Operating Instructions

5“ Coin Validator v² eagle

with ccTalk/S1 interface

08.15 Hns/GS/Roe
BA_v2_eagle_serial_EN_2-2

CPI Crane Payment Innovations GmbH | Zum Fruchthof 6 | 21614 Buxtehude | Germany
info@cranePI.com | www.cranePI.com | Phone: +49 (0) 41 61-729-0 | Fax: +49 (0) 41 61-729-115

Table of contents

1 Revision protocol

Version	Revision	Chapters/sections concerned
_1-3	• 4-way sorting mechanism added	• 2.2.2 "Models" • 4.1 "Overview" • 4.3.1 "Model number decoding" • 5.5 "Sorting accepted coins (option)" • 10.2.1.3 "Implemented ccTalk commands" • 10.2.1.4 "ccTalk Error Code Table" • 10.2.3 "Pin assignment, v² eagle – bcr-applications" (option)
	• Enhanced accessories	• 10.3 "Accessories"
_1-4	• Revised model number decoding • Revised data block number decoding	• 4.3.1 "Model number decoding" • 4.3.2 "Data block number decoding"
_1-5	Corrected order number	10.3 "Accessories"
_1-6	Corrected order numbers	10.3 "Accessories"
_2-0	• New status LED	• 4 "Design" • 8.2 "Troubleshooting"
	• New options and accessories of v² eagle with 4-fold sorting mechanism	• 2.2 "About the v² eagle" • 4 "Design" • 5.5 "Sorting accepted coins (option)" • 6 "Start-up" • 10.2 "Interfaces" • 10.3 "Accessories"
	• New product label	• 4.3 "Product label"
	• Revised cleaning measures	• 8.1 "Cleaning measurement and validation area"
	• ccTalk commands, error messages & settings deleted (to be found in the separate v² eagle ccTalk protocol specification)	• 10.2 "Interfaces"
_2-1	• Revised model number decoding • Revised data block number decoding	• 4.3.1 "Model number decoding" • 4.3.2 "Data block number decoding"
	• Added cover picture	• Cover
_2-2	• Revised current consumption values	• 10.1 "Device data"
	• s² HSD-3000 accessories removed	• 4.1 "Overview"
	•	• 5.5 "Sorting accepted coins"
	•	• 10.2 "Interfaces"
	• Coin path for 4-fold sorter	• 4.2 "Coin path"
	• Revised product label	• 4.3 "Product label"
	• Coins programmable via host	• 9.3 "Remote Coin Programming (RCP) – Programming coins via host"
	• Order numbers for accessories updated	• 10.3 "Accessories"

2 About ...

This chapter is intended to provide a general overview of the advantages and options of the coin validator v² eagle with serial ccTalk or S1 interface. The first section, however, is designed to help you navigate easily within these operating instructions.

2.1 About these operating instructions

These operating instructions describe the design and operation of the electronic 5" coin validator v² eagle with serial ccTalk or S1 interface. Afterwards, chapters 6 and 7 explain the necessary steps for starting up and operating the coin validator. Chapter 8 describes how to clean the coin validator and remedy the cause of any malfunction.

Chap. 10 "Technical data" and the appended "Index" reduce the search for specific explanations.

2.1.1 Text conventions

To make it easier for you to navigate within these operating instructions and to operate the device, the following accentuations were made in the text:

Safety instructions which you must observe in order to protect operators and equipment.

Special notes intended to facilitate the use of the coin validator.

At the beginning of each chapter you will find a short "guide" which summarizes the contents of the chapter.

Device functions which are set or prepared by the manufacturer according to customer specifications and can be set or changed using our service and configuration tool *(cp. Chap. "9 What subsequent settings can be made?", p. 39)*.

1 2 3 ... **Requests to perform an action** are numbered in another typeface.

[Fig. 1/2] Reference to a figure. The number preceding the slash indicates the number of the figure, the number following the slash is the number of the item in the figure.

2.1.2 Additional useful technical documentation

Apart from the operating instructions you already have, further documentation is available for the v² eagle, e.g. for configuration or spare part lists. All documentation can be downloaded from the Crane Payment Innovations website (**www.cranePI.com**, **Support**) as pdf file. The ccTalk protocol specification is available upon request.

2.2 About the v² eagle

The v²-eagle coin validator with serial ccTalk or S1 interface in the standardized 5“ format uses the patented multi-frequency technology (MFT) for reliable coin validation. Communication with the vending machine control system takes place either via the ccTalk-specified 10-pin AWP connecting plug or via the NRI-specified 10-pin S1 connecting plug. Due to these interfaces and its modular design the v² eagle is ideally suited for slot and amusement machines; however it is also used in the vending and transportation sector.

For coin acceptance the coin validator has 32 coin channels which – divided into 2 x 16 coin channels – can be managed in two memory blocks with different coin configurations and selected individually.

Depending on the application the coin validator can optionally be equipped with different internal sorting mechanisms.

To be able to react as quickly as possible to new false coins and to make your individual settings, the coin validator can be configured on site in the machine using a service tool or in the workshop via a PC programming station.

Any coins or tokens not taken into account by the manufacturer can be programmed in the optional teach mode directly on the coin validator without any configuration software by inserting the coins.

2.2.1 The v² eagle features

- Reliable acceptance of genuine coins and rejection of false coins due to MFT multiple sensing of the coins inserted and evaluation of 24 measuring parameters
- Operating and manipulation safety provided by optical accepted coin sensors and sorting control in the coin validation and coin outlet area
- Acceptance speed of two coins per second
- 32 coin channels managed in two independently configured and individually selectable memory blocks (2 x 16 coin channels)
- Serial interface
  - flexible and extensive communication with the machine control
  - easy transmission and control of device functions
  - possibility to connect to additional peripheral equipment
  - economical device design
- Service interface for PC programming station or on-site service tool
- Flash technology for easy and time-saving firmware updates (CXflash)

- Options
  - Teach mode for three coin channels
  - String sensor
  - Top or front entry, front or bottom return
  - Front plate
  - 4-fold sorting mechanism
  - 5-fold in-line or cross-way sorting mechanism
  - Passive 4-way or active 8-way manifold
  - Various return levers depending on machine type
  - Remote Coin Programming (RCP) for ccTalk coin validators on host-controlled machines

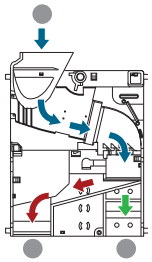
2.2.2 Models

The v² eagle is available in different models. They mainly differ

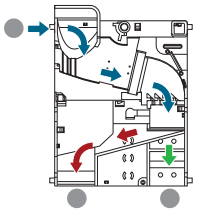
- in the coin insert and return area
- in the sorting mechanism and
- in the communication protocol.

2.2.2.1 Coin entry and return area

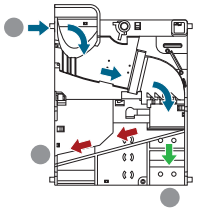
- Top entry and bottom return (E**1**xxxx. ../E**2**xxxx. ..)
  The coin is inserted into the device from the top and returned, if not accepted, via the return area at the bottom.



- Front entry and bottom return (E**3**xxxx. ..) (not in combination with 5-fold cross-way sorting)
  The coin is inserted into the device from the side and returned, if not accepted, via the return area at the bottom. The coin validator with front entry generally has an NRI front plate fitted to the left-hand side of the device *(cp. Chap. "10.3 Accessories", p. 45)*. However, this model is also available without front plate.



- Front entry and front return (E**4**xxxx. ..) (not in combination with 5-fold cross-way sorting)
  The coin is inserted into the device from the side and returned, if not accepted, via the return area also located on the side. The coin validator with front entry and front return generally has an NRI front plate fitted to the left-hand side of the device *(cp. Chap. "10.3 Accessories", p. 45)*. However, this model is also available without front plate.



2.2.2.2 Internal 4-fold/5-fold sorting mechanism

In order to sort the accepted coins into the cash-box or e.g. change tubes or hoppers, the v² eagle can optionally be equipped with an internal 4-fold or 5-fold sorting system *(cp. Chap. "5.5 Sorting accepted coins (option)", p. 25)*:

- 4-fold sorting (Ex**7**xCx. .., in combination with ccTalk protocol only)
- 5-fold in-line sorting (Ex**8**xxx. ..)
  The sorting chutes are arranged behind one another
- Fixed cash box chute in in-line sorting system (for no sorting)
  (Ex**1**xxx. ../Ex**2**xxx. ../Ex**3**xxx. ../Ex**4**xxx. ../Ex**5**xxx. ..)
- 5-fold cross-way sorting (E1**9**xxx. .., in combination with top entry only)
  The sorting chutes are arranged beside one another

2.2.2.3 Communication protocol

The coin validator communicates with the machine control via a serial protocol. The coin validator works as slave and the machine as master. Two communication protocols are possible:

- ccTalk protocol (Exxx**C**x. ..)
  Open and usable by everybody without restrictions. Another advantage consists in the remote upload, i.e. complete coin and device configurations can be loaded from a host computer to the coin validator via the ccTalk interface
  – Standard
    Protocol according to ccTalk specification.
  – ACMI
    The factory programming of the coin validator in this model meets all requirements of the Italian gaming machine act "legge 289 – comma 6“ passed in July 2003.
    The ACMI model of the v² eagle is write-protected to prevent alteration of the factory programming by means of configuration tools.

In order to meet the requirements of the Italian gaming machine act subsequent configuration of the ccTalk ACMI model is impossible. If you want to change the factory settings please contact our sales representative.

- S1 protocol (Exxx**S1**. .., not in combination with 4-fold sorting mechanism)
  MDB protocol modified by NRI for the German gaming machine market. The S1 protocol differs from the MDB protocol only in the maximum voltage range (up to 28 V instead of 42 V) and the prescribed galvanic isolation of the communication lines.

Protocol specifications are available on request.

3 Safety instructions

Before starting up the device for the first time, please read these instructions and in particular the safety instructions carefully at least once. This is to ensure that you have understood the contents of this manual and how to operate the coin validator.

3.1 Proper use

The electronic 5“ coin validator v² eagle with serial ccTalk or S1 interface is intended for use in gaming, transportation, vending and change giving machines with serial ccTalk or S1 interface and is designed to check the coins inserted into the machine for specific properties and to accept (and sort) or reject them. Use the coin validator exclusively for this purpose. Under no circumstances can the manufacturer be held liable for any damage or loss resulting from improper use of the device.

The coin validator has been built in accordance with state-of-the-art standards and the recognized safety rules. Nevertheless, this equipment can constitute a source of danger. Please observe therefore the following safety instructions.

3.2 Protecting persons and equipment

The coin validator may only be connected by a qualified electrician.

Use the coin validator only in accordance with its proper use. Under no circumstances can the manufacturer be held liable for any damage or loss resulting from improper use of the device.

The coin validator PCB is fitted with components which may be damaged beyond repair by electrostatic discharges. Please observe the handling instructions for components exposed to the risk of electrostatic discharge.

Select the correct voltage for the coin validator (see label).

Never pull the connecting cable of the coin validator from the machine when a voltage is applied.

Pull the mains plug of the machine before installing, cleaning or removing the coin validator.

Contact Crane Payment Innovations GmbH in Buxtehude if you want to modify the device beyond the scope of the modifications or attachments described here.

Keep water and other liquids away from the coin validator.

Please dispose of the device correctly at the end of its service life.

