Technical Documentation

NRI

A Crane Co. Company

Elektronic Coin Validator
G-40 cctalk

G-40.61xx, G-40.71xx, G-40.81xx

G-40.62xx, G-40.72xx, G-40.82xx

G-40.F200

Operating instructions

RoHS ✓

Table of contents

1   General information

This chapter should provide a general overview of the advantages and options regarding the coin validator G-40 cctalk. The first section, however, is designed to help you navigate easily within these instructions.

General information about these instructions

These operating instructions describe the design and operation of the electronic coin validator G-40 with serial cctalk interface. Afterwards, chapters 5 und 6 explain the necessary steps for starting up and operating the coin validator. Chapter 7 explicates how to clean the coin validator and remedy the cause of a malfunction.

Chap. 9 "Technical data" as well as the appended "Index" and "Glossary" reduce the search for specific explanations.

Text conventions

To make it easier for you to navigate within these 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, which are to facilitate the use of the coin validator.

1 2 3 …   Requests to perform an action are numbered in another typeface.
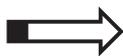
At the beginning of a chapter you will find a short "guide", which summarizes the contents of the chapter.

WinEMP   Device functions, which are set or prepared by the manufacturer according to customer specifications and can be set or changed using the NRI PC programming station (see Chap. 8 "The PC programming station WinEMP" and web pages for product accessories on the internet (www.nri24.com)).

Additional useful technical documentation

Apart from the operating instructions you already have, the following documentation is available for the G-40 cctalk:

- "WinEMP –The configuration and diagnostics program for NRI coin validators, operating instructions for the G-40"

If this documentation is not available to you, you can download it at any time from the NRI homepage (www.nri24.com) in the compressed PDF format.

General information about the coin validator G-40 cctalk

The electronic coin validators G-40 with serial cctalk interface in standardized 5" format are based on the tried and tested validation and measurement properties of the G-40.48xx S1. Communication with the machine control is likewise accomplished using a serial data transmission, whereby the coin validator functions as slave and the machine as master. Due to its modular and compact design, the G-40 cctalk is mainly suited for amusement machines.

16 measuring parameters ensure a reliable acceptance of genuine coins and rejection of false coins. Thanks to the coin validator's **flash technology**, software downloads to adapt the measuring technology, coin data and control software can be executed quickly and simply. The G-40 cctalk has 16 coin channels in both of its (memory) blocks.

For the purpose of coin acceptance the G-40 cctalk has 32 coin channels, which are divided into 2 x 16 coin groups and can thus be data-managed and activated as two memory blocks with different coin configurations.

To be able to react as quickly as possible to new false coins and enable you to make your individual adjustments, the coin validator can be connected to a PC programming station which is made up of the configuration and diagnostics software "WinEMP" (including card reader and licence chip card) and an NRI tester for power supply of the G-40 (see Chap. 8 "The PC programming station WinEMP" and product accessory pages on the internet (www.nri24.com)).

Coins that have not been taken into consideration at the manufacturer's company can be programmed in the optional teach mode directly at the coin