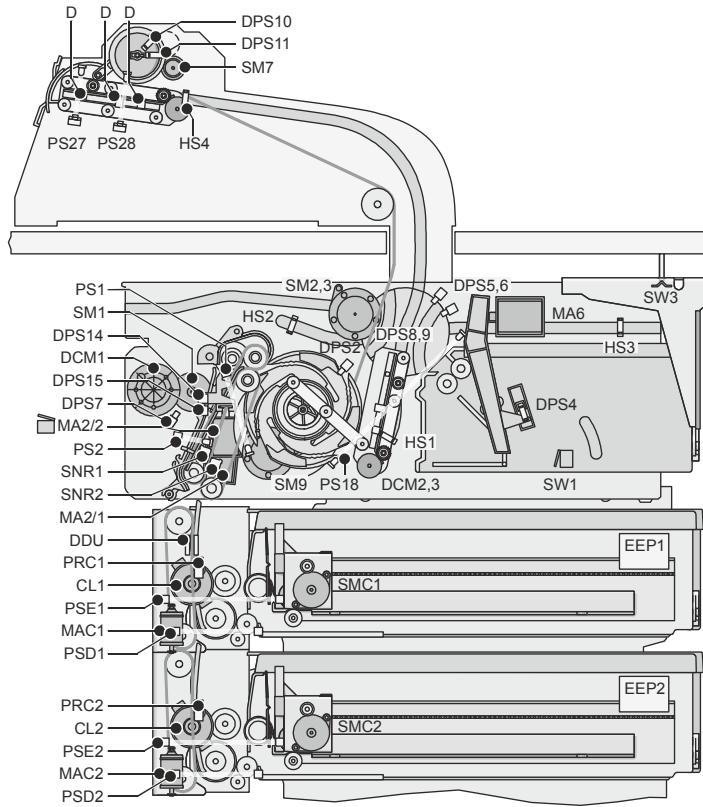
Pin	Designation	Input/output	Function
1	VBUS		
2	D-	Bidirectional	Data
3	D+	Bidirectional	Data
4	GND	Bidirectional	
Shield	Shield		

Sensors and electromechanical components

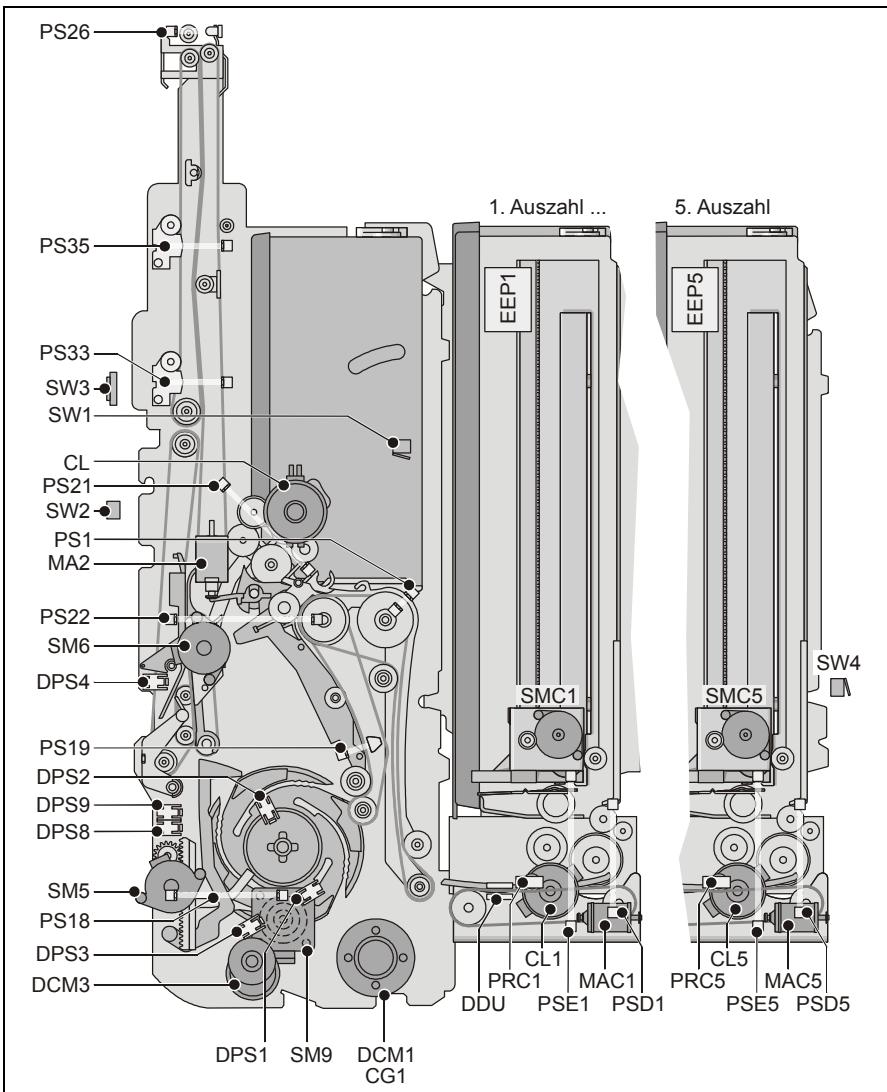
CMD-V4 with horizontal output transport RL



CMD-V4 with vertical output transport



VCMD with vertical output



Meaning of abbreviations and symbols

Electrical elements

Stacker and output transport

Component	Name	Location
D	Permanent magnets (3 units) – without sensors	Clamp
DPS 2	Stacker wheel position query	Stacker wheel input
DPS 4	Sensor: position of retract compartment	RR box
DPS 5	Sensor: home position	Routing disk drive, left
DPS 6	Sensor: home position	Routing disk drive, right
DPS 7	Home position of sliding surface	Single reject
DPS 8	Sensor: Position	Routing disk drive, left
DPS 9	Sensor: Position	Routing disk drive, right
DPS 10	Hybrid photosensor	Shutter
DPS 11	Hybrid photosensor	Shutter
DPS 14	Home position of switch	Single reject
DPS 15	Switch position: single reject	Single reject
SNR 1	Scanning bar Serial Number Recognition	Stacker wheel input
SNR 2	Scanning bar Serial Number Recognition	Stacker wheel input
HS 1	Home position (Hall-Sensor)	Clamp positioning
HS 2	Initial RR position (behind the routing disk) (Hall-Sensor)	Clamp positioning
HS 3	Reversal in FL direction (if required.) (Hall-Sensor)	Clamp positioning
HS 4	Stop over position and final position of clamp(Hall sensor)	Clamp positioning
PS 1	Stacker wheel input	Stacker wheel input
PS 2	Tray empty' check	Single reject
PS 18	Tray monitoring/ input monitoring 'clamp empty'	Swivel drive for clamp flap/RR box

Component	Name	Location
PS 27	Removal photosensor	Clamp positioning
PS 28	Bundle rear edge control	Clamp positioning
DCM 1	Main drive motor	Stacker wheel input
DCM 2	Traction motor + planetary gears	Clamp
DCM 3	Belt drive + planetary gears	Clamp
DCM 7	DC motor (Outdoor)	Shutter
MA 2/1	Switch control magnet	Single reject
MA 2/2	Switch control magnet	Single reject
MA 6	Magnet for retract compartment	Reject box
SW 1	RR box inserted	Reject box
SW 2	Safety switch	Slide rack
SW 3	Locking handle	Release lever
SM 1	Pressure on sliding surface for emptying	Single reject
SM 2	Routing disk motor	Routing disk drive, left
SM 3	Routing disk motor	Routing disk drive, right
SM 7	Stepper motor (Indoor)	Shutter
SM 9	Stacker wheel stepper motor	Stacker wheel input
T 1	Timing disk	Stacker wheel input

Dispenser module I

Component	Name	Location
MACx	Retaining magnet	Dispenser module; cassette x x = 1 – 6
CLx	Extractor gear	Dispenser module; cassette x x = 1 – 6
PSDx	Dispensing sensor	Dispenser module; cassette x x = 1 – 6
PSEx	Empty sensor	Dispenser module; cassette x x = 1 – 6
DDU	Length measurement, measuring station	Top dispenser module
SMCx	Stepper motor for pressure	in cassette x x = 1 – 6
PRCx	Pressure sensor	Dispensing unit; cassette x x = 1 – 6
EEPx	EEPROM	at cassette x x = 1 – 6

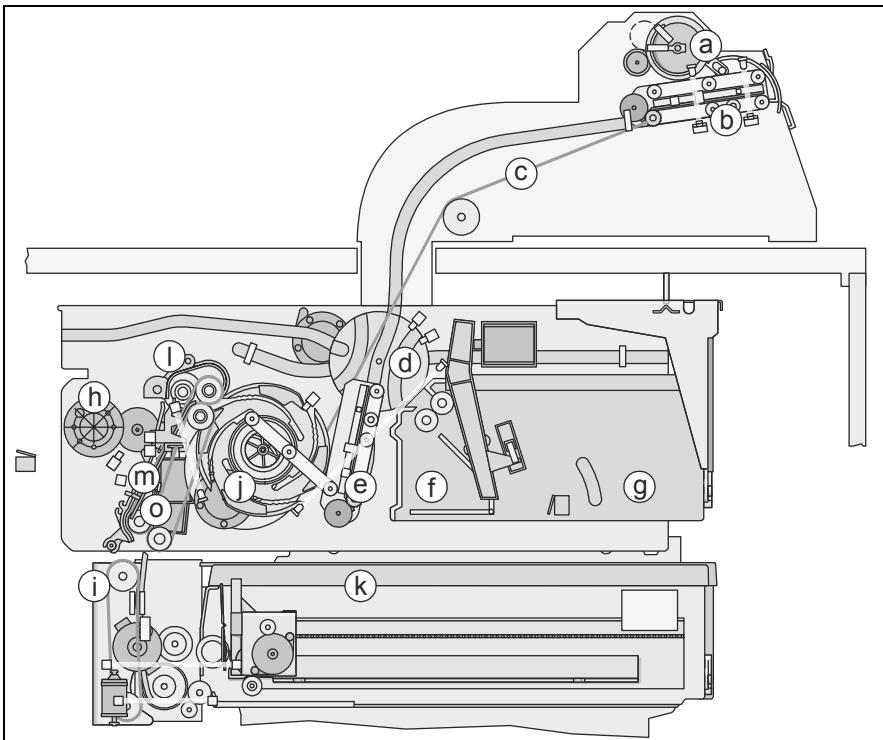
Stacker and output transport VCMD

Component	Designation	Location
CG1	Clock oscillator for speed control and width measuring of the notes	at main motor DCM1
CL	Coupling for the drive of the reject cassette	
CL1	Coupling with built-in brake for note dispensing (1st cash-out cassette)	
DCM 1	Function 1: Main drive motor for dispensing and collecting individual notes and for their banknote transport into the reject cassette	Stacker wheel input
	Function 2: Drive for the output transport of the bundle to the customer, in addition to note retraction from stacking compartment into the reject cassette	
DCM 3	Drive for the finger-type pressure bar and switching of the motor DCM1 between Function 1 and Function 2	Clamp
DCM 7	Shutter drive, shutter flap	Shutter
DPS 1	Finger-type pressure bar in the stacking compartment in home position for dispensing	Stacker input
DPS 2	Stacker wheel position query	Stacker wheel input
DPS 3	Finger-type pressure bar in the stacking compartment in the cash output	Stacker input
DPS 4	Switching dispensing/transport	Stacker wheel input
DPS 8 / DPS 9	Comb-type lifting bar sensor in the stacking compartment: in home position / cash output	Above reject box
EEP	Cassette connector with EEPROM	
PS 1	Banknote counter; controls single reject deflector (reflective photosensor)	
PS 18	Note or notes in the stacking compartment	
PS 19	Banknote counter, control stacker wheel	
PS 21	Monitoring of cash path in the reject cassette	Above reject box
PS 22	Path monitoring of cash output and bundle reject	
PS 26	Notes in cash-out position, presenting position	Output transport
PS 33	Cash path monitoring photosensor in the output transport	

Component	Designation	Location
PS 35	Cash path monitoring photosensor in the output transport	
MA 2	Lift magnet for single reject deflector	Single reject
SW 1	Reject/retract box pushed in	Reject box
SW 2	Safety switch stacker cover	Cover plate in front of the bundle reject deflector
SW 3	second function key	at the control panel on the chassis
SW 4	Safety switch	Cassette rack
SM 5	Stepper motor for comb-type lifting bar drive in the stacking compartment	Stacker wheel input
SM 6	Stepper motor for bundle reject switch	Above reject box
SM 7	Stepper motor (indoor)	Shutter
SM 9	Stacker wheel stepper motor	Stacker wheel input

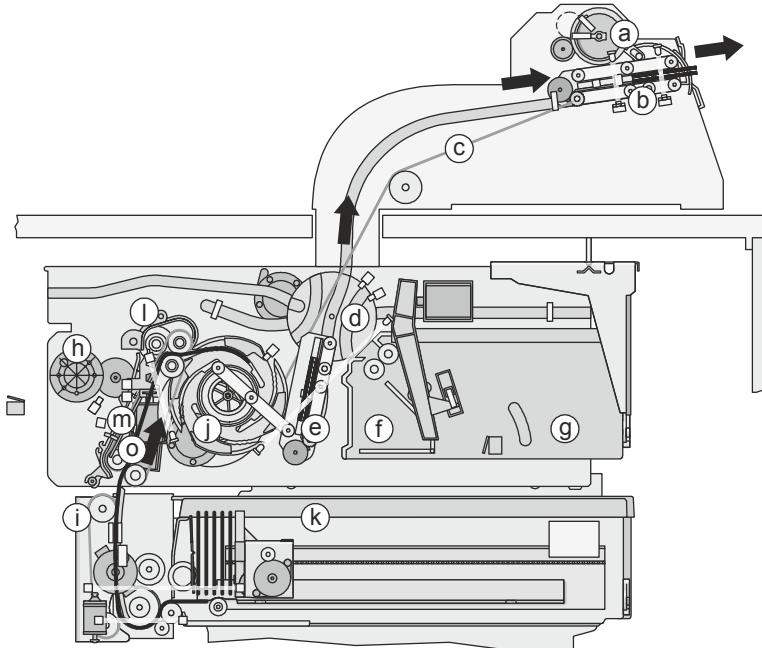
Processes in the CMD-V4 (schematic)

In the following, the most important processes in the CMD-V4 are shown step-by-step and described. To do so, the shown schematic drawing of the CMD-V4 with vertical transport (Frontload) is used.



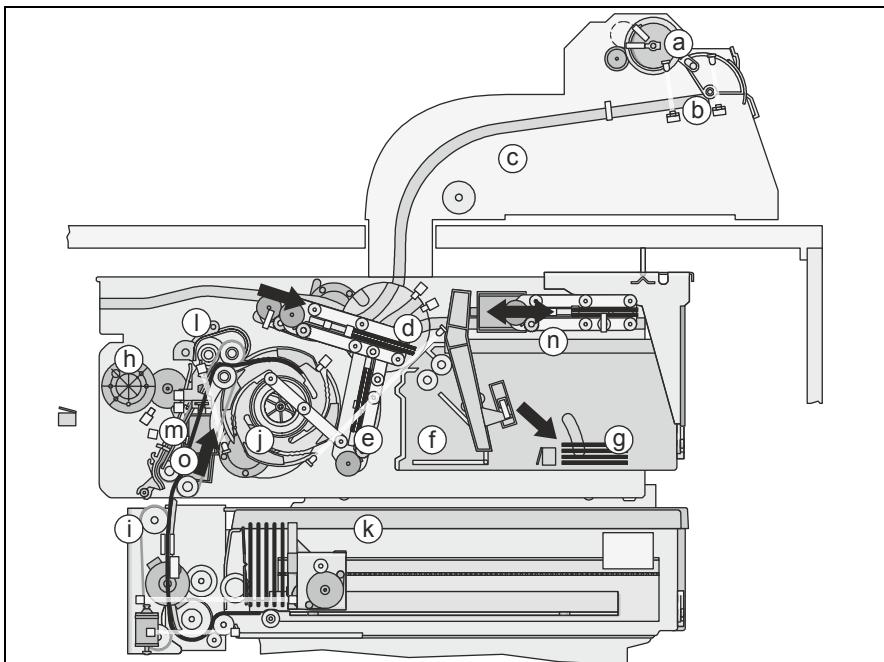
- | | |
|--|--|
| A Shutter | h Main drive motor |
| b Clamp in cash-out position | i Multiple-note detection unit |
| c Output transport vertical FL | j Stacker wheel |
| d Routing disk | k Cassette 1 |
| e Clamp in stacking position | l Single reject switch |
| f Retract box of the reject/
retract cassette | m Single reject box |
| g Reject box of the reject/
retract cassette | n Dispensing direction (horizontal LF) |
| | o Serial number recognition scanning
rail |

Dispensing in the direction of the customer



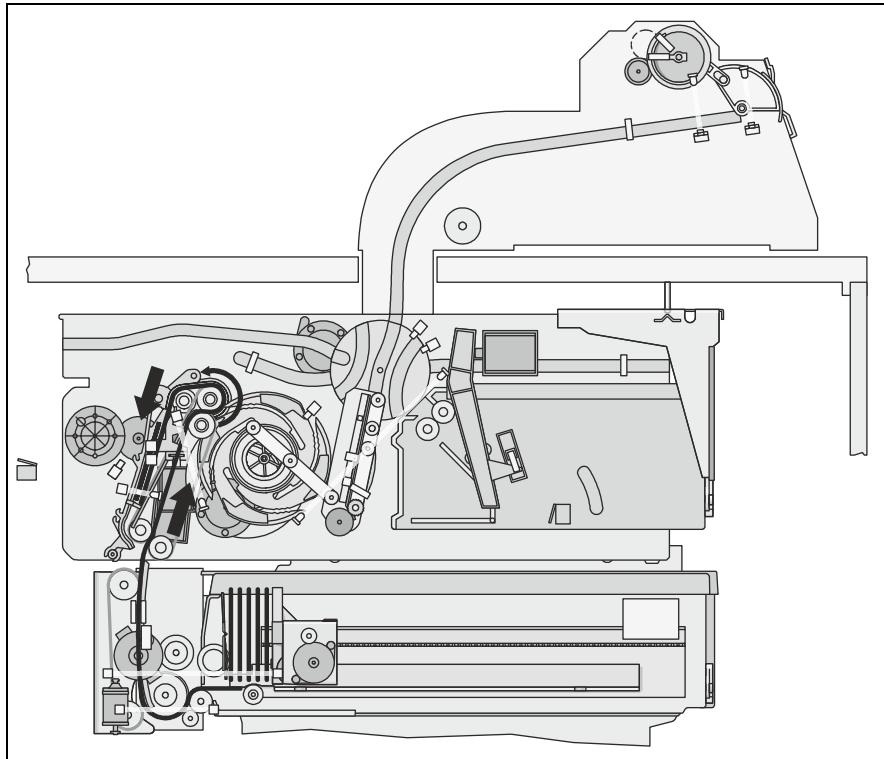
1. Dispensing of the requested banknote number one after another from every cassette (overall max. 60) (k)
2. Transport of the single notes to the multiple-note detection unit (i)
3. Transport of single notes for serial number detection (configuration-dependent) (o)
4. All 'good notes' are stored in the stacking position of the clamp (e)
5. Clamp gets closed with the routing disk
6. Routing disk takes the vertical dispensing position (d)
7. Transport of the bundle to the cash-out position (b)
8. The shutter opens
9. Transport of the bundle to the removal position
10. Note output by the customer
11. The shutter closes
12. Clamp goes back to its stacking position and switches automatically open (e)

Bundle reject

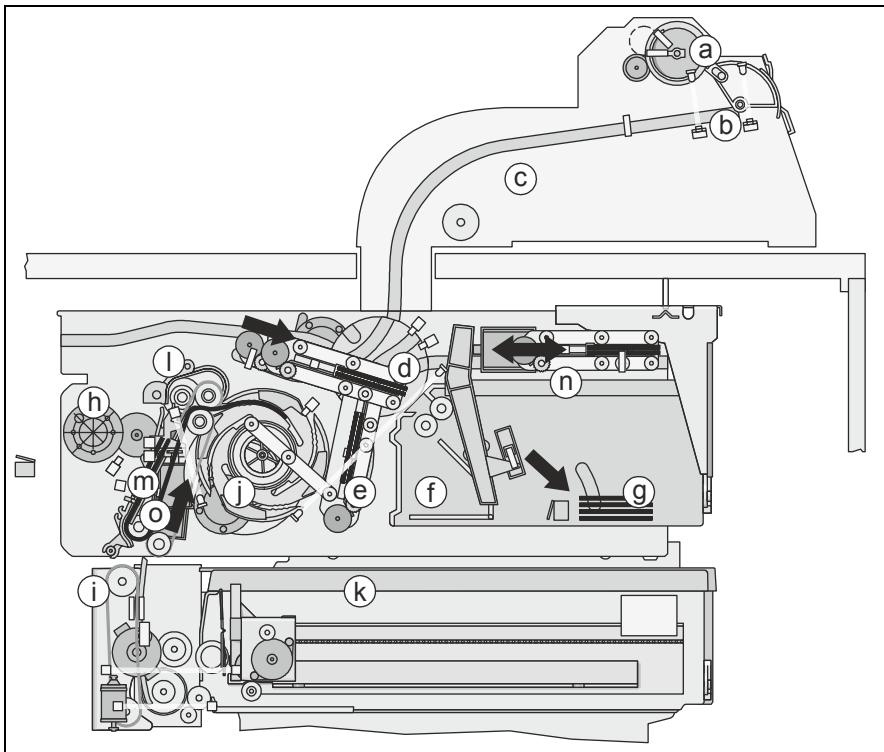


1. - 4. Process as the dispensing in the direction of the customer (vertical Frontload)
5. Routing disk takes the horizontal dispensing position Frontload (d)
6. Clamp moves in the direction of the dispensing (horizontal Frontload) (n)
7. Routing disk moves to the reject/retract position (d)
8. Clamps moves in the reject/retract position
9. Routing disk moves to the reject/retract position "Block the route" (d)
10. Clamps moves in the reject/retract cassette as far as possible
11. Routing disks turns in the reject/retract position and moves the clamp to its reject/retract position by that
12. Transport of the bundle in the reject box of the reject/retract cassette (g)

Single reject

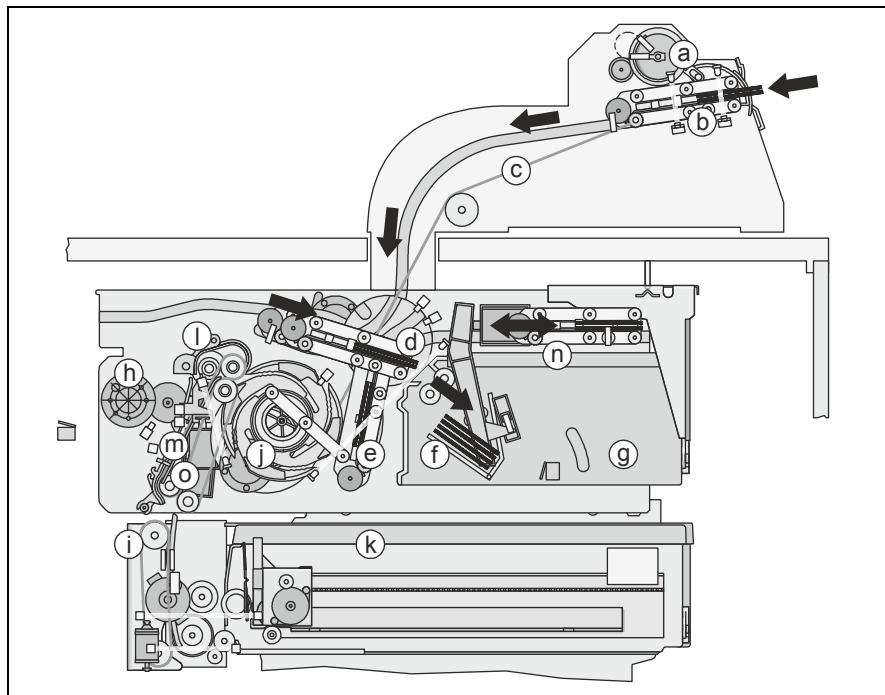


1. - 3. Process as the dispensing in the direction of the customer (vertical Frontload)
- 3.1 If a 'bad note' gets recognized, it is controlled with the single reject switch (i) and stored in the single reject box (m). Max. two 'bad notes' per transaction can be stored in the single reject box. They don't have to be from one transaction.
4. - 11. Process as the dispensing in the direction of the customer (vertical Frontload)

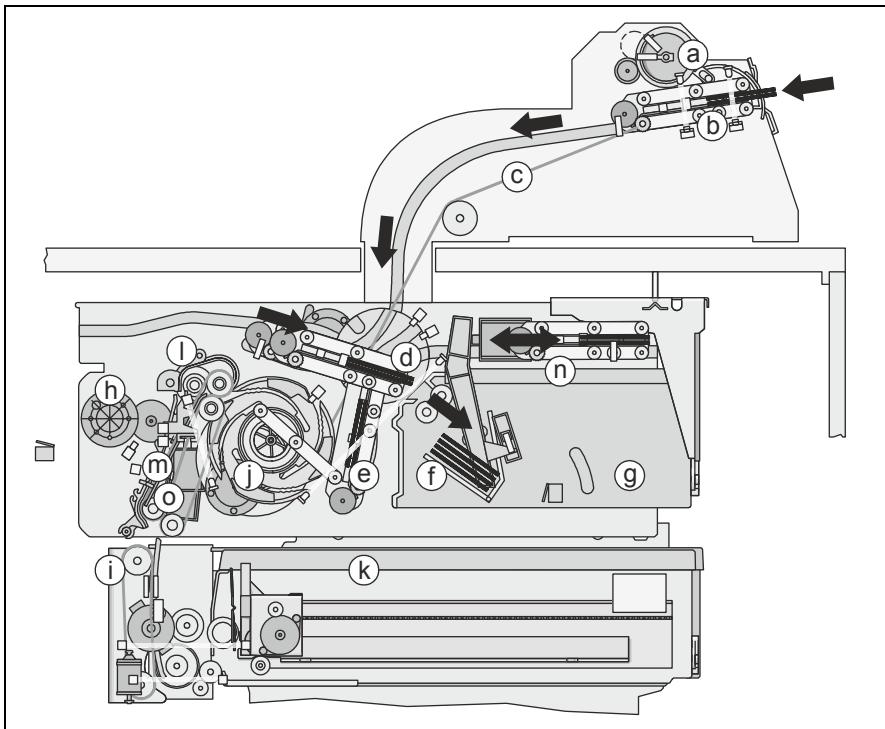


12. Bad notes are stored from the single reject box (m) via the stacker wheel (j) in the stacking position if the clamp (e).
13. Routing disk takes the horizontal dispensing position Frontload (d)
14. Clamp moves in the direction of the dispensing (horizontal Frontload) (n)
15. Routing disk moves to the reject/retract position (d)
16. Clamps moves in the reject/retract position
17. Routing disk moves to the reject/retract position "Block the route" (d)
18. Clamps moves in the reject/retract cassette as far as possible
19. Routing disks turns in the reject/retract position and moves the clamp to its reject/retract position by that
20. Transport of the bundle in the reject box of the reject/retract cassette (g)

Bundle retract



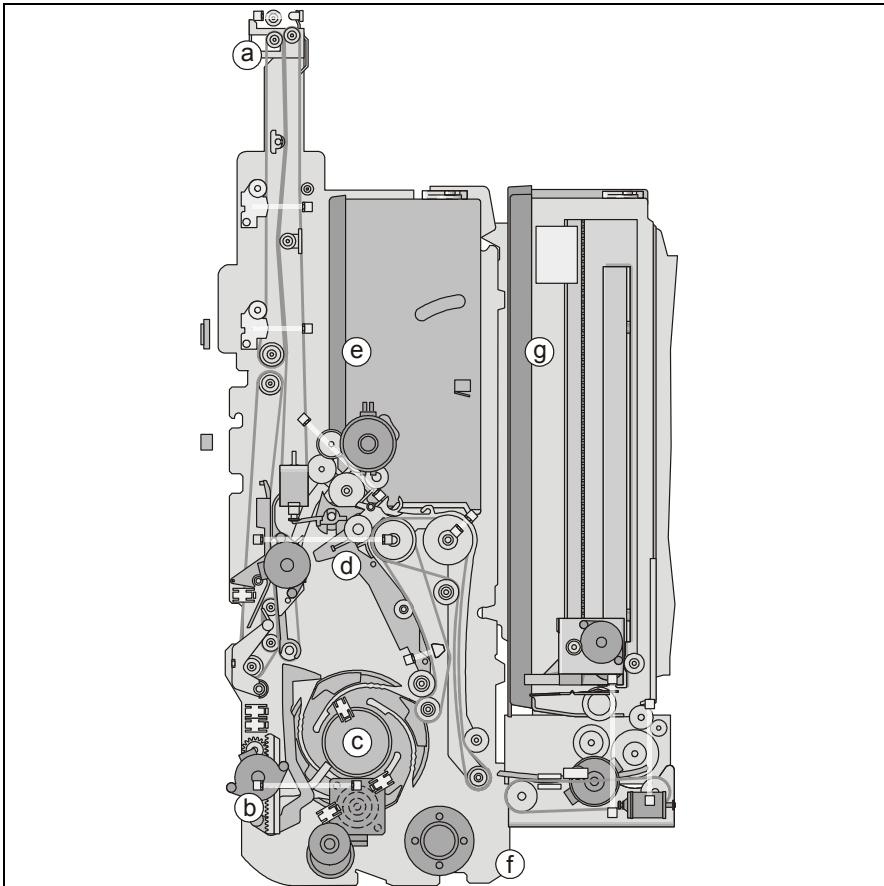
1. - 8. Processes as the dispensing in the direction of the customer (vertical Frontload)
9. Notes don't get removed in the defined waiting time!
10. Retract of the notes in the cash-out position (b)
11. The shutter closes
12. Clamps moves in the direction of the stacker (c)
13. Switching reject/retract box
14. Routing disk takes the horizontal dispensing position Frontload (d)
15. Clamp moves in the direction of the dispensing (horizontal Frontload) (n)
16. Routing disk moves to the reject/retract position (d)



17. Clamps moves in the reject/retract position
18. Routing disk moves to the reject/retract position "Block the route" (d)
19. Clamps moves in the reject/retract cassette as far as possible
20. Routing disks turns in the reject/retract position and moves the clamp to its reject/retract position by that
21. Transport of the bundle in the retract box of the reject/retract cassette (f)

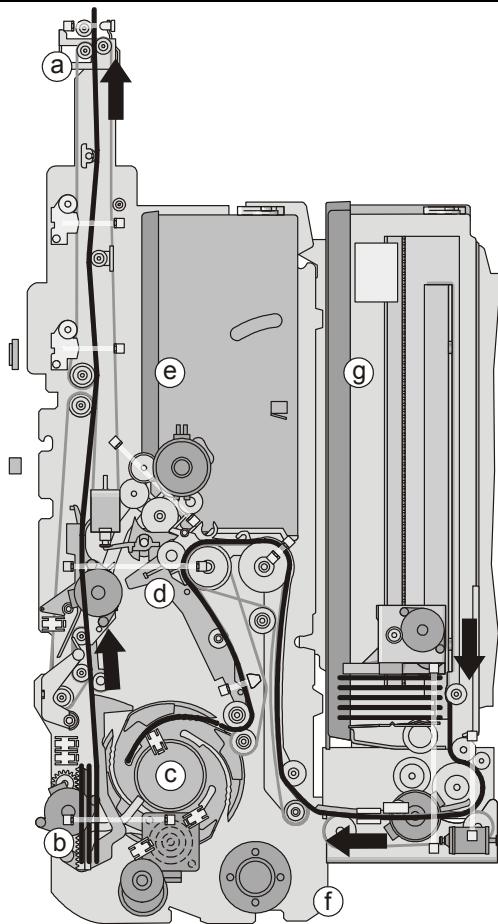
Processes in the VCMD (schematic)

In the following, the most important processes in the VCMD are shown step-by-step and described.