We reserve the right to make technical modifications to the device which are not covered by these instructions!

4 Design

This chapter describes
- the main parts the v² eagle consists of, and
- all parts required for the operation of the coin validator.

4.1 Overview

Of the top coin entry model
- without sorting mechanism or with 5-fold in-line sorting mechanism
- with 5-fold cross-way sorting mechanism
- with 4-fold sorting mechanism

4.1.1 v² eagle without sorting/with 5-fold in-line sorting mechanism (standard)

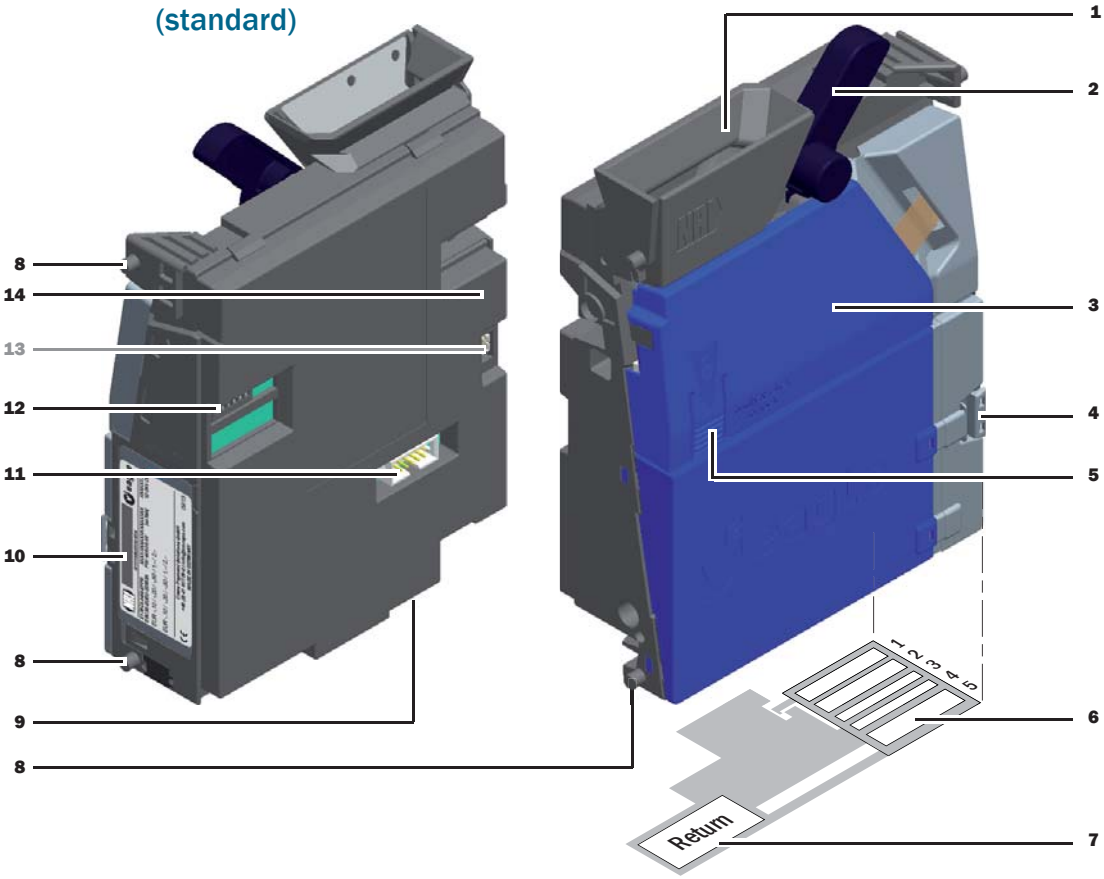


Fig. 1: Design – v² eagle without sorting/with 5-fold in-line sorting mechanism

1 Coin insert funnel (front entry model open on the side, see section "Coin path" in this chapter)
2 Coin return lever (option)
3 Flight deck
4 Locking lever for sorting cover
5 Closing device for flight deck
6 Coin outlet – cash-box chute 1, 2, 3, 4 or 5/sorting chutes 1–5
7 Coin outlet – return (for front return see section "Coin path" in this chapter
8 Mounting stud
9 Interface – service/configuration
10 Label
11 Interface – machine (ccTalk/S1)
12 Switch block
13 Interface – customized
14 Status LED (covered)

4.1.2 v² eagle with 5-fold cross-way sorting mechanism

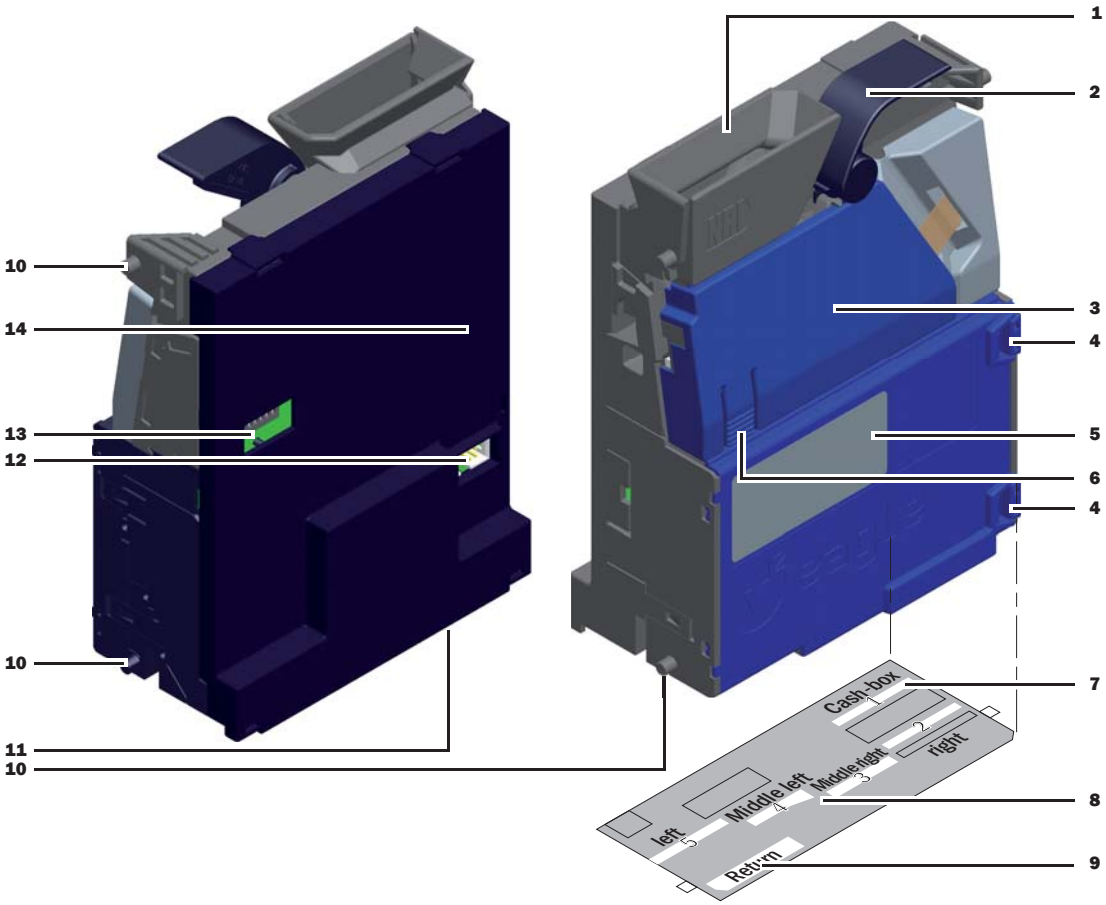


Fig. 2: Design – v² eagle with 5-fold cross-way sorting mechanism

1 Coin insert funnel
2 Coin return lever
3 Flight deck
4 Locking lever for sorting cover
5 Label
6 Closing device for flight deck
7 Coin outlet – cash-box
8 Coin outlet – sorting (left/center, left/center, right/right)
9 Coin outlet – return
10 Mounting stud
11 Interface – service/configuration
12 Interface – machine (ccTalk/S1)
13 Switch block
14 Status LED (covered)

4.1.3 v² eagle with 4-fold sorting mechanism

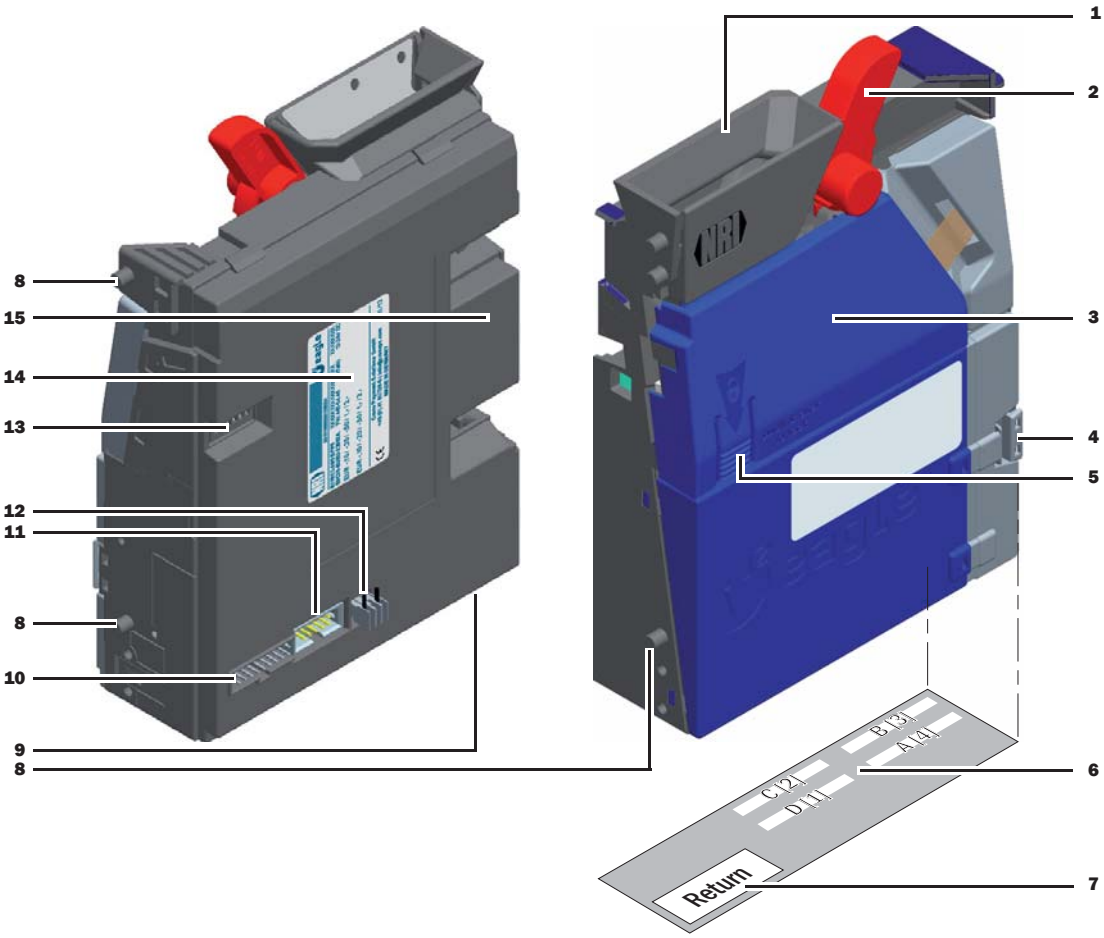


Fig. 3: Design – v² eagle with 4-fold sorting mechanism

1 Coin insert funnel
2 Coin return lever
3 Flight deck
4 Locking lever for sorting cover
5 Closing device for flight deck
6 Coin outlet – cash-box/sorting
7 Coin outlet – return
8 Mounting stud
9 Interface – service/configuration
10 Interface – bulk coin recycling (BCR) applications (option)
11 Interface – machine (ccTalk)
12 Interface – 8-way manifold (option)
13 Switch block
14 Label (not shown)
15 Status LED (covered)