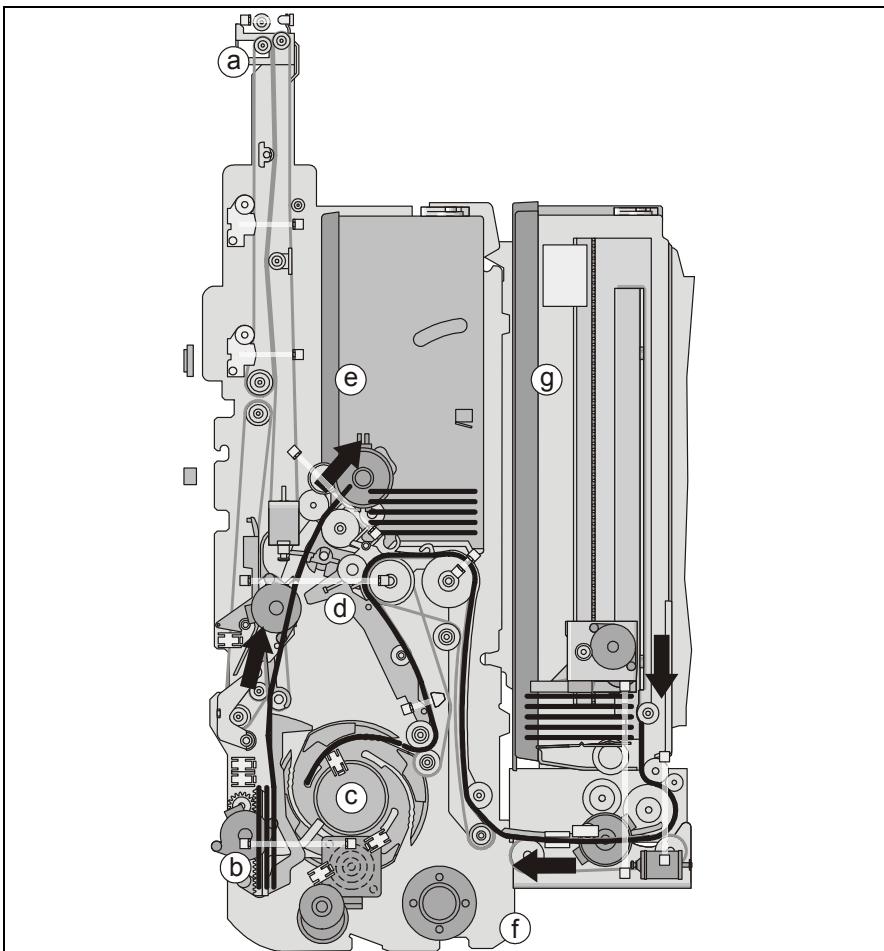
- a Cash-out position
- b Stacking position
- c Stacker wheel
- d Single reject switch
- e Reject compartment of the reject cassette
- f Multiple-note detection unit
- g Cassette 1

Withdrawal



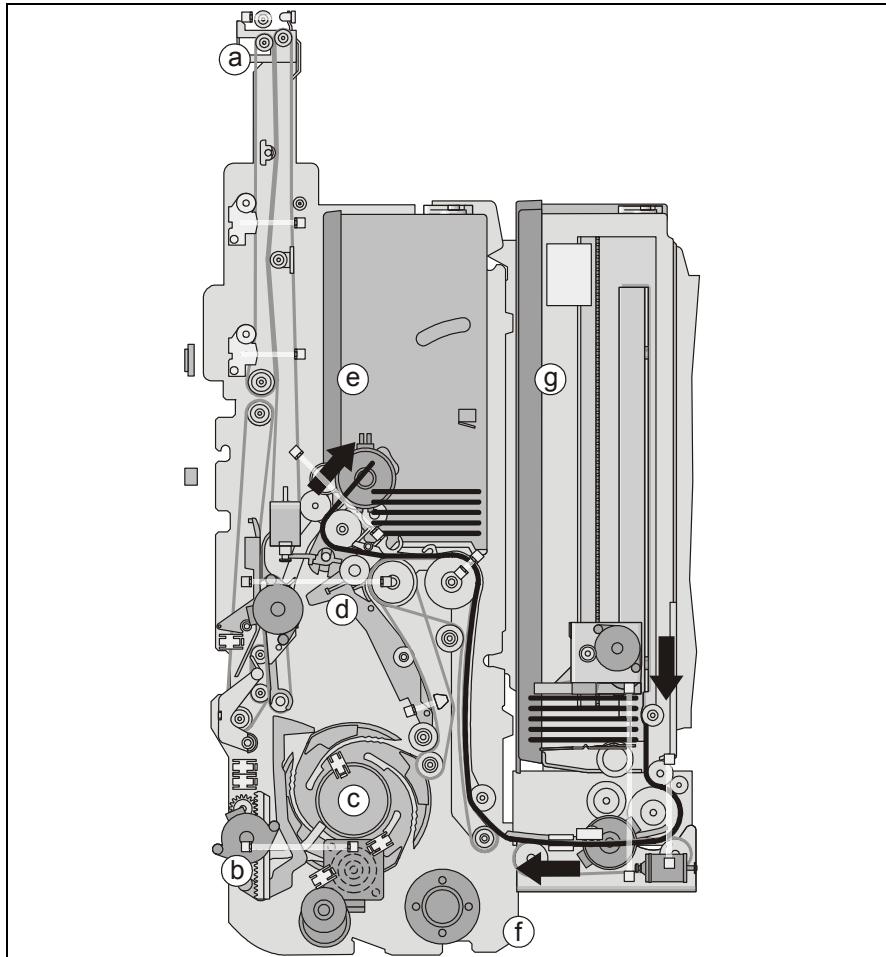
1. Dispensing of the requested banknote number one after another from every cassette (overall max. 60) (g)
2. Transport of the single notes to the multiple-note detection unit (f)
3. All 'good notes' are stored using the stacker wheel (c) in the stacking position (b)
4. Transport of the bundle to the cash-out position (a)
5. Note output by the customer

Bundle reject



1. Dispensing of the requested banknote number one after another from every cassette (overall max. 60) (g)
2. Transport of the single notes to the multiple-note detection unit (f)
3. All 'good notes' are stored using the stacker wheel (c) in the stacking position (b)
4. Transport of the bundle in the reject compartment of the reject cassette (e)

Single reject



1. Dispensing of the requested banknote number one after another from every cassette (overall max. 60) (g)
2. Transport of the single notes to the multiple-note detection unit (f)
3. If a 'bad note' gets recognized, it is controlled with the single reject switch (d) into the reject compartment of the reject cassette (e).

Processes in the CMD-V4

Start-up behavior

With Reset or after the power up, you can check whether the CMD-V4 is ready to operate, but this can only work if the command has been executed without errors!

After a device reset the CMD-V4 is in a defined state.

The performance of a command is aborted when the first error is detected. Error causes can be detected with the status display on the controller (see chapter "Troubleshooting").

Controller test

During the reset the same routine runs as during the power up. But the controller test will not be performed. The controller test needs approx. six seconds and is ended with the status display <-->. In the event of an error, operation with the status code <10> (Controller defective) will be interrupted.

Firmware test

The validity of the downloaded firmware is checked. If necessary, operation with the status code <11> (No firmware) will be interrupted.

Memory reset

The internal markers are reset.

In addition to the general storage area, there are also program and parameter areas, which contains remains even if the supply voltage fails because of a support battery.

Determination of the device type

With the help of the connected components on the controller board via the corresponding connectors, the device type gets automatically determined (quantity of dispensing units, shutter available (yes/no), output direction).

Checking the cassettes

First type and quantity of the available cassettes are determined. The values of the cassette storage are compared to the internal data. If there are differences, the corresponding cassettes get marked as 'new.'

To operate correctly, the device requires a minimum of one ready cash-out cassette and the reject/retract cassette. If this minimum requirement is not met, this will be represented on the status display with the code <14>. The device is not ready for operation.

Checking the photosensors

All photosensors are checked. The respective result is administrated internally.

The following status displays / warnings could occur in the event of error:

<70 ... 9A> Photosensors dirty.

Checking device locks

Operation is interrupted when the device lock 'Customer retract without storage of bundle' is in effect (status display <13>) or the safety switch is 'Open' (status display <12>).

Checking mechanical and electronic components

Individual components are checked. The following errors are possible:

- <21> Multiple-note detection unit defective (DDU)
- <23> Routing disk defective/blocked (SM 2 / SM 3)
- <24> Reject/retract drive defective/blocked (MA 6)
- <25> Dispensing motor defective (DCM 1)
- <26> Stacker wheel drive defective / blocked (SM 9)

Checking the transport paths

If there are or were bank notes in the customer access, at first a retract is performed.

If there is a bundle in the clamp during the reset, a bundle reset is performed.

After the output transport was emptied, the transport motor is switched on for approx. five seconds. All determined notes are transported to the reject cassette.

The following status displays could appear in the event of error:

- <18> Banknote jam during dispensing
- <19> Clamp transport defective/jammed

Checking the shutter

If one is installed, the functioning of the shutter is checked by opening and closing of the flap. The processing is terminated with (Status display <28>) if the test cycle has not been completed correctly.

Dispensing

Checking the basic condition

A check is run to determine if:

- the transport paths are free.
- all requested cassette positions are ready and logged on.

The requested number of notes is subtracted from every cassette via the system interface. The dispensed notes are transported to the multiple-note detection unit.

All 'good notes' are stored in the stacking position of the clamp. If a 'bad note' is recognized during the dispensing, a bundle reject or a single reject is performed after that (depending on the configuration). The dispensing command gets repeated.

Dispensing ends when:

- the required number of notes has been achieved.
- a cassette empties during a dispense process.
- the requested number of notes cannot be presented in one minute.
- the note dispensing is not possible from a cassette.

Multiple dispense/note dimensions outside the tolerance values

If the multiple-note detection unit detects double or overlapping notes, then a dispensing of multiple banknotes is involved. In such cases, the dispensing command is interrupted until all notes have reached the clamp. A bundle reject or a single reject takes place after that (depending on the configuration). The dispensing is then subsequently repeated.

Dispensing aborts with the status display <5x> (too many bad notes from cassette x) if five multiple dispenses have been detected during a dispense transaction from one cassette.

Undefined notes

If more notes reach the stacking position of the clamp as were dispensed, a bundle reject is performed. Thereafter, the original command is repeated.

The command is aborted after three repetitions in sequence with the status display <3x> (too many bundle rejects from cassette x).

Dispensing of notes not possible

If the CMD-V4 does not succeed in dispensing a note, the dispense transaction is initiated again.

The attempt to dispense is repeated a maximum of five times. After that, the command is terminated by the CMD-V4 with the status display <4> (no note dispensing possible from cassette x) (cassette is empty or note bundle is sticky).

Banknote jam

A banknote jam may occur during the dispense process. If a note jam occurs, power is applied to the transport motor for approx. another two seconds. This ensures that transportable notes reach the stacking position of the clamp.

After this a banknote is dispensed from the bottom cassette and transported to the stacking position of the clamp.

If the note reaches the stacking position of the clamp, the transport route is empty again. A bundle reject is performed. In a standard dispensing, the original command get repeated.

If the note does not reach the stacking position of the clamp, the procedure is repeated a maximum of two times. Afterwards, a non-removable banknote jam is clearly ascertained. There is no further device operation. The status display shows the status <18> (note jam during dispensing). The device is no longer ready for operation.

An inspection is mandatory, the note jam needs to be removed by hand. Troubleshooting must be completed with a reset.

Transportation

With the transport function, dispensed notes can be output or stored in the reject/retract cassette.

The generic term 'transport' sums up the following functions:

- Transport in standby position
- Bundle reject
- Cash presentation (incl. waiting for the removal)
- Cash output
- Cash retract with storage
- Cash retract without storage
- Shutter test / open / closed

Transport in standby position

This command is performed by the actual cash output. With it, the note bundle is transported from the stacking position of the clamp to the standby position. Which is right before the shutter.

Bundle reject

This function is used to transport note bundles which were not yet in customer access, to the reject box.

Single reject

This function is only available, if the system was delivered in a country out of the European Union.

If a 'bad note' is recognized during the dispensing, this note gets rejected and a spare note gets dispensed. Max. two banknotes per transaction can be stored in the single reject box. After a completed transaction, the notes in the single reject box get transported in the reject/retract cassette.

Cash presentation (incl. waiting for the removal), cash output

Before the transport, the shutter is opened (if available). After this, the notes which were in the parking position gets provided to the customer.

The further handling is controlled by the system.

- Cash out-put
In this case, the note are provided for so long until all photosensors are free.
- Cash presentation
The notes are transported until the bundle is in customer access. After this, it waits for the removal.

After the note output, the shutter gets closed and the clamp goes back to its stacking position. The function ends, if the shutter is completely closed and the clamp could reach its stacking position.

If single notes were parked in the single reject switch, they get transported by the clamp in the reject box of the reject/retract cassette.

Cash retract with storage

The bundle is transported to the parking position at first with this function. The shutter is closed. After this the notes are stored in the retract box of the reject/retract cassette.

Cash retract without storage

Function see section "Cash retract with storage"

After the closing of the shutter, the clamp moves back in the stacking position and flips open. The note bundle remains in the clamp, so that a assignment between customer and note bundle is possible. A device lock is activated.



All dispensing and transport commands are refused when a device lock is set (status display <13>). In addition, activation of the function key has no effect in such cases.

The flag is also active during a power failure; it won't be reseted by a reset. So that after the disposal of the note bundle, the CMD-V4 can be still operated, the device lock needs to be unlocked.

Serial Number Recognition

The control of the serial number detection is performed by the product-specific software. Power is supplied through the CMD-V4 controller. The two-sided recording of the bank note takes place shortly before entry into the stacker wheel. The reproduction of the recorded bank note is transmitted directly to the system unit (PC) per USB. The product-specific software provides the data for evaluating the serial numbers on the notes.

Processes in the VCMD

Start-up behavior

With Reset or after the power up, you can check whether the VCMD is ready to operate, but this can only work if the command has been executed without errors!

After a device reset the VCMD is in a defined state.

After the performance of a command, the detection of the first error is canceled. Error causes can be detected with the status display on the controller (see chapter "Troubleshooting").

Controller test

During the reset the same routine runs as during the power up. But the controller test will not be performed. The controller test needs approx. six seconds and is ended with the status display <-->. In the event of an error, operation with the status code <10> (Controller defective) will be interrupted.

Firmware test

The validity of the downloaded firmware is checked. If necessary, operation with the status code <11> (No firmware) will be interrupted.

Memory reset

The internal markers are reset.

In addition to the general storage area, there are also program and parameter areas, which contains remains even if the supply voltage fails because of a support battery.

Determination of the device type

With the help of the connected components on the controller board via the corresponding connectors, the device type gets automatically determined (quantity of dispensing units, shutter available (yes/no), output direction).

Checking the cassettes

First type and quantity of the available cassettes are determined. The values of the cassette storage are compared to the internal data. If there are differences, the corresponding cassettes get marked as 'new.'

To operate correctly, the device requires a minimum of one ready cash-out cassette and the reject cassette. If this minimum requirement is not met, this will be represented on the status display with the code <14>. The device is not ready for operation.

Checking the photosensors

All photosensors are checked. The respective result is administrated internally.

The following status displays / warnings could occur in the event of error:

<70 ... 9A> Photosensors dirty.

Checking device locks

Operation is interrupted when the device lock 'Customer retract without storage of bundle' is in effect (status display <13>) or the safety switch is 'Open' (status display <12>).

Checking mechanical and electronic components

Individual components are checked. The following errors are possible:

- <21> Multiple-note detection unit defective (DDU)
- <25> Dispensing motor defective (DCM 1)
- <26> Stacker wheel drive defective / blocked (SM 9)

Checking the transport paths

If there is a bundle in the stacking position during the reset, a bundle reject is performed.

After the output transport was emptied, the transport motor is switched on for approx. five seconds. All determined notes are transported to the reject cassette.

The following status displays could appear in the event of error:

- <18> Banknote jam during dispensing
- <19> Transport defective / blocked

Dispensing

Checking the basic condition

A check is run to determine if:

- the transport paths are free.
- all requested cassette positions are ready and logged on.

The requested number of notes is subtracted from every cassette via the system interface. The dispensed notes are transported to the multiple-note detection unit.

All 'good notes' are stored in the stacking position. If a 'bad note' is recognized during the dispensing, a single reject is performed. The respective note will be removed once more and transported to the stacking position. The dispensing command is resumed.

Dispensing ends when:

- the required number of notes has been achieved.
- a cassette empties during a dispense process.
- the requested number of notes cannot be presented in one minute.
- the note dispensing is not possible from a cassette.

Multiple dispense/note dimensions outside the tolerance values

If the multiple-note detection unit detects double or overlapping notes, then a dispensing of multiple banknotes is involved. A single reject of the 'multiple dispense' takes place in such cases and the dispensing of the note is repeated. The dispensing is then subsequently resumed.

Dispensing aborts with the status display <5x> (too many bad notes from cassette x) if five multiple dispenses have been detected during a dispense transaction from one cassette.

Undefined notes

If more notes reach the stacking position than were dispensed, a bundle reject is performed. Thereafter, the original command is repeated.

The command is aborted after three repetitions in sequence with the status display <3x> (too many bundle rejects from cassette x).

Dispensing of notes not possible

If the VCMD does not succeed in dispensing a note, the dispense transaction is initiated again.

The attempt to dispense is repeated a maximum of 5 times. After that, the command is terminated by the VCMD with the status display <4x> (no note dispensing possible from cassette x) (cassette is empty or note bundle is sticky).

Banknote jam

A note jam may occur during the dispense process. If a note jam occurs, power is applied to the transport motor for approx. another two seconds. This ensures that transportable notes reach the stacking position.

After this a banknote is dispensed from the bottom cassette and transported to the stacking position.

If the note reaches the stacking position, the transport route is empty again. A bundle reject is performed. In a standard dispensing, the original command gets repeated.

If the note does not reach stacking position, this procedure is repeated a maximum of twice more. Afterwards, a non-removable note jam is clearly ascertained. There is no further device operation. The status display shows the status <18> (note jam during dispensing). The device is no longer ready for operation.

An inspection is mandatory, the note jam needs to be removed by hand. Troubleshooting must be completed with a reset.

Transportation

With the transport function, dispensed notes can be output or stored in the reject cassette.

The generic term 'transport' sums up the following functions:

- Transport in standby position
- Bundle reject
- Cash presentation (incl. waiting for the removal)
- Cash output

Transport in standby position

This command is performed by the actual cash output. With it, the note bundle is transported from the stacking position to the standby position.

Bundle reject

This function is used to transport note bundles which were not yet in customer access, to the reject box.

Single reject

If a 'bad note' is recognized during the dispensing, this note will be individually controlled into the reject cassette and a spare note will be dispensed.

Cash presentation (incl. waiting for the removal), cash output

The notes are transported out of the stacking position into the cash-out position. After this, the notes which were in the standby position gets provided to the customer.

The further handling is controlled by the system.

- Cash out-put
In this case, the note are provided for so long until all photosensors are free.
- Cash presentation
The notes are transported until the bundle is in customer access. After this, it waits for the removal.

Troubleshooting

Information regarding operation or troubleshooting are provided with the aid of the two-digit status display on the controller. During normal operation, this display is set to '00' at the start of each reset, transport or dispensing command.

- i** The displays apply equally to the CMD-V4 and the VCMD. Deviations are pointed out explicitly where they arise.

If a special state occurs during the processing of one of these commands, this is shown in the display and remains until the next device command is made.

Additional displays can occur during the initialization, after the switch on or after a reset.

It is also possible to check the operability of the CMD-V4 or VCMD with an internal test. More information on this can be found in the chapter "Device Overview and Operation", section "Function test."

- i** If a reset should be performed after an error elimination, move the clamp to its home position (stacking position of the clamp in the stacker).

Displays at start-up

No.	ERROR	Reaction
off	No power supply	Switch the device on.
.8 .8	Controller defective	Replace the controller.
8 - 0 bis 9	Controller test after Power On (the displays flash and change continuously)	None
b 8	Warning Battery too weak	Replace battery (controller)
8 0	Controller defective	Replace the controller.
- -	Firmware start-up (Reset) Determination of the validity of the firmware CMOS parameter check, Mechanical components check Clearing run	None -> Error 11 -> Initialization of the photosensors -> CMOS error PS xx, 22 -> Error 23 ... 28 -> Error 18,19, 71..9A
P X S X	Error during initialization of the photosensors after configuration change or replacement of the controller (the display switches between 'PS' and the photosensor number 'XX').	Check photosensor xx and clear it, try Reset once again, possibly replacing the module or the controller.
0 0	Start-up completed without error	

Displays in normal operation

Error code	ERROR	Explanation/action
off	No power supply	Switch the device on.
0 0	Start-up (after RESET or electronics self-test)	Wait for the system to finish booting up.
b 0	Burn; program controller	-
c 0	Compare; check controller	-
0 0	Controller OK	-
0 0	No error	-
0 0	Software faulty	Switch the device off and on again. Read the hardware status (Stop-Info field), perform a download if necessary.
0 9	Communication problem with ChipCard controller	Check the lines to the ChipCard controller. Check ChipCard controller, replacing it if necessary
0 8	Communication problem with ChipCard / or wrong ChipCard inserted (ChipCard number not '226-0PR')	Check the ChipCard on the controller, replacing it if necessary.

Error code	ERROR	Explanation/action
09	Locking handle open CMD-V4 or VCMD is not in dispensing position	Push the CMD-V4 or VCMD as far as possible into the device using the green locking handle (CMD-V4 or VCMD must audibly click into place). If this should not be possible, then the locking switch must be checked and possibly recalibrated or replaced.
80	Controller defective or	replace controller
80	Battery empty or battery jumper not connected: only with self-test commands for battery testing	Insert the battery jumper or replace the battery or replace the controller if the battery is permanently soldered in place.
88	No software (download)	Perform a software download.
82	Safety switch open	Insert CMD-V4 or VCMD.
83	Device lock waiting	A retract has been performed during which the bank notes that were not removed by the customer have been deposited in the SAT. All transport functions of the CMD-V4 or VCMD have been blocked afterwards by the software. Remove the customer bank notes from the SAT, then use the product-specific software to reset the device lock (RESET inhibit flag).

Error code	ERROR	Explanation/action
8 4	CMD-V4 or VCMD minimum configuration is missing	Cassette is defective or absent. The CMD-V4 or VCMD requires at least one ready cash-out cassette and the reject/retract cassette (RR cassette) for operation. Insert the RR cassette and filled cash-out cassette(s) and register them using the product-specific software.
8 5	Cassette distributor board with invalid coding, not inserted or defective	Check the wiring to the cassette distributor board. Check the cassette distributor board and replace it if necessary.
8 6	Output transport coding invalid	Perform coding on the output transport cable connector.
8 8	CMD-V4: Belt drive of clamp defective (M 3) or jam	Evaluate the error information in the device status. Initiate corresponding measures: e.g.: Replace the output transport or the controller.

Error code	ERROR	Explanation/action
18	Banknote jam during dispensing	<p>A note jam has been discovered in the dispensing areas or in the vertical transports of the dispensing units or in the stacker during the dispensing transaction (photosensors PSDx, DDU, PS1, PS18). Check the banknote path from the cassettes up to the stacking compartment or the reject compartment for jammed notes.</p> <p>Check for correct seating of the plug connections on the CMD controller and/or on the elements of the photosensors.</p> <p>Afterwards, bring the CMD-V4 or the VCMD back into the safe into dispensing position, whereby the safety switch is closed and the CMD-V4 or VCMD is started up again (Reset). If the status display continues to show '18' after this start-up, then the jam was not effectively eliminated and/or another jam has occurred.</p> <p>Use the test program self-test command to check the 'Status of the photosensors'. If a photosensor (besides the 'cassette empty photosensor') is reported as being 'covered', determine the reason and eliminate the error.</p> <p>If no error can be determined and if '18' continues to be displayed after the next start-up, then the stacker, the respective dispensing unit or the controller must be replaced.</p>

Error code	ERROR	Explanation/action
8 9	CMD-V4: Clamp transport defective/blocked. VCMD: Note jam in output transport	Clear the block and then perform a reset. Replace the stacker or the controller if necessary
20	Single reject switch (MA2/1, MA2/2, SM1) defective/blocked	<p>Check the SAT in the area of the single reject switch for jammed notes/note residue and remove them if found. Check the mobility of the single reject switch by pressing and releasing the rotor in the lift magnet MA2.</p> <p>Select Test function 2 (mechanical test) on the function button and watch the activation of the single reject switch. If the lift magnet MA2 does not move or if it does not move completely, the SAT or the controller must be replaced.</p> <p>If the magnet moves with a full stroke, then the CMD-V4 or the VCMD can be put back into operation.</p> <p>If the error occurs again after a short time, and if no reason can be determined following renewed inspection of the single reject switch, then the SAT or the controller must be replaced.</p>
21	Faulty measuring station (DDU)	Check whether there is a jam in the area of the measurement station. Are the cables connected? Replace dispensing unit with DDU or controller.

Error code	ERROR	Explanation/action
22	Photosensor amplifier faulty or photosensor initialization unsuccessful	<p>Check all of the banknote paths from the cassettes to the stacking compartment, from the stacking compartment to the cash output and the input area of the RR cassette for jammed notes/note residues and remove these if found.</p> <p>Afterwards, bring the CMD-V4 or the VCMD back into the safe into dispensing position, whereby the safety switch is closed and the CMD-V4 or VCMD is started up again (Reset). If the status control shows '22' again after this start-up, then the controller must be replaced.</p>
23	CMD-V4: Routing disk (SM2/SM3) defective/blocked VCMD: Note bundle reject switch defective/blocked SM6	<p>Clear block Move CMD-V4 or VCMD in the safe into dispensing position (safety switch closed) and select Test function 2 (mechanical test) on the function key after the start-up. If this test function ends once again with the status display '23', then the SAT or the controller must be replaced, otherwise the CMD-V4 or VCMD can be put back into operation.</p>

Error code	ERROR	Explanation/action
2	CMD-V4: Reject/retract drive defective/blocked (MA 6)	The Reject/Retract chute selection in the RR cassette could not be set correctly. Remove the RR cassette and check the mobility of the retract box in the RR cassette. Check the connectors on the CMD controller and on the lift magnet MA6 for correct seating. Check the photosensor on the changeover lever for fixed seating. Move the CMD-V4 in the safe into dispensing position (safety switch closed). Re-insert the RR cassette and select Test function 2 (mechanical test) on the function key and monitor the movement of the RR drive (MA6). If the lift magnet does not move or if the end positions of the lever are not reached (status display '24' once again), then the output transport of the controller must be replaced.
4		

Error code	ERROR	Explanation/action
2 5	Dispensing drive (DCM 1) defective / blocked	<p>The main motor (DCM 1) could no longer be brought up to its minimum rotational speed after a short start-up time. Select 1 (Reset) on the function key.</p> <p>The motor attempts to start up, but only labored operating noises are to be heard: check the bank note paths of the CMD-V4 or VCMD for a massive note jam. Check the input into the RR cassette to see if notes are jammed there.</p> <p>Move the CMD-V4 or the VCMD in the safe into dispensing position (safety switch closed) and select Text function 2 (mechanical test) on the function key after the start-up of the CMD-V4 or VCMD:</p> <p>Observe the operating noises and transport function of the main motor.</p> <p>If the main motor does not rotate or if this test function ends again with the status display '25', the output transport or the controller must be replaced, otherwise the CMD-V4 or VCMD can be put back into operation.</p>

Error code	ERROR	Explanation/action
26	CMD-V4: Stacker wheel drive (SM 9) defective/blocked VCMD: comb-type lifting bar defective/blocked SM5 Dispensing / Transport changeover switch defective/blocked M3	Check the SAT in the area of the stacking compartment for jammed notes/note residue and remove them if found. Move the CMD-V4 or the VCMD in the safe into dispensing position (safety switch closed) and select Text function 2 (mechanical test) on the function key after the start-up of the CMD-V4 or VCMD: If this test function ends once again with the status display '26', then the SAT or the controller must be replaced.
28	CMD-V4: Shutter error	Check the output area of the CMD-V4 and of the shutter for foreign objects that prevent the movement of the shutter label. Move the CMD-V4 into dispensing position (safety switch closed). Select Test function 2 (mechanical test) on the function key and monitor the movement of the shutter. Troubleshooting can be performed on the shutter without danger even during ongoing test functions - afterwards, perform Test function 2 once again without operator intervention into the shutter movement. If this test ends once again with the status display '28', then the shutter or the controller must be replaced.

Error code	ERROR	Explanation/action
29	Output photosensor covered (manipulation)	<p>Check the cash output of the SAT and the shutter for foreign objects that interfere with the function of the output photosensor.</p> <p>Check the connector on the CMD-V4 or VCMD for correct seating.</p> <p>Resetting the error code: Firmware version <=16.80: Move the CMD-V4 or VCMD in the safe into dispensing position (safety switch closed) and select '1' (Reset) with the function key. If the status display reports '29' once again after the start-up of the CMD-V4 or VCMD, then the shutter, the SAT or the controller must be replaced.</p> <p>FW version >=16.80: Pull out the CMD-V4 or the VCMD and then slide it back in again (safety switch opened/closed) and then wait for the subsequent RESET. If the status display reports '29' once again after the start-up of the CMD-V4 or VCMD, then the shutter, the SAT or the controller must be replaced.</p>

Error code	ERROR	Explanation/action
3 X	Too many problems dispensing from cassette x (x = 1 - 6)	<p>Bundle rejects can be caused by extremely skewed banknotes or banknotes that are extracted in an uncontrolled way or by problems with the photosensors.</p> <p>This error can be ignored the first time it occurs (warning). If the error has however already occurred, then please proceed as follows:</p> <ol style="list-style-type: none">1. Remove cassette from the dispensing unit 'x' and check the bank note input: Are the front notes deformed on one side? Uniform pressure of the front notes on the right-hand and left-hand sides?2. With the cassette removed, check the dispensing area in the dispensing unit for jammed bank note residue.

Error code	ERROR	Explanation/action
3 X	Too many problems dispensing from cassette x (x = 1 - 6)	<p>3. Check the transport path from cassette 'x' to the stacking compartment for jammed notes/note residue. Has a transport belt run off the rollers?</p> <p>4. Check the connectors on the CMD controller or VCMD and on the individual elements of the photosensors for correct seating.</p> <p>5. Check the stroke of the magnet for the retaining shaft for sluggish movement by pressing the rotor (or check the movement of the magnet with Test function 2 (mechanical test)).</p> <p>If these tests reveal no errors and if the status '3x' continues to appear, then the respective dispensing unit or the controller must be replaced.</p>

Error code	ERROR	Explanation/action
H X	No note dispensing possible or possibly faulty note contact pressure when deploying a new cassette (x = 1 - 6)	<p>A) No note could be extracted from cassette 'x' or</p> <p>B) The required contact pressure could not be built up when the cassettes were pushed inside.</p> <p>Procedure in Case A):</p> <ol style="list-style-type: none"> 1. Remove cassette 'x' and check the note input: The notes must be standing vertically in the cassette. Are the front banknotes extremely deformed? If notes are curved, then the outward curve must face the pressure carriage! Are the front notes sticky or hooked into one another with kinks? 2. With the cassette removed, check the dispensing area in the dispensing unit for jammed notes/bank note residue. 3. Check the connectors on the CMD controller or VCMD and and on the coupling of the dispensing unit 'x' for correct seating.

Error code	ERROR	Explanation/action
4 X	No note dispensing possible or possibly faulty note contact pressure when deploying a new cassette (x = 1 - 6)	<p>4. Afterwards, place filled cassette in dispensing unit 'x' and select '3' (Trial dispensing process) on the function button with the safety switch closed. If this test ends once again with the error code '4x', select Trial dispensing process once again, checking the function of the coupling and retaining shaft while doing so. If the coupling or the retaining magnet is not actuated, the dispensing unit or the controller must be replaced.</p>
4 X	No note dispensing possible or possibly faulty note contact pressure when deploying a new cassette (x = 1 - 6)	<p>Procedure in Case B):</p> <p>1. Remove cassette 'x' and check the note input: The notes must be standing vertically in the cassette. Are the front banknotes extremely deformed? If notes are curved, then the outward curve must face the pressure carriage! If necessary, place notes from the rear part of the cassette towards the front. If the stack of notes rubs heavily against the side note guides (laterally protruding notes kinked to the rear) then the stack of notes needs to be aligned better.</p>

Error code	ERROR	Explanation/action
 X	No note dispensing possible or possibly faulty note contact pressure when deploying a new cassette (x = 1 - 6)	<p>2. Reinsert the cassette. Does the pressure carriage move forward audibly when doing so?</p> <ul style="list-style-type: none"> - If there is no noise to be heard, check the connectors on the CMD controller and the connectors on the cassette for correct seating. Carry out a test with a different cassette. If the motor still continues not to operate, then the controller is defective. - If the motor noise is audible, but the error message '4x' occurs again after a few seconds (together with a three-signal sound), then remove the cassette and check the stroke of the dispensing shaft manually for sluggish movement. Remove the cassette, open it, move it by hand into dispensing position. Check the movement of the return bar for sluggish movement.

Error code	ERROR	Explanation/action
4 X	No note dispensing possible or possibly faulty note contact pressure when deploying a new cassette (x = 1 - 6)	<p>3. If no reason can be discerned and if this error also occurs with a different cassette in this dispensing unit, then the quality of the pressure sensor must be checked with test program and self-test command 'Query status cassette contact pressure' (DYQ) - If an error is present, then the dispensing unit or the controller must be replaced.</p>
5 X	Too many bad banknotes from cassette x (x = 1 - 6)	<p>Too many double or excessively wide or excessively narrow notes were detected during a dispense transaction from cassette 'x'. Remove cassette 'x' and check whether the correct note type was placed in it. Check the notes for deformations or stickiness.</p> <p>Reinsert the cassette and restart the application. If many 'good' notes are controlled out by Single Reject, or if the error '4x' reoccurs after a short time, then a new reference value determination should be carried out for this note type. If the error cannot be eliminated, then the dispensing unit or the controller must be replaced.</p>

Error code	ERROR	Explanation/action
6 X	Cassette x defective (x = 1 - 6)	The note data stored in cassette 'x' could not be read and/or rewritten (writing error in the cassette EEPROM). Check the connectors on the CMD controller and the connectors on the cassette for correct seating. If the error also occurs with a different cassette in this dispensing unit, then the controller must be replaced.

Dirty photosensors/sensors

Error code	ERROR	Explanation/action
	Banknote measurement point (DDU) not ready	<p>Check whether there is a jam in the area of the measurement station. Is the measurement station dirty or are the cables plugged in?</p> <p>Replace dispensing unit with DDU or controller.</p>
	Dispensing sensor dirty or pressure sensor faulty (x = 1 - 6)	<p>A) If a cassette can be installed in cassette position 'x' without error (one-time signal tone), then the error message indicates an extremely soiled photosensor 'dispensing sensor' in the dispensing unit 'x' (PSDx) that must be cleaned.</p> <p>Afterwards, execute a reset (move CMD-V4 or VCMD into dispensing position).</p> <p>Note: After the first time this error has occurred, the CMD-V4 or VCMD can still continue working until the operation is automatically shut down with further increasing soiling.</p> <p>B) If it is not possible to deploy a cassette at cassette position 'x' (no signal tone, even after several seconds), then the dispensing unit or the controller must be replaced after checking the controllers on the CMD controller and on the pressure sensors (PSDx).</p>

8 X	Cassette empty sensor dirty (x = 1 - 6)	<p>Clean photosensor 'PSE_x' in the respective dispensing unit and the associated prism in the pressure carriage of the cassette. Afterwards, execute a reset (move CMD-V4 or VCMD into dispensing position). Check the degree of soiling of all photosensors in KDIAG with the test program via self-test command 'DYK' (Query status photosensors, photosensor amplifiers): Photosensors that exhibit status '3' or higher should be cleaned. Status improvement can be queried after reset.</p> <p>Note:</p> <p>After the first time this error has occurred, the CMD-V4 or VCMD can still continue working until the operation is automatically shut down with further increasing soiling.</p>
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Error code	ERROR	Explanation/action
9 0	SAT: Photosensor PS1 (P) dirty; stacker wheel input	<p>Clean the transmission and reception diodes between the stacker wheels carefully with a brush. Return the CMD-V4 to dispensing position. If the status display continues to show the error code '90' after startup (Reset), remove the stacker and clean the surfaces of the prism from below, between the stacker wheels, return the CMD-V4 to dispensing position. If the status display continues to show the error code '90' after startup (Reset), then the stacker must be replaced.</p> <p>Check the degree of soiling of all photosensors in KDIAG with the test program via self-test command 'DYK' (Query status photosensors, photosensor amplifiers). Photosensors that exhibit status '3' or higher must be cleaned. Status improvement can be queried after the reset.</p> <p>Note: After the first time this error has occurred, the CMD-V4 or VCMD can still continue working until the operation is automatically shut down with further increasing soiling.</p>

Error code	ERROR	Explanation/action
9 8	Photosensor dirty	Photosensor '9x' is soiled and urgently requires cleaning. Remove dust deposits on the surfaces of the respective transmitter/receiver (elements with clear or violet-colored plastic housing) and if necessary from the associated prism (P) (two crystal-clear surfaces opposite the transmitter/receiver) with a brush or compressed air. After cleaning, return the CMD-V4 or VCMD to home position and await start-up or select '1' (Reset) on the function button.
	Tray monitoring: Photosensor PS18	
9 3	CMD-V4: 'Compartment empty' (Single reject) PS2 VCMD: Monitoring of entrance reject box PS21	Check the degree of soiling of all photosensors in KDIAG with the test program via self-test command 'DYK' (Query status photosensors, photosensor amplifiers): Photosensors that exhibit status '3' or higher must be cleaned. Status improvement can be queried after the reset. Remark: After the first occurrence of the error code '9x', the CMD-V4 or VCMD can still continue working until the operation is automatically shut down with further increasing soiling (the status display '9' will also be displayed in such cases).
9 5	Removal photosensor CMD-V4: PS27 (P) VCMD: PS26	
9 8	CMD-V4: Bundle rear edge control, Shutter photosensor PS 28	

Checking the banknote paths

Before checking the banknote paths, you should perform the following steps:

- Activate the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").
- Open the safe door (see the operating manual of the base device).
- Pull the CMD-V4 as far as possible out of the safe by the green release lever or pull the VCMD as far as possible out of the safe by the rod marked in green, respectively (see chapter "Removal/Installation of Components", section "Pulling out/pushing in the CMD-V4" or "Pulling out/pushing in the VCMD", respectively).



If the release lever jams with the CMD-V4, you must check the current position of the clamp. If possible, push the clamp carefully back to its home position. Perform a reset using the function button. Now check whether the CMD-V4 can be pulled out (see also section "Locking handle blocked").

CMD-V4

Locking handle blocked

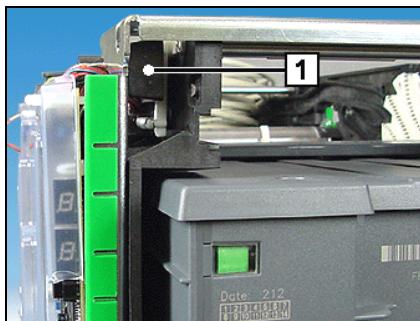
If the locking handle is blocked by the routing disk as soon as the disk moves from its home position.

If you cannot use the locking handle, a reason could be that the banknote clamp is not in the stacking position or there is an error on the routing disk.



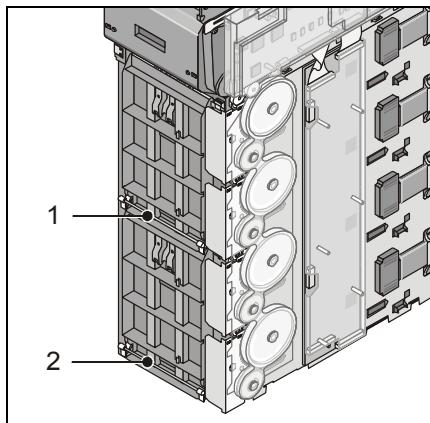
Make sure that the banknote clamp is in the stacking position, because if it is not, the clamp could fall down during the pulling out and the ribbon cable could be damaged.

- Remove the reject/retract cassette (see chapter "Device Overview and Operation", section "Removing the cassette") and check in which position the banknote clamp is.
- If the banknote clamp is not in the stacking position, try to move the clamp carefully downwards in the stacking position.

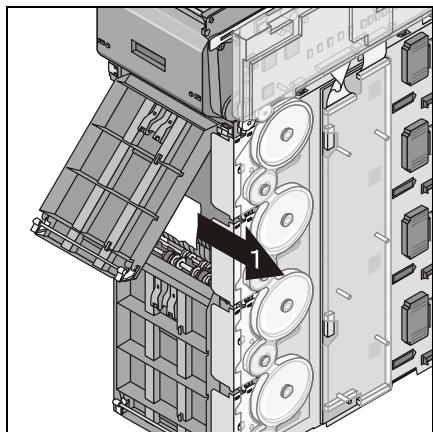


If the banknote clamp is down, you can use the emergency release (1) on the CMD-V4 and pull out the CMD-V4.

Checking the vertical transport



Raise the release handle (1) or (2) of the dispensing unit and move the cover forward.



Check the upper and/or lower area of the vertical transport and if necessary remove any notes (1).

Now move the cover back until it snaps into place.

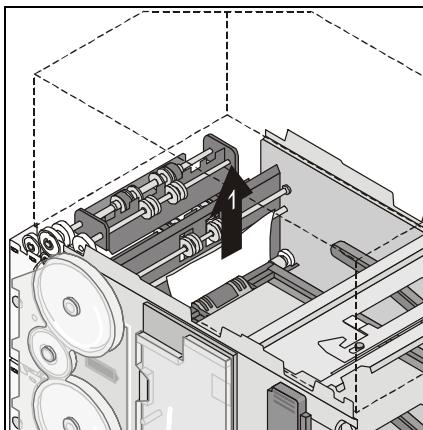
- i** Make sure that the cover lies flush with the surface and that the two sides of the locking handle are locked in position.

Checking the dispensing areas



In the dispensing units the vertical transport (at the rear) and the dispensing area (inside the device) must be checked.

The dispensing areas can only be checked when the cassettes have been removed from the dispensing units (see chapter "Device Overview and Operation", section "Removing the cassette").



Check the dispensing area of each dispensing unit for banknotes and if necessary remove the banknotes (see arrow).

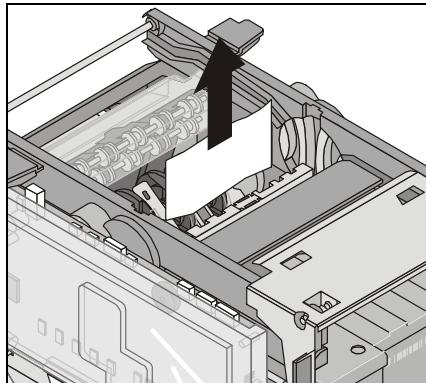
- Re-insert all cassettes which were removed (see chapter "Device Overview and Operation", section "Inserting the cassette").
- Log on the cassettes using the product-specific software (see the operating manual of the basic device).

Checking the stacker and output transport



Do **not** try to open the clamp by force; you could damage it.

Stacker wheel area

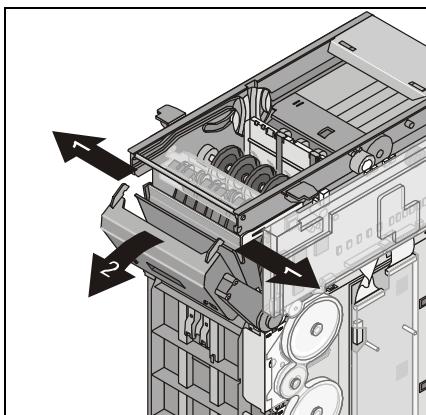


Check the area round the stacker wheel and remove any notes if necessary.

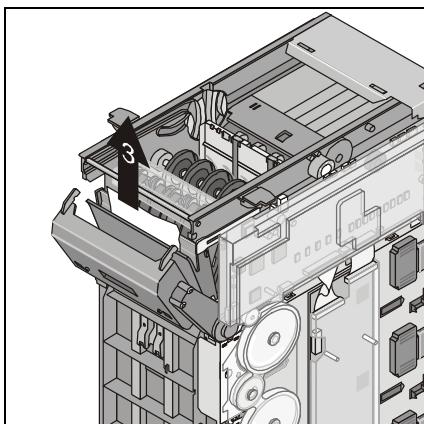
Single reject area



The function of the single reject depends on the individual configuration.



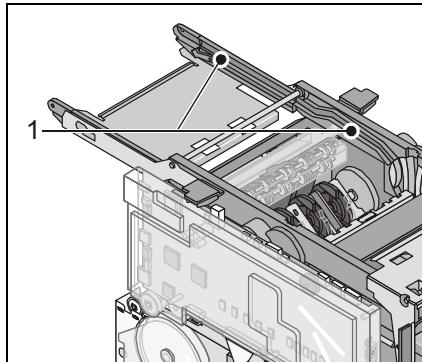
Press the green release levers (1) outwards and pull the flap (2) forwards.



Check the area and if necessary remove the banknotes (3).

Gear tracks of the stacker and output transport

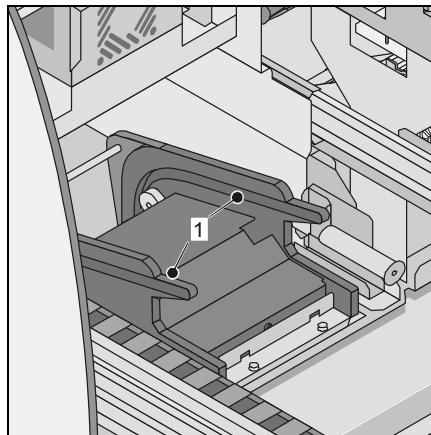
Horizontal output



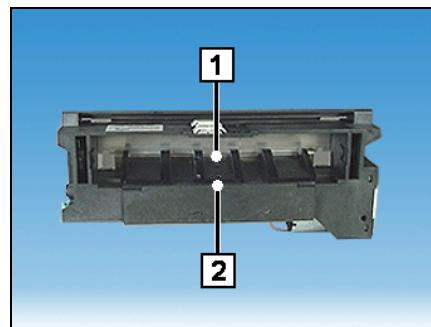
If the clamp has come to a standstill at a position outside the stacking position, you may need to check and clean the gear tracks (1).

Gear tracks of the output transport

Vertical output



If the clamp has come to a standstill at a position outside the stacking position, you may need to check and clean the gear tracks (1).



Check the photosensors (1) and (2) in the shutter area.

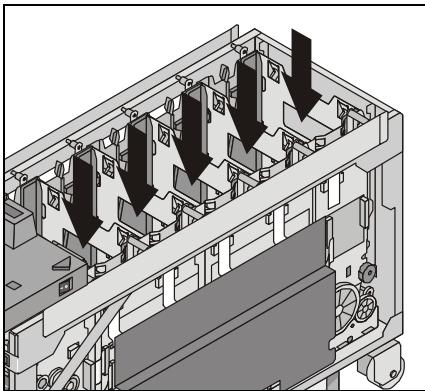
After checking the banknote paths, proceed as follows:

- After checking the cash paths push the CMD-V4 by the green release lever back into the safe as far as possible (see the operating manual of the basic device).
- Close the safe door (see the description in the basic device operating manual).

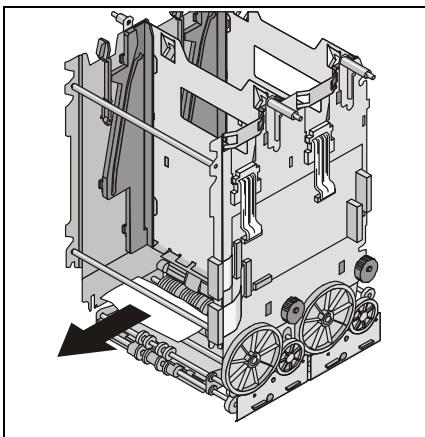
VCMD

Checking the dispenser module

- Remove all cassettes from the VCMD (see chapter "Device Overview and Operation", section "Removing the cassette").



Check the dispensing area of each dispensing module for available banknotes ...

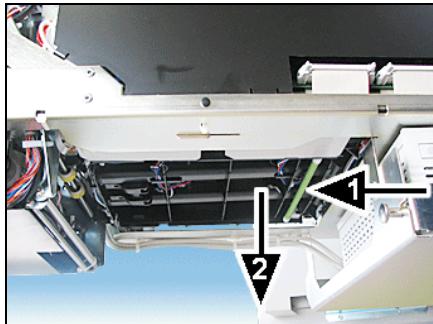


... and remove the any notes that may be available (see arrow).

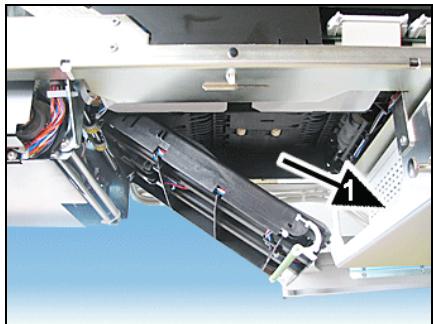
Checking the horizontal feed



It is not possible to check the horizontal feed except underneath the cash-out cassettes 1 and 2!



Press the locking handle (1) of the dispensing unit marked in green in the arrow direction and swing the cover downward (2).

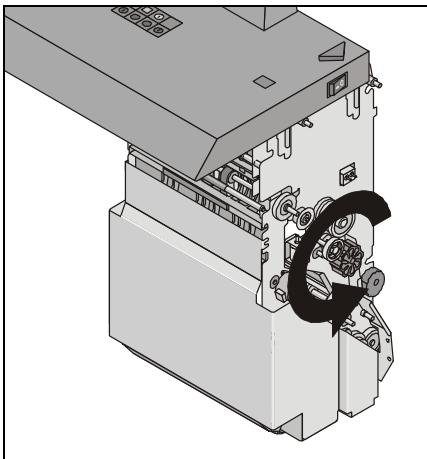


Check the area of the horizontal feed and remove any banknotes that may be there (1).

Now move the cover back until it snaps into place.

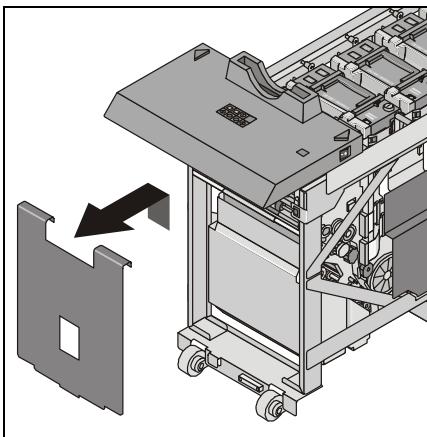


Make sure that the cover lies flush with the surface and that the two sides of the locking handle are locked in position.

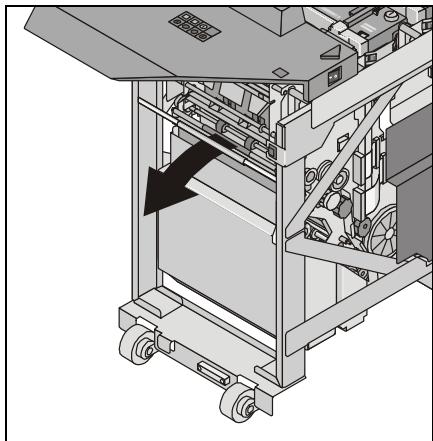


Turn the green handwheel in the direction of the arrow in order to transport inaccessible jammed notes into the stacking compartment.

- Re-insert all cassettes which were removed (see chapter "Device Overview and Operation", section "Inserting the cassette").



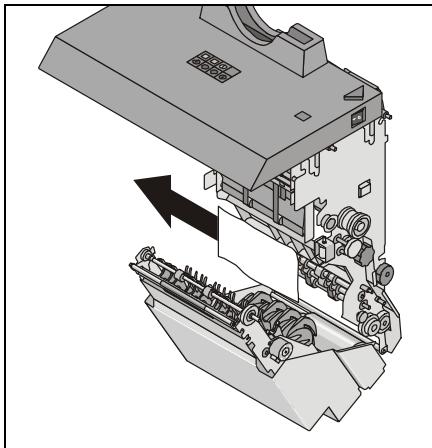
Lift the safety cover slightly and remove it from its mounting in the direction of the arrow.



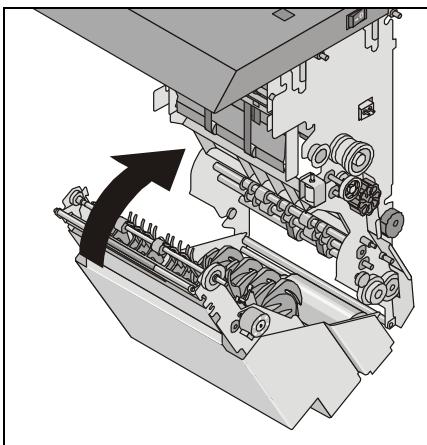
Swing open the stacker and output transport on the green release handle up into the final position.



Risk of crushing!



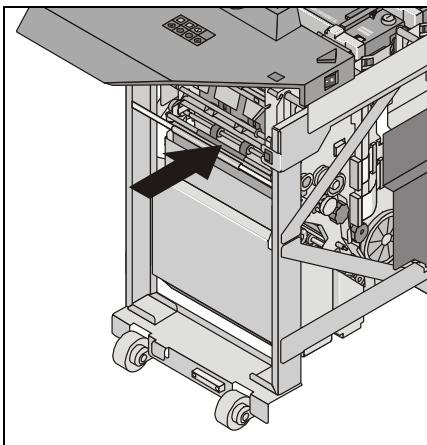
Remove the jammed bank notes from the stacking compartment (see arrow).



Swing the stacker and output transport back on the green release handle (see arrow).



Risk of crushing!

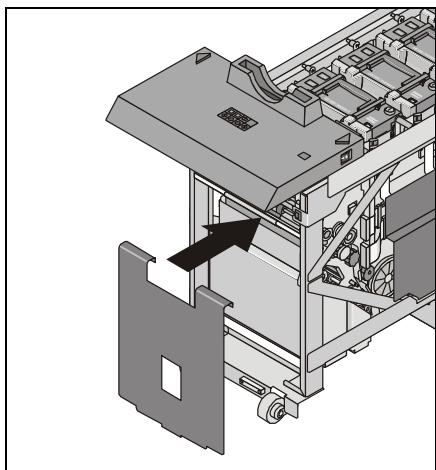


Press the stacker and output transport at the green locking grip edge in the arrow direction until the stacker and output transport engages.



Take care to ensure that the Stacker and output transport does not become tilted, but engages smoothly on both the left-hand and right-hand sides.

- Push the VCMD into the safe (see chapter "Removal/Installation of Components", section "Pulling out/pushing in the VCMD").



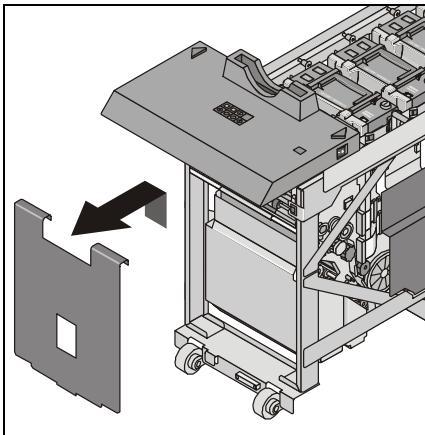
Reinstall the safety shield (see arrow).



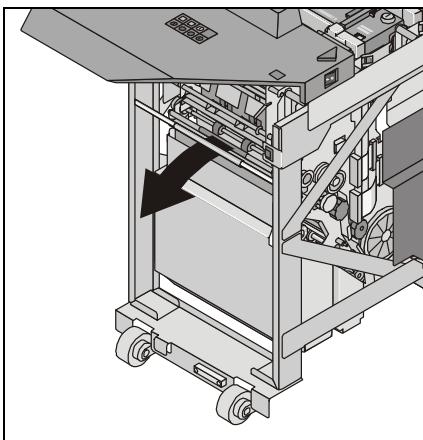
It is not possible to operate the VCMD without the safety shield!

- Log on the cassettes using the product-specific software (see chapter "Basic Operation", section "Calling the product-specific software" in the operating manual for the basic device).
- Wait for the VCMD to power up.
- Close the safe door (see the description in the basic device operating manual).
- Exit the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").

Checking the rear output transport



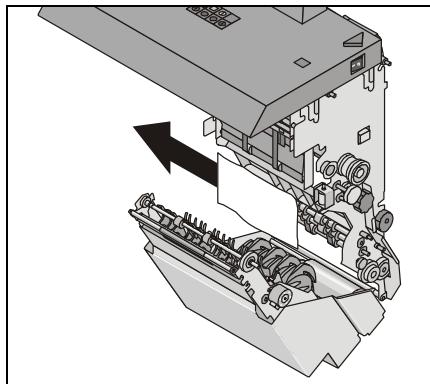
Lift the safety cover slightly and remove it from its mounting in the direction of the arrow.



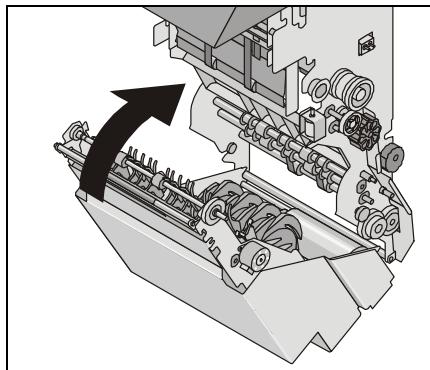
Swing open the stacker and output transport on the green release handle up into the final position.



Risk of crushing!



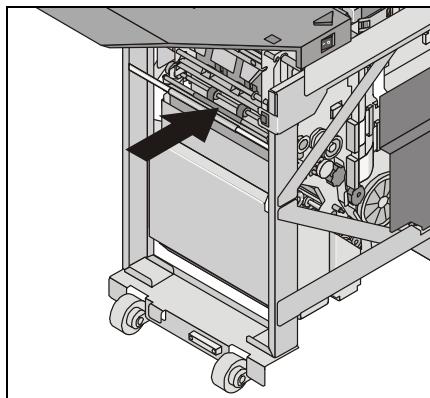
Remove the jammed bank notes from the stacking compartment (see arrow).



Swing the stacker and output transport back on the green release handle (see arrow).



Risk of crushing!

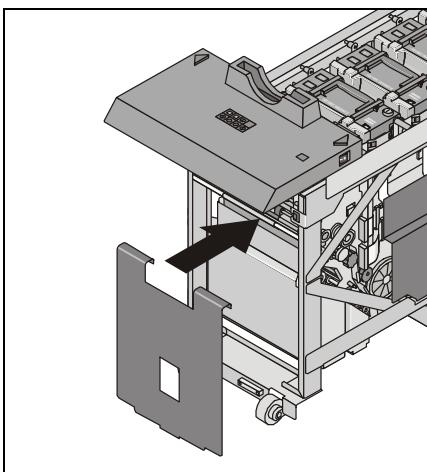


Press the stacker and output transport at the green locking grip edge in the arrow direction until the stacker and output transport engages.



Take care to ensure that the Stackter and output transport does not become tilted, but engages smoothly on both the left-hand and right-hand sides.

- Push the VCMD into the safe (see chapter "Removal/Installation of Components", section "Pulling out/pushing in the VCMD").



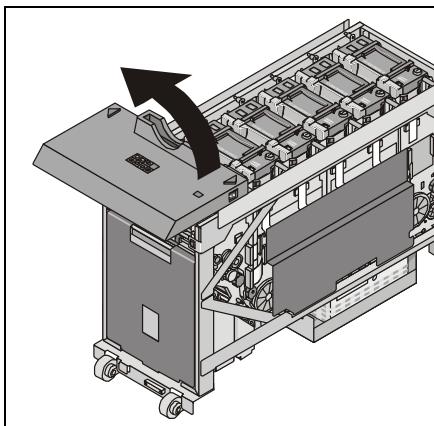
Reinstall the safety shield (see arrow).



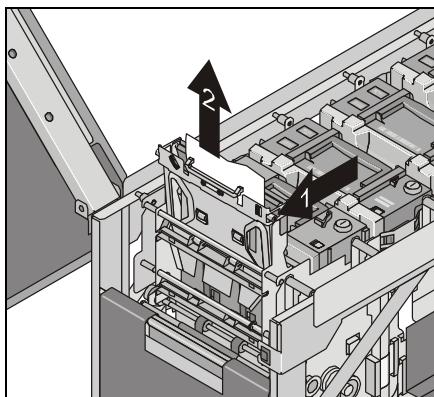
It is not possible to operate the VCMD without the safety shield!

- Wait for the VCMD to power up.
- Close the safe door (see the description in the basic device operating manual).
- Exit the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").

Checking the front output area



Swing the operating unit door upwards in the arrow direction.



Press the shaft in the arrow direction (1), hold it firmly there and remove the available bank notes in arrow direction (2). Release the shaft, it will be returned automatically to its starting position.

- Push the VCMD into the safe (see chapter "Removal/Installation of Components", section "Pulling out/pushing in the VCMD").
- Close the safe door (see the description in the basic device operating manual).
- Exit the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").

Serial Number Recognition

There is no status display for the serial number detection. In the event of a malfunction, the message ensues through the product-specific software.

If the detection rate becomes worse, then the scanning rails must be cleaned.

- Activate the product-specific software (refer to the operating manual of the basic ProCash device, chapter "Basic Operation", section "Calling the product-specific software").
- Open the safe door (see the operating manual of the base device).
- Pull the CMD-V4 as far as possible out of the safe by the green release lever (see chapter "Removal/Installation of Components", section "Pulling out/pushing in the CMD-V4").

i If the release lever jams with the CMD-V4, you must check the current position of the clamp. If possible, push the clamp carefully back to its home position. Perform a reset using the function button. Now check whether the CMD-V4 can be pulled out (see also section "Locking handle blocked").

- Remove the two scanning rails (see chapter "Removal/Installation of Components", section "Removing/installing scanning rails").
- Clean the two scanning rails.
- Reinstall the two scanning rails (see chapter "Removal/Installation of Components", section "Removing/installing scanning rails").
- Push the CMD-V4 by the green release lever back into the safe as far as possible (see the operating manual of the basic device).
- Close the safe door (see the description in the basic device operating manual).

Removal/Installation of Components



This chapter describes the removal and installation of components of the Cash Media Dispenser (CMD-V4) without respect to the basic device.

Any differences that may exist between the CMD-V4 and the VCMD (Vertical Cash Media Dispensers) will be specifically addressed.

The device-specific removals and installations are included in the respective service manuals.



Note that the device should always be turned off during replacements of components.



After the replacement of components, the CMD-V4 or VCMD must be initialized once again (see chapter "Start-up", section "Start-up after component replacement").

Pulling out/pushing in the CMD-V4

- Open the safe door (refer to the operating manual of the basic device).



Pulling out:

Pull the CMD-V4 out of the safe by the green release lever (1).

i If the release lever jams and you cannot pull out the CMD-V4, it is imperative that you consult the chapter "Troubleshooting", section "Release lever blocked".

Pushing in:

Use the green release lever to push the CMD-V4 into the device as far as it goes (the CMD-V4 must audibly latch into place).

Pulling out/pushing in the VCMD

Pulling out the VCMD up to level 1 (removing cassettes)

- Open the device and safe door (refer to the operating manual of the basic device).



Pulling out:

Pull the VCMD out of the safe by the green rod (1) as far as possible.

Pushing in:

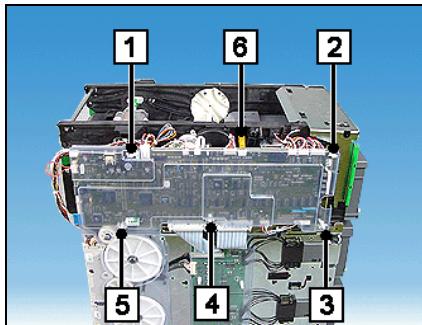
Slide the VCMD into the device as far as possible using the rod marked in green.

CMD controller

CMD-V4

- Open the safe door (see operating manual of the basic device) and pull the CMD-V4 out of the device (see section "Pulling out/pushing in the CMD-V4").

The CMD controller is disassembled including the protective cover.



To remove the CMD controller, remove at first all connectors on the controller. Detach the CMD controller carefully from the threaded pins (1) to (5). Apply the jumper settings.

i The EEPROM (6) always has to stay on the stacker.

Installation

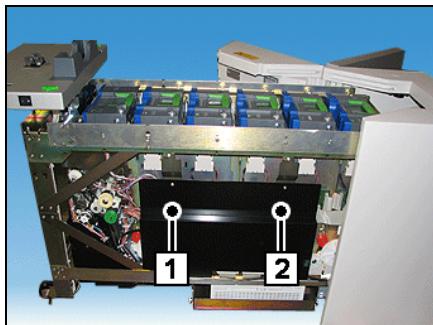
The controller is put on the threaded pins during installation. The controller must audibly lock into position while doing so.

i After the replacement of the CMD controller, the photosensors and the pressure sensor need to be initiated and the reference value need to be determined again (see chapter "Start-up").

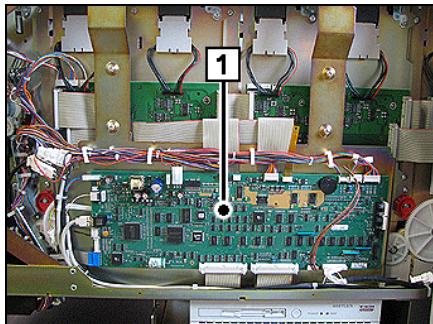
VCMD

- Open the safe door (see operating manual of the basic device) and pull the VCMD out of the safe (see section "Pulling out/pushing in the VCMD").
- Remove the cover plate (see chapter "Removal/Installation of Components", section "Opening the device" in the service manual for the ProCash 5100).

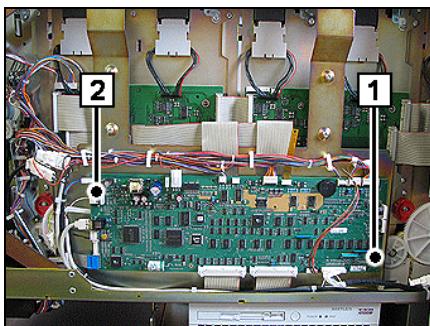
The CMD controller is disassembled including the protective cover.



Loosen the screws (1) and (2) and remove the panel.



To remove the CMD controller (1), remove at first all connectors on the controller.
Detach the CMD controller carefully from the threaded pins.



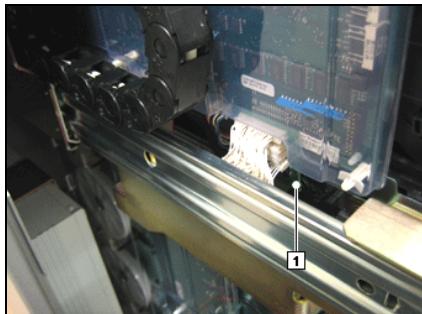
Reinstall it by following the same steps in reverse order. The controller must audibly lock into position on the securing bolts while doing so. Apply the jumper settings (1)!

i The connector (2) for the door monitor is jumpered.

- i** After the replacement of the CMD controller, the photosensors and the pressure sensor need to be initiated and the reference value need to be determined again (see chapter "Start-up").

Extension board ProCash 5000 (mini)

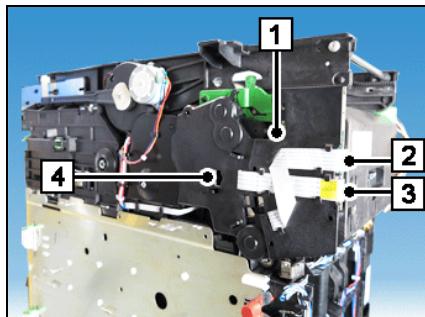
- Open the safe door and pull the CMD-V4 out of the device (see operating manual of the basic device).



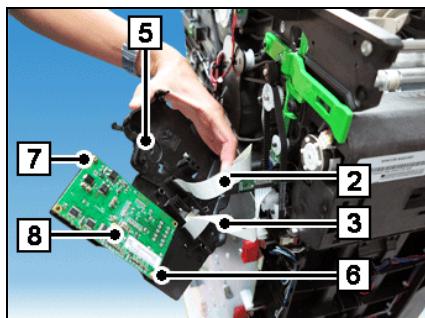
Remove all connectors from the extension board (1) and remove the board.

Serial Number Recognition

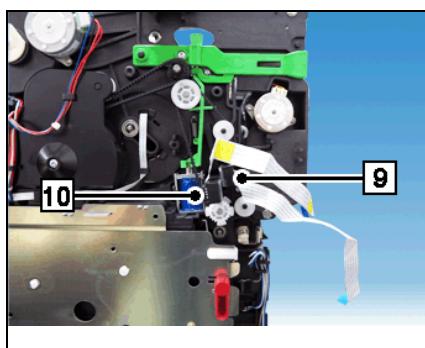
- Open the safe door (see operating manual of the basic device) and pull the CMD-V4 out of the device (see section "Pulling out/pushing in the CMD-V4").



Disconnect the cables (1) to (3). Remove the cables from the holding devices. Remove screw (4) and carefully pull off ...



... the cover (5). Pull the two cables (2) and (3) carefully out of the cover. Remove screws (6) und (7) and take out the control electronics (8).



Pull out the scanning rails (9) and (10). Observe the alignment and the color coding when you do so.

i Correct alignment of the scanning rails is imperative for the function. The scanning rail marked with yellow must be installed on the left and the scanning rail marked with blue on the right.