4.2 Coin path

4.2.1 v² eagle without sorting/ with 5-fold in-line sorting mechanism

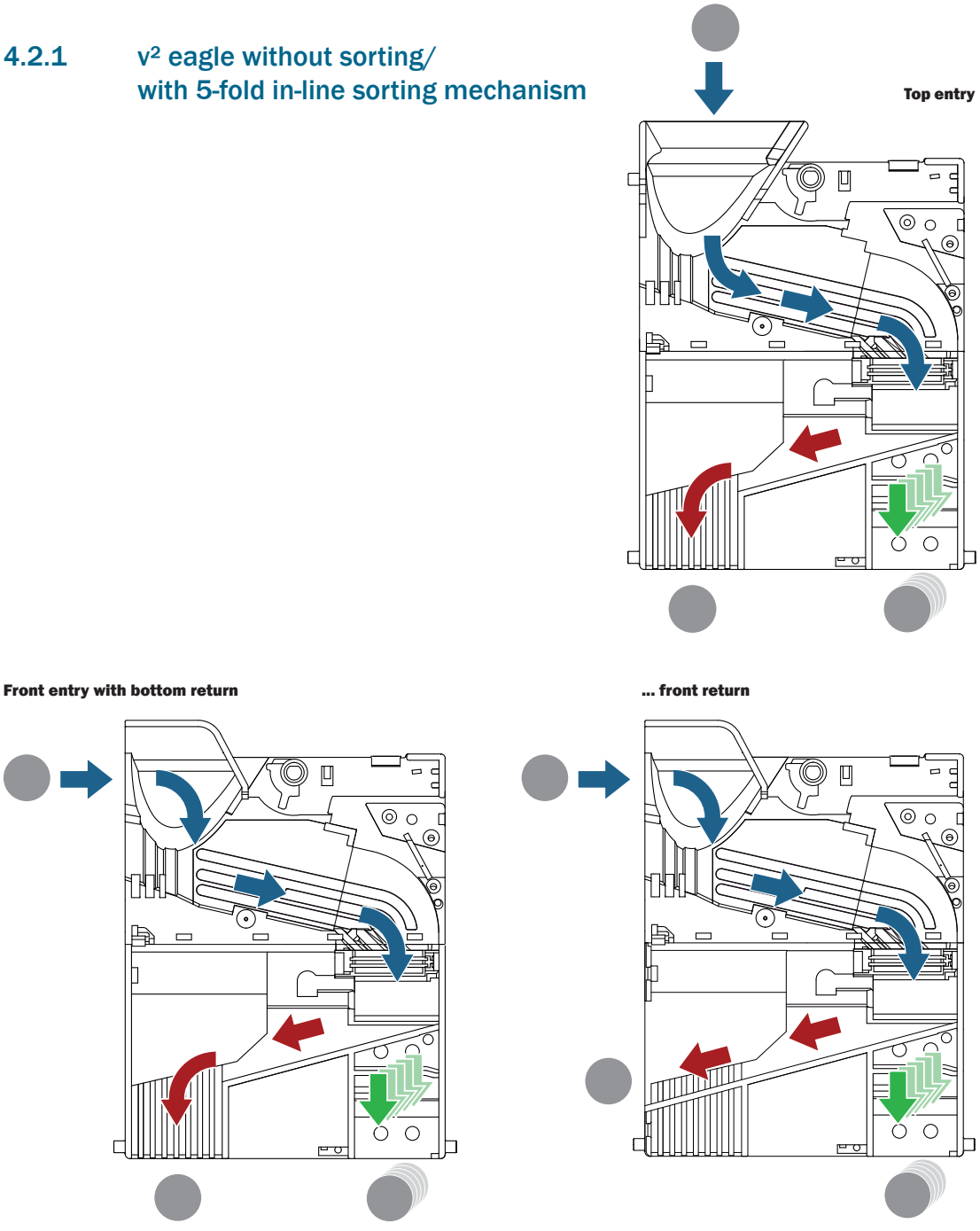


Fig. 4: Coin path for top and front entry version of the v² eagle without sorting or with 5-fold in-line sorting

4.2.2 v² eagle with 4-fold sorting mechanism

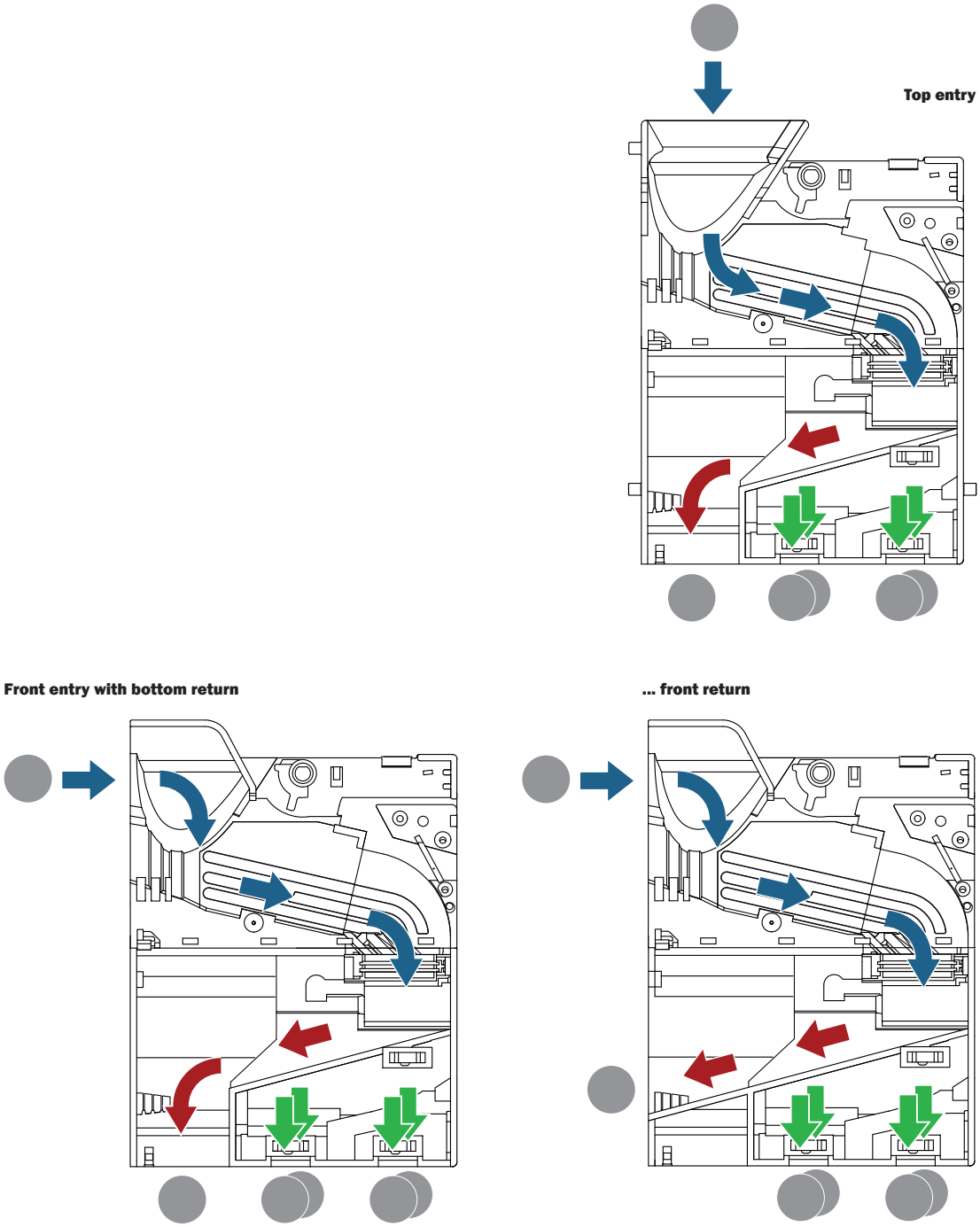


Fig. 5: Coin path for top and front entry version of the v² eagle with 4-fold sorting mechanism

4.3 Product label

The label of the coin validator [Fig. 1/10]/[Fig. 2/5]/[Fig. 3/14] contains all data defining the device such as device number and type, operating voltage and customer-specific currency and coin programming:

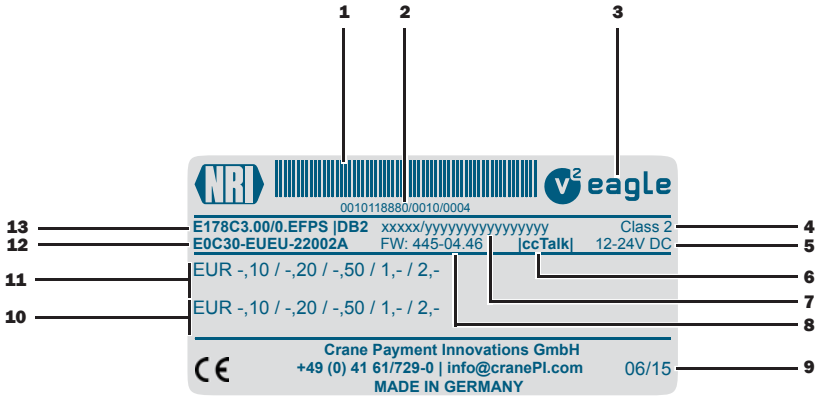


Fig. 6: Product label

1 Bar code

2 Customer order number (10-digit), Item no./order (4-digit), device serial number/item (4-digit)

3 Device type

4 UL control circuit classification: Class 2 (UL 508A §2.7) = Control circuit with limited power

5 Nominal voltage

6 Machine interface

7 Purchase order number /customer material number (option)

8 Firmware number/version

9 Date of manufacture

10 Coin programming – memory block B (if DIL switch S1 set to ON)

11 Coin programming – memory block A (if DIL switch S1 set to OFF)

12 Data block number/revision A–Z *(cp. Chap. "4.3.2 Data block decoding", p. 19)*

13 Model number *(cp. Chap. "4.3.1 Model number decoding", p. 19)*
DBx:
RCP-compliant coin validator for coin programming over host (option) *(cp. Chap. "9.3 Remote Coin Programming (RCP) – Programming coins via host interface (v² eagle ccTalk only)", p. 40)*

4.3.1 Model number decoding

EXXXXX.XX/X.XXX

Options – **D**iverter interface (s² HSD), **E**ncryption, **H**ardness sensor, **J**am sensor, **O**pto sensor, **P** = Write protection, **S**tring detection, **W**ater protected

Manufacturing process – internal option code & revision

Machine interface – **C0** = ccTalk, **C3** = ccTalk, SR5-compatible, **C4** = ccTalk ACMI,# **P4** = BDTA, **P5** = BACTA, **S0** = S1