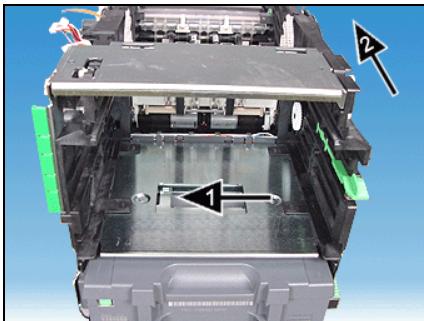
The replacement always takes place as a module unit.

- Reinstall it by following the same steps in reverse order.

Stacker

CMD-V4

- Remove the CMD controller (see section "CMD controller").
- Remove the reject/retract cassette (see chapter "Device overview and operation", section "Removing the cassette").
- Remove the serial number detection device if present (see section "Serial number detection").



Slide the locking/release lever to the left (see arrow 1) until it locks into place.

Push the stacker to the rear (arrow 2) and remove it upwards.



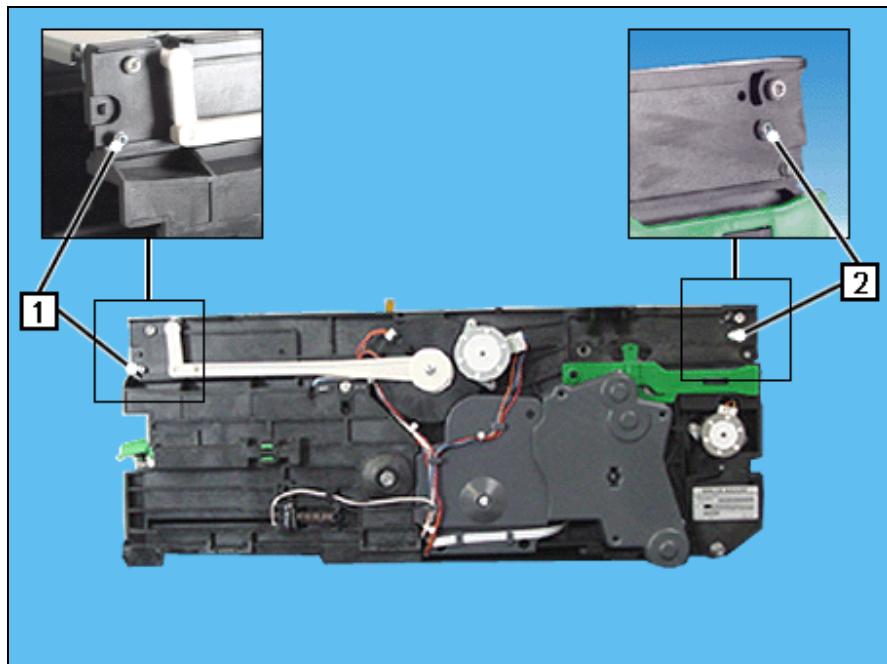
The limit screws from the old stacker must be applied to the new stacker. The limit screws depend on the model. They are intended to prevent it from falling out when it the clamp malfunctions. Only screws of the same type (length, diameter, type of thread) may be used.

Reinstall it by following the same steps in reverse order.



The photosensors must be initiated after the stacker has been replaced.

The following illustration shows the position of the limit screws on the stacker.



1 Left-hand limit screw

2 Right-hand limit screw

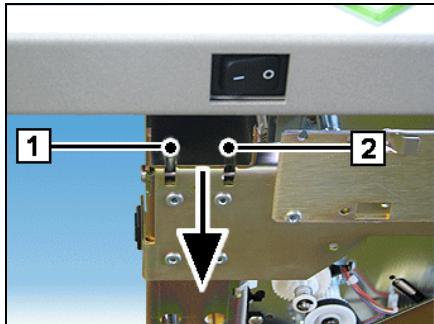
The following table contains an overview of the limit screws that must be present, depending on the system.

Limit screws, left	Limit screws, right
ProCash 1500xe / USB Rearload	-
-	ProCash 1500xe / USB Frontload
ProCash 2000xe / USB Frontload/Rearload	ProCash 2000xe / USB Frontload/Rearload
ProCash 8000 Frontload/Rearload	ProCash 8000 Frontload/Rearload
CINEO C2060 Frontload/Rearload	CINEO C2060 Frontload/Rearload
ProCash 2050xe / USB	-
ProCash 8050	-
CINEO C2550	-
ProCash 2054xe	-

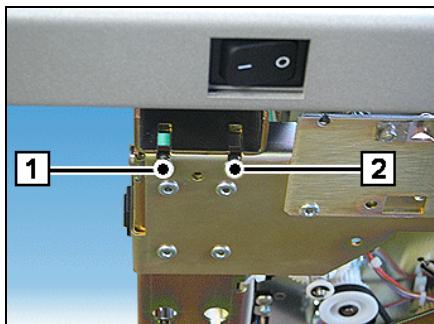
Limit screws, left	Limit screws, right
ProCash 2100xe / USB Frontload/Rearload	ProCash 2100xe / USB Frontload/Rearload
ProCash 8100 Frontload/Rearload	ProCash 8100 Frontload/Rearload
CINEO C2070 Frontload/Rearload	CINEO C2070 Frontload/Rearload
ProCash 2150xe / USB	-
ProCash 8150	-
CINEO C2560	-
CINEO C2080 Frontload/Rearload	CINEO C2080 Frontload/Rearload
ProCash 2250xe / USB	-
CINEO C2560 DU	-
-	ProCash 2350xe / USB
-	CINEO C2590

VCMD

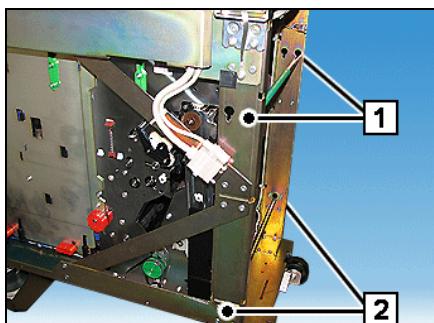
- Open the safe door (see operating manual of the basic device) and pull the VCMD out of the safe (see section "Pulling out/pushing in the VCMD").



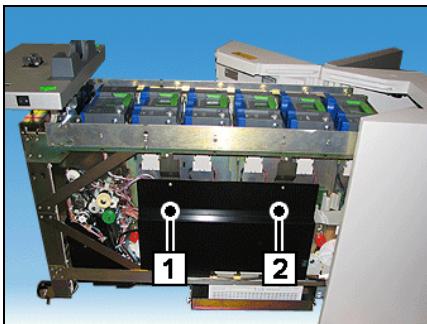
Undo screws (1) and (2) and swing the bracket down in the direction shown by the arrow.



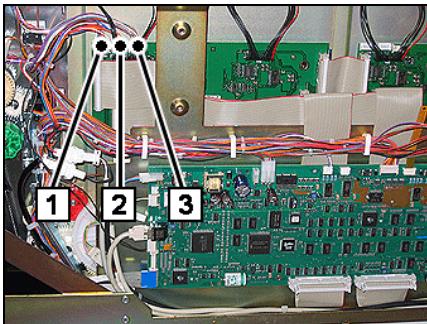
The operating panel can be lifted upwards when the screws (1) and (2) are folded up.



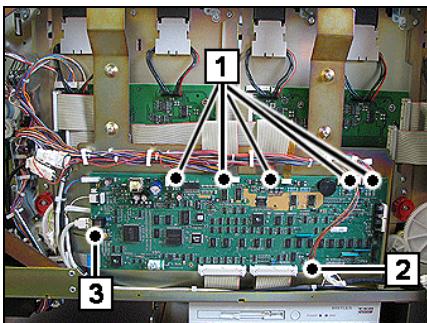
On the right-hand and left-hand sides, loosen the screws of the traverses (1) and (2) and remove the traverses.



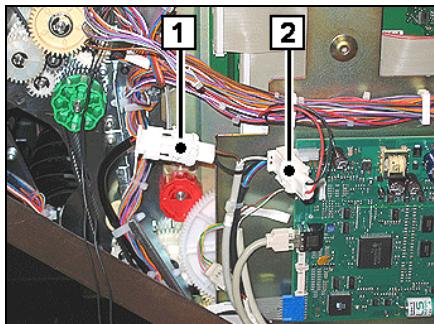
Loosen the screws (1) and (2) and remove the panel.



Detach the connectors (1) to (3) from the distributor board of the dispensing unit with multiple-note detection unit.



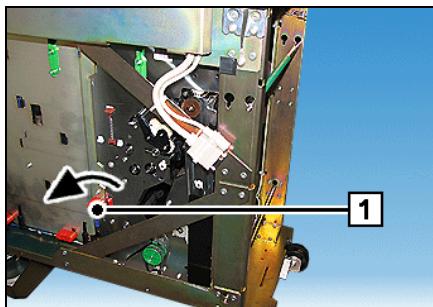
Open the retaining clips of the cable harness and pull off all of the connectors from the upper side of the CMD controller (1) and the connectors (2) and (3).



Disconnect the plug connections (1) and (2) to the main drive motor.



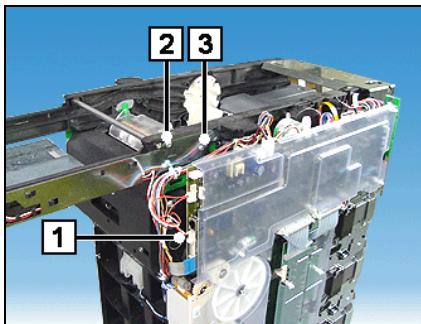
Press the locking lever of the reject cassette to the rear.
Pull the reject cassette out of the device.



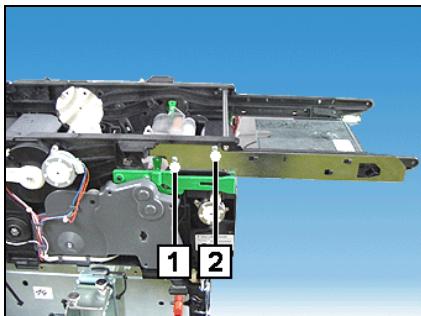
Rotate the locking knob of the stacker (1) counterclockwise by 180°.
Remove the stacker to the front from the device (pull it out somewhat at the bottom and then unhinge it towards the top).

Reinstall it by following the same steps in reverse order.

Horizontal output transport



On the left-hand side of the CMD-V4, detach the connector (1) and remove the two screws (2) and (3).



Remove the two screws on the right side (1) and (2).

Pull the output transport slightly apart to the right and left and detach it.

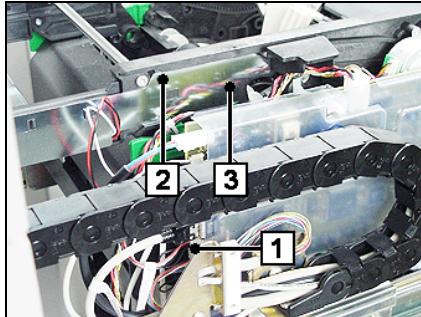
Reinstall it by following the same steps in reverse order.



Take care to ensure during installation that the same screw type is used.

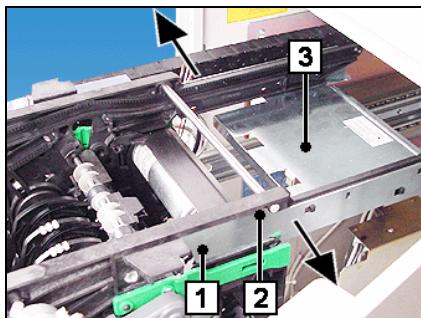
Output transport ProCash 2050xe/USB / ProCash 8050 / CINEO C2550

- Open the safe door and pull the Cash Media Dispenser out of the device (consult the operating or the service manual of the basic device).



Detach connector (1) from the CMD controller.

Remove the screws (2) and (3).



Remove the screws (1) and (2) on the opposite side.

Press the two side panels outwards a little (see arrows) and remove the output transport (3) upwards.

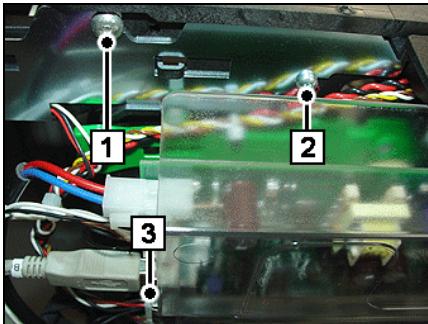
Reinstall it by following the same steps in reverse order.



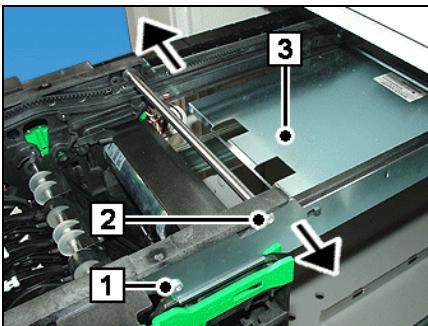
For installing the new output transport, you may only use the screws previously removed or screws of the same type.

Output transport ProCash 2054xe

- Open the safe door and pull the Cash Media Dispenser out of the device (consult the operating or the service manual of the basic device).



Remove screws (1) and (2) and detach connector (3) on the CMD controller.



Remove the screws (1) and (2) on the opposite side.
Press the two side panels outwards a little (see arrows) and remove the output transport (3) upwards.

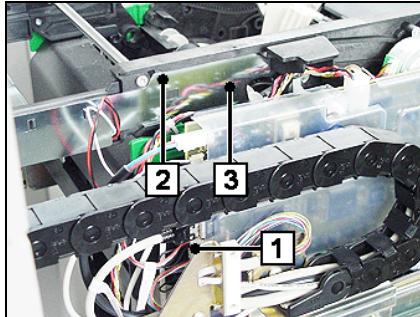
Reinstall it by following the same steps in reverse order.



For installing the new output transport, you may only use the screws previously removed or screws of the same type.

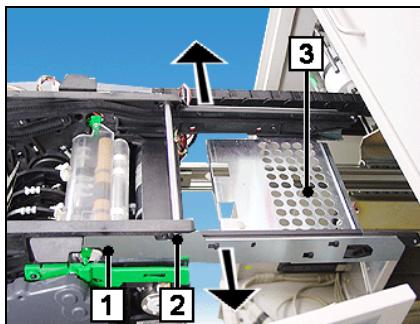
Output transport ProCash 2150xe/USB / ProCash 8150 / CINEO C2560

- Open the safe door and pull the Cash Media Dispenser out of the device (consult the operating or the service manual of the basic device).



Detach connector (1) from the CMD controller.

Remove the screws (2) and (3).



Remove the screws (1) and (2) on the opposite side.

Press the two side panels outwards a little (see arrows) and remove the output transport (3) upwards.

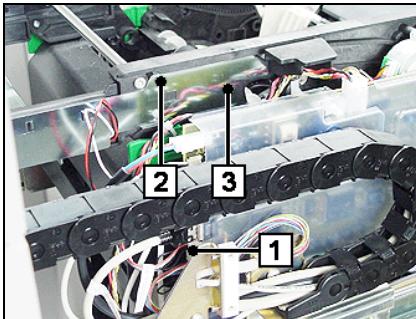
Reinstall it by following the same steps in reverse order.



For installing the new output transport, you may only use the screws previously removed or screws of the same type.

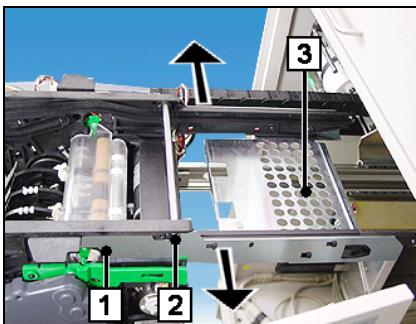
Output transport ProCash 2250xe/USB / CINEO C2560 DU

- Open the safe door and pull the Cash Media Dispenser out of the device (consult the operating or the service manual of the basic device).



Detach connector (1) from the CMD controller.

Remove the screws (2) and (3).



Remove the screws (1) and (2) on the opposite side.

Press the two side panels outwards a little (see arrows) and remove the output transport (3) upwards.

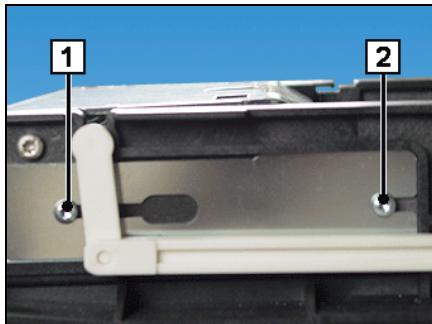
Reinstall it by following the same steps in reverse order.



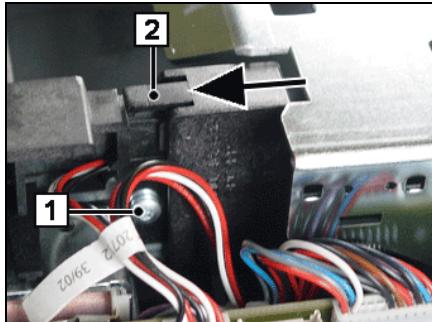
For installing the new output transport, you may only use the screws previously removed or screws of the same type.

Output transport ProCash 2350xe/USB / CINEO C2590

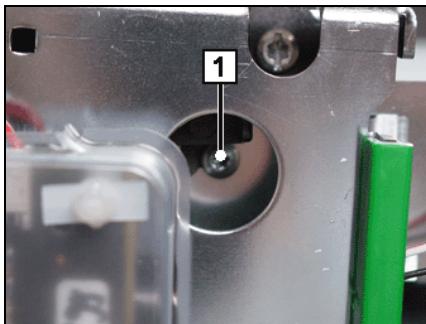
- Open the right-hand safe door and pull the Cash Media Dispenser out of the device as far as possible (consult the operating manual of the basic device).



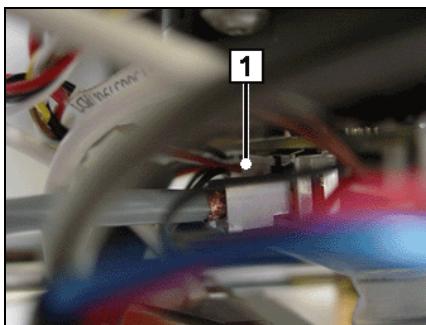
Remove screws (1) and (2).



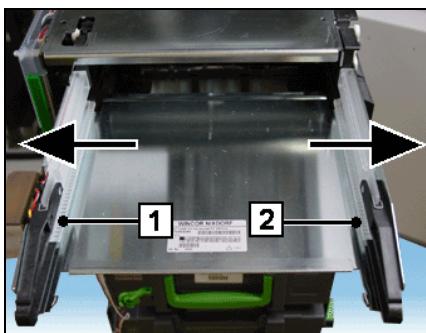
Remove the screw (1), lift the catch (2) of the emergency release a little bit and push the emergency release as far as possible in the direction of the arrow.



Remove the screw (1).



Disconnect the connector (1).

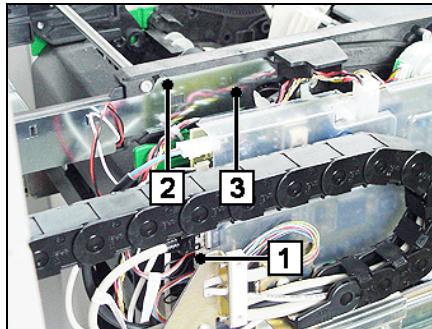


Press the panels (1) and (2) slightly outwards (see arrows) and pull the output transport to the front out of the device.

i Make sure during the installation that the emergency release is reinserted in its previous position. Reinstall it by following the same steps in reverse order. For installing the new output transport, you may only use the screws previously removed or screws of the same type.

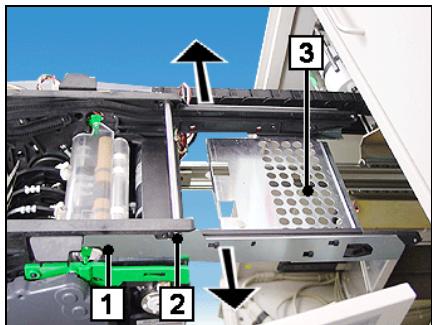
Output transport ProCash 5000 (mini)

- Open the safe door and pull the Cash Media Dispenser out of the device as far as possible (consult the operating or the service manual of the ProCash 5000 (mini)).



Detach connector (1) from the CMD controller.

Remove the screws (2) and (3).



Remove the screws (1) and (2) on the opposite side.

Press the two side panels outwards a little (see arrows) and remove the output transport (3) upwards.

Reinstall it by following the same steps in reverse order.

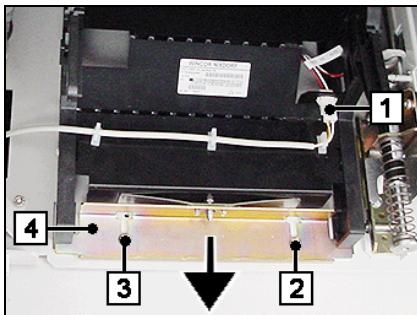


For installing the new output transport, you may only use the screws previously removed or screws of the same type.

Vertical output transport

Output transport ProCash 2000xe/USB RL

- Pull the operating panel out of the device (see operating manual or service manual for the ProCash 2000xe / 2000xe USB).



Disconnect the connector (1) and free the cable from the clamps.

Loosen the screws (2) and (3), and pull the plate (4) out of the device a little (see arrow).

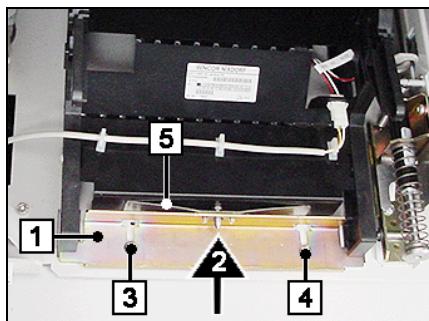
Pull the output transport a little in the direction of the arrow and remove it upwards.

Reinstall it by following the same steps in reverse order.



When replacing the output transport make sure that it fits properly in the guides of the stacker. Pull the cash media dispenser out of the device, if necessary, and then push it back in.

Adjustment

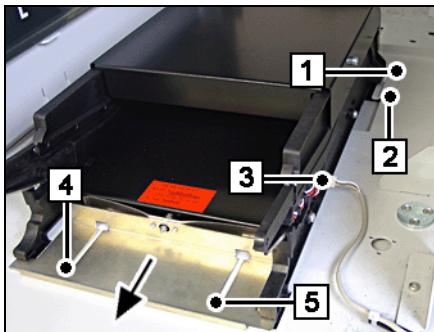


Push the plate (1) up against the output transport (2) with the cash media dispenser pushed in.

Then push the plate approx. 3 (0.12") to 5 mm (0.2") back and secure it with screws (3) and (4).

When the plate is secured, the spring (5) must still exert noticeable pressure on the output transport.

Output transport ProCash 8000 / CINEO C2060



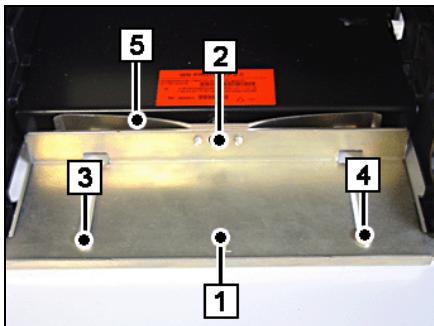
Remove screws (1) and (2) and remove the mounting plate. Disconnect the connector (3). Loosen screws (4) and (5) and pull the plate a little out of the device (see arrow). Pull the presenter a little in the direction of the arrow and lift it up and out.

Reinstall it by following the same steps in reverse order.



When replacing the output transport make sure that it fits properly in the guides of the stacker. Pull the cash media dispenser out of the device, if necessary, and then push it back in.

Adjustment



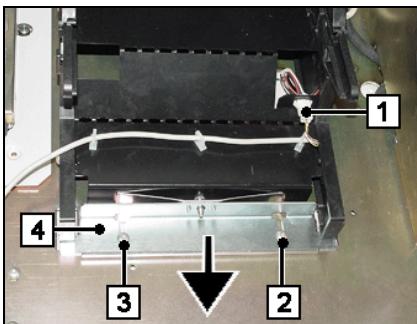
Push the plate (1) up against the output transport (2) with the cash media dispenser pushed in.

Then push the plate approx. 3 (0.12") to 5 mm (0.2") back and secure it with screws (3) and (4).

When the plate is secured, the spring (5) must still exert noticeable pressure on the output transport.

Output transport ProCash 2100xe/USB RL

- Open the door of the operating panel and pull the operating panel out of the device (see operating manual or service manual for the ProCash 2100xe / 2100xe USB).



Disconnect the connector (1) and free the cable from the clamps.

Loosen the screws (2) and (3), and pull the plate (4) out of the device a little (see arrow).

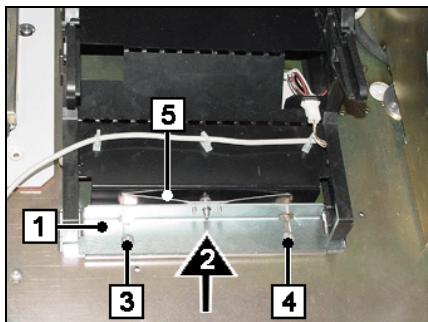
Pull the output transport a little in the direction of the arrow and remove it upwards.

Reinstall it by following the same steps in reverse order.



When replacing the output transport make sure that it fits properly in the guides of the stacker. Pull the cash media dispenser out of the device, if necessary, and then push it back in.

Adjustment

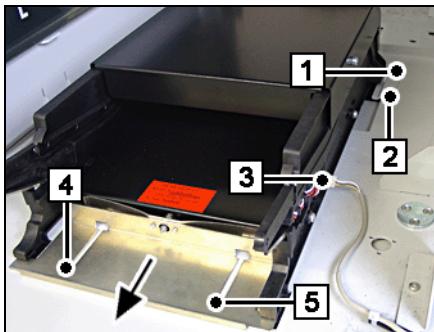


Push the plate (1) up against the output transport (2) with the cash media dispenser pushed in.

Then push the plate approx. 3 (0.12") to 5 mm (0.2") back and secure it with screws (3) and (4).

When the plate is secured, the spring (5) must still exert noticeable pressure on the output transport.

Output transport ProCash 8100 / CINEO C2070



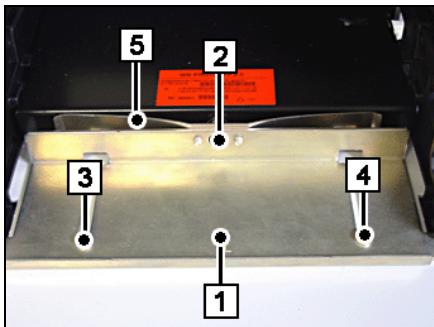
Remove screws (1) and (2) and remove the mounting plate. Disconnect the connector (3). Loosen screws (4) and (5) and pull the plate a little out of the device (see arrow). Pull the presenter a little in the direction of the arrow and lift it up and out.

Reinstall it by following the same steps in reverse order.



When replacing the output transport make sure that it fits properly in the guides of the stacker. Pull the cash media dispenser out of the device, if necessary, and then push it back in.

Adjustment

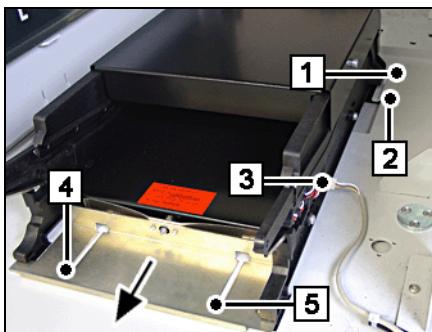


Push the plate (1) up against the output transport (2) with the cash media dispenser pushed in.

Then push the plate approx. 3 (0.12") to 5 mm (0.2") back and secure it with screws (3) and (4).

When the plate is secured, the spring (5) must still exert noticeable pressure on the output transport.

Output transport CINEO C2080



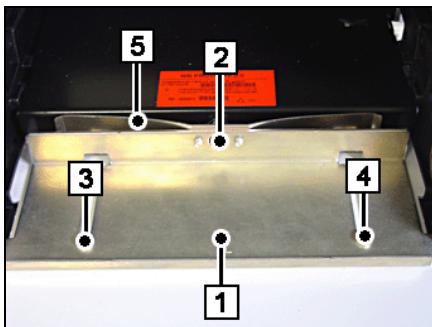
Remove screws (1) and (2) and remove the mounting plate. Disconnect the connector (3). Loosen screws (4) and (5) and pull the plate a little out of the device (see arrow). Pull the presenter a little in the direction of the arrow and lift it up and out.

Reinstall it by following the same steps in reverse order.



When replacing the output transport make sure that it fits properly in the guides of the stacker. Pull the cash media dispenser out of the device, if necessary, and then push it back in.

Adjustment



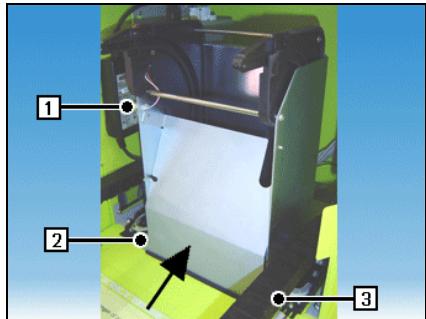
Push the plate (1) up against the output transport (2) with the cash media dispenser pushed in.

Then push the plate approx. 3 (0.12") to 5 mm (0.2") back and secure it with screws (3) and (4).

When the plate is secured, the spring (5) must still exert noticeable pressure on the output transport.

Output transport Beetle/iSCAN

- Open the safe door (see operating manual or service manual).



Disconnect the connector (1) and free the cable from the clamps.

Remove the four screws (2) and (3), two screws on each side.

Slide the output transport in the direction shown by the arrow and remove it upwards.

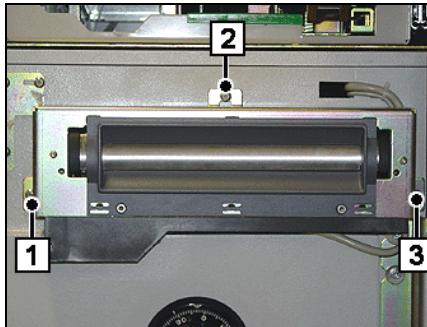
Reinstall it by following the same steps in reverse order.



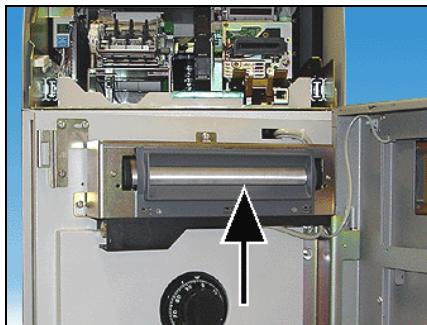
When replacing the output transport make sure that it fits properly in the guides of the stacker. Pull the cash media dispenser out of the device, if necessary, and then push it back in.

Shutter ProCash 1500xe / USB

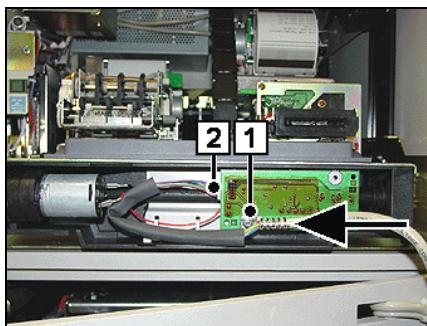
- Open the front door (see operating manual or service manual for the ProCash 1500xe / 1500xe USB).



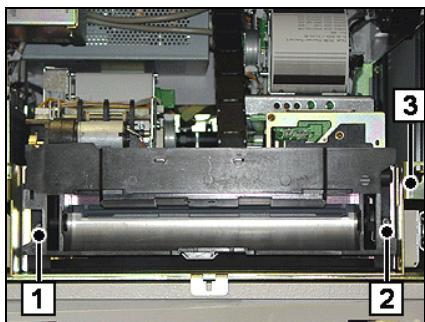
Loosen screws (1) to (3).



Open the safe door (Frontload) or pull out the CMD-V4 a little (Rearload) and remove the shutter upwards in the direction shown by the arrow.
Set the shutter down on the safe.



Loosen screw (1) and push the ground connection to the left in the direction shown by the arrow.
Detach connector (2).
Turn the shutter around.



Remove screws (1) and (2) and remove the shutter support with the shutter plate (3). It will be needed when it is reinstalled.

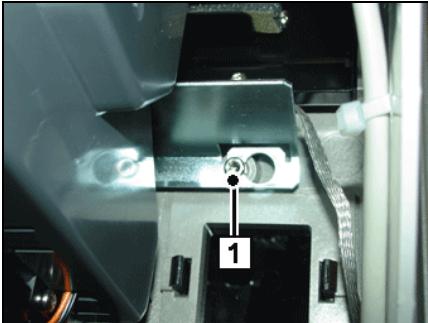
Reinstall it by following the same steps in reverse order.

i When installing the shutter be sure to push it down as far as possible.

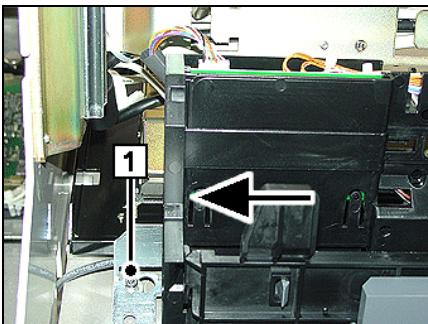
i After adjusting the shutter, complete a test dispense and output of a banknote.

Shutter ProCash 2000xe / USB FL/RL

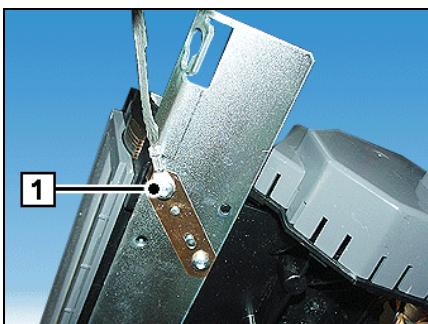
- Pull the operating panel out of the device (see operating manual or service manual for the ProCash 2000xe / 2000xe USB).



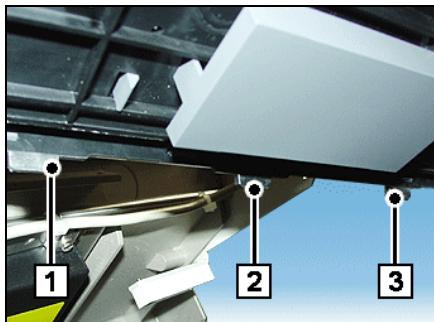
Disengage the screw (1).



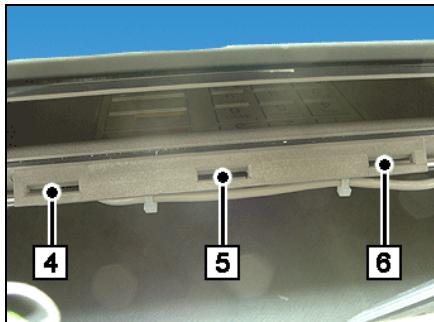
Loosen the screw (1), slide the shutter slightly in the direction of the arrow and remove it to the rear.



Remove the screw (1) and remove the shutter from the device.



When you install the scanner, note that tabs (1) to (3) ...



... must be inserted into the respective mountings (4) to (6).



Adjust the shutter in such a way that the shutter opening is flush with the opening in the operating panel on the left-hand side as seen from the shutter (see arrow).

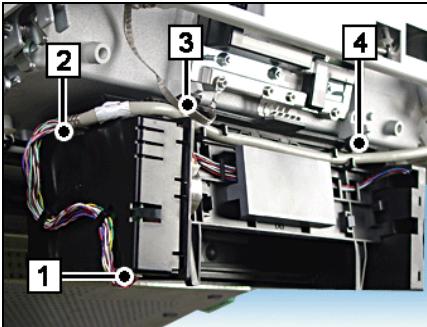
Continue with the installation by following the same steps in reverse order.



The shutter must have a ground connection. If it does not have one, it must be retrofitted.

Shutter ProCash 8000 / CINEO C2060

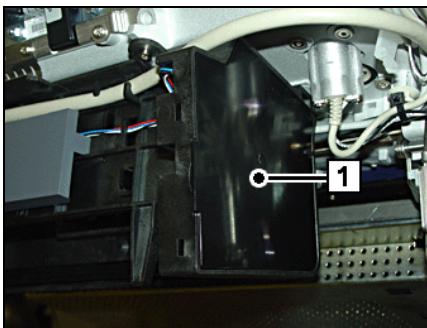
- Open the operating panel (see operating manual of the ProCash 8000 / CINEO C2060).



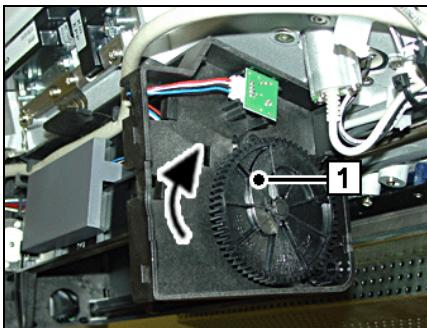
Disconnect the connector (1).

Remove the screw of the ground strap (2) and detach the cable from all mountings.

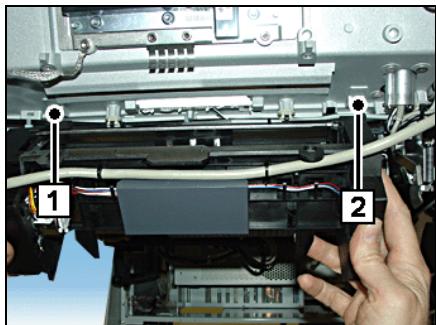
Remove screws (3) and (4).



Remove the cover (1) on the right side.



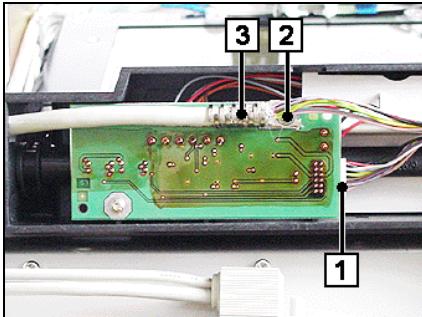
Turn the wheel (1) in the direction of the arrow far enough as to enable release and removal of the shutter.



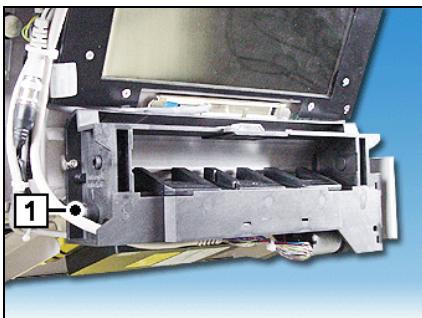
During the installation, make sure that the catches (1) and (2) hook in the corresponding mountings.

Shutter ProCash 2050xe / USB

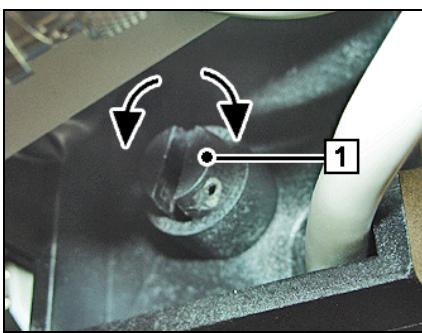
- Pull the operating panel out of the device (see operating manual or service manual for the ProCash 2050xe / 2050xe USB).



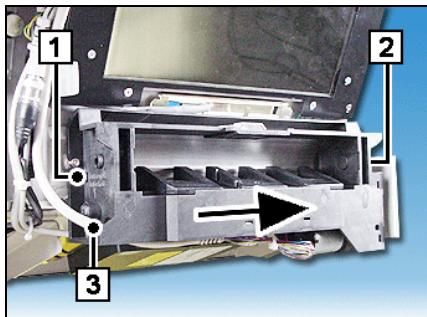
Disconnect the connector (1).
Loosen screw (2) and unhook the ground strap (3).



Open the shutter manually (1). See the following illustration as well.



Open the shutter flap of the shutter by rotating on the shaft (1).



Undo screws (1) and (2).

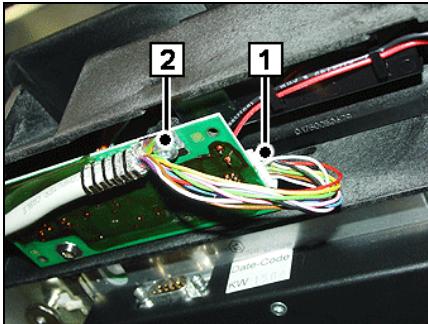
Push the shutter a little in the direction of the arrow and remove it.

Pull out the cable (3).

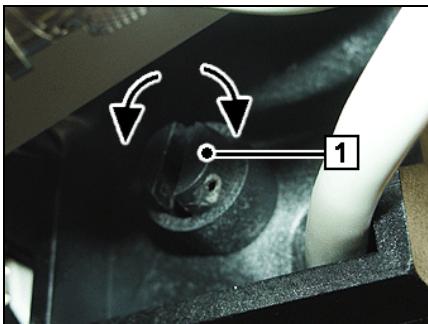
Reinstall it by following the same steps in reverse order.

Shutter ProCash 2054xe

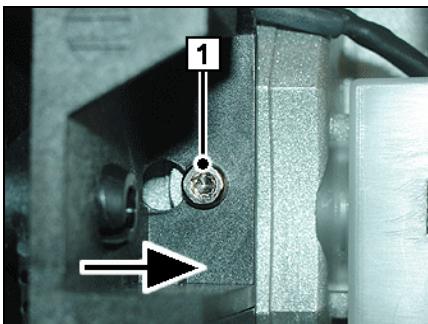
- Pull the operating panel out of the device (see operating manual or service manual for the ProCash 2054xe).



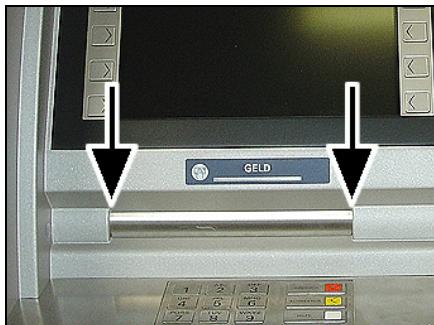
Disconnect the connector (1).
Loosen the screw (2) on the underside of the shutter and remove the connection cable from the holder.



Rotate the adjusting screw (1) to the right or to the left until the shutter flap is opened.



Loosen the screw (1) and the corresponding screw on the opposite side. Push the shutter a little in the direction of the arrow and remove it to the rear.

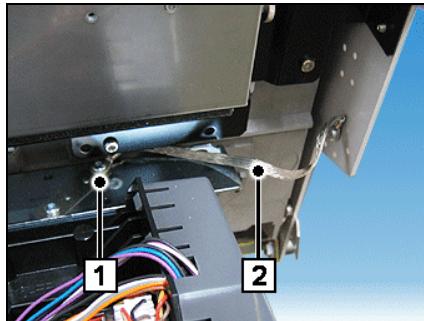


During installation, take care to ensure that the shutter flap is centered (see arrows).

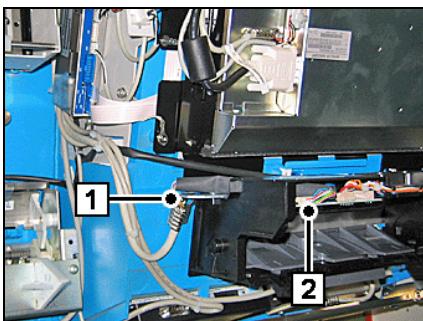
Reinstall it by following the same steps in reverse order.

Shutter ProCash 2100xe / USB FL/RL

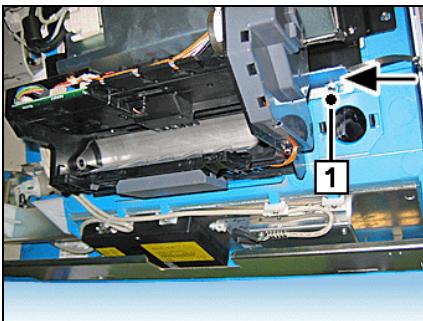
- Open the door of the operating panel and pull the operating panel out of the device (see operating manual or service manual for the ProCash 2100xe / 2100xe USB).



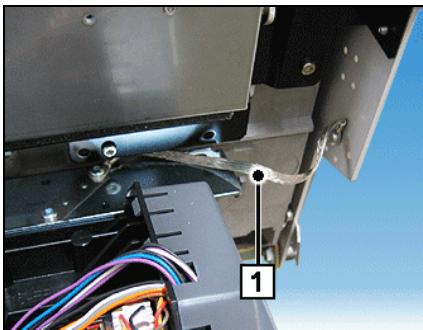
Remove the screw (1) and slide the ground strap (2) to the side.



Remove screw (1) and detach the connector (2).



Loosen the screw (1), slide the shutter slightly in the direction of the arrow and remove it to the front.

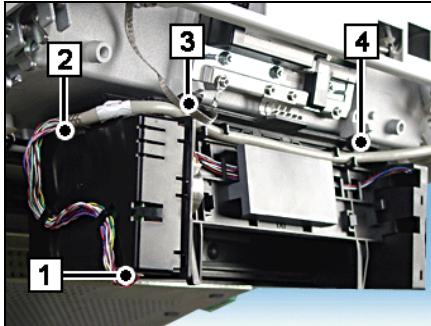


i There must be a ground strap (1) between the shutter and the operating panel.
If it does not have one, it must be retrofitted.

Continue with the installation by following the same steps in reverse order.

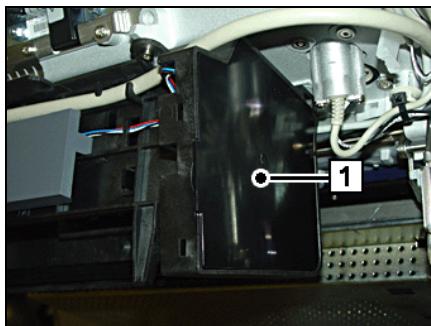
Shutter ProCash 8100 / CINEO C2070

- Open the operating panel (see operating manual of the ProCash 8100 / CINEO C2070).

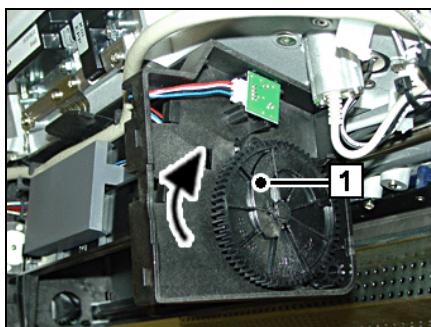


Disconnect the connector (1).
Remove the screw of the ground strap (2) and detach the cable from all mountings.

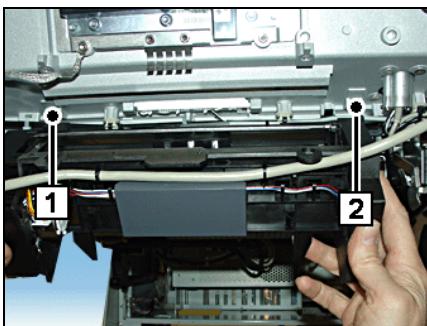
Remove screws (3) and (4).



Remove the cover (1) on the right side.



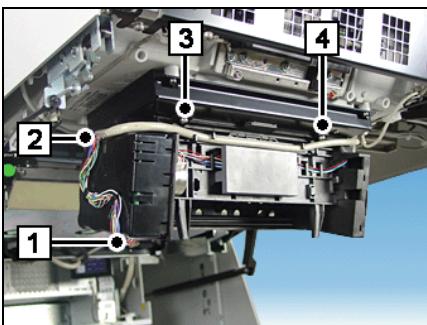
Turn the wheel (1) in the direction of the arrow far enough as to enable release and removal of the shutter.



During the installation, make sure that the catches (1) and (2) hook in the corresponding mountings.

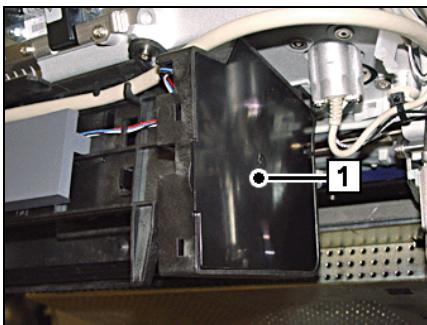
Shutter ProCash 8100 / CINEO C2070

- Raise the operating panel (see the operating manual of the CINEO C2080).

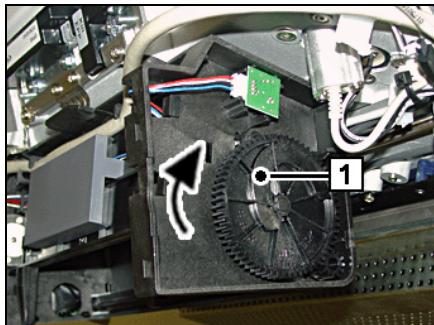


Disconnect the connector (1).
Remove the screw of the ground strap (2) and detach the cable from all mountings.

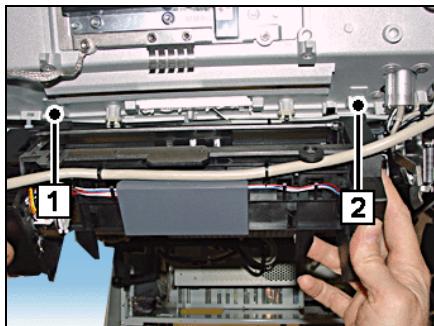
Remove the screws (3) and (4).



Remove the cover (1) on the right side.



Turn the wheel (1) in the direction of the arrow far enough as to enable release and removal of the shutter.



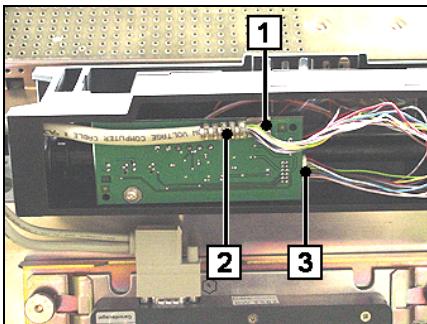
During the installation, make sure that the catches (1) and (2) hook in the corresponding mountings.

Continue with the installation by following the same steps in reverse order.

Shutter ProCash 2150xe / USB

Pre-series level

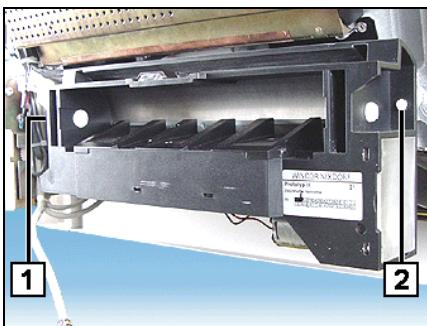
- Pull the operating panel out of the device (see operating manual or service manual for the ProCash 2150xe / 2150xe USB).



Loosen the screw (1) on the underside of the shutter.

Slide the cable (2) slightly to the right, unhook it on the left-hand side and remove it to the left.

Disconnect the connector (3).



Remove screws (1) and (2) and remove the shutter upwards.

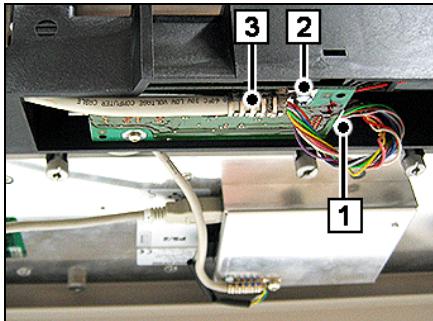
Reinstall it by following the same steps in reverse order.



The shutter must have a ground connection. If it does not have one, it must be retrofitted.

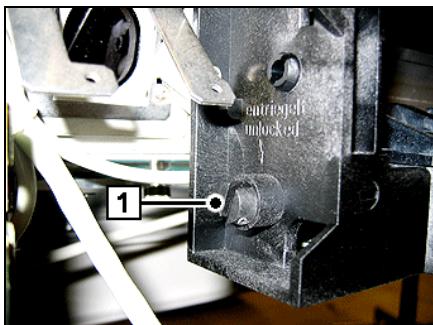
Series version

- Pull the operating panel out of the device (see operating manual or service manual for the ProCash 2150xe / 2150xe USB).

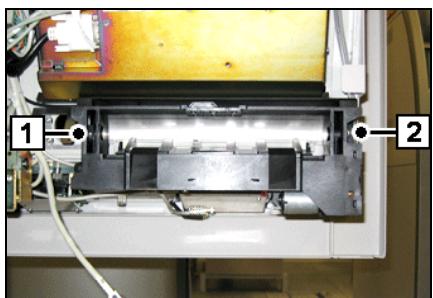


On the underside of the shutter detach connector (1).

Loosen screw (2) and remove the ground strap (3).



Before removing the shutter, open its shutter flap by rotating the button (1).



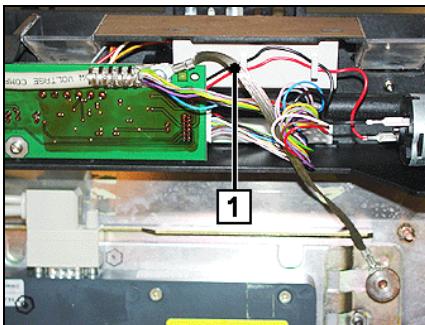
Remove screws (1) and (2) and remove the shutter upwards.

- Before installing the new shutter, open its shutter flap by rotating the button (1) (see illustration above).

Continue with the installation by following the same steps in reverse order.



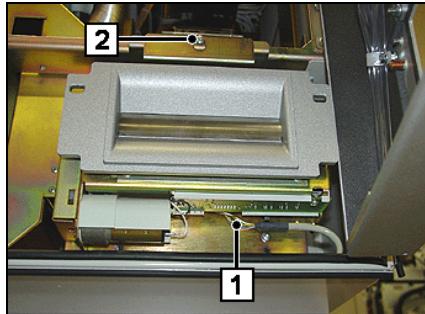
Adjust the shutter so that the flap is in the center (see arrows).



During installation of the shutter, do not fail to ensure that the ground strap (1) from the keyboard to the shutter is connected once again to the electronic board of the shutter!

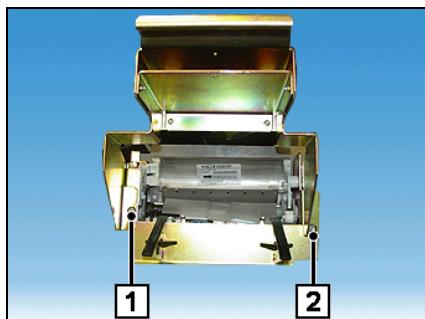
Shutter ProCash 2250xe / USB Drive Up

- Open the operating panel door (see operating manual or service manual for the ProCash 2250xe / 2250xe USB Drive Up).

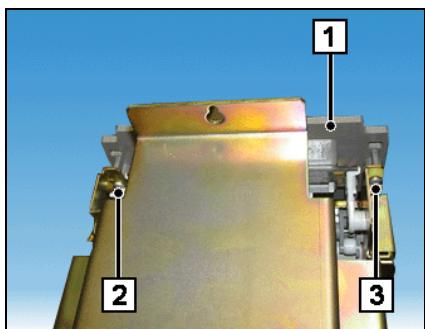


Detach the cable (1).

Loosen the screw (2), slide the shutter slightly upwards and remove it to the front.



Turn the shutter and remove the screws (1) and (2).



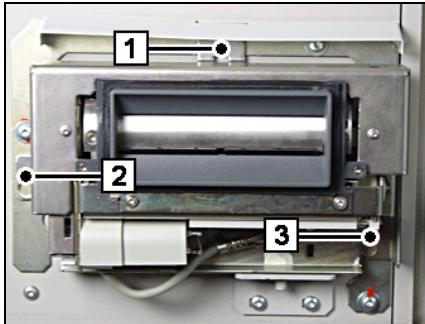
Remove the shutter faceplate (1) by removing the screws (2) and (3).

Reinstall it by following the same steps in reverse order.

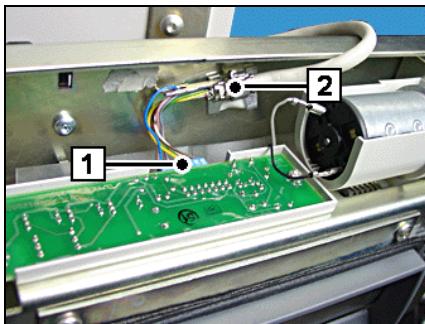
i The shutter faceplate is needed again for the installation of the new shutter.

Shutter ProCash 2350xe / USB

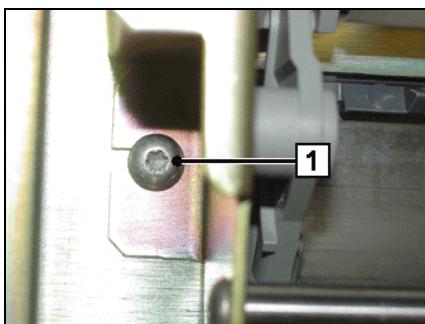
- Open the operating panel (see operating manual or service manual for the ProCash 2350xe / 2350xe USB).



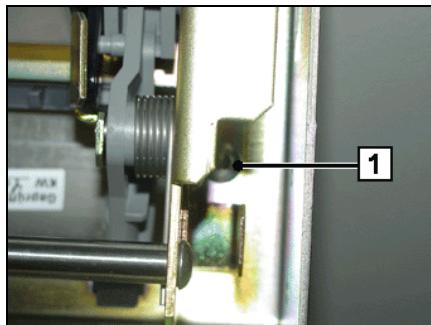
Remove the screw (1) and loosen the screws (2) and (3). Push the shutter slightly upwards, detach it and turn it around.



Detach the connector (1) and remove the ground connection (2).



Remove the screw (1).



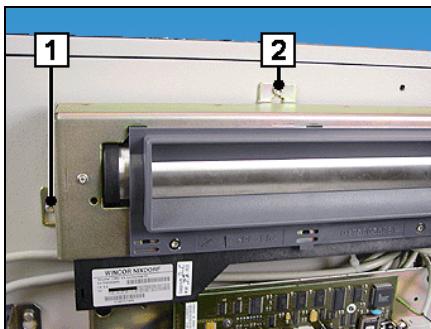
Remove the screw (1). Open the shutter manually so you can remove it upwards.

Install the new shutter on the old mounting plate.

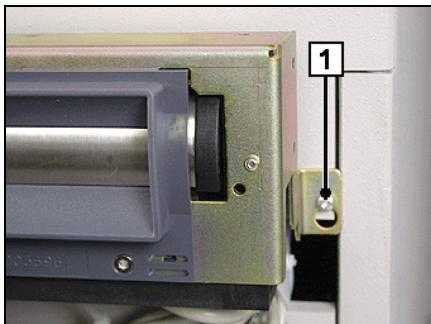
Continue with the installation by following the same steps in reverse order.

Shutter ProCash 5000 (mini)

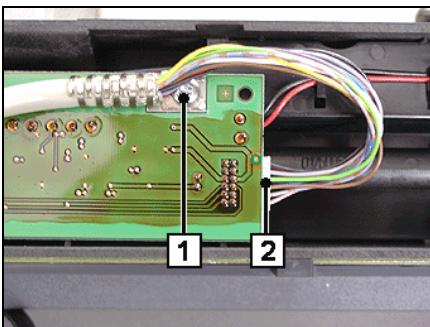
- Remove the safe door covering (see operating manual or service manual for the ProCash 5000 (mini)).



Undo screws (1) and (2).



Loosen the screw (1). Remove the shutter upwards and put it aside.



Disengage the ground connection (1), disconnect the plug (2) and remove the shutter.

Reinstall it by following the same steps in reverse order.

Adjusting the shutters



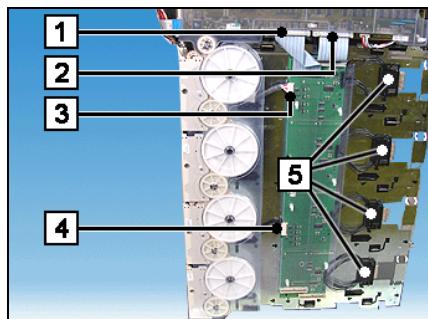
Adjust the shutter so that the flap is in the center (see arrows).

Distributor board

CMD-V4

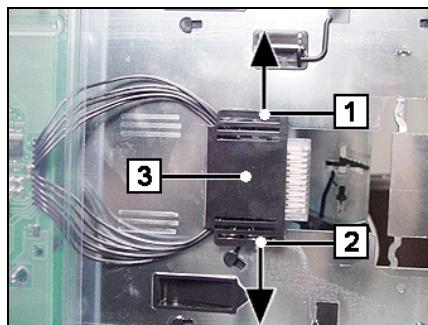
Quadruple rack

- Remove all cassettes from the CMD-V4 (see chapter "Device overview and operation", section "Removing the cassette").

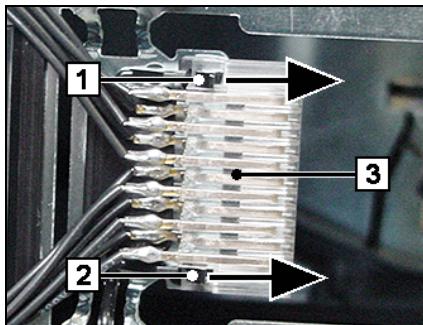


Detach the tab connectors (1) and (2) from the controller and the connectors (3) and (4) from the distributor board.

The removal of the connectors (5) is described in the following.

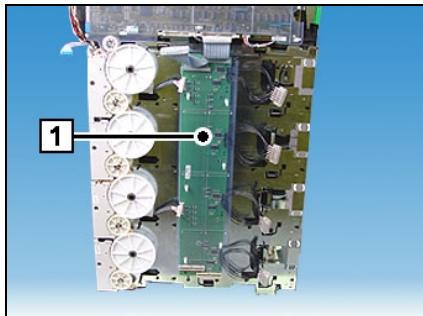


To do so, press catches (1) and (2) in the direction of the arrows and open the hinged cover (3). Carry out this procedure with the other three covers as well.



Press the catches (1) and (2) in the direction of the arrows while pulling off connector (3) towards the front.

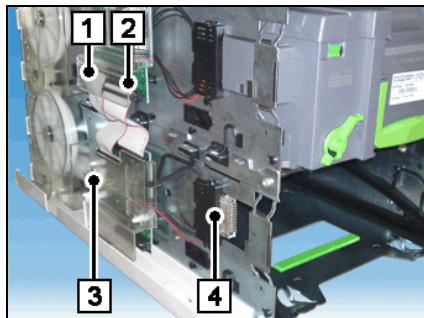
Proceed exactly the same way with the other three connectors.



Carefully pull the distributor board (1) with the protection cover from the fastening bolts.

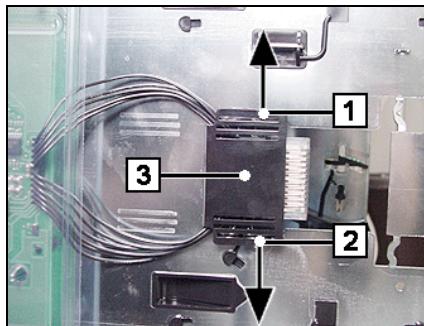
1-cassette housing

- Remove all cassettes from the CMD-V4 (see chapter "Device overview and operation", section "Removing the cassette").

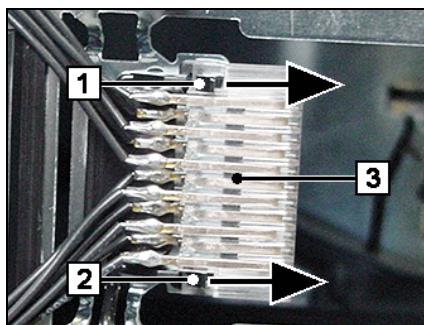


Detach the tab connectors (1) and (2) and the connector (3) from the distributor board.

The removal of the connectors (4) is described in the following.

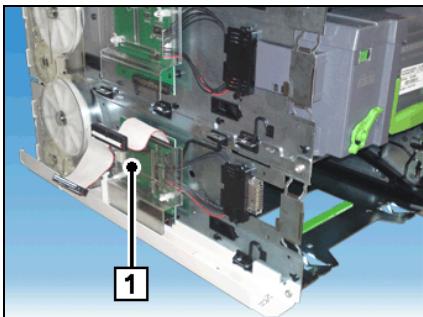


To do so, press catches (1) and (2) in the direction of the arrows and open the hinged cover (3). Carry out this procedure with the other three covers as well.



Press the catches (1) and (2) in the direction of the arrows while pulling off connector (3) towards the front.

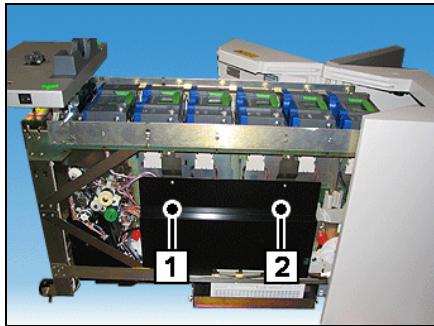
Proceed exactly the same way with the other three connectors.



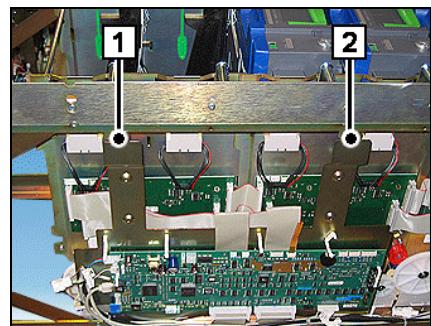
Carefully pull the distributor board (1) with the protection cover from the fastening bolts.

VCMD

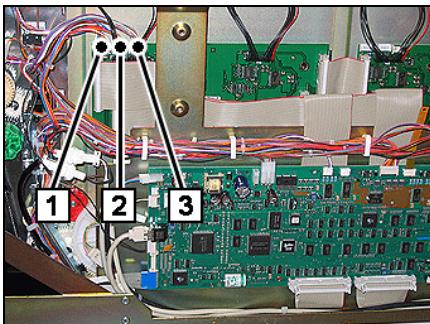
- Open the safe door (see operating manual of the basic device) and pull the VCMD out of the safe (see section "Pulling out/pushing in the VCMD").
- Remove the cover plate (see chapter "Removal/Installation of Components", section "Opening the device" in the service manual for the ProCash 5100).



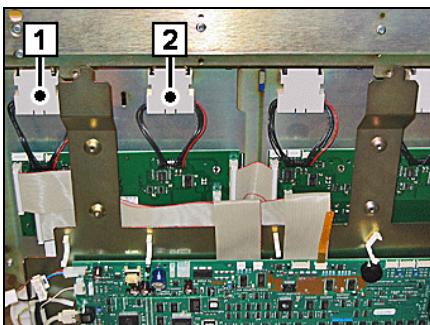
Loosen the screws (1) and (2) and remove the panel.



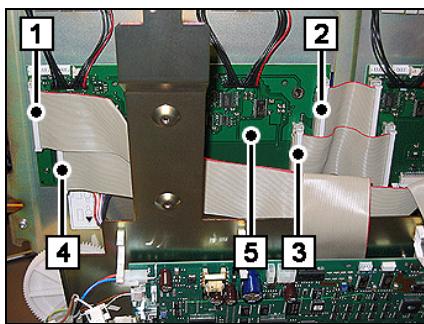
Undo screws (1) and (2).
Pull the mounting of the CMD controller somewhat to the right and swing the mounting down.



Detach the connectors (1) to (3) from the distributor board of the dispensing unit with multiple-note detection unit.

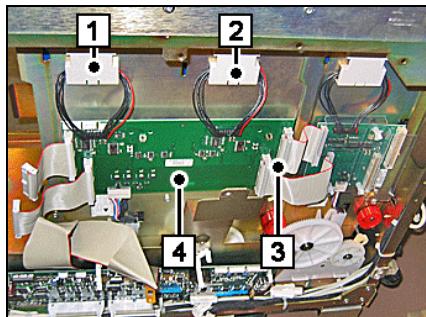


Detach connectors (1) and (2).