Coin return lever – **0** = no lever **1–8** = rf. table

Sorting – **1..5** = without sorting with fixed cash box chute 1..5, **7** = 4-fold sorter, **8** = 5-fold in-line sorter, **9** = 5-fold cross-way sorter

Coin entry/outlet – **1** = Top entry, **3** = Front entry/bottom return, **4** = Front entry & return

v² family – **E**agle

Options | **Machine interface** | **Equipment**

Coin return lever #	1	2	3	4	5	6	8
							

4.3.2 Data block decoding

EXXXX-XXXX-XXXXXX

Data block revision A–Z

3-digit consecutive number

Write protection – **0** = No protection, **1** = ACMI, **2** = VDAI

Memory block/Coin channels – **1** = 1 x 32 coin channels, **2** = 2 x 16 coin channels

Second currency – **XX** = First 2 digits of ISO4217 currency code, **--** = no 2nd currency, **+2** = 2nd & 3rd currency, **+3** = 2nd, 3rd & 4th currency

Main currency – **XX** = First 2 digits of ISO4217 currency code (EU = Euro, CH = Swiss franc, US = US dollar)

Hardware relevant to coin acceptance – **0** = Top entry, **2** = Front entry

Machine interface – **C0** = ccTalk, **C3** = ccTalk, SR5-compatible, **C4** = ccTalk ACMI, **P4** = BDTA, **P5** = BACTA, **S0** = S1

Measurement variant – V**0**, V**1**

v² family – **E**agle

Configuration | **Currency** | **Hardware**

4.4 Switch block

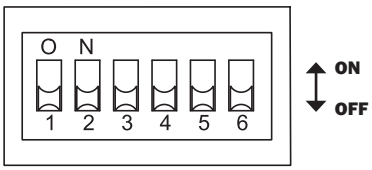
The coin validator has a switch block [**Fig. 1/12**]/[**Fig. 2/13**]/[**Fig. 3/13**] with six DIL switches S1-6 on the rear of the device. The DIL switches can be used to set certain device functions:

For details on how to use the switch block to set the individual functions, see *Chap. "7 Operation", p. 33*.

On the rear of the device you will find a brief description of the individual switch functions.

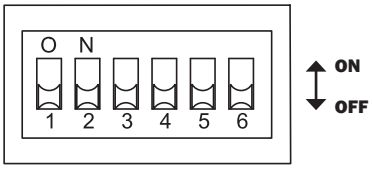
4.4.1 Switch functions on v² eagle ccTalk

DIL switch	Function	OFF	ON
S1	Memory block	A	B
S2	Defined coin channels	enabled	inhibited
S3	Teach mode	–	Teach channel 14
S4	Teach mode	–	Teach channel 15
S5	Teach mode	–	Teach channel 16
S6	Operating mode	Normal mode	Teach mode



4.4.2 Switch functions on v² eagle S1

DIL switch	Function	OFF	ON
S1	Memory block	A	B
S2	not used	–	–
S3	Teach mode	–	Teach channel 14
S4	Teach mode	–	Teach channel 15
S5	Teach mode	–	Teach channel 16
S6	Operating mode	Normal mode	Teach mode



4.5 Coin return lever

The return lever [**Fig. 1/2**]/[**Fig. 2/2**]/[**Fig. 3/2**] on the top of the device is operated using the return button on the machine when coins which have been inserted are to be returned or e.g. a jam caused by coins which have become stuck needs to be removed. Actuation of the return lever opens the measurement and validation area of the coin validator so that all objects in the coin validator are directed to the return area.

The v² eagle can be equipped with different return levers, depending on the dimensions of the machine *(cp. Chap. "4.3.1 Model number decoding", p. 19)*.

4.6 Status LED

On the rear side, the coin validator is equipped with a red status LED [**Fig. 1/14**]/[**Fig. 2/14**]/[**Fig. 3/15**] indicating the operating state of the v² eagle:

Flashing cycle	**Meaning**
 *Once a second*	Validator powered, no error
3 times a second	Error, no coin acceptance

4.7 Interfaces

For details of the machine and optional sorting and BCR interface [**Fig. 1/11**]/[**Fig. 2/12**]/[**Fig. 3/10-12**] please refer to *Chap. "5 Function", p. 22* and *Chap. "10 Technical data", p. 41*.

5 Function

This chapter describes how the coin validator works:

- Coin acceptance and coin channels
- Memory blocks
- Accepted coin sensor and sorting control
- Coin inhibition/activation of narrow coin channels
- Sorting of accepted coins (option)
- Teach mode (option)
- String recognition (option)

5.1 Coin acceptance and coin channels

For coin acceptance the coin validator has 32 "memory slots" to which up to 32 different coin types or tokens can be assigned. These "memory slots" are called coin channels. The acceptance band of one coin type/token is assigned to each coin channel and the respective coin type/token is accepted in this channel.

After a reset, coin acceptance is inhibited and must be enabled by the machine. By default the v² eagle refuses any further coin acceptance when it has not been addressed by a machine within a certain period of time (ccTalk protocol: last 500ms, S1 protocol: last 2s) or if the last coin accepted has not yet been scanned by the machine.

To enable reliable rejection of false coins, channels with a narrow or even very narrow acceptance band are frequently set up for a coin type in addition to the normal coin channel. The limit values of these coin channels are closer to one another so that false coins with similar measured values are rejected, if the normal channel is inhibited *(cp. Chap. "7.2 Inhibiting coins/activating narrow coin channel (only c2 eagle ccTalk)", p. 33)*. Narrow and very narrow coin channels, however, also feature a lower acceptance rate.

In addition, it is possible to assign coins with different measured values but identical coin values to different coin channels. In this way the coin validator can accept e.g. old and new coins of the same denomination.

In addition to the acceptance band of a coin type, further coin information which defines further processing of the coin after its acceptance is assigned to a coin channel: e. g. the coin value or sorting information for a sorting device.

Since in most cases not all coin channels are assigned by customized factory programming, further coin types and the desired information can be assigned to these free channels at any time using the NRI configuration and service tools. Existing configurations can be changed.

Three coin channels are intended to be used for the teach mode. In these teach channels new tokens/coin types can be taught also without configuration and service tools, directly on the coin validator using the switch block; i. e. a new coin or token is assigned to a channel *(cp. Chap. "5.6 Teach mode (option)", p. 31)*.

5.2 Memory blocks

The v² eagle manages two separately programmed (memory) blocks A and B *(cp. Chap. "4.3 Product label", p. 18)*. 16 coin channels with different coin types (also currencies), sorting information etc. can be assigned to each block. Only one block at a time can be active and used for coin measurement and further coin processing. You can use the switch block on the device to select the desired block.

5.3 Accepted coin sensor and sorting control

To ensure that accepted coins actually arrive in the cash-box or sorting device and that acceptance has not been tampered with, an accepted coin sensor (light barrier) and a sorting control (light barrier) check whether the inserted coin drops unhindered through the coin outlet towards the cash-box or sorting device. Only when the coin has passed these checking devices, either coin acceptance or, in case of tampering, an error code is transmitted to the machine (cp. separate v² eagle ccTalk specification, available on request).

5.4 Coin inhibition/activation of narrow coin channels

If coins are no longer to be accepted for payment on the machine you can either

- inhibit coin acceptance completely,
- inhibit all coin channels of a certain coin to ensure that this coin is no longer accepted, or
- inhibit the normal coin channel of a certain coin so that this coin is accepted only in the narrow channel.

After a reset, coin acceptance is inhibited and must be enabled by the machine. By default the v² eagle refuses any further coin acceptance when it has not been addressed by a machine within a certain period of time (ccTalk protocol: last 500ms, S1 protocol: last 2s) or if the last coin accepted has not yet been scanned by the machine.

5.4.1 Inhibiting all coins/individual coin channels via machine control system

The control system can

- inhibit coin acceptance completely. In this case the coin validator does not accept any coins.
- inhibit all coin channels of a certain coin, e.g. if there is no more change in an external payout unit or in case of high fraud hazard.
- inhibit the normal coin channel of a certain coin so that this coin is accepted only in the narrow channel.

How to program the inhibit or enable functions is described in the

- general specification "ccTalk Serial Communication Protocol, Generic Specification“, made available on the Internet at "www.ccTalk.org“, and
- specific v² eagle ccTalk protocol specification made available to you on request, or
- the NRI interface specification "Electronic Coin Validator G-40 S1“ made available to you on request which is based on the NAMA specification "Multi-Drop Bus/Internal Communication Protocol“.

5.4.2 Inhibiting a coin channel/coin channel group using the switch block (only v² eagle ccTalk)

As an alternative to inhibition via the control system, the ccTalk coin validator is provided with a switch for inhibiting a single coin channel or a coin channel group on site.

All coin channels assigned to this switch by customized factory programming are inhibited, e.g. channels with normal acceptance bands, so that the coins inserted are accepted in the channels with narrow acceptance bands, or the channels of a defined coin (normal, narrow, very narrow), if a coin is no longer to be accepted for payment on the machine.

Chap. "7.2 Inhibiting coins/activating narrow coin channel (only c2 eagle ccTalk)", p. 33 describes how to inhibit these coin channels.

5.5 Sorting accepted coins (option)

To direct accepted coins either to the cash-box or an external sorting device, e.g. change tubes or hoppers, the coin validator can be equipped with a 5-fold in-line or cross-way sorting mechanism or a 4-fold sorting mechanism at the coin outlet. The chutes are controlled via a flap sorting system using three solenoids.

In this section you learn all about the principle of

- 5-fold in-line sorting
  - without manifold
  - with manifold
- 5-fold cross-way sorting
- 4-fold sorting
  - without manifold
  - with 4-way or 8-way manifold

5.5.1 Sorting principle of 5-fold in-line sorter (Ex8xxx. ..)

The individual coin types can be distributed to the five chutes arranged behind one another independent of their dimensions. Each chute can be defined as cash-box chute.

Which coin is sorted into which of the up to five chutes is determined by customized factory programming.

5.5.1.1 ccTalk sorting

For the event that a payout unit transmits a 'full' signal to a ccTalk coin validator, up to three spare sorting chutes can be defined for each coin programmed in a ccTalk coin validator in addition to the main sorting chute. When a payout unit is full, the coins are sorted into these chutes. Using the commands 222/221 "Modify Sorter Override Status“/“Request Sorter Override Status“ you can inhibit the sorting chute of the full payout unit so that the coins can be sorted into the next sorting chute (cf. ccTalk Specification).

These (spare) sorting chutes are also programmed in the factory according to the customer's specifications or set via the machine control system. If all sorting chutes defined for a coin signal "Tube full", the coin is directed into the cash box (ccTalk default sorting chute).

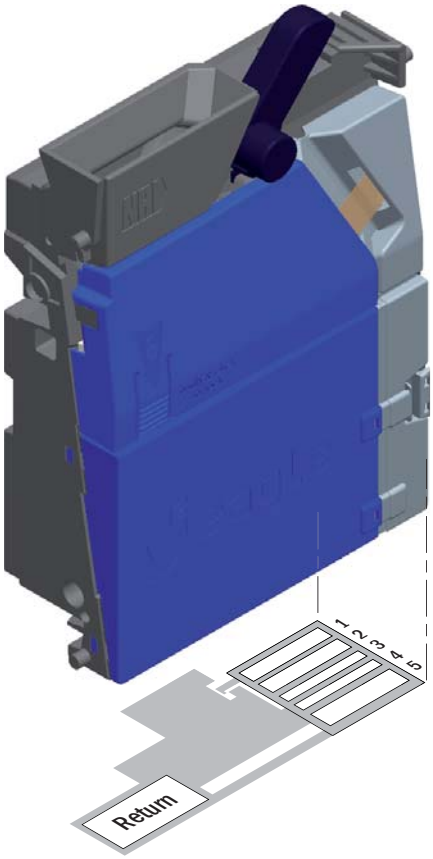


Fig. 7: Sorting chutes 1–5 of in-line sorting system

The following table shows which sorting chute is assigned to which ccTalk sorter path:

v² eagle sorting chute	ccTalk sorter path
1	2
2	3
3	4
4	5
5	1

In principle, the ccTalk protocol can address eight sorter paths, however for the v² eagle ccTalk only five paths are provided.

5.5.1.2 Sorting with NRI 4-way manifold

For the purpose of splitting-up and for better transport of the sorted coins you have the option of an NRI 4-way manifold which can be screwed to the coin validator from the bottom. This adapter is primarily used in AWP and SWP slot machines.

If the manifold is installed, four sorting chutes are available *(cp. Chap. "10.3 Accessories", p. 45)*.

Which coin is sorted into which of the up to four adapter chutes is determined by customized factory programming or is set via the machine control system just like the cash box chute (ccTalk default sorting chute).

The following table shows which manifold chute corresponds to which coin validator chute and to which ccTalk sorter path:

Manifold chute	v² eagle sorting chute	ccTalk sorter path
A	3	4
B	2	3
C	1	2
D	5	1

In principle, the ccTalk protocol can address eight sorter paths, however for the manifold only four paths are provided.

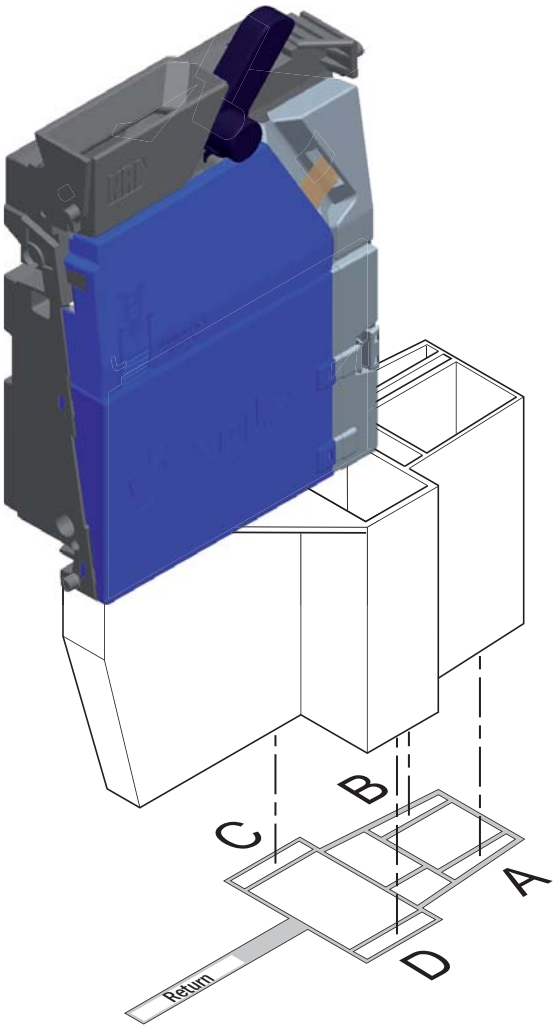


Fig. 8: Sorting chutes A–D of NRI manifold

5.5.2 Sorting principle of 5-fold cross-way sorting (E19xxx. ..)

In case of cross-way sorting the five sorting chutes are arranged beside one another. The cash box chute is located behind the right-hand sorting chute.

If one of the four 'full' sensors integrated in the coin validator signals that a connected change tube is full, the coin drops into the cash box. Only when payments have been made from this tube, coins are sorted again into this tube. If the same type of coin is to be sorted into two or more tubes, first the left tube is filled and payments are made from the right tube.

The chute into which the individual coins are sorted depends on the coin diameter:

v² eagle sorting chute	left	middle left	middle right	right
Diameter max. (mm)	29	23.5	26	32

Which coin is sorted into which of the four sorting chutes is determined by customized factory programming or set via the machine control system.

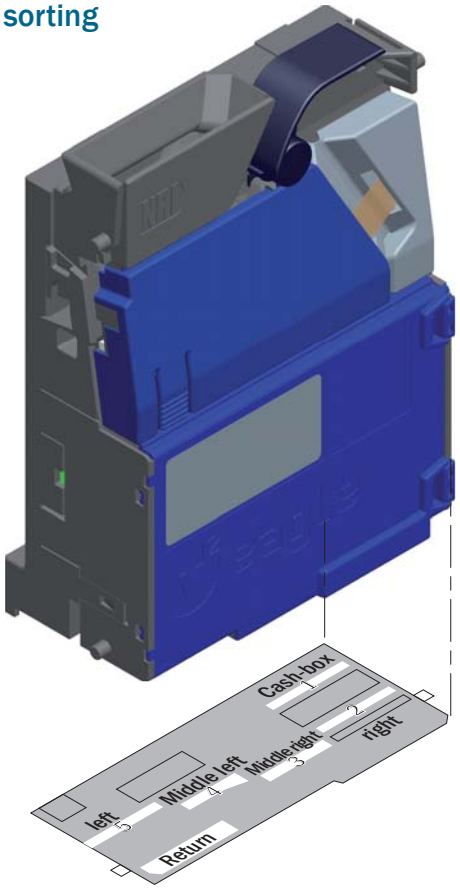


Fig. 9: Sorting chutes of 5-fold cross-way sorting system

5.5.2.1 ccTalk sorting

The default sorter path 1 is programmed to be the cash box chute and cannot be changed.

For each coin programmed in a ccTalk coin validator up to three spare sorting chutes can be defined in addition to the main sorting chute, into which the coins are sorted when a change tube is full. When a 'full' sensor in the coin validator transmits a 'full' signal, you can direct the coin either into one of the these spare sorting chutes or into the cash box using the command 221 "Request Sorter Override Status“, provided redirection has not been activated via the command 222 "Modify Sorter Override Status“ (cf. ccTalk specification).

These (spare) sorting chutes are also programmed in the factory according to the customer's specifications or set via the machine control system. If all sorting chutes defined for a coin signal "Tube full", the coin is directed into the cash box (ccTalk default sorting chute).

The following table shows which sorting chute is assigned to which ccTalk sorter path:

v² eagle sorting chute	ccTalk sorter path
Cash-box	1, 6–8
Tube, left	5
Tube, middle left	4
Tube, middle right	3
Tube, right	2

In principle, the ccTalk protocol can address eight sorter paths, however for the v² eagle ccTalk only five paths are provided.

5.5.3 Sorting principle of 4-fold sorting (E17xxx. ..)

The individual coin types can be distributed to the four chutes independent of their dimensions. Each chute can be defined as cash box chute.

Which coin is sorted into which of the up to four chutes is determined by customized factory programming. Standard programming: Chute D

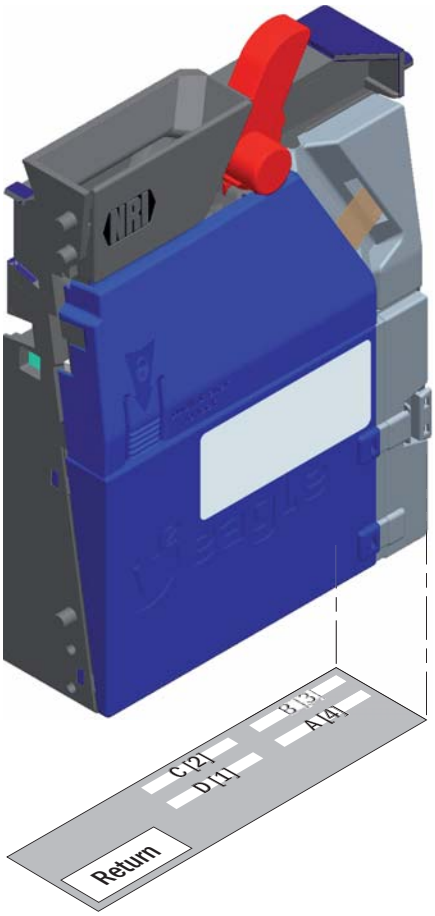


Fig. 10: Sorting chutes of 4-fold sorting system

5.5.3.1 ccTalk sorting

For the event that a payout unit transmits a 'full' signal to a ccTalk coin validator, up to three spare sorting chutes can be defined for each coin programmed in a ccTalk coin validator in addition to the main sorting chute. When a payout unit is full, the coins are sorted into these chutes. Using the commands 222/221 "Modify Sorter Override Status"/"Request Sorter Override Status" you can inhibit the sorting chute of the full payout unit so that the coins can be sorted into the next sorting chute (cf. ccTalk specification).

These (spare) sorting chutes are also programmed in the factory according to the customer's specifications (standard programming: ccTalk sorter path 1, chute D) or set via the machine control system. If all sorting chutes defined for a coin signal "Tube full", the coin is directed into the cash box (ccTalk default sorting chute).

The following table shows which sorting chute is assigned to which ccTalk sorter path:

v² eagle sorting chute	ccTalk sorter path
A	4
B	3
C	2
D	1

In principle, the ccTalk protocol can address eight sorter paths, however for the v² eagle ccTalk only four paths are provided.

5.5.3.2 Sorting with Money Controls 4-way manifold

For the purpose of splitting-up and for better transport of the sorted coins you have the option of a Money Controls 4-way manifold which can be screwed to the coin validator from the bottom. This adapter is primarily used in AWP and SWP slot machines.

If the manifold is installed, also four sorting chutes are available *(cp. Chap. "10.3 Accessories", p. 45)*.

Which coin is sorted into which of the up to four manifold chutes is determined by customized factory programming or is set via the machine control system just like the cash box chute (ccTalk default sorting chute).

The following table shows which manifold chute corresponds to which coin validator chute and to which ccTalk sorter path:

Manifold chute	v² eagle chute	ccTalk sorter path
A	A	4
B	B	3
C	C	2
D	D	1

In principle, the ccTalk protocol can address eight sorter paths, however for the manifold only four paths are provided.