Detach the plugs (1) to (4) from the distributor board.

Detach the distributor board (5) from the fastening bolts.



Detach connectors (1) and (2).
Detach the two connectors (3) from the right-hand side of the distributor board.
Carefully detach the distributor board (4) from the fastening bolts.

Dispensing units

CMD-V4

Double dispensing unit

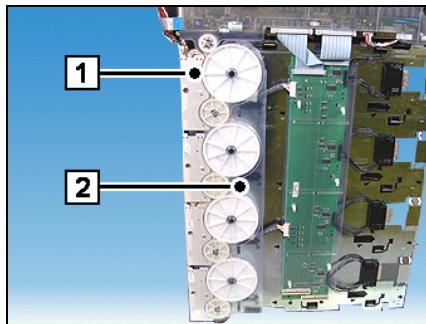
Two double dispensing units can be deployed in the quadruple rack. The top dispensing unit always contains the multiple-note detection unit.



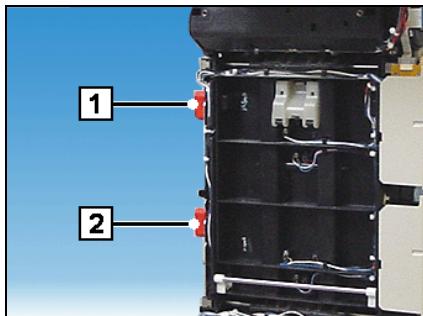
Remove the cassettes before you remove the dispensing unit!



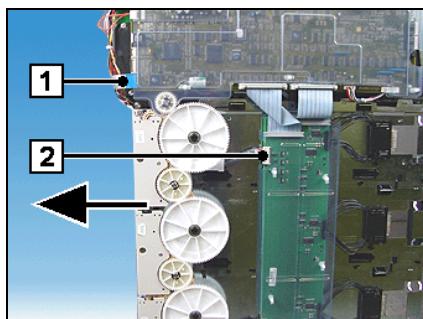
The two dispensing units should not be swapped.



Remove the screw (1).
Unclip the protective cover (2) from the holders and remove the protective cover.

Upper dispensing unit with multiple-note detection unit**Dismantling:**

Release the upper dispensing unit by turning the locking/release levers (1) and (2) each 90° counterclockwise.

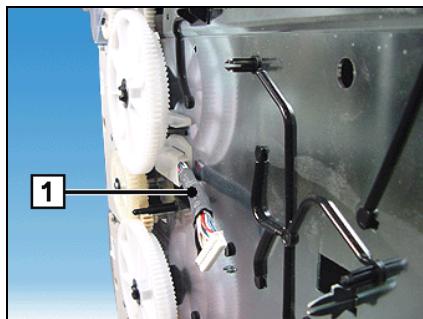


The multiple-note detection unit that is connected by cable with the CMD controller is located in the upper dispensing unit. This cable must be disconnected (1).

Disconnect the plug (2) from the distributor board.

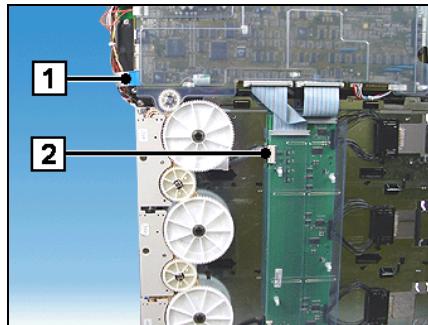
Remove the dispensing unit in the direction shown by the arrow.

- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").

**Installation:**

Guide the connector cable (1) carefully between the gearwheels and the device wall.

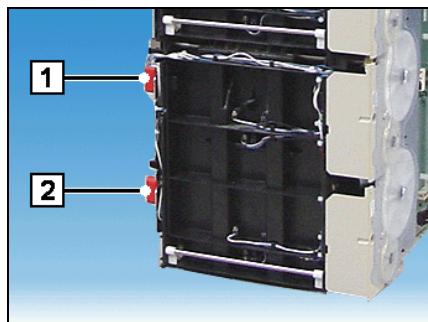
- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position.



Connect the cable to the CMD controller (1) and to the distributor board (2).

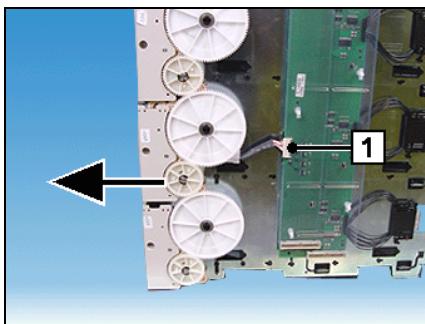
- Install the protection cover.

Lower dispensing unit



Dismantling:

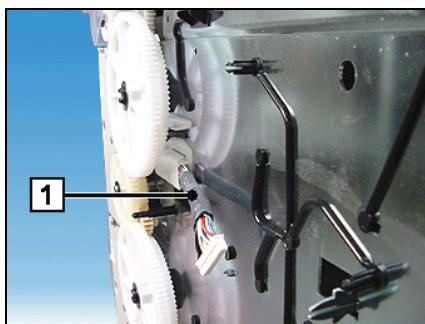
Turn the locking/release levers (1) and (2) on the left side of the dispensing unit each 90 degrees counterclockwise.



Disconnect the plug (1) from the distributor board.

Remove the lower dispensing unit in the direction shown by the arrow.

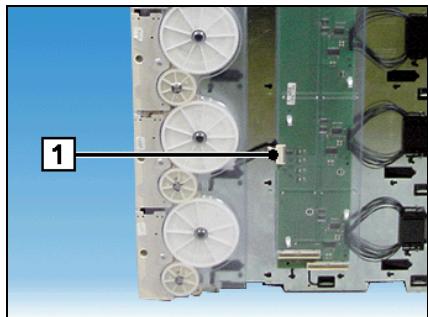
- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").



Installation:

Guide the connector cable (1) carefully between the gearwheels and the device wall.

- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position.



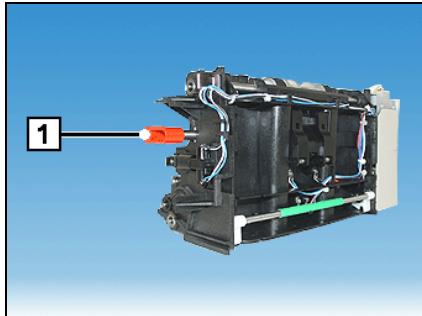
Connect the cable to the distributor board (1).

- Install the protection cover.

Single dispensing unit with multiple-note detection unit



The cassette must be removed before the single dispensing unit!



Dismantling

Release the dispensing unit by turning the locking/release lever (1) 90° counterclockwise.

- The multiple-note detection unit is located in the upper dispensing unit and is connected by cable with the CMD controller. This cable must be disconnected.
- Disconnect the plug from the distributor board.
- Remove the dispensing unit.

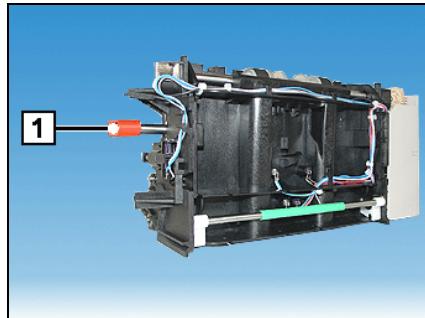
Installation

- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").
- Guide the connector cable carefully between the gearwheels and the device wall (see also the section "Double dispensing unit").
- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position (see also section "Double dispensing unit").
- Connect the cable to the CMD controller and to the distributor board.
- Install the protection cover on the CMD controller.

Single dispensing unit without multiple-note detection unit



The cassette must be removed before the single dispensing unit!



Dismantling:

Turn the locking/release levers (1) on the left side of the dispensing unit each 90 degrees counterclockwise.

- Disconnect the plug from the distributor board.
- Remove the dispensing unit.

Installation

- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").
- Guide the connector cable carefully between the gearwheels and the device wall (see also the section "Double dispensing unit").
- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position (see also section "Double dispensing unit").
- Connect the cable to the distributor board.
- Install the protection cover.

VCMD

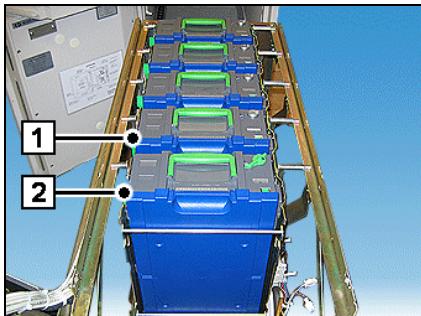
Front double dispensing unit with multiple-note detection unit

Dismantling

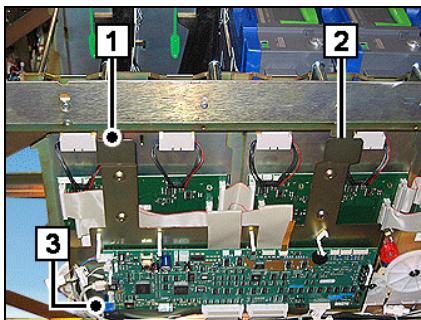
- Remove the VCMD stacker (see section "Stacker").



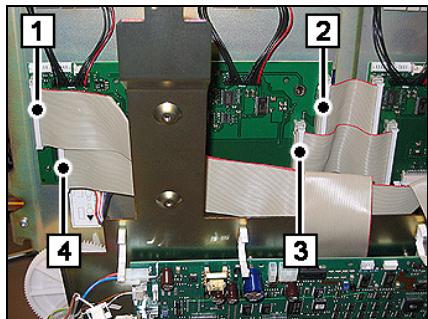
Remove the cassettes before you remove the dispensing unit!



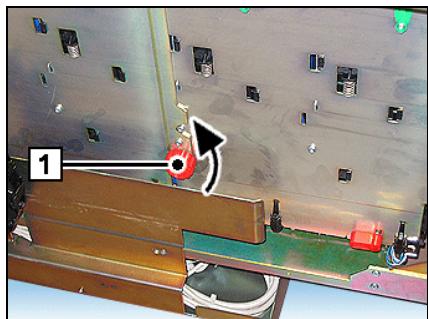
Press the locking levers (1) and (2) to the rear and pull the cash-out cassettes 1 and 2 out of the device.



Undo screws (1) and (2).
Pull the mounting of the CMD controller somewhat to the right and swing the mounting down.
Detach connector (3) from the CMD controller.



Disconnect the plugs (1) to (4) from the distributor board of the dispensing unit with multiple-note detection unit.



Rotate the locking knob of the housing (1) counterclockwise by 180°.
Disengage the housing by tilting it back somewhat at the front side (round rod) and remove the housing with the dispensing unit out of of the device.

Illustration is missing yet!

Release the front dispensing unit by turning the locking/release levers (1) and (2) each 90° counterclockwise.
Disconnect the plug (3) from the distributor board.
Remove the dispensing unit (4) in the direction shown by the arrow.

Installation

- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").
- Guide the connector cable carefully between the gearwheels and the device wall.
- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position.
- Connect the cable to the distributor board.

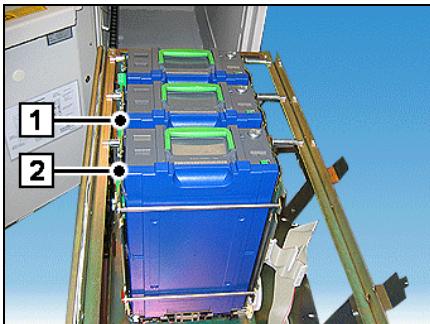
Rear double dispensing unit without multiple-note detection unit

Dismantling

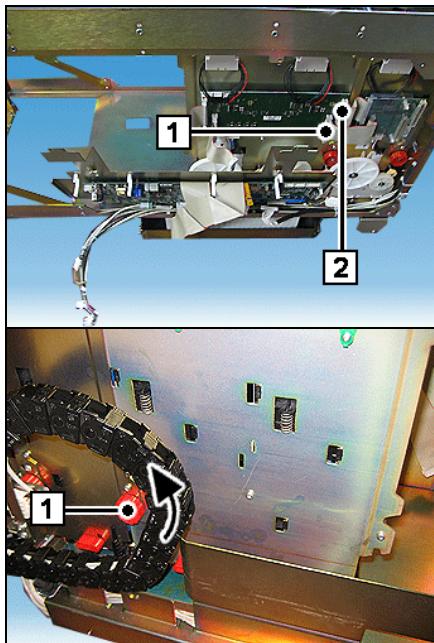
- Remove the front housing (if this has not already been done).



Remove the cassettes before you remove the dispensing unit!



Press the locking levers (1) and (2) to the rear and pull the cash-out cassettes 3 and 4 out of the device.



Detach connectors (1) and (2) from the board.

Rotate the locking knob of the housing (1) counterclockwise by 180° and remove the housing with the dispensing unit from the device.

Illustration is missing yet!

Release the front dispensing unit by turning the locking/release levers (1) and (2) each 90° counterclockwise.

Disconnect the plug (3) from the distributor board.

Remove the dispensing unit (4) in the direction shown by the arrow.

Installation

- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").
- Guide the connector cable carefully between the gearwheels and the device wall.
- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.

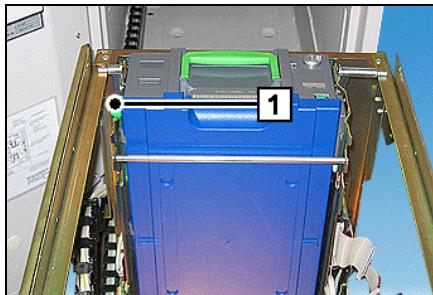
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position.
- Connect the cable to the distributor board.

Single dispensing unit without multiple-note detection unit

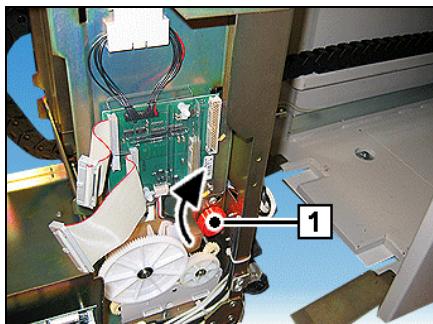
- Remove the rear dispensing unit without multiple-note detection unit (see section "Double dispensing unit").



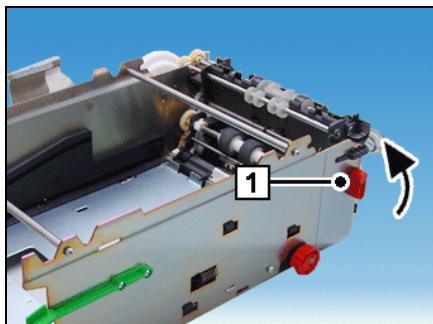
The cassette must be removed before the single dispensing unit!



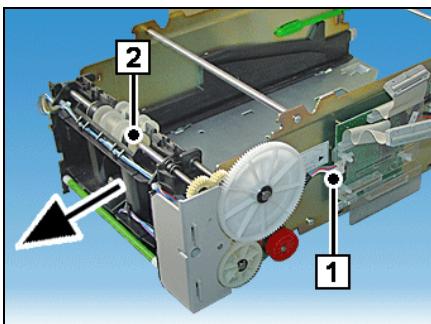
Press the locking lever (1) to the rear and pull the cash-out cassette 5 out of the device.



Rotate the locking knob of the extension module (1) clockwise by 180° and remove the extension module from the device.
Rotate the locking knob of the housing (1) counterclockwise by 180° and remove the housing with the extension module from the device.



Turn the locking/release lever (1) in counterclockwise direction.



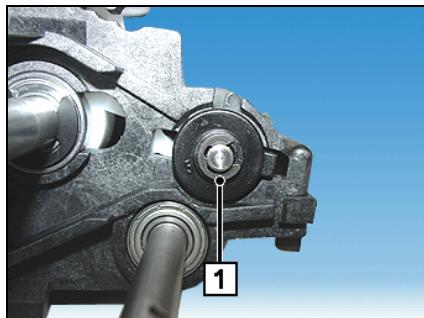
Disconnect the plug (1) from the distributor board.

Remove the dispensing unit (2) in the direction shown by the arrow.

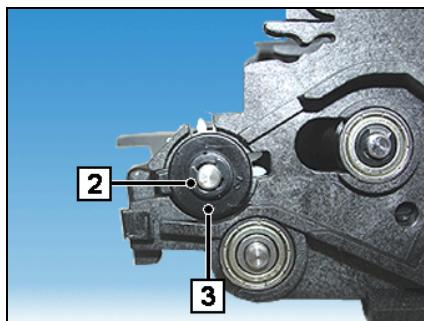
Installation

- Adjust the new dispensing unit (see section "Adjustment of the dispensing unit").
- Guide the connector cable carefully between the gearwheels and the device wall.
- Insert the dispensing unit and close the latching mechanism. If it cannot be closed, check the correct seating of the dispensing unit.
- If necessary, turn the gearwheels carefully so that the dispensing unit locks into position.
- Connect the cable to the distributor board.
- Install the protection cover.

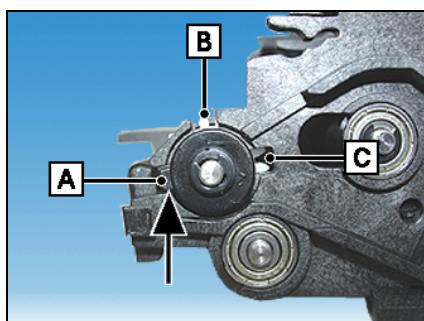
Adjustment of the dispensing unit



Remove the circlip (1) on the left side and ...



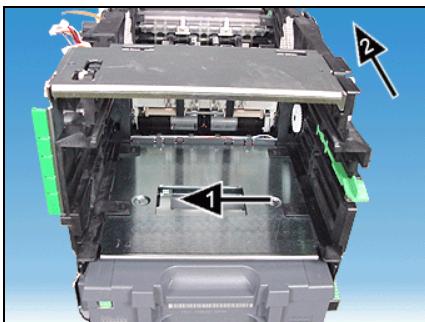
... the circlip (2) on the right side. Pull the two eccentrics (3) out slightly so that they can be rotated.



Move the eccentric mark A, B or C to the required setting position. The setting position A is marked with a arrow in the illustration.
You will find further information in the chapter "Function and Integration", section "Adjustment eccentric".

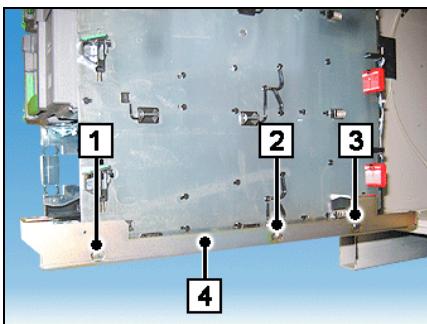
Quadruple rack

- Remove all cassettes from the CMD-V4 (see chapter "Device overview and operation", section "Removing the cassette").
- Remove all dispensing units (see section "Dispensing units").
- Remove the distributor board (see section "Distributor board").
- Disconnect all cable connections between the basic device and the CMD controller.



Slide the locking/release lever to the left (see arrow 1) until it locks into place.

Push the stacker to the rear (arrow 2) and remove it upwards.



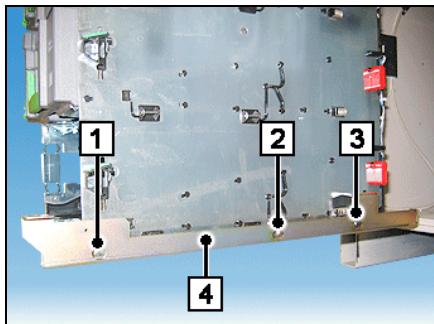
Protective rails (if present):

Remove the protective rails on both sides by removing either the two screws (1) and (3) or the three screws (1) to (3) and the protective rail (4).

- Remove the 4-cassette housing from the basic device (see the service manual of the basic device).

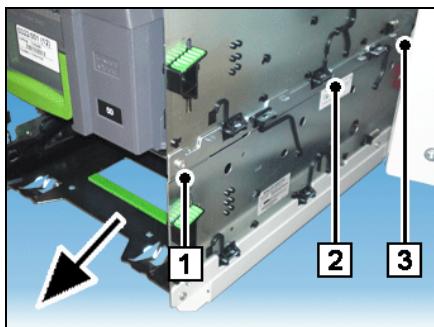
1-cassette housing

- Remove the cassette from the 1-cassette housing to be replaced (see chapter "Device overview and operation", section "Removing the cassette").
- Remove the dispensing unit from the corresponding 1-cassette housing (see section "Dispensing units").
- Remove the distributor board (see section "Distributor board").



Protective rails (if present):

Remove the protective rails on both sides by removing either the two screws (1) and (3) or the three screws (1) to (3) and the protective rail (4).



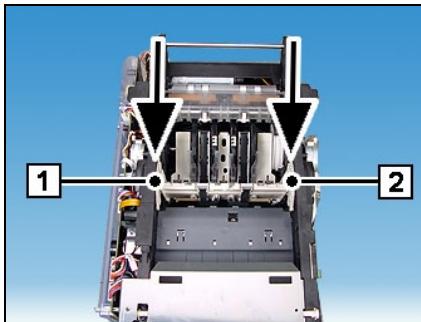
On both sides, remove either the two screws (1) and (3) or the three screws (1) to (3).

Pull the 1-cassette housing in the direction of the arrow and remove to towards the bottom.

 Caution: Hold the 1-cassette housing firmly with both hands.

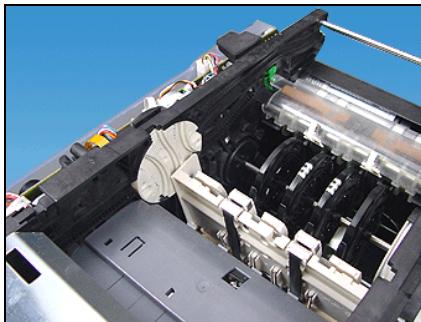
Clamp

Dismantling



Rotate the two routing disks (1) and (2) in the arrow direction until they stop.

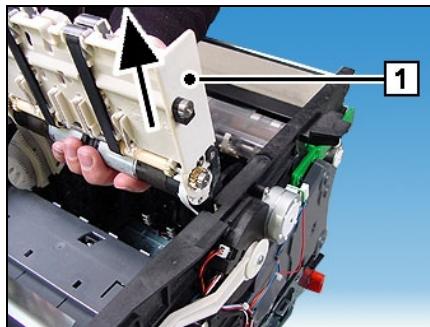
The clamp is closed at the same time and must lock into position.



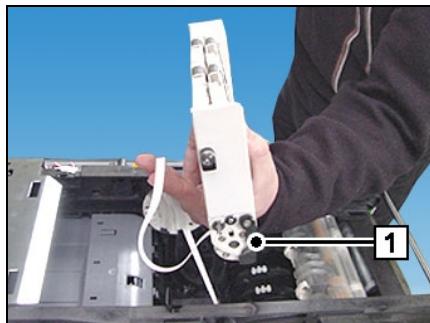
Rotate the routing disks back by approx. 90° (as shown in the image) so that the clamp can be removed upwards.



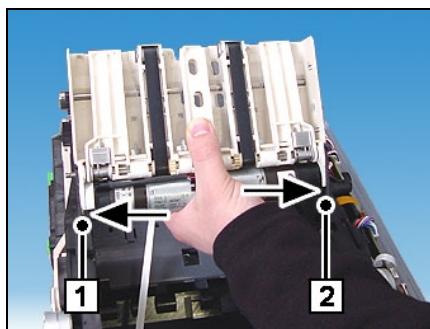
Note that the clamp is not permitted to be opened incorrectly.



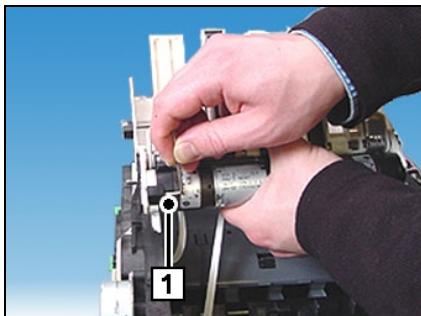
Remove the clamp (1) upwards.



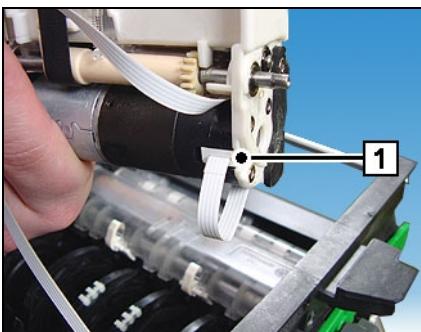
The illustration shows the latch (1) on the left-hand side for opening the clamp.



Open the clamp by pressing the latches (1) and (2) on the left-hand and right-hand sides of the clamp in the direction of the arrows.



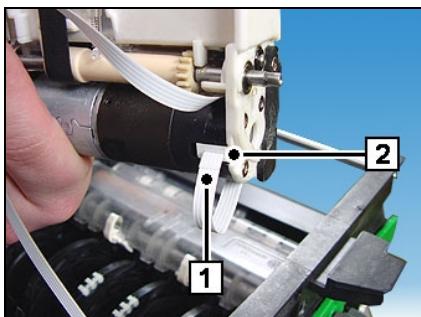
Press the securing pin out (1) and hold the cable firmly.



Disengage the cable lock (1) and pull the cable out.

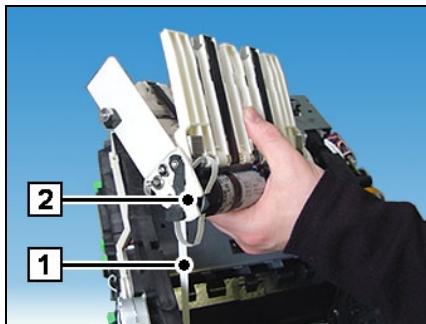
i Caution!
Take care to ensure that the cable does not snap back into the take-up; fasten the cable in place if necessary.

Installation



Thread in the cable (1) as shown in the image by moving it slightly back and forth.

Insert the cable (1) into the connector and press in the cable lock (2).

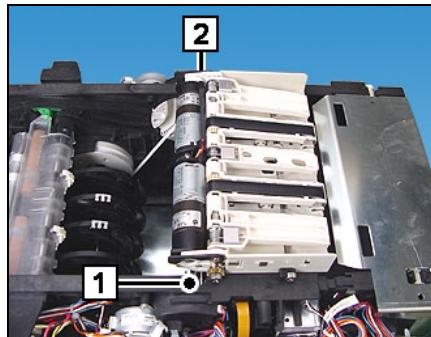


Pull the cable (1) taut.

Insert the securing pin (2) with the clamp open.

(The illustration shows the cable before it has been pulled taut.)

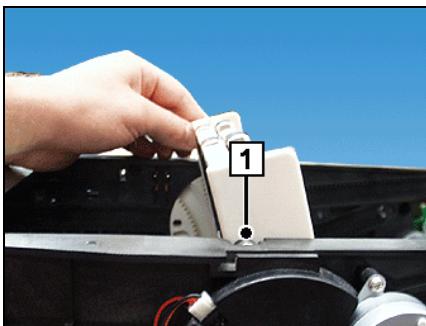
Close the clamp. The two latches, to the right and to the left, must be engaged manually.



Place the clamp, as shown in the illustration, on the stacker. Slide the clamp into the routing disk.

The gearwheels (1) and (2) must be inserted evenly.

- i Take care to ensure that the black plastic on the ball bearings is facing downward.
The clamp must be deployed in the closed state.



Check for correct insertion of the clamp by positioning the ball bearing flush with the side wall of the stacker on one side (1). The corresponding ball bearing on the other side wall must also be flush.

- Carefully allow the clamp to glide in. Press this down with caution until it snaps open slightly.

Maintenance and service

The information required for carrying out troubleshooting and maintenance on the individual components can be found in the various sections in this manual.



When carrying out work on components and sub-assemblies that carry an electrical charge, these pieces of equipment must first be disconnected from the power supply. As a result of system design, it is not sufficient to switch off the device using the power switch on the power distributor. In addition, the rubber plug must also be disconnected from the power distributor.

Maintenance

Maintenance intervals

Preventive maintenance is required for the CMD-V4 or VCMD every two years or, at the latest, after 200,000 transactions.

Performing maintenance



All of the photosensors should be cleaned only in a dry state.

The preventive maintenance is comprised of the following points:

- If available, evaluate error statistics according to error sources and take these into particular account during maintenance (replace components if necessary).
- The quality of the photosensors needs to checked with special test commands after maintenance work has been accomplished. The quality needs to be at least Service Level (Status * 2).
- Remove the cassettes from the CMD-V4 or the VCMD.

- Clean the cassettes. Check all function parts for damage, smooth motion and play.
- Switch off the CMD CMD-V4 or the VCMD.
- Remove the stacker, if necessary with the output transport (horizontal), and the dispensing units.
- Check the correct position of the belts on the guide rollers.
- Clean the SAT and the dispensing units with a brush.
- Clean the photosensors/prisms and the transport rollers in the dispensing units and in the stacker with compressed air.
- If installed, clean the scanning rails of the serial number recognition.

After the maintenance, delete the parameters for the pressure sensors and for the photosensors in the CMOS of the CMD controller. After this, an initialization of the CMD controller and a reference value determination for all note type become mandatory (see chapter "Start-up", section "Initiating the CMD-V4 or VCMD").

After that, a trial dispensing process must be carried out error-free via a test program or using the application with at least five notes from each cassette.

- The function test is carried out by the system software. (Refer to the software documentation for further information.)

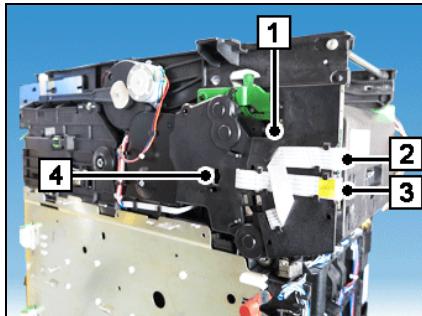
Stacker

- Visually inspect the stacker for damage and contamination.
- Clean the stacker with a vacuum cleaner, a brush, a dust cloth or with compressed air.
- Clean the photosensors using a brush, compressed air or a dust cloth. All of the photosensors should be cleaned only in a dry state.
- If installed, clean the scanning rails of the serial number recognition.
- Check any routing disks that may be installed for smooth motion.

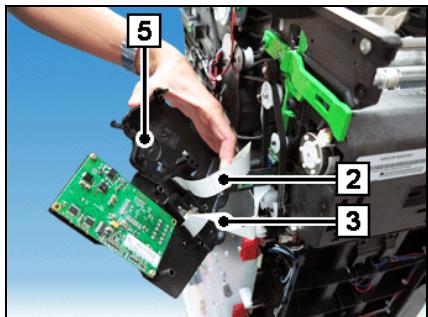
Serial Number Recognition

Malfunctions could occur, caused by dirty scanning rails of the serial number recognition.

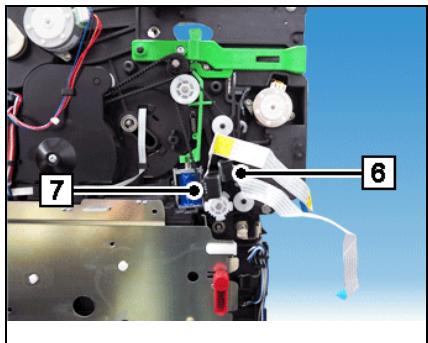
The scanning rails should therefore be cleaned every three months to prevent this.



Disconnect the cables (1) to (3). Remove the cables from the holding devices. Remove screw (4) and carefully pull off ...

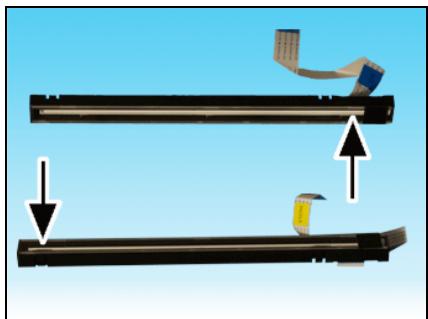


... the cover (5). Pull the two cables (2) and (3) carefully out of the cover.



Pull out the scanning rails (6) and (7). Observe the alignment and the color coding when you do so.

i Correct alignment of the scanning rails is imperative for the function. The scanning rail marked with yellow must be installed on the left and the scanning rail marked with blue on the right.



Remove any dirt, dust, etc. on the two scanning rails (see arrows) using a monitor screen cleaner.

Output transport

- Remove the output transport (see chapter "Removal/Installation of Components").
- Visually inspect the output transport for damage and contamination.
- Clean the output transport with a vacuum cleaner, a brush, a dust cloth or with compressed air.
- Reinstall the output transport (see chapter "Removal/Installation of Components").

Transport routes

The rolls and belts inside the transport route are maintenance-free.

Shutter

- Visually inspect the shutter for damage and contamination.
- Clean the photosensors using a brush, compressed air or a dust cloth. All of the photosensors should be cleaned only in a dry state.
- Release the shutter and check the mechanism for smooth motion.

Cash-out cassettes

- Visually inspect the cash-out cassettes for damage and contamination.
- Clean the cash-out cassettes with a vacuum cleaner, a brush, a dust cloth or with compressed air.
- Check if the correct note dimension is set (also in the cover).
- Check whether the cassette pressure carriage is in the right position and readjust it if necessary.

Reject/retract cassette or reject cassette

- Visually inspect the reject/retract cassette or the reject cassette for damage and contamination.
- Clean the reject/retract cassette or the reject cassette with a vacuum cleaner, a brush, a dust cloth or with compressed air.
- Check if the gearwheel fits properly.
- Check for uniform transport roller pressure in the intake of the cassette.

General

- Check whether the components have been installed correctly.
- Check all cables for safe installation and correct attachment.
- Check the ground connections and replace them if necessary.
- Check the functioning of locks and make contacts and adjust them.

Approved maintenance materials

You can order the items listed below electronically or from our service partner.