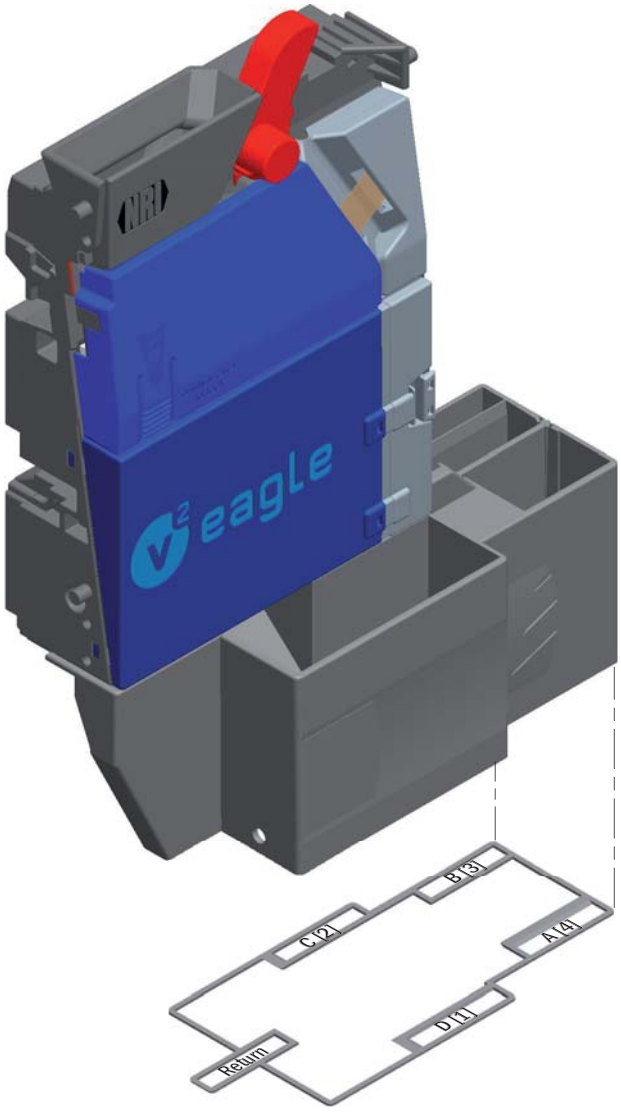


Fig. 11: Sorting chutes A–D of Money Controls 4-way manifold

5.5.3.3 Sorting with active Money Controls 8-way manifold

Other applications even require sorting into up to eight different paths. For this you can use the Money Controls 8-way manifold which is to be hung up in the machine right under the coin validator *(cp. Chap. "10.3 Accessories", p. 45)*. This active 8-way manifold fans out each of the four sorting chutes of the coin validator in two chutes.

Which coin is sorted into which of the up to eight manifold chutes is determined by customized factory programming or is set via the machine control system just like the cash box chute (ccTalk default sorting chute).

The following table shows which manifold chute corresponds to which coin validator chute and to which ccTalk sorter path :

Manifold chute	v² eagle chute	ccTalk sorter path
A	A	4
a		5
B	B	3
b		6
C	C	2
c		7
D	D	1
d		8

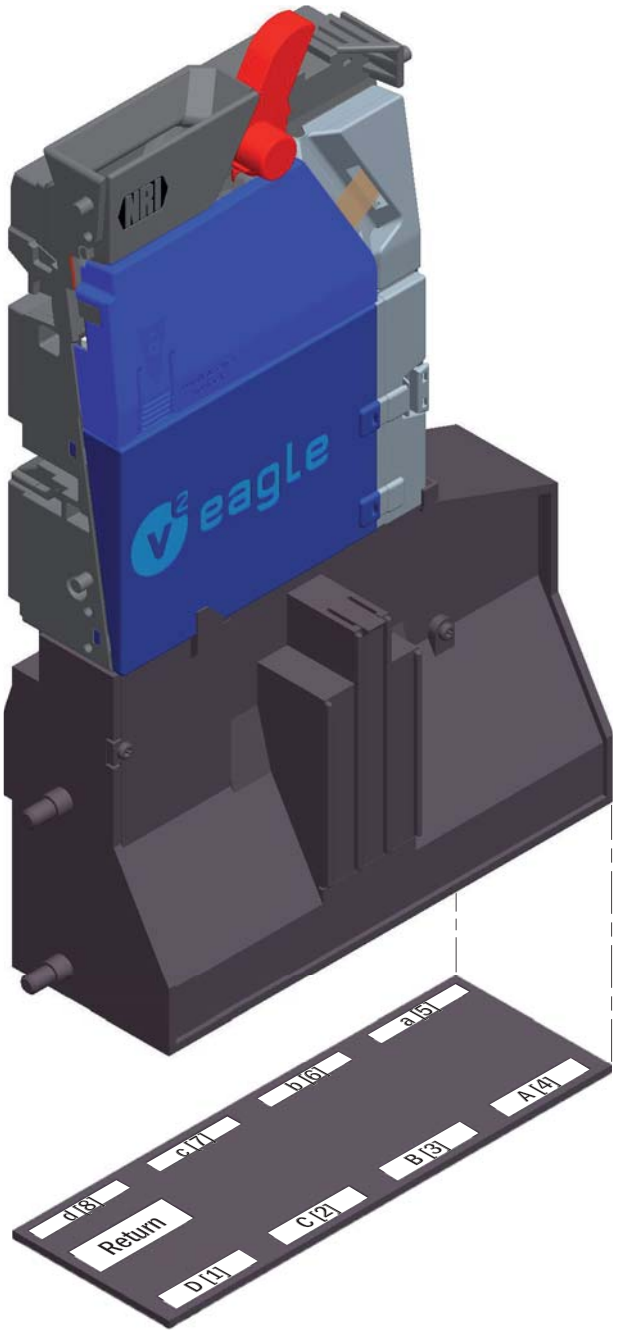


Fig. 12: Sorting chutes of Money Controls 8-way manifold

5.6 Teach mode (option)

If the v² eagle has been programmed accordingly in the factory, coin channels can be taught in the teach mode without configuration software either via the switch block on the coin validator or via the ccTalk machine control system, i. e. a new token or coin is assigned to a coin channel. The new acceptance band is generated by inserting the tokens/coins. It is not necessary to remove the coin validator from the machine for this purpose. The last three coin channels 14 – 16 (= teach channels) of the activated memory block are available for teaching *(cp. Chap. "7.3 Teaching coin channels in teach mode (optional)", p. 34)*.

5.7 String recognition (option)

To ensure that no coins suspended from a string can be inserted into the coin validator or that the acceptance gate cannot otherwise be tampered with, the coin validator can be equipped with an optical sensor (cannot be retrofitted) in the acceptance area which recognizes both tight and loose strings.

The construction of the acceptance gate (dismounted in figure) makes the string go through the light beam between the two optical sensors. If the acceptance gate is completely closed, the string lengthens the light signal. If the acceptance gate is slightly open (tight string), the light beam is directly interrupted by a flag on the accpetance gate.

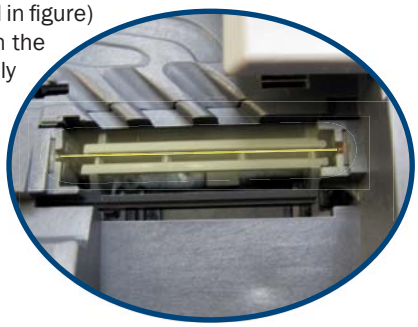


Fig. 13: Section – String recognition

If the sensor recognizes a string, the coin validator transmits an error message

- ccTalk coin validator: error code 20 "Coin-on-String Mechanism activated"
- S1 coin validator: error code 01 (hex) "String Detection is or was active"

and the coin is not accepted. At first, coin acceptance is inhibited for 30 seconds. If the string is not removed within this time period and the sensor continues to recognize it, coin acceptance remains inhibited and in addition all "jammed coins" are automatically released.

Sensitivity of the string sensor

To enable faster testing of the string sensor for functioning, coin acceptance is not inhibited when diagnosis is performed. When the string sensor is activated only an error code is transmitted.

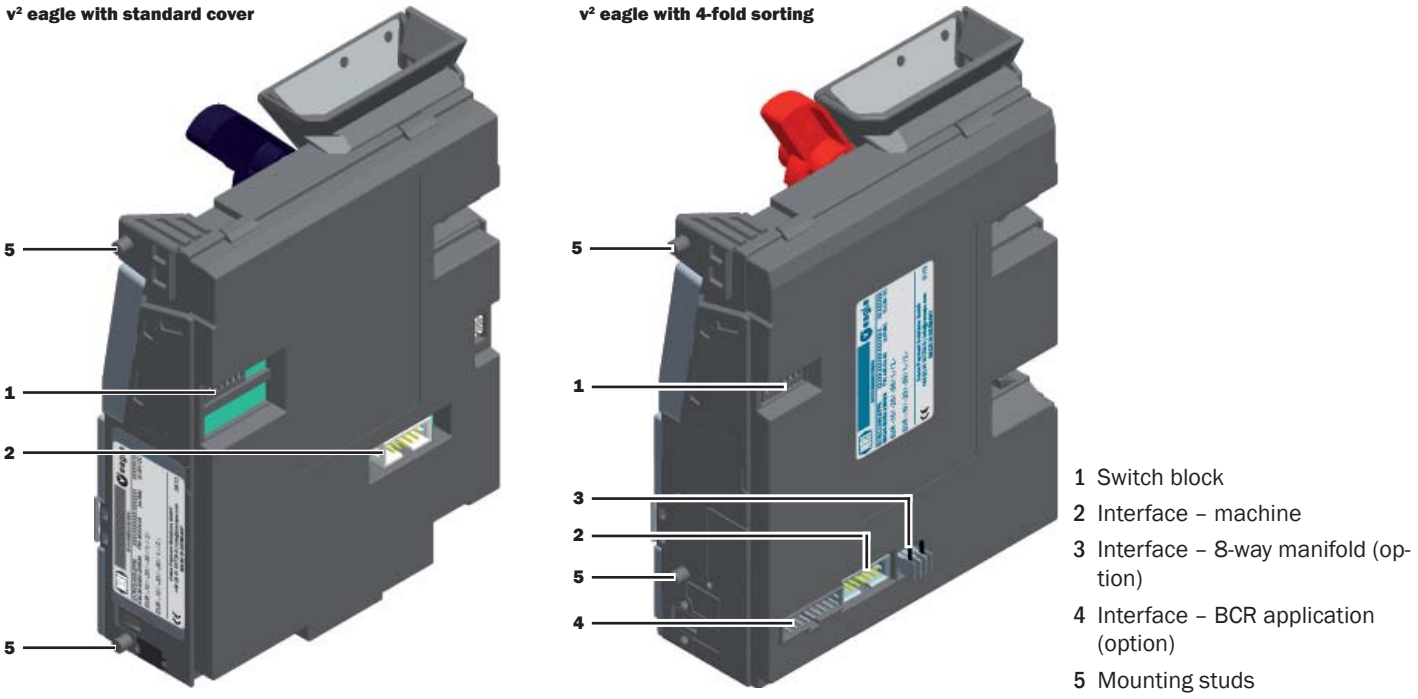
6 Start-up

For all installation work on the coin validator or the machine please observe the following safety instructions:

- **The coin validator may only be connected by a qualified electrician.**
- **The coin validator is not suited for outdoor use.**
- **Do not use the coin validator if the device or connecting cable are damaged .**
- **Make sure that the correct supply voltage is connected (see label).**
- **Never pull the connecting cable of the coin validator from the machine when a voltage is applied.**
- **Pull out the machine's mains plug before you install or remove the coin validator.**

To install the v² eagle in a machine with ccTalk or S1 interface:

1. If necessary make individual settings via the switch block [**Fig. 14/1**] *(cp. Chap. "7 Operation", p. 33)*.
2. Disconnect the machine from the mains supply.
3. Connect the coin validator to the machine using the 10-pin ccTalk/S1 interface [**Fig. 14/2**] and the appropriate connecting cable.
4. Connect the 8-way manifold, if any, to the coin validator using the optional sorting interface [**Fig. 14/4**], or connect coin validator with BCR interface [**Fig. 14/4**] for BCR applications.
5. Hang up the coin validator in the machine using the lateral mounting studs [**Fig. 14/5**].
6. Reconnect the mains supply to the machine.