- Orders: <http://extranet.wincor-nixdorf.com>
<http://www.wincor-nixdorf.com/mediaservice>
- E-mail address for logistics questions: <mailto:serviceslogistics@wincor-nixdorf.com>
- E-mail address for technical questions: <mailto:servicessupport@wincor-nixdorf.com>

Commercial Name / Product Name	Part number
Screen cleaning agent ECS-260 250 ml	01750035530
Air duster spray with extension tube	01770007430
ITS:06377122 / -WM Universal cleaning cloth	01770005406
Data medium cleaning solution	03224600952
ITS:06517714 /-WM Flat paintbrush 1	01770005440

A list of all cleaning and maintenance materials approved by Wincor Nixdorf can be found on the Intranet and Extranet.



Please note the manufacturer's specifications on the packaging and on the information sheet included in the packaging.

The product can be damaged or soiled if non-approved materials are used or if the product is handled improperly.

Dispose of the packaging and empty containers in accordance with locally applicable regulations.

Appendix

Technical data

Cash Media Dispenser CMD-V4 without output transport

Power supply:	5.5 A Operation 11 A peak (approx. 20 ms)
Dimensions:	The overall dimensions depend on the configuration of the CMD-V4.
Height	
Four cassettes:	758.0 mm (29.84")
Five cassettes:	895.5 mm (35.26")
Six cassettes:	1033.0 mm (40.67")
Width:	340.0 mm (13.39")
Depth with inserted cassettes:	537.0 mm (21.14")
Device weight without cassettes and without single reject:	max. 30 kg (66.14 lb)
Note dimensions in mm:	54 x 85 x 0.08 (2.13" x 3.35" x 0.003") to 92 x 182 x 0.12 (3.62" x 7.17" x 0.005")
Maximum number of banknotes per transaction:	60
Dispensing and transport speed:	6 - 8 notes / second
Number of dispensing units:	2 to 6
Realized safety functions:	DES security function for the line encryption

Vertical Cash Media Dispenser VCMD vertical output

Dimensions: The overall dimensions depend on the configuration of the VCMD.

Depth	
Four cassettes:	945 mm (37.2")
Five cassettes:	970 mm (38.19")
Six cassettes:	1136 mm (44.72")
Width:	355 mm (13.98")
Height with inserted cassettes:	660 mm (25.98")
Note dimensions in mm:	54 x 85 x 0.08 (2.13" x 3.35" x 0.003") to 85 x 182 x 0.12 (3.35 x 7.17 x 0.0047)
Maximum number of banknotes per transaction:	60
Dispensing and transport speed:	approx. 6 notes / second
Number of dispensing units:	2 to 6
Realized safety functions:	DES security function for the line encryption

CMD-V4 stacker

Dimensions

Depth:	505 mm (19.88")
Width:	301 mm (11.85")
Height:	208 mm (8.19")

Weight

with single reject:	8.82 kg (19.44 lb)
without single reject:	8.50 kg (18.74 lb)

Stacker and output transport VCMD

Vertical output in the ProCash 5100

Dimensions

Depth: 660 mm (25.98")

Width: 355 mm (13.98")

Height: 220 mm (8.66")

Weight: 15.5 kg (34.17 lb)

Output transport CMD-V4

**Output transport vertical Frontload in the ProCash 2000xe / 2000xe USB /
ProCash 8000 and ProCash 2100xe / 2100xe USB / ProCash 8100 /
CINEO C2070**

Dimensions

Depth: 401 mm (15.79")

Width: 239 mm (9.41")

Height: 180 mm (7.09")

Weight: 1.5 kg (3.31 lb)

**Output transport vertical Frontload closed in the ProCash 2000xe /
2000xe USB / ProCash 8000 and ProCash 2100xe / 2100xe USB /
ProCash 8100 / CINEO C2070**

Dimensions

Depth: 416 mm (16.38")

Width: 239 mm (9.41")

Height: 197 mm (7.76")

Weight: 2.0 kg (4.41 lb)

Output transport vertical Frontload closed in the CINEO C2040

Dimensions

Depth: 368 mm (14.49")

Width: 246 mm (9.69")

Height: 219 mm (8.62")

Weight: 2.6 kg (5.74 lb)

**Output transport vertical Rearload in the ProCash 2000xe / 2000xe USB /
ProCash 8000 and ProCash 2100xe / 2100xe USB / ProCash 8100 /
CINEO C2070**

Dimensions

Depth: 410 mm (16.14")

Width: 239 mm (9.41")

Height: 180 mm (7.09")

Weight: 1.5 kg (3.31 lb)

**Output transport vertical Rearload closed in the ProCash 2000xe /
2000xe USB / ProCash 8000 and ProCash 2100xe / 2100xe USB /
ProCash 8100 / CINEO C2070**

Dimensions

Depth: 420 mm (16.54")

Width: 239 mm (9.42")

Height: 190 mm (7.48")

Weight: 2.0 kg (4.41 lb)

**Output transport vertical Rearload closed in the CINEO C2040 /
CINEO C2080**

Dimensions

Depth: 336 mm (13.23")

Width: 246 mm (9.69")

Height: 222 mm (8.74")

Weight: 2.6 kg (5.74 lb)

**Output transport horizontal Frontload 101 mm (3.98") in the
ProCash 1500xe / 1500xe USB and ProCash 1521xe**

Dimensions

Depth: 130 mm (5.12")

Width: 200 mm (7.87")

Height: 50 mm (1.97")

Weight: 1.0 kg (2.2 lb)

**Output transport horizontal Frontload 125 mm (4.92") in the
ProCash 1500xe USB in the BZ01, ProCash 5000 mini, ProCash 5000
and iScan Tower Line 100**

Dimensions

Depth: 130 mm (5.12")
Width: 250 mm (9.84")
Height: 70 mm (2.76")

Weight: 0.5 kg (1.1 lb)

**Output transport horizontal Frontload 241 mm (9.49") in the
ProCash 2350xe / 2350xe USB / CINEO C2590**

Dimensions

Depth: 250 mm (9.84")
Width: 200 mm (7.87")
Height: 50 mm (1.97")

Weight: 1.0 kg (2.2 lb)

**Output transport horizontal Rearload 124 mm (4.88") in the
ProCash 1500xe / 1500xe USB and ProCash 5000**

Dimensions

Depth: 130 mm (5.12")
Width: 200 mm (7.87")
Height: 50 mm (1.97")

Weight: 1.0 Kg (2.2 lb)

**Output transport horizontal Rearload 232 mm (9.13") in the
ProCash 2050xe / 2050xe USB, ProCash 8050, CINEO C2550,
ProCash 2054xe, ProCash 2150xe / 2150xe USB, ProCash 8150,
CINEO C2560 and in the ProCash 2250xe / 2250xe USB**

Dimensions

Depth: 345 mm (13.58")
Width: 227 mm (8.94")
Height: 57 mm (2.24")

Weight: 0.52 kg (1.15 lb)

**Output transport horizontal Rearload 252.6 mm (9.94") in the
ProCash 8050, CINEO C2550, ProCash 8150 and CINEO C2560**

Dimensions

Depth: 360 mm (14.17")

Width: 227 mm (8.94")

Height: 57 mm (2.24")

Weight: 0.58 kg (1.28 lb)

**Output transport horizontal Rearload 287 mm (11.3") in the ProCash 285,
ProCash 2054xe and ProCash 2150xe CEN VI / 2150xe USB CEN VI**

Dimensions

Depth: 393 mm (15.47")

Width: 227 mm (8.94")

Height: 57 mm (2.24")

Weight: 1.0 kg (2.2 lb)

Output transport 420 mm (16.53") in the Beetle/iScan

Dimensions

Depth: 420 mm (16.54")

Width: 310 mm (12.2")

Height: 260 mm (10.24")

Weight: 1.1 kg (2.43 lb)

Shutter CMD-V4/V5

Dimensions	Shutter vertical Rearload and vertical Frontload
Depth:	310 mm (12.2")
Width:	150 mm (5.91")
Height:	100 mm (3.94")
Weight:	0.5 kg (1.1 lb)
Dimensions	Shutter horizontal Rearload
Depth:	305 mm (12.01")
Width:	126 mm (4.96")
Height:	67 mm (2.64")
Weight:	0.9 kg (1.98 lb)
Dimensions	Shutter horizontal Frontload
Depth:	310 mm (12.2")
Width:	150 mm (5.91")
Height:	100 mm (3.94")
Weight:	0.9 kg (1.98 lb)
Dimensions	Shutter with shutter support horizontal Rearload and horizontal Frontload
Depth:	353 mm (13.9")
Width:	146 mm (5.75")
Height:	80 mm (3.15")
Weight:	1.2 kg (2.65 lb)

CMD controller

Processor:	80C188XL 20 MHz
Memory:	512 Kbyte static RAM 512 Kbyte Flash-PROM (PUT, bootstrap loader)
Interface:	USB 1.1 Full-Speed V.24 (RS232)
Transfer parameters	
Line speed	19.2 / 56 Kbaud Automatic baud rate detection
Data format:	NRZ
Parity:	ODD
Code width:	8 bit + parity
Stop bits:	2
Dimensions	
Depth:	430 mm (16.93")
Width:	160 mm (6.3")
Height:	25 mm (0.98")
Weight:	0.42 kg (0.93 lb)

CMD Controller II

Processor:	80C188XL 20 MHz
Memory:	512 Kbyte static RAM 512 Kbyte Flash-PROM (PUT, bootstrap loader)
Interface:	USB 2.0 V.24 (RS232)
Transfer parameters	
Line speed	19.2 / 56 Kbaud Automatic baud rate detection
Data format:	NRZ
Parity:	ODD
Code width:	8 bit + parity
Stop bits:	2
Dimensions	
Depth:	430 mm (16.93")
Width:	160 mm (6.3")
Height:	25 mm (0.98")
Weight:	0.42 kg (0.93 lb)

4-cassette housing CMD-V4 (without content)

Dimensions	
Depth:	450 / 438 mm (17.72"/17.24")
Width:	305 mm (12.01")
Height:	600 mm (23.62")
Weight:	10.9 / 10.8 kg (24.03/23.81 lb)

1-cassette housing CMD-V4 (without content)

Dimensions

Depth: 450 / 438 mm (17.72"/17.24")
Width: 305 mm (12.01")
Height: 162 mm (6.38")

Weight: 3.34 / 3.2 kg (7.36/7.05 lb)

2-cassette housing VCMD (without content)

Dimensions

Depth: 457 mm (17.99")
Width: 355 mm (13.98")
Height: 305 mm (12.01")

Weight: 6.78 kg (14.95 lb)

1-cassette housing VCMD (without content)

Dimensions

Depth: 457 mm (17.99")
Width: 355 mm (13.98")
Height: 167 mm (6.57")

Weight: 3.64 kg (8.02 lb)

Double dispensing unit without DDU

Dimensions

Depth: 282 mm (11.1")
Width: 305 mm (12.01")
Height: 200 mm (7.87")

Weight: 3.3 kg (7.28 lb)

Double dispensing unit with DDU

Dimensions

Depth: 282 mm (11.1")
Width: 305 mm (12.01")
Height: 200 mm (7.87")

Weight: 3.34 kg (7.36 lb)

Single dispensing unit without DDU

Dimensions

Depth: 144 mm (5.67")
Width: 310 mm (12.2")
Height: 141 mm (5.55")

Weight: 1.76 kg (3.88 lb)

Single dispensing unit with DDU

Dimensions

Depth: 144 mm (5.67")
Width: 310 mm (12.2")
Height: 141 mm (5.55")

Weight: 1.8 kg (3.97 lb)

Cash-out cassettes CMD-V4

Note dimensions

Size: 54 x 85 mm (2.13" x 3.35") to
92 x 182 mm (3.62" x 7.17")

Strength: 0.08 mm (0.0031") to 0.12 mm (0.0047")

Stack length: Bundles with thicknesses of up to 310 mm (12.20")

Storage capacity*: approx. 2500 banknotes

Dimensions

Depth: 441 mm (17.36")

Width: 264 mm (10.39")

Height: 125 mm (4.92")

Weight:

of an empty cassette: 3.5 kg (7.72 lb)

of a completely filled cassette*/**: 6.3 kg (13.89 lb)

* The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.

** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.

Cash-out cassettes VCMD

Note dimensions

Size: 54 x 105 mm to 82 x 182 mm
Strength: 0.08 mm (0.003") to 0.12 mm (0.005")

Stack length: Bundles with thicknesses of up to 310 mm (12.20")
Storage capacity*: approx. 2500 banknotes

Dimensions

Depth: 441 mm (17.36")
Width: 264 mm (10.39")
Height: 125 mm (4.92")

Weight:

of an empty cassette: 3.7 kg (8.16 lb)
of a completely filled cassette*/**: 6.5 kg (14.33 lb)

- * The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.
- ** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.

Reject cassette VCMD

Note dimensions

Size: 54 x 85 mm (2.13" x 3.35") to
92 x 182 mm (3.62" x 7.17")
Strength: 0.08 mm (0.003") to 0.12 mm (0.005")

Storage capacity*

Reject compartment: max. 400 notes

Dimensions

Depth: 260 mm (10.24")
Width: 253 mm (9.96")
Height: 118 mm (4.65")

Weight:

of an empty cassette: 1.3 kg (2.87 lb)
of a completely filled cassette**/**: 2 kg (4.41 lb)

* The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.

** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.

Reject cassette CMD-V4

Note dimensions

Size: 54 x 85 mm (2.13" x 3.35") to
92 x 182 mm (3.62" x 7.17")
Strength: 0.08 mm (0.003") to 0.12 mm (0.005")

Storage capacity*

Reject compartment: max. 400 notes

Dimensions

Depth: 260 mm (10.24")
Width: 253 mm (9.96")
Height: 118 mm (4.65")

Weight:

of an empty cassette:	1.3 kg (2.87 lb)
of a completely filled cassette**/**:	2 kg (4.41 lb)

* The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.

** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.

Standard cassette Basic/Midrange

Banknote length:	105 mm - 185 mm (4.13" - 7.28")
Banknote height:	58 mm - 85 mm (2.28" - 3.35")
Banknote thickness:	0.08 mm to 0.12 mm (0.0031" to 0.0047")
Stack length:	300 mm (11.81")
Storage capacity*:	More than 2200***
Dimensions (L x W x H):	411 mm x 260 mm x 128.5 mm (16.18" x 10.24" x 5.06")
Weight:	
of an empty cassette:	3.4 kg (7.5 lb)
of a completely filled cassette*/**:	6.5 kg (14.33 lb)

Compact cassette Basic/Midrange

Banknote length:	105 mm - 185 mm (4.13" - 7.28")
Banknote height:	58 mm - 85 mm (2.28" - 3.35")
Banknote thickness:	0.08 mm - 0.12 mm (0.0031" to 0.0047")
Stack length:	200 mm (7.87")
Storage capacity*:	More than 1000***
Dimensions (L x W x H):	313 mm x 260 mm x 128.5 mm (12.32" x 10.24" x 5.06")
Weight:	
of an empty cassette:	2.55 kg (5.62 lb)
of a completely filled cassette*/**:	3.96 kg (8.73 lb)

* The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.

** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.

*** Refers to brand new banknotes.

Standard cassette High End

Banknote length:	105 mm - 185 mm (4.13" - 7.28")
Banknote height:	58 mm - 85 mm (2.28" - 3.35")
Banknote thickness:	0.08 mm to 0.12 mm (0.0031" to 0.0047")
Stack length:	240 mm (9.44")
Storage capacity*:	More than 1700***
Dimensions (L x W x H):	411 mm x 260 mm x 128.5 mm (16.18" x 10.24" x 5.06")
Weight:	
of an empty cassette:	4.4 kg (9.7 lb)
of a completely filled cassette*/**:	8.6 kg (18.96 lb)

Compact cassette High End

Banknote length:	105 mm - 185 mm (4.13" - 7.28")
Banknote height:	58 mm - 85 mm (2.28" - 3.35")
Banknote thickness:	0.08 mm to 0.12 mm (0.0031" to 0.0047")
Stack length:	140 mm (5.51")
Storage capacity*:	More than 800***
Dimensions (L x W x H):	313 mm x 260 mm x 128.5 mm (12.32" x 10.24" x 5.06")
Weight:	
of an empty cassette:	3.9 kg (8.6 lb)
of a completely filled cassette*/**:	5.3 kg (11.68 lb)

- * The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.
- ** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.
- *** Refers to brand new banknotes.

Reject / retract cassette

Banknote length:	85 - 182 mm (3.35" to 7.17")
Banknote height:	54 - 92 mm (2.13" to 3.62")
Banknote thickness:	0.08 - 0.12 mm (0.0031" to 0.0047")
Storage capacity*	
Reject compartment:	400 banknotes
Retract box:	100 banknotes
Dimensions (L x W x H):	260 x 253 x 118 mm (10.24" x 9.96" x 4.65")
Weight:	
of an empty cassette:	1.5 kg (3.3 lb)
of a completely filled cassette*/**:	2.2 kg (4.85 lb)

* The storage capacity and weight of a completely filled cassette depends on the type, quality, nature and state of the banknotes.

** The weight of a completely filled cassette was ascertained using banknotes with a denomination of 50 euros.

Environmental protection

Environmentally and recycling-friendly product development

This product has been designed according to our corporate guideline 'Environmentally and recycling-friendly product development'.

This means that crucial criteria such as long life, choice of material and its labeling, emissions, packaging, ease of disassembly and recyclability have been taken into account. This saves resources and relieves the strain on the environment.

Saving energy

Please switch on devices that need not be constantly running only when they are actually needed. They should also be turned off when they are not needed for longer periods of time.

Disposing of used consumables

Please dispose of printer consumables, batteries and cleaning and maintenance materials according to national regulations (where relevant complying with vendor specifications).

Labels on plastic case parts

Please do not stick any labels on plastic case parts since that would make recycling more difficult.

Returning, recycling and disposing of used units and consumables



Details regarding the return and recycling of used units and consumables can be obtained from your local branch office.

Pin assignments

Power supply unit connector (supply voltage)

Connector: 2-pole AMP, pins 90°

Pin No.	Signal name	ERROR
1	P24 V	Supply voltage +24 V
2	GNDNT	Ground for +24 V

Safety switch

Connector: 3-pin DUBOX, single-row 90°

Pin No.	Signal name	ERROR
1	RELAY	Safety cutoff relay
2	GND	Ground
3	NC	not used

Base modul

Elements	
HS2	Lift magnet single reject deflector
SM6	Reject / retract cassette stepper motor chute selection
DPS 4	Photo sensor to chute selection
S1	Microswitch retract/reject cassette available
PS 1	Banknote paths photosensor (reflective photosensor)
PS 21	Panknote paths photosensor (controlled)

Connector: 20-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	SM6PH1P	Stepper motor SM6 phase 1, plus connection
2	SM6PH1M	Stepper motor SM6 phase 1, minus connection

Pin No.	Signal name	ERROR
3	SM6PH2P	Stepper motor SM6 phase 2, plus connection
4	SM6PH2M	Stepper motor SM6 phase 2, minus connection
5	H2P	Single reject switch, plus connection
6	H2M	Single reject switch, minus connection
7	P12V	DPS4 photosensor, power source
8	GND	DPS4 photosensor, ground
9	GL4	DPS4 photosensor, output signal
10	IGSAMOUT	DPS4 photosensor, transmit current plus
11	S1	Microswitch retract/reject cassette available, signal
12	GND	Microswitch retract/reject cassette available, ground
13	VCCL	PS21 receiver, collector
14	LAGT212235	PS21 receiver, emitter
15	VCCL	PS1 receiver, collector
16	LAGTL1	PS1 receiver, emitter (reflective photosensor)
17	IQLSMIN	Transmit current photosensors plus LED PS 1 (reflective)
18	IXGMOUT	Transmit current photosensors minus
19	IQLS	Transmit current photosensors plus sending LED PS21
20	IQLS56VN	Transmit current photosensors minus

Main motor M1

Elements	
DCM1	Main motor

Connector: 2-pole AMP, socket 90°

Pin No.	Signal name	ERROR
1	M1P	Main motor, Plus connection
2	M1M	Main motor, Minus connection

Stacker

Elements	
DCM3	Slewing motor for stacking compartment
DPS1/DPS3	Photosensors for stacking compartment position
DCM5	Stepper motor for note bundle reject deflector
DPS8/DPS9	Photosensors for bundle reject deflector
PS29, PS22	Banknote path photosensors (regulated)
PS18, PS19	PS29 TOPLED (caution, d. c. light!)
T1	Timing disk DCM1

Connector: 34-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	SM5PH1P	Stepper motor DCM5 phase 1, plus connection
2	SM5PH1M	Stepper motor DCM5 phase 1, minus connection
3	SM5PH2P	Stepper motor DCM5 phase 2, plus connection
4	SM5PH2M	Stepper motor DCM5 phase 2, minus connection
5	M3P	DC motor DCM3, Plus connection
6	GNDL	DC motor DCM3, Minus connection
7	P12V	Voltage supply DPS1/DPS3 and DPS8/DPS9
8	GND	Connection to ground DPS1/DP3 and DPS8/DPS9
9	GL1N	Output signal photosensor DPS1, dispensing position
10	GL3N	Output signal photosensor DPS3, cash-out position
11	GL8N	Output signal photosensor DPS8, transport position
12	GL9N	Output signal photosensor DPS9, reject position
13	IGSAMIN	Transmit current Plus (DPS1/3 and DPS8/9)
14	IGSAMOUT	Transmit current Minus (DPS1/3 and DPS8/9)
15	P12V	PS29 receiver, collector
16	LAGT2629	PS29 receiver, emitter
17	VCCL	PS22 receiver, collector
18	LAGT212235	PS22 receiver, emitter
19	VCCL	PS18 receiver, collector
20	LAGT18	PS18 receiver, emitter
21	VCCL	PS19 receiver, collector
22	LAGT19	PS19 receiver, emitter
23	IXGMOUT	Transmit current photosensors Plus (PS29, TOPLED)
24	IQLS	Transmit current photosensors minus
25	IQLS	Transmit current photosensors Plus (PS22),

Pin No.	Signal name	ERROR
		PS18, PS19)
26	IQLS34VN	Transmit current photosensors minus
27		Free
28	VCC	Main motor timing disk, voltage supply
29	T1OUT	Main motor timing disk, output signal
30	GND	Main motor timing disk, ground
31		Free
32		Free
33		Free
34		free

Frontload module

Elements	
PS33, PS35	Banknote path photosensors (regulated)
PS 26	PS26 TOPLED (caution, d. c. light!)

Connector: 10-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	P12V	PS26 receiver, collector
2	LAGT2629	PS26 receiver, emitter - caution, d. c. light!
3	VCCL	PS35 receiver, collector
4	LAGT212235	PS35 receiver, emitter
5	VCCL	PS33 receiver, collector
6	LAGT33	PS33 receiver, emitter
7	IXGMOUT	Transmit current photosensors plus (PS26)
8	IQLS	Transmit current photosensors minus
9	IQLSSH	Transmit current photosensors plus (PS33, PS35)
10	GND	Transmit current photosensors minus

Dispensing unit 1 (Module positions 1 and 2)

Elements	
CL1, CL2	Electromagnetic clutch (dispensing unit - position 1, 2)
HR1, HR2	Lift magnet retaining spring (dispensing unit - position 1, 2)
PSD1/2	Photosensor dispensing sensor, controlled (dispensing unit - position 1, 2)
PSE1/2	Photosensor cassette empty sensor (dispensing unit - position 1, 2)
LANDR1/2	Note pressure measurement (dispensing unit - position 1, 2)

Connector: 24-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	P24V	Electromagnetic clutch, Plus connection, dispensing unit - position 1
2	EK1	Electromagnetic clutch, Minus connection, dispensing unit - position 1
3	P24V	Lift magnet retaining spring, Plus connection (dispensing unit - position 1)
4	HR1	Lift magnet retaining spring, Minus connection (dispensing unit - position 1)
5	P24V	Electromagnetic clutch, Plus connection (dispensing unit - position 2)
6	EK2	Electromagnetic clutch, Minus connection (dispensing unit - position 2)
7	P24V	Lift magnet retaining spring, Plus connection (dispensing unit - position 2)
8	HR2	Lift magnet retaining spring, Minus connection (dispensing unit - position 2)
9	P12V	+ 12 V for pressure measurement (dispensing unit - Position 1)
10	P12V	+ 12 V for pressure measurement (dispensing unit - Position 2)
11	GND	Ground for pressure measurement (dispensing unit - Position 1)
12	GND	Ground for pressure measurement (dispensing unit - Position 2)

Pin No.	Signal name	ERROR
13	UANDR1	Signal of pressure measurement (dispensing unit - Position 1)
14	UANDR2	Signal of pressure measurement (dispensing unit - Position 2)
15	IAN12IN	Transmit current for pressure measurement (reflective photosensor)
16	IAN12OUT	Transmit current for pressure measurement (reflective photosensor)
17	VCCL	All receivers, collector
18	LAM135	PSD1 receiver, emitter
19	LKL135	PSE1 receiver, emitter
20	LAM246	PSD2 receiver, emitter
21	LKL246	PSE2 receiver, emitter
22	NC	not used
23	IQLS12VN	Transmit current photosensors plus (PSD1, 2; PSE1, 2)
24	IQLS12	Transmit current photosensors minus (PSD1, 2; PSE1, 2)

Cassette connector dispensing unit 1

(Module positions 1 and 2)

Elements	
	serial EEPROM
	Stepper motor

Connector: 20-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	EEDAT	serial EEPROMs: data conductor for cassette 1
2	EEDAT	serial EEPROMs: data conductor for cassette 2
3	EETAKT	serial EEPROMs: clock line for cassette 1
4	EETAKT	serial EEPROMs: clock line for cassette 2
5	EECSK1	serial EEPROM cassette 1: select
6	EECSK2	serial EEPROM cassette 2: select
7	GND	Ground (EEPROM, measuring electronics) for cassette 1
8	GND	Ground (EEPROM, measuring electronics) for cassette 2
9	VCCSWK1	Switched power supply, cassette 1
10	VCCSWK2	Switched power supply, cassette 2
11	NC	not used
12	NC	not used
13	SMK1P1P	Stepper motor cassette 1, Phase 1 Plus
14	SMK2P1P	Stepper motor cassette 2, Phase 1 Plus
15	SMK1P1M	Stepper motor cassette 1, Phase 1 Minus
16	SMK2P1M	Stepper motor cassette 2, Phase 1 Minus
17	SMK1P2P	Stepper motor cassette 1, Phase 2 Plus
18	SMK2P2P	Stepper motor cassette 2, Phase 2 Plus
19	SMK1P2M	Stepper motor cassette 1, Phase 2 Minus
20	SMK2P2M	Stepper motor cassette 2, Phase 2 Minus

Dispensing unit 2

Module positions 3 and 4

Elements	
CL3, CL4	Electromagnetic clutch (dispensing unit - position 3, 4)
HR3, HR4	Lift magnet retaining spring (dispensing unit - position 3, 4)
PSD 3/4	Photosensor dispensing sensor, controlled (dispensing unit - position 3, 4)
PSE 3/4	Photosensor cassette empty sensor (dispensing unit - position 3, 4)
LANDR3/4	Note pressure measurement (dispensing unit - position 3, 4)

Connector: 24-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	P24V	Electromagnetic clutch, Plus connection (dispensing unit - position 3)
2	EK3	Electromagnetic clutch, Minus connection (dispensing unit - position 3)
3	P24V	Lift magnet retaining spring, Plus connection (dispensing unit - position 3)
4	HR3	Electromagnetic clutch, Minus connection (dispensing unit - position 3)
5	P24V	Electromagnetic clutch, Plus connection (dispensing unit - position 4)
6	EK4	Electromagnetic clutch, Minus connection (dispensing unit - position 4)
7	P24V	Lift magnet retaining spring, Plus connection (dispensing unit - position 4)
8	HR4	Electromagnetic clutch, Minus connection (dispensing unit - position 4)
9	P12V	+ 12 V for pressure measurement (dispensing unit - Position 3)
10	P12V	+ 12 V for pressure measurement (dispensing unit - Position 4)

Pin No.	Signal name	ERROR
11	GND	Ground for pressure measurement (dispensing unit - Position 3)
12	GND	Ground for pressure measurement (dispensing unit - Position 4)
13	UANDR3	Signal of pressure measurement (dispensing unit - Position 3)
14	UANDR4	Signal of pressure measurement (dispensing unit - Position 4)
15	IAN34IN	Transmit current for pressure measurement (reflective photosensor)
16	IAN34OUT	Transmit current for pressure measurement (reflective photosensor)
17	VCCL	PSD3 receiver, collector
18	LAM135	PSD3 receiver, emitter
19	LKL135	PSE3 receiver, emitter
20	LAM246	PSD4 receiver, emitter
21	LKL246	PSE4 receiver, emitter
22	NC	not used
23	IQLS34VN	Transmit current photosensors plus (PSD3, 4; PSE3, 4)
24	IQLS34	Transmit current photosensors minus (PSD3, 4; PSE3, 4)

Cassette connector dispensing unit 2

(Module positions 3 and 4)

Elements	
	serial EEPROM
	Stepper motor

Connector: 20-ping DUBOX, 2-row 90°

Pin No.	Signal name	ERROR
1	EEDAT	serial EEPROMs: data conductor for cassette 3
2	EEDAT	serial EEPROMs: data conductor for cassette 4
3	EETAKT	serial EEPROMs: clock line for cassette 3
4	EETAKT	serial EEPROMs: clock line for cassette 4
5	EECSK3	serial EEPROM cassette 3: select
6	EECSK4	serial EEPROM cassette 4: select
7	GND	Ground (EEPROM, measuring electronics) for cassette 3
8	GND	Ground (EEPROM, measuring electronics) for cassette 4
9	VCCSWK3	Switched power supply, cassette 3
10	VCCSWK4	Switched power supply, cassette 4
11	NC	not used
12	NC	not used
13	SMK3P1P	Stepper motor cassette 3, Phase 1 Plus
14	SMK4P1P	Stepper motor cassette 4, Phase 1 Plus
15	SMK3P1M	Stepper motor cassette 3, Phase 1 Minus
16	SMK4P1M	Stepper motor cassette 4, Phase 1 Minus
17	SMK3P2P	Stepper motor cassette 3, Phase 2 Plus
18	SMK4P2P	Stepper motor cassette 4, Phase 2 Plus
19	SMK3P2M	Stepper motor cassette 3, Phase 2 Minus
20	SMK4P2M	Stepper motor cassette 4, Phase 2 Minus

Extension connector for dispensing unit 3

(Module position 5 and 6)

An extension board is used for dispensing unit 3 (positions 5 and 6) that contains the power driver, power sources, level converter, etc. The logical signal (TTL level or analog level) are guided through the extension connector. A list appears below of the elements that are operated by the extension board.

Elements	
CL5, CL6	Electromagnetic clutch (dispensing unit - position 5, 6)
HR5, HR6	Lift magnet retaining spring (dispensing unit - position 5, 6)
PSD5/6	Photosensor dispensing sensor, controlled (dispensing unit - position 5, 6)
PSE5/6	Photosensor cassette empty sensor (dispensing unit - position 5, 6)
EEPR5/6	serial EEPROM cassette 5, 6
SMK5/6	Stepper motor cassette 5, 6
LANDR5/6	Note pressure measurement (dispensing unit - position 5, 6)

Plug: 40-pole, Berg pins, LOW profiles, 2-row 90°

Pin No.	Signal name	ERROR
1	GNDL	Ground for load currents
2	MATAKT	Magnet pulsing
3	GNDL	Ground for load currents
4	GNDL	Ground for load currents
5	P24V	+ 24 V for load currents
6	P24V	+ 24 V for load currents
7	V5	Selection signal dispensing unit - position 5
8	V6	Selection signal dispensing unit - position 6
9	IOEK	Electromagnetic clutch
10	IOHR	Lift magnet retaining spring
11	GND	Ground
12	GND	Ground
13	P12V	Voltage supply for the pressure measurement dispensing unit
14	UANDR5	Measurement signal, cassette 5

Pin No.	Signal name	ERROR
15	UANDR6	Measurement signal, cassette 6
16	IQLS56VN	Transmit current photosensors supply voltage
17	ULANDR	Analog voltage for power source for pressure measurement
18	LISEL3N	Analog voltage for path transmit current photosensors
19	GND	Ground
20	VCC	Power supply +5 V
21	LAM135	PSD5 receiver, emitter
22	LKL135	PSE5 receiver, emitter
23	LAM246	PSD6 receiver, emitter
24	LKL246	PSE6 receiver, emitter
25	GND	Ground
26	EEDAT	serial EEPROMs: data conductor
27	EETAKT	serial EEPROMs: clock line
28	EECSK5	serial EEPROM cassette 5: select
29	EECSK6	serial EEPROM cassette 6: select
30	GND	Ground
31	SMDAT0	Stepper motor control signal, Bit 0
32	SMDAT1	Stepper motor control signal, Bit 1
33	SMDAT2	Stepper motor control signal, Bit 2
34	SMDAT3	Stepper motor control signal, Bit 3
35	SMDAT4	Stepper motor control signal, Bit 4
36	SMDAT5	Stepper motor control signal, Bit 5
37	SMDAT6	Stepper motor control signal, Bit 6
38	IOE	I/O enable
39	ENSMK5N	Clock signal for SM latch cassette 5
40	ENSMK6N	Clock signal for SM latch cassette 6

Connector plug for shutter (incl. Z module)

Elements	
DCM7, DCM8	Shutter motor, DC
DPS10/11, DPS12/13	Photosensors for shutter position
DCM4	Stepper motor for Z module drive
PS27 / PS28	Banknote path monitoring in the Z module

Connector: 15-pole DSUB, pins, 90°

Pin No.	Signal name	ERROR
1	ZTAKT	Pulse for the stepper motor of the Z module
2	ZRICHTG	Correct for stepper motor of the Z module drive
3	RMSH1N	Sensor shutter position Bit 0
4	GND	Ground
5	SHMOTEN	Shutter motor M7 or M8 ON
6	ZEIN	Stepper motor of the Z module ON
7	LSH27	PS27 signal
8	NC	not used
9	IQLSSH	Transmit current photosensors
10	P24V	Power supply +24 V
11	RMSH2N	Sensor shutter position Bit 1
12	SHMOTRN	Shutter motor M7 or M8 direction
13	P12V	Power supply +12 V
14	GNDL	Ground for load currents
15	LSH28	PS28 signal

The two sensors RMSH1N and RMSH2N reproduce the shutter position in coded form. In order to withdraw the bank notes, the shutter is first moved into the completely "OPEN" position.