1 Switch block
2 Interface – machine
3 Interface – 8-way manifold (option)
4 Interface – BCR application (option)
5 Mounting studs

Fig. 14: Installation

7 Operation

This chapter describes how to operate the coin validator, i. e. set certain functions on the coin validator:

- Selecting the memory block
- Inhibiting coins/activating narrow coin channel
- Teaching coin channels in teach mode (option)

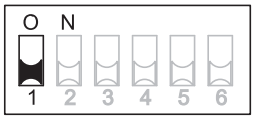
The settings which are made directly on the coin validator are described. In NRI screencast tutorials (**www.cranePI.com, Support**) you can learn how to make settings using the PC configuration software heartbeat *(cp. Chap. "9 What subsequent settings can be made?", p. 39)*.

Chap. "5 Function", p. 22 describes the functions of the adjustable device options.

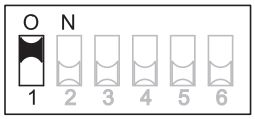
7.1 Selecting the memory block ...

If the coin validator is to access the other memory block and e.g. accept euro coins instead of the national currency coins, the correct block can be selected using the lower switch block:

1. Unhook the coin validator from the machine.
2. For memory block B set DIL switch S1 to ON (up), for memory block A set DIL switch to OFF (down).



Memory block A selected



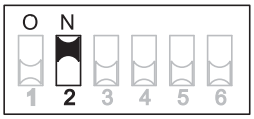
Memory block B selected

3. Remount coin validator in the machine.
4. Switch power off and on again.
   The required memory block is activated.
5. Check coin acceptance of the new memory block selected.

7.2 Inhibiting coins/activating narrow coin channel (only c² eagle ccTalk)

To inhibit the coin channels assigned to DIL switch S2:

1. Unhook the coin validator from the machine.
2. Set DIL switch S2 to ON (up).
3. Remount coin validator in the machine.
4. Switch power off and on again.
   All coin channels assigned to the DIL switch in the factory or via heartbeat are inhibited for coin acceptance.
5. Test coin acceptance.



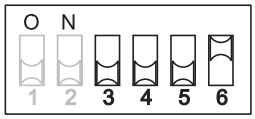
7.3 Teaching coin channels in teach mode (optional)

If the v² eagle has been programmed accordingly in the factory, a token or a new coin can be assigned to a coin channel using either the switch block on the coin validator or ccTalk commands and a service menu of the machine.

7.3.1 ... using the switch block on the coin validator

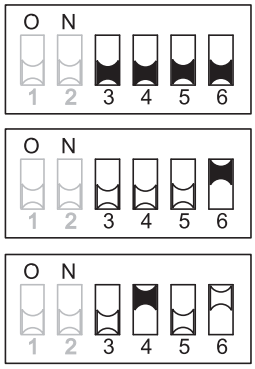
To generate new acceptance bands, up to three coin channels (teach channels) can be taught using the switch block on the coin validator. You need at least ten coins/tokens of the new type. The following DIL switches have the following functions:

DIL switch	Function	OFF	ON
S3	Teach mode	–	Teach channel 14
S4	Teach mode	–	Teach channel 15
S5	Teach mode	–	Teach channel 16
S6	Teach mode	OFF	ON



Proceed as follows to assign a new coin/token to coin channel 14, 15 or 16:

1. Unhook the coin validator from the machine.
2. Set DIL switches S3-6 to OFF (down).
3. Set DIL switch S6 to ON (up).
   The device is in the teach mode for teaching the coin channels.
4. Select the coin channel to be taught (14–16, here: 15) by setting the respective DIL switch (S3–5, here: S4) to ON (up).



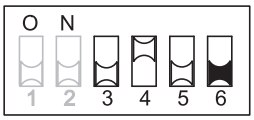
5. Insert at least 10 coins of the new coin type/token into the coin validator or machine. After the 10th coin has been inserted, the acceptance gate is operated once (brief clacking sound). Further coins can be inserted.

If there is no signal after the 10th coin has been inserted, the coins inserted cannot be used.

Now you can save the measured values generated by the inserted coins with a normal (a) or a wide (b) acceptance band. A wide acceptance band is an appropriate choice when you only have a limited selection of coins at your disposal for the purpose of teaching tokens.

To save with the normal acceptance band:

6a Set DIL switch S6 back to OFF (down).
Successful saving is signalled by the acceptance gate attracting once. A saving error is signalled by the acceptance gate attracting twice (brief cracking sounds), if e.g. the acceptance band of the coins inserted and the acceptance band of a coin channel already programmed overlap, or the measured values generated are too different and the tolerances would become too large.

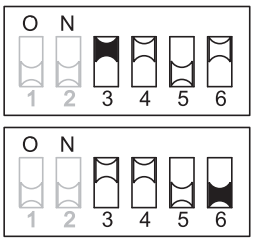


To cancel the process first set the DIL switch of the respective coin channel (S3–5, here: S4) and then DIL switch S6 to OFF (down).

To save with the wide acceptance band:

6b Set an additional DIL switch S3–5 (here: S3) to ON (up). The acceptance band has been widened.

Now you can set DIL switch S6 to OFF (down) again. Successful saving is signalled by the acceptance gate attracting once. A saving error is signalled by the acceptance gate attracting twice (brief cracking sounds), if e.g. the acceptance band of the coins inserted and the acceptance band of a coin channel already programmed overlap, or the measured values generated are too different and the tolerances would become too large.



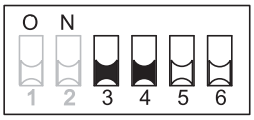
To cancel the process first set the DIL switch of the respective coin channel (S3--5, here: S4) and the additional DIL switch for the wide acceptance band (here: S3) and then DIL switch S6 to off (down).

7 Set DIL switch S3–5 to OFF again (down)

8 Remount the coin validator in the machine.

9 Switch power off and on again.

10 Enable the taught coin channel (here: 15) via the control system and adapt sorting, if necessary.



The coin validator will now accept the new coin type/token for payment.

7.3.2 ... using ccTalk commands/machine service menu

If the coin validator has been programmed accordingly in the factory and is not write-protected, coin channels can be taught using ccTalk command set (cp. separate v² eagle ccTalk protocol specification, available on request) in order to create new acceptance bands. This command set can be used to start and monitor the teach mode e.g. via a service menu.

The new acceptance bands are generated and saved by inserting ten coins/tokens of the new type. After saving of the acceptance bands the coin validator will accept the new coin type/token for payment.

Fur further information about teaching of coins/tokens via the service menu please refer to the instruction manual for the machine.

Should you overwrite a configured coin channel in the teach mode, all properties assigned to this channel (e. g. coin ID, sorting etc.) must be adapted to the new coin/token (see separate heartbeat manual).

8 Maintenance and service

This chapter describes how to

- clean the v² eagle and
- remedy the cause of malfunctions.

Please consider the following safety instructions when cleaning or servicing the coin validator:

- **Pull the mains plug of the machine before removing and cleaning the coin validator.**
- **Do not use any solvents or scouring agents which attack the plastic material or optics of the device.**
- **Do not submerge the coin validator in any kind of liquid. This will damage the device.**

8.1 Cleaning measurement and validation area

On their way through the coin validator the coins may leave residues on sensitive parts in the measurement and validation area which must be removed from time to time to ensure reliable coin processing.

Depending on the coin validator's application in the machine, the air pollution (e.g. dust, nicotine) and other conditions to which the validator is subjected, the coin validator is soiled at different degrees. Therefore these application conditions have a strong influence on the cleaning interval

A film of dirt on the flight deck's coin runway or the measurement surface may change the position of the coin in front of the sensors and thus lead to shifts in the inductive and optical measurements. If these measured values are more and more beyond the acceptance band programmed, the acceptance rate decreases. In case of heavy soiling coins may even be rejected.

- Cleaning interval: depends on application conditions, minimum once per year
- Cleaning agent/tool: small brush, slightly moistened cloth, lukewarm water with washing-up solution

1. Pull the mains plug of the machine.
2. Pull the coin insert funnel [Fig. 15/**1**] at the front and open the flight deck beyond the first stop.
3. Remove loose dust and coin residues from the two sides of the coin runway using a brush.
4. Wipe the two sides of the coin runway clean using a slightly moistened cloth.

Any possible film of dirt in the highlighted areas [Fig. 16/**1**, **2**] **must be removed residue-free. Doing this prevent fluid from entering the device.**

5. Allow all parts to dry.

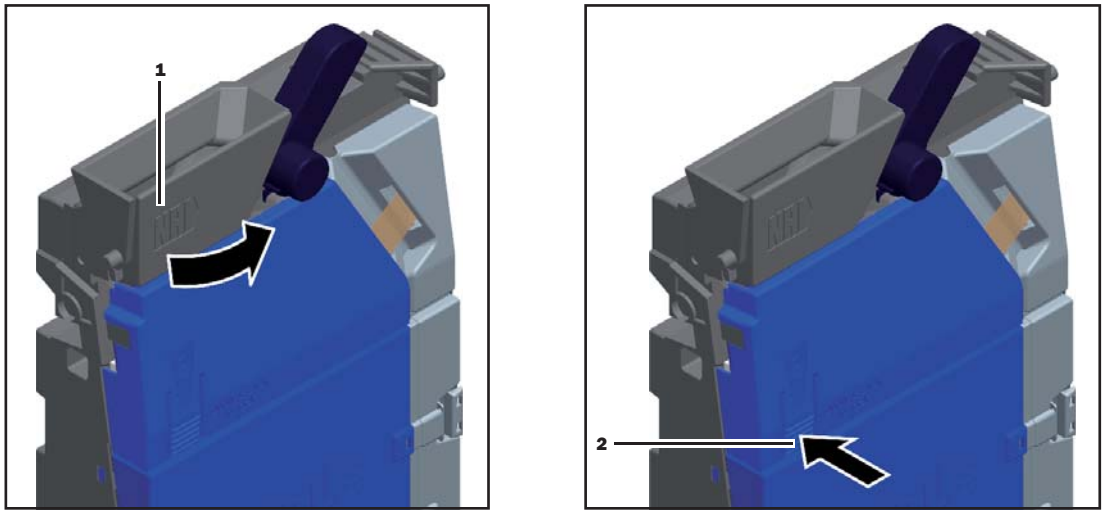


Fig. 15: Opening and closing the flight deck of the coin validator

6 Make sure that in particular the measurement surface with the inductive coil and the three optical sensors [**Fig. 16/1**] as well as the runway [**Fig. 16/2**] on the flight deck are clean. In case these areas are not clean, repeat steps 4 and 5 and check again for cleanliness.

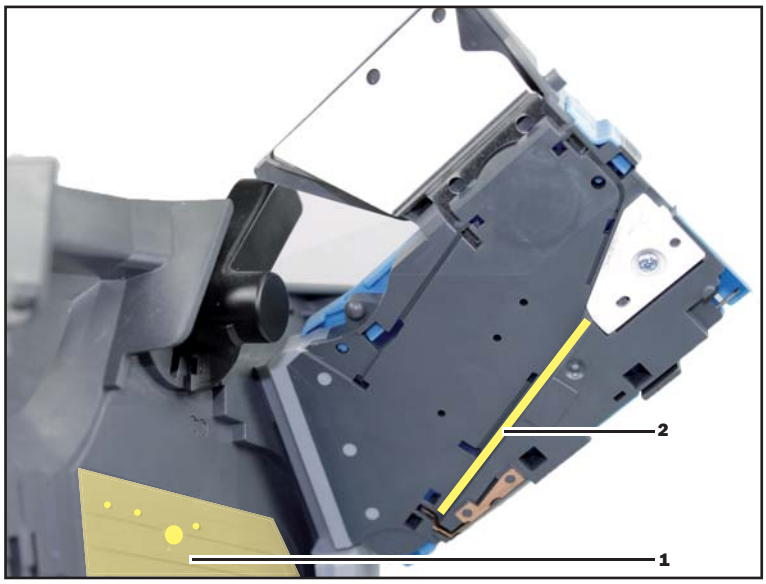


Fig. 16: Surfaces and parts to be cleaned in the measurement and validation area

7 Close flight deck and press closing device [**Fig. 15/2**] so that the flight deck audibly clicks into place.

8 Reconnect the machine to the mains supply.

8.2 Troubleshooting

Malfunctions can occur in all electronic devices. These do not always have to be faults in the device. In many cases improper connections or incorrect settings are the reason. Therefor: please check first of all whether the malfunction can simply be remedied using the following table.

Problem	Possible cause	Remedy, hints
Status LED flashes continuously (once a second) ☀	Coin Validator powered	No error
Status LED flashes 3 times a second ☀☀☀	Return lever pressed/got stuck	Ensure that return lever is not permanently pressed by error
	Coin runway dirty	Open flight deck and clean coin runway *(cp. Chap. "8.1 Cleaning measurement and validation area", p. 36)*
	Flight deck not locked	Make sure that the flight deck is locked properly by pressing the closing device *(cp. Chap. "8.1 Cleaning measurement and validation area", p. 36)*
	Coin inhibited	• Make sure that machine control system does not inhibit coin acceptance • Only v² eagle ccTalk: make sure that the coin is not inhibited using DIL switch S2 on the rear of the device, or that not only the narrow coin channel is enabled and the normal one is inhibited *(cp. Chap. "7.2 Inhibiting coins/activating narrow coin channel (only c2 eagle ccTalk)", p. 33)*
Coin validator does not accept coin	No power supply	• Connect cable to validator and machine correctly • Supply machine with voltage
	Return lever pressed/got stuck	Ensure that return lever is not permanently pressed by error
	Coin runway dirty	Open flight deck and clean coin runway *(cp. Chap. "8.1 Cleaning measurement and validation area", p. 36)*
	Flight deck not locked	Make sure that the flight deck is locked properly by pressing the closing device *(cp. Chap. "8.1 Cleaning measurement and validation area", p. 36)*
	Coin inhibited	• Make sure that machine control system does not inhibit coin acceptance • Only v² eagle ccTalk: make sure that the coin is not inhibited using DIL switch S2 on the rear of the device, or that not only the narrow coin channel is enabled and the normal one is inhibited *(cp. Chap. "7.2 Inhibiting coins/activating narrow coin channel (only c2 eagle ccTalk)", p. 33)*
Coin validator accepts coin, but no credit is given	Coin does not exit the device	Make sure that the coin outlet is not blocked by foreign objects or devices connected to the bottom of the coin validator

If the malfunction cannot be remedied please contact our service technicians.

9 What subsequent settings can be made?

This chapter provides general information concerning the NRI service and configuration tools for the v² eagle and the device functions which can be configured subsequently.

Beyond that coins can be programmed or updated via host interface as an option.

9.1 Service and configuration tools

Depending on whether you want to configure the coin validator in the workshop or on site a PC software or a mobile service tool is recommended.

9.1.1 PC configuration software heartbeat

The PC software heartbeat serves for diagnostics and individual configuration of the new NRI coin validator generation and for updating the complete coin and device configuration using data blocks currently provided by Crane Payment Innovations in Buxtehude (data block upload).

The heartbeat software identifies the coin validator connected to the PC and its device-specific data and displays the data on the screen of your PC for diagnostics and configuration.

Using the heartbeat tutorial (**www.cranePI.com, Support**) you will learn how to connect the coin validator to your PC and how to install and use the software.

9.1.2 On-site service tool HENRI⁺

For on-site configuration we recommend the HENRI⁺ service tool by which you can update the complete coin and device configuration quickly and reliably via data block upload.

The separate short reference guide describes how to connect and use the tool.

HENRI⁺ is also suitable for on-site firmware updates.

9.2 Which device functions can be set?

- Acceptance of genuine coins and rejection of false coins
  (acceptance band adjustment after insertion of genuine coins and false coins)
- Coin via channel assignment of
  - coin value
  - ccTalk Coin ID
  - ccTalk Coin Type/Position 1–16
- Sorting via
  - channel assignment of main and spare sorting channels
  - definition of a ccTalk default sorting chute
- Coin inhibition via channel assignment of DIL switch S2 (only v² eagle ccTalk)
- Sensitivity of the string sensor
- New coins/tokens
  (generation of a new acceptance band and assignment of the coin/sorting data)
- Data block upload for current coin and device data

9.3 Remote Coin Programming (RCP) – Programming coins via host interface (v² eagle ccTalk only)

If you would like coins to be programmed via host interface, you will need an RCP-compliant coin validator *(cp. Chap. "4.3 Product label", p. 18)*.

This coin data transmission either updates acceptance bands of coins already programmed or programs new coins in coin channels prepared to be remote-programmed with completely new acceptance bands.

The product label indicates DBx for all RCP-compliant coin validators. DBx means the coin set number (depends on validator hardware affecting the coin measurements) from which the currency data required must be selected.

10 Technical data

This chapter contains
- all relevant v² eagle data
- details of machine and sorting interfaces
- information concerning v² eagle accessories

10.1 Device data

Supply voltage	10V to 28V DC
Current consumption when accepting coins	Acceptance solenoid: approx. 3W Sorting solenoid: approx. 2W (max. 2 at the same time)
U_{Nom} = 12V	Without sorting: approx. 400mA (for approx. 150ms) With sorting: approx. 1000mA (for approx. 250ms)
U_{Nom} = 24V	Without sorting: approx. 300mA (for approx. 150ms) With sorting: approx. 600mA (for approx. 250ms)
Temperature range	0 °C to 60 °C
Temperature change	0.2 °C/min. max.
Rel. humidity	up to 93%
Condensation	not permitted
Machine interface	ccTalk: 9600 baud, 8-bit, N, 1, 5_V TTL, common transmitting and receiving line, active low Protocol in compliance with Generic Specification "cctalk Serial Communication", Crane Payment Solutions (Money Controls) and v² eagle ccTalk protocol specification (available on request) S1: 9600 baud, 9-bit, N, 1, 5 V TTL, Tx active low, Rx active high Protocol in compliance with Interface Specification "G-40 S1", NRI (available on request) For pin assignment refer to *Chap. "10.2.1 Pin assigment", p. 43*
Coin acceptance	32 coin types max. in 2 x 16 channels Coin diameter: 15–31mm (optionally up to 32mm, at 2.4mm thickness max.) for 5-fold cross-way sorting (in mm):

left	middle left	middle right	right
29	23.5	26	32

	Coin thickness: 1.5–2.4mm (optionally up to 3.4mm) Speed: 2 coins/s
Device dimensions	Standard 5” format, exact dimensions depend on validator model, cf. separate "Installation Drawings"
Mounting position	vertical, max. deviation: ± 2°

Directives applied	EMC:	2004/108/EC EN 55 014-2 (interference resistance) EN 55 022 (interference emission)
	Machinery:	2006/42/EC
	R&TTE:	1999/5/EC (Radio and telecommunications terminal equipment)
	(cf. Declaration of Conformity)	
Product certifications	CE UL	

10.2 Interfaces

The following pages show pin assignments for the connection of the coin validator to

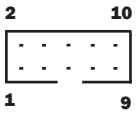
- the machine
- the sorting mechanisms

v² eagle-specific ccTalk commands/settings and error messages are explained in the v² eagle ccTalk protocol specification (available on request).

10.2.1 Pin assigment

10.2.1.1 v² eagle – machine (ccTalk)

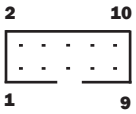
Pin	Function	Level
1	Data	active low
2	Data 0V	GND
3	-	-
4	-	GND
5	Reset	active low
6	-	-
7	Supply 12 V DC	-
8	Supply 0 V	GND
9	- (Serial Mode)	-
10	-	-



You will find a detailed description of the serial ccTalk interface in the v² ealge ccTalk specification (available on request) and in the Generic Specification "cctalk Serial Communication Protocol" available on the Internet at www.cctalk.org.

10.2.1.2 v² eagle – machine (S1)

Pin	Function	Level
1	GND	
2	-	
3	Master Receive	active low (open collector)
4	GND	
5	Master Transmit	active high (3.3V)
6	-	
7	-	
8	3.3V (Output)	
9	-	
10	Supply 12V DC	



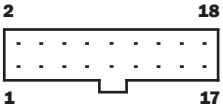
You will find a detailed description of the serial S1 interface in the NRI Interface Specification "G-40 S1" which will be made available to you on request.

10.2.1.3 v² eagle – 8-way manifold (option)

Pin	Function	Level
1	GND, switched	
2	Key pin	
3	Supply voltage U_{++}	

10.2.1.4 v² eagle – BCR applications (option)

Pin	Function	Level
1	–	
2	5V, output	
3	Supply voltage U_{++}	
4	Coin entry sensor, input (15k PU), covered/not covered	hi/lo
5	GND	
6	–	
7	–	
8	Supply voltage U_{++}	
9	5V, output	
10	Supply voltage U_{++}	-
11	–	
12	–	
13	–	
14	GND	
15	Sorting opto-isolator connected in series, input (15k PU), covered/not covered	hi/lo
16	GND	
17	Supply voltage U_{++}	
18	Activate sorting solenoid, open collector	lo



10.3 Accessories

To adapt the v² eagle to your individual requirements you can acquire the following NRI accessories from Crane Payment Innovations in Buxtehude/Germany:

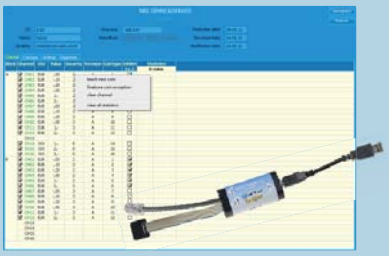
10.3.1 Front plates

Designation		Order no.	
Front plate (233 x 77mm) for v² ealge with 5-fold in-line sorting	for front entry and bottom return	30202	
	for front entry and front return	20694	
Front plate (233 x 77mm) for v² ealge with 4-fold sorting	for front entry and bottom return	38734	
	for front entry and front return	38733	

10.3.2 Sorters

Designation		Order no.	
4-way manifold	for v² eagle with 5-fold in-line sorting	12811	
	for v² eagle with 4-fold sorting (with 8 mm extension, removable)	41363	
8-way manifold	for v² eagle with 4-fold sorting	35197	

10.3.3 Service tools

Designation		Order no.	
HENRI⁺	**On-site Service tool** to update the complete coin/ device configuration and firmware version (incl. license, USB PC cable, coin validator cable)	HENRI⁺ for v² eagle	
	Power supply in the machine using voltage adapter	33573	
	in the workshop using 12V-power supply unit with international adapters	26482	
	Protective cover	34714	
heartbeat	**PC application** to diagnose and update single settings or the complete coin/ device configuration (incl. License, USB PC cable, 12V-power supply unit)	28535	
	Additional license to upload complete coin/device configuraiton	35267	

11 Index