After the transport of the bank notes into the output position, the shutter is moved back into the 'CLOSED' position to the extent required to reach the crossover point from L L to H H. (L = 0 V - H = + 12 V)

RMSH2N	RMSH1N	ERROR
H	L	Shutter flap is 'CLOSED'
L	L	Shutter flap between 'CLOSED' and banknote presentation
H	H	Shutter flap between banknote presentation and 'OPEN'
L	H	Shutter flap is 'OPEN'

Connector plug for multiple-note detection unit

Elements	
Optical thickness measurement	
DMLED1, DMLED2	Transmission diodes
DMPHT1, DMPHT2	Receiver transistors
Mechanical thickness measurement	
	Reflective photosensors 1, 2

Connector: 10-pole DUBOX, pins, 2-row 90°

Pin No.	Signal name	ERROR
1	DMLED1IN	Transmit current for the IR LED of reflective photosensor 1
2	DMLED1OUT	Transmit current for the IR LED of reflective photosensor 1
3	DMLED2IN	Transmit current for the IR LED of reflective photosensor 2
4	DMLED2OUT	Transmit current for the IR LED of reflective photosensor 2
5	P12V	Power supply +12 V
6	DMPHT1	Amplified signal of photo transistor 1 of reflective photosensor 1
7	N12V	Power supply -12 V
8	DMPHT2	Amplified signal of photo transistor 2 of reflective photosensor 2
9	GND	Ground
10	DMCOD	Coding of optical/mechanical thickness measurement: GND = optical / open = mechanical

Door switch connection

Elements	
Magnetic switch	Door switch for safe door
Jumper	Reports that the magnetic switch is connected

Connector: 4-pole DUBOX, single-row 90°

Pin No.	Signal name	ERROR
1	TUERM	Magnetic switch / Door switch for safe door
2	GND	Ground for the magnetic switch
3	TUERB	Jumper, reports the wiring of the door switch
4	GND	Ground for the jumper

Battery connector

Elements	
Lithium battery	TL5242/W (Part. no. 92675.07.1.39), 3.6 V / 1.9 Ah

Connector: 4-pole Berg connector, single-row 90°

Pin No.	Signal name	ERROR
1	VBATT	Plus pole (battery)
2	NC	not used
3	NC	not used
4	GND	Minus pole (battery)

RS232C connection

The controlling system unit (PC) is connected via this RS232C interface.

Connector: 9-pole Sub-D, pins 90°

Pin No.	Signal name	ERROR
1	DCD1	Carrier Detect
2	RXD1	Receive Data (IN)
3	TXD1	Transmit Data (OUT)
4	DTR1	Data Terminal Ready
5	GND	Ground
6	DSR1	Data Set Ready
7	RTS	Request to Send (OUT)
8	CTS	Ready for Sending (IN)
9	RI	Ring Indicator

The 9-pole Sub-D connector is occupied in accordance with standard. The input CTS (Pin 8) is highly resistively connected with + 12 V in order to receive a defined signal when the input is open.

CMD controller

Connector on the left side of the controller:

X1 Mechanical thickness sensor

Dubox connector, 8-pole

(Series = 2466407537, Son = 2466410537)

Contact	Designation
1	+ 5 V
2	GND
3	Measuring input for the 1nd analog hall sensor
4	GND
5	+ 5 V
6	GND
7	Measuring input for the 2nd analog hall sensor
8	GND

X2 Shutter

JST pin connector Model PHD, 2 x 10-pole, S20B-PHDSS (90°)

(Series = A3C40014865, Son = A3C40014864)

Contact	Designation
1	+ 24 V
2	Load – GND
3	+ 12 V
4	GND
5	Release of the energizing of SM7 (24 V level) / Phase + (open) from M7
6	Direction of SM7 (24 V level) / Phase - (closed) from M7
7	Switched input from DPS10
8	Switched input from DPS11
9	Switched input from DPS12 (Reserve)
10	Measuring input for phototransistor from PS27 or PS26 (Removal - Detection) (PSR6)
11	Measuring input for phototransistor from PS28 or PS29 (Removal - Detection) (PSR7)

Contact	Designation
12	+ current for transmission diodes from PS27, PS28 or PS26, PS29 (LSISH)
13	Shutter 1 switched input
14	GND
15	Shutter 2 switched input
16	GND
17	Shutter 3 switched input
18	GND
19	Shutter 4 switched input
20	GND

Jumper coding

Pin 19	Pin 17	Pin 15	Pin 13	
Shutter4	Shutter3	Shutter2	Shutter1	
-	-	-	B	= shutter in the safe
-	-	B	-	= shutter in the head unit
-	B	-	-	= VCMD shutter

X3 Transport Unit

JST pin connector Model PHD, 2 x 6-pole, S12B-PHDSS (90°)
 (Series = A3C40015986, Son = A3C40015984)

Contact	Designation
1	+ 5 V
2	Switched input from HS4 (sensor for clamp end position)
3	GND
4	NC
5	Switched input Transport1
6	GND
7	Switched input Transport2
8	GND
9	Switched input Transport3
10	GND
11	Switched input Transport4
12	GND

Jumper coding

Pin 11	Pin 9	Pin 7	Pin 5	
Transport4	Transport3	Transport2	Transport1	
-	-	-	B	= Rearload transport - module in the safe
-	-	B	-	= Frontload transport - module in the safe
-	B	-	B	= Rearload transport - module in the top part
-	B	B	-	= Frontload transport - module in the top part
-	B	-	-	= VCMD Transport module
B	-	-	-	= BBA UT Transport module

X4 V.24 interface on the PC

Contact	Designation
1	+ 5 V
2	Switched input from HS4 (sensor for clamp end position)
3	GND
4	NC
5	Switched input Transport1
6	GND
7	Switched input Transport2
8	GND
9	Switched input Transport3
10	GND
11	Switched input Transport4
12	GND

8-pole Western

(Series = 5603107937;00 or A3C40016907, Son = 5603111937)

Contact	Designation
1	NC
2	DSR, not used
3	RxD
4	DTR / RTS
5	TxD
6	GND
7	CTS
8	NC

X5 USB interface on the PC

USB connector type B, (Series: 0150507337;00)

Contact	Designation
1	NC
2	USB data -
3	USB data +
4	GND
5	Shielding
6	Shielding

X6 Door switch and security switch in the safeJST pin connector Model PHD, 2 x 5-pole, S10B-PHDSS (90°)
(Series = A3C40016307, Son = A3C40016306)

Contact	Designation
1	NC
2	NC
3	Inquiry of the security switch
4	GND
5	Inquiry of the door switch
6	GND
7	Inquiry of the jumper
8	GND
9	Reserve input
10	GND

X7 V.24 interface

JST pin connector Model PH, 6-pole, B6B-PH-K-S (standing)
(Series = 9405007037, Son = 9405010037)

Contact	Designation
1	NC (DSR is not used)
2	RxD
3	DTR / RTS
4	TxD
5	GND
6	CTS

X8 NEN from the special electronics

JST pin connector Model PH, 2-pole, S2B-PH-K-S (90°)
(Series = A3C40014712;11, Son = A3C40014711)

Contact	Designation
1	NEN
2	GND

X9 24 V voltage supply

2-pole Mini-Fit 39-30-1020
(Series = A3C40029754, Son = A3C40029755)

Contact	Designation
1	+ 24 V
2	GND

Connector on the top side of the controller:

X10 24 V connection

2-pole Mini-Fit 39-30-1020
(Series = A3C40029754, Son = A3C40029755)

Contact	Designation
1	+ 24 V
2	GND

X11 Motor M1)

6-pole Mini-Fit 39-30-1060
(Series = A3C40030083, Son = A3C40009552)

Contact	Designation
1	Motor +
2	NC
3	Clock signal from main motor M1
4	Motor -
5	+ 5 V
6	GND

X12 Additional motor on the main drive component for Single Reject (optional)

JST pin connector Model PH, 1 x 4-pole, S4B-PH-K-S (90°)
(Series = 7206807137, Son = 7206810137)

Contact	Designation
1	Phase A + of SM1 (contract pressure of the sliding surface for emptying the Single-Reject)
2	Phase A - of SM1 (contract pressure of the sliding surface for emptying the Single-Reject)
3	Phase B + of SM1 (contract pressure of the sliding surface for emptying the Single-Reject)
4	Phase B - of SM1 (contract pressure of the sliding surface for emptying the Single-Reject)

X13 Clamp motors

ZIF connector, 4-pole, 1.25 mm, Molex, Series 5597, Type 39-51-3043, Top contact (Series = A3C40029756, Son = A3C40029757)

Contact	Designation
1	+ from clamp traction motor M2
2	- from clamp traction motor M2
3	+ from belt drive on clamp M3
4	- from belt drive on clamp M3

X14 motor and lift magnets on the stacker / left and right side cover

JST pin connector Model PHD, 2 x 9-pole, S18B-PHDSS (90°)
(Series = A3C40032097, Son = A3C40032098)

Contact	Designation
1	Phase A + of SM9 (stacker wheel)
2	Phase A - of SM9 (stacker wheel)
3	Phase B + of SM9 (stacker wheel)
4	Phase B - of SM9 (stacker wheel)
5	Phase A + of SM2 (left routing disk)
6	Phase A - of SM2 (left routing disk)
7	Phase B + of SM2 (left routing disk)
8	Phase B - of SM2 (left routing disk)
9	Phase A + of SM3 (right routing disk)
10	Phase A - of SM3 (right routing disk)
11	Phase B + of SM3 (right routing disk)
12	Phase B - of SM3 (right routing disk)
13	+ 24 V
14	Lift magnet MA6 (Retract box)
15	+ 24 V
16	Lift magnet MA2 / 1 (switch control for Single-Reject, optional)
17	+ 24 V
18	Lift magnet MA2 / 2 (switch control for Single-Reject, optional)

X15 EEPROM on the stacker

ZIF connector, 8-pole, 1.00 mm, Molex, Series 52043, (90°), Bottom Contact
(Series = A3C40030173, Son = A3C40030174)

Contact	Designation
1	+ 5 V
2	GND
3	Chip select to the EEPROM
4	Pulse to the EEPROM
5	Data output to the EEPROM
6	Data input from the EEPROM
7	NC
8	NC

X16 Hall sensors on the stacker

JST pin connector Model PHD, 2 x 6-pole, S12B-PHDSS (90°)
(Series = A3C40015986, Son = A3C40015984)

Contact	Designation
1	VCC
2	VCC
3	Switched input from HS1 (sensor for clamp home position)
4	Switched input from HS2 (sensor for Reject/Retract initial position)
5	GND
6	GND
7	VCC
8	VCC
9	Switched input from HS3 (sensor for Reject/Retract reversed position)
10	Switched input from DPS3 (Reserve, used more than once!!!)
11	GND
12	GND

X17 hybrid photosensors and photosensors on the Single Reject

JST pin connector Model PHD, 2 x 8-pole, S16B-PHDSS (90°)

(Series = 0152307537;00, Son = 0152310537)

Contact	Designation
1	VCC
2	VCC
3	Switched input from DPS14 (sensor for Single-Reject switch position)
4	Switched input from DPS15 (sensor for Single-Reject switch position)
5	GND
6	GND
7	VCC
8	VCC
9	Switched input from DPS7 (sensor for Single-Reject sliding surface home position)
10	Switched input from DPS3 (Reserve, used more than once!!!)
11	GND
12	GND
13	Power supply for phototransistor from PS2 (empty compartment monitor with Single-Reject) (LSVCC)
14	Measuring input for phototransistor from PS2 (empty compartment monitor with Single-Reject) (LSR5)
15	+ Current for transmission diodes from PS2 (LSIPLUS)
16	- Current for transmission diodes from PS2 (LISIS2)

X18 hybrid photosensors and photosensors on the stacker / left side cover

JST pin connector Model PHD, 2 x 11-pole, S22B-PHDSS (90°)
 (Series = A3C40032102, Son = A3C40032103)

Phototransistor of PS18 in place.

Contact	Designation
1	VCC
2	VCC
3	Switched input from DPS5 (inquiry of the positions of the left routing disk)
4	Switched input from DPS8 (inquiry of the positions of the left routing disk)
5	GND
6	GND
7	VCC
8	VCC
9	Switched input from DPS2 (sensor for stacker wheel position)
10	Switched input from DPS4 (sensor for Retract box)
11	GND
12	GND
13	VCC
14	VCC
15	Switched input from DPS1 (Reserve)
16	Switched input from DPS3 (Reserve, used more than once!!!)
17	GND
18	GND
19	Power supply for phototransistor from PS1 (stacker wheel input) (LSVCC)
20	Measuring input for phototransistor from PS1 (stacker wheel input) (LSR3)
21	+ Current for transmission diodes from PS1 + PS18 (LSIPLUS)
22	- Current for transmission diodes from PS1 + PS18 (LSIS1)

Connector on the bottom side of the controller:

X30 dispensing units

Male connectors, 2 x 20-pole (straight) (series = 2383807837)

Contact	Designation
1	GND
2	GND
3	GND
4	GND
5	GND
6	+ 5 V
7	+ 5 V
8	+ 5 V
9	+ 5 V switched
10	+ 5 V switched
11	+ 5 V switched
12	Load – GND
13	Load – GND
14	Load – GND
15	Load – GND
16	Load – GND
17	Load – GND
18	+ 24 V switched
19	+ 24 V switched
20	+ 24 V switched
21	+ 24 V switched
22	+ 24 V switched
23	+ 24 V switched
24	Dispensing clutch dispensing unit 1
25	Retaining magnet dispensing unit 1
26	Dispensing clutch dispensing unit 2
27	Retaining magnet dispensing unit 2
28	Dispensing clutch dispensing unit 3
29	Retaining magnet dispensing unit 3
30	Dispensing clutch dispensing unit 4

Contact	Designation
31	Retaining magnet dispensing unit 4
32	Dispensing clutch dispensing unit 5
33	Retaining magnet dispensing unit 5
34	Dispensing clutch dispensing unit 6
35	Retaining magnet dispensing unit 6
36	Dispensing clutch dispensing unit 7
37	Retaining magnet dispensing unit 7
38	Dispensing clutch dispensing unit 8
39	Retaining magnet dispensing unit 8
40	Load – GND

X31 dispensing units

Male connectors, 2 x 20-pole (straight) (series = 2383807837)

Contact	Designation
1	GND
2	EEPROM pulse
3	EEPROM data
4	D0
5	D1
6	D2
7	D3
8	D4
9	D5
10	D6
11	D7
12	CS-ICN
13	CS-ReserveN
14	CS Dispensing unit1
15	CS Dispensing unit2
16	CS Dispensing unit3
17	CS Dispensing unit4
18	CS Dispensing unit5
19	CS Dispensing unit6

Contact	Designation
20	CS Dispensing unit7
21	CS Dispensing unit8
22	WRN
23	RDN
24	ResetN
25	GND
26	Free
27	Power source for the LEDs (LSIPLUS)
28	Current sink dispensing unit 1 (LSIV1)
29	Current sink dispensing unit 2 (LSIV2)
30	Current sink dispensing unit 3 (LSIV3)
31	Current sink dispensing unit 4 (LSIV4)
32	Current sink dispensing unit 5 (LSIV5)
33	Current sink dispensing unit 6 (LSIV6)
34	Current sink dispensing unit 7 (LSIV7)
35	Current sink dispensing unit 8 (LSIV8)
36	Voltage supply phototransistors (LSVCC)
37	Inquiry 1. Phototransistor for pressure sensor (LSANDR)
38	Inquiry 2. Phototransistor for empty sensor (LSR1)
39	Inquiry 3. Phototransistor for dispensing sensor (LSR2)
40	GND

X32 hybrid photosensors and photosensors on the stacker / left side cover

JST pin connector Model PHD, 2 x 7-pole, B14B-PHDSS (standing)
 (Series = A3C40032574, Son = A3C40032575)

Contact	Designation
1	VCC
2	VCC
3	Switched input from DPS6 (inquiry of the positions of the right routing disk)
4	Switched input from DPS9 (inquiry of the positions of the right routing disk)
5	GND
6	GND
7	VCC
8	VCC
9	Switched input from S1 (switch reports "Reject/Retract cassette inserted")
10	Switched input from DPS3 (Reserve, used more than once!!!)
11	GND
12	GND
13	Voltage supply for phototransistors of PS18 (input monitoring in front of the Reject cassette) (LSVCC)
14	Measuring input for phototransistor from PS18 (input monitoring in front of the Reject cassette) (LSR4)

X33 position switches and extensions

JST pin connector Model PHD, 2 x 17-pole, B34B-PHDSS (standing)
 (Series = A3C40036263, Son = A3C40036264)

Contact	Designation
1	+ 5 V
2	GND
3	+ 24V
4	Load – GND
5	Chip select to the reserve device on the SPI2
6	Pulse to the reserve device on the SPI2
7	Data output to the reserve device on the SPI2

Contact	Designation
8	Data input from the reserve device on the SPI2
9	Inquiry of the position switch
10	GND
11	Spare output
12	GND
13	Segment A of the 7-segment display top / left
14	Segment B of the 7-segment display top / left
15	Segment C of the 7-segment display top / left
16	Segment D of the 7-segment display top / left
17	Segment E of the 7-segment display top / left
18	Segment F of the 7-segment display top / left
19	Segment G of the 7-segment display top / left
20	Segment DP of the 7-segment display top / left
21	Special output for the 7-segment display top / left
22	Segment A of the 7-segment display bottom / right
23	Segment B of the 7-segment display bottom / right
24	Segment C of the 7-segment display bottom / right
25	Segment D of the 7-segment display bottom / right
26	Segment E of the 7-segment display bottom / right
27	Segment F of the 7-segment display bottom / right
28	Segment G of the 7-segment display bottom / right
29	Segment DP of the 7-segment display bottom / right
30	Special output for the 7-segment display bottom / right
31	Free
32	Free
33	Free
34	free

Connector on the right side of the controller:

X40 jumpers

Berg pin connector, 2 x 10-pole (Series 5673507037;10)

Contact	Designation
1	'DOOR' (note safe door), to be queried through firmware
2	GND
3	'SCOP' (reserve input, is not supported)
4	GND
5	'Jump A' (reserve input A), to be queried through firmware
6	GND
7	'Jump B' (reserve input B), to be queried through firmware
8	GND
9	'Jump C' (reserve input C), to be queried through firmware
10	GND
11	'Jump D' (reserve input D), to be queried through firmware
12	GND
13	'Clear CMOS' RAM, to be queried through firmware
14	GND
15	'NEN', also to be queried through firmware
16	GND
17	'Battery' jumper
18	GND
19	'Jump PLD' jumper (jumper for controlling one PLD function)
20	GND

The following elements continue to be available:

Battery, display, beeper, sensor

Connector in the middle of the controller:

X50 JTAG-PLD programming connector

X51 Kontron test connector

X52 Turbodebugger plug

4-cassette distributor board

1st connection to the CMD controller

Contact	Designation
1	GND
2	GND
3	GND
4	GND
5	GND
6	+ 5 V
7	+ 5 V
8	+ 5 V
9	+ 5 V switched
10	+ 5 V switched
11	+ 5 V switched
12	Load – GND
13	Load – GND
14	Load – GND
15	Load – GND
16	Load – GND
17	Load – GND
18	+ 24 V switched
19	+ 24 V switched
20	+ 24 V switched
21	+ 24 V switched
22	+ 24 V switched
23	+ 24 V switched
24	Dispensing clutch dispensing unit 1
25	Retaining magnet dispensing unit 1
26	Dispensing clutch dispensing unit 2
27	Retaining magnet dispensing unit 2
28	Dispensing clutch dispensing unit 3
29	Retaining magnet dispensing unit 3
30	Dispensing clutch dispensing unit 4
31	Retaining magnet dispensing unit 4

Contact	Designation
32	Dispensing clutch dispensing unit 5
33	Retaining magnet dispensing unit 5
34	Dispensing clutch dispensing unit 6
35	Retaining magnet dispensing unit 6
36	Dispensing clutch dispensing unit 7
37	Retaining magnet dispensing unit 7
38	Dispensing clutch dispensing unit 8
39	Retaining magnet dispensing unit 8
40	Load – GND

2nd connection to the CMD controller

Contact	Designation
1	GND
2	EEPROM pulse
3	EEPROM data
4	D0
5	D1
6	D2
7	D3
8	D4
9	D5
10	D6
11	D7
12	CS-ICN
13	CS-ReserveN
14	CS Dispensing unit1
15	CS Dispensing unit2
16	CS Dispensing unit3
17	CS Dispensing unit4
18	CS Dispensing unit5
19	CS Dispensing unit6
20	CS Dispensing unit7
21	CS Dispensing unit8
22	WRN

Contact	Designation
23	RDN
24	ResetN
25	GND
26	Free
27	Power source for the LEDs (LSIPLUS)
28	Current sink dispensing unit 1 (LSIV1)
29	Current sink dispensing unit 2 (LSIV2)
30	Current sink dispensing unit 3 (LSIV3)
31	Current sink dispensing unit 4 (LSIV4)
32	Current sink dispensing unit 5 (LSIV5)
33	Current sink dispensing unit 6 (LSIV6)
34	Current sink dispensing unit 7 (LSIV7)
35	Current sink dispensing unit 8 (LSIV8)
36	Voltage supply phototransistors (LSVCC)
37	Inquiry 1. Phototransistor for pressure sensor (LSANDR)
38	Inquiry 2. Phototransistor for empty sensor (LSR1)
39	Inquiry 3. Phototransistor for dispensing sensor (LSR2)
40	GND

1 or 4 cassette connectors (ISEP)

Contact	Designation
1	Data to and from the EEPROM
2	Pulse to the EEPROM
3	Chip select to the EEPROM
4	GND for logic
5	+ 5 V, switched
6	+ 24 V
7	Stepper motor
8	Stepper motor
9	Stepper motor
10	Stepper motor
11	Load – GND

Connector for 1-cassette distributor board

Contact	Designation
1	Power source for the transmission diodes (LSIPLUS)
2	Current sink dispensing unit x (LSIVx), activates the three transmission diodes of the only dispensing unit x
3	Power supply for the pressure phototransistor (LSVCC)
4	Input of the pressure phototransistor (LSANDR) (PS at the side)
5	Power supply for the cassette empty sensor phototransistor (LSVCC)
6	Input from the cassette empty sensor phototransistor (LSR1) (PS top)
7	Power supply for the dispensing sensor phototransistor (LSVCC)
8	Input from the dispensing sensor phototransistor (LSR2) (PS bottom)
9	+ 24 V for dispensing clutch
10	Output to the dispensing clutch of dispensing unit x
11	+ 24 V for retaining magnet
12	Output to the retaining magnet of dispensing unit x

Connector for the two double dispensing units on the 4-cassette distributor board

Contact	Designation
1	Power source for the transmission diodes (LSIPLUS)
2	Current sink dispensing unit x (LSIVx), activates the three transmission diodes of the only dispensing unit x
3	Power supply for the pressure phototransistor (LSVCC)
4	Input of the pressure phototransistor (LSANDR) (PS at the side)
5	Power supply for the cassette empty sensor phototransistor (LSVCC)
6	Input from the cassette empty sensor phototransistor (LSR1) (PS top)
7	Power supply for the dispensing sensor phototransistor (LSVCC)
8	Input from the dispensing sensor phototransistor (LSR2) (PS bottom)
9	Power source for the transmission diodes (LSIPLUS)
10	Current sink dispensing unit x+1 (LSIVx+1), activates the three transmission diodes of the only dispensing unit x+1
11	Power supply for the pressure phototransistor (LSVCC)
12	Input of the pressure phototransistor (LSANDR) (PS at the side)
13	Power supply for the cassette empty sensor phototransistor (LSVCC)
14	Input from the cassette empty sensor phototransistor (LSR1) (PS top)
15	Power supply for the dispensing sensor phototransistor (LSVCC)
16	Input from the dispensing sensor phototransistor (LSR2) (PS bottom)
17	+ 24 V for dispensing clutch
18	Output to the dispensing clutch of dispensing unit x
19	+ 24 V for retaining magnet
20	Output to the retaining magnet of dispensing unit x
21	+ 24 V for dispensing clutch
22	Output to the dispensing clutch of dispensing unit x+1
23	+ 24 V for retaining magnet
24	Output to the retaining magnet of dispensing unit x+1

Spare parts catalogue

Overview of the individual elements

Output transports	
Material No.	Designation
1750057875	AGT CMD-V4 horizontal FL 101 mm (for ProCash 1500xe/USB FL / 1521xe FL / 280 / 281)
1750059284	AGT CMD-V4 horizontal RL 124 mm (for ProCash 1500xe/USB RL / 5000 RL)
1750068776	AGT CMD-V4 horizontal FL 125 mm (for ProCash 5000 mini FL)
1750059116	AGT CMD-V4 horizontal RL 232 mm (for ProCash 2050xe/USB / 2150xe/USB / 2250xe/USB / 2054xe)
1750059283	AGT CMD-V4 horizontal FL 241 mm (for ProCash 2350xe/USB FL / CINEO C2590)
1750160110	AGT CMD-V4 horizontal RL 252.6 mm (for ProCash 8050/8150 / CINEO C2550/C2560 / CINEO C2560 DU)
1750076716	AGT CMD-V4 horizontal RL 287 mm (for ProCash 2150xe/USB CEN VI / ProCash 2054xe)
1750045360	AGT CMD-V4 vertical FL (for ProCash 2000xe/USB FL / ProCash 2100xe/USB FL)
1750098460	AGT CMD-V4 vertical FL closed (ProCash 2000xe/USB FL / 2100xe/USB FL)
1750045348	AGT CMD-V4 vertical RL (for ProCash 2000xe/USB RL / ProCash 2100xe/USB RL)
1750098461	AGT CMD-V4 vertical RL closed (ProCash 2000xe/USB RL / 2100xe/USB RL)
1750154375	Output transport 8x CMD-V4 vertical FL closed (for ProCash 8x00 FL and CINEO C2060/C2070 FL)
1750154376	Output transport 8x CMD-V4 vertical RL closed (for ProCash 8x00 RL and CINEO C2060/C2070 RL)
1750164758	Output transport 8x CMD-V4 vertical FL (for ProCash 8x00 FL and CINEO C2060/C2070 FL)
1750164759	Output transport 8x CMD-V4 vertical RL (for ProCash 8x00 RL and CINEO C2060/C2070 RL)

Output transports	
Material No.	Designation
1750068690	AGT CMD-V4 SCO

Stacker	
Material No.	Designation
1750055782	CMD stacker without single reject switch
1750058042	CMD stacker complete with single reject switch
1750089828	CMD stacker II / single reject switch
1750089829	CMD stacker II without reject switch
1750109658	CMD stacker without reject switch
1750109659	CMD stacker/single reject switch
1750109666	CMD stacker II / single reject switch
1750109667	CMD stacker II without reject switch
1750053977	Clamp CMD-V4
1750083454	Stacker output transport BBA-UT CMD-V4
1750111640	Stacker output transport BBA-UT CMD-V4

Shutter	
Material No.	Designation
1750045330	Shutter CMD-V4 vertical RL
1750100966	Shutter CMD-V4 vertical RL rail
1750054768	Shutter CMD-V4 vertical FL
1750100965	Shutter CMD-V4 vertical FL rail
1750053690	Shutter CMD-V4 horizontal RL
1750082603	Shutter CMD-V4 horizontal RL assy.
1750100964	Shutter CMD-V4 horizontal RL rail
1750056960	Shutter CMD-V4 horizontal FL
1750082602	Shutter CMD-V4 horizontal FL assy.
1750085287	Shutter CMD-V4 horizontal FL assy. w
1750157286	Shutter 8x CMD FL
1750159971	Shutter 8x CMD RL
1750166396	Shutter horiz. 8x CMD FL
1750166395	Shutter horiz. 8x CMD RL
1750229726	Shutter horiz. 8x CMD RL rail
1750187300	Shutter horiz. VBK 8x CMD RL

Shutter	
Material No.	Designation
1750184934	Shutter protection 8x CMD FL
1750184935	Shutter protection 8x CMD RL
1750192728	Shutter_CMD_V4_horiz._RL_VBK
1750193367	Shutter_CMD-V4_vert._RL_VBK
1750193148	Shutter_CMD-V4_vert_FL_VBK

Controller and distributor boards	
Material No.	Designation
1750055781	CMD Controller assembled (incl. cover)
1750074210	CMD Controller with USB assembled with cover
1750105679	CMD Controller II USB assy. with cover
1750123397	CMD SCP Controller USB with cover
1750044878	Distributor board 4-cassette assy. (including cover)
1750052425	Distributor board 1-cassette assy. (including cover)
1750092590	CMD-DaK distributor board without K plug
1750102602	CMD-DaK distributor board with K plug
1750068065	Extension board in connection with the ProCash 5000 (mini)
1750254979	SNR CMD-V4 stacker with ER prep.

Racks	
Material No.	Designation
1750053055	CMD-V4 4-cassette housing assembled
1750064370	CMD Outsert housing 4-cassette pre-assy.
1750130600	CMD housing NT pre-assy. 4-cassette
1750121290	Housing SCP assy.
1750092425	CMD-DaK housing 2-cassette not shown assy.
1750094547	CMD-DaK housing 2-cassette assy.
1750054048	1-cassette housing complete with locking
1750054366	1-cassette housing complete without locking
1750064370	CMD Outsert housing 4-cassette pre-assembled
1750066065	CMD Outsert housing 1-cassette pre-assembled
1750066067	CMD Outsert housing 1-cassette without locking pre-assembled

Racks	
Material No.	Designation
1750141416	CMD housing NT pre-assy. 1-cassette
1750141838	CMD housing NT pre-assy. 1-cassette without locking
1750055308	CMD latch
1750080936	Spring clip 4-compartment housing CMD-V4
1750080940	Spring clip 1-compartment housing CMD-V4
1750174785	CMD inside door Vill. assy.

Dispensing units	
Material No.	Designation
1750051760	Double dispensing unit CMD-V4 (without multiple-note detection unit)
1750109615	Double dispensing unit CMD-V4 (without multiple-note detection unit)
1750125830	Double dispensing unit CMD-V4 II for VCMD (without multiple-note detection unit)
1750051761	Double dispensing unit MDMS CMD-V4 (with multiple-note detection unit)
1750109641	Double dispensing unit MDMS CMD-V4 (with multiple-note detection unit)
1750125831	Double dispensing unit MDMS CMD-V4 II for VCMD (with multiple-note detection unit)
1750051758	Single dispensing unit CMD-V4 or VCMD (without multiple-note detection unit)
1750109613	Single dispensing unit CMD-V4 or VCMD (without multiple-note detection unit)
1750051759	Single dispensing unit MDMS CMD-V4 or VCMD (with multiple-note detection unit)
1750109614	Single dispensing unit MDMS CMD-V4 or VCMD (with multiple-note detection unit)
1750035762	Extractor shaft CMD-V4 assembled
1750192140	Extractor shaft CMD-V4 A complete
1750192142	Extractor shaft CMD-V4 B complete

Reject / retract cassette	
Material No.	Designation
1750041920	CMD reject/retract cassette
1750056651	CMD reject/retract cassette lead-sealed
1750056652	CMD reject cassette lead-sealed
1750056653	CMD reject cassette
1750061714	CMD reject/retract cassette lockable
1750061877	CMD reject cassette lockable
1750063255	CMD reject cassette gray
1750063256	CMD reject cassette lockable gray
1750063257	CMD reject cassette lead-sealed gray
1750122197	CMD reject cassette gray
1750122198	CMD reject cassette lead-sealed gray

Cash-out cassettes	
Material No.	Designation
1750053501	Cash-out cassette CMD-V4
1750053502	Cash-out cassette CMD-V4 lockable
1750053503	Cash-out cassette CMD-V4 lead-sealed
1750053504	Cash-out cassette CMD-V4 FSM
1750053505	Cash-out cassette CMD-V4 FSM lockable
1750053506	Cash-out cassette CMD-V4 FSM lead-sealed
1750053511	Cash-out cassette BBA-UT CMD-V4
1750053512	Cash-out cassette BBA-UT CMD-V4 lockable
1750053513	Cash-out cassette BBA-UT CMD-V4 lead-sealed
1750053540	Cash-out cassette CMD-V4 no cash
1750053550	Cash-out cassette CMD-V4 maculation
1750053650	Cash-out cassette CMD-V4 maculation
1750081760	Cash-out cassette CMD-V4 maculation 2
1750092195	Cash-out cassette CMD-V4 SQS pre-assembled
1750109646	Cash-out cassette CMD-V4
1750109651	Cash-out cassette CMD-V4 lead-sealed
1750109655	Cash-out cassette CMD-V4 FSM
1750109656	Cash-out cassette CMD-V4 FSM lead-sealed
1750109662	Cash-out cassette CMD-V4 maculation 2

Cash-out cassettes	
Material No.	Designation
1750109668	Cash-out cassette CMD-V4 SQS RF0
1750109669	Cash-out cassette CMD-V4 SQS RF2
1750109754	Cash-out cassette BBA-UT CMD-V4
1750109755	Cash-out cassette BBA-UT CMD-V4 lead-sealed
1750109756	Cash-out cassette CMD-V4 no cash
1750109757	Cash-out cassette CMD-V4 maculation
1750136553	Cash-out cassette CMD-V4 UT without lock FSM
1750136555	Cash-out cassette CMD-V4 UT with lock FSM
1750152040	Cash-out cassette CMD-V4 FSM spec.
1750042970	CMD carriage assembled
1750043537	CMD closure assembled
1750042973	CMD cassette lid assy.
1750058210	CMD cassette lid printed in blue
1750058211	CMD cassette lid maculation printed
1750081830	CMD cassette lid maculation 2 pre-assembled
1750038783	CMD cassette handle
1750043537	CMD closure assembled
5482000111	Lock assembled



Spare parts with FRU numbers have been introduced with the introduction of the CMD-V4.

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Notes

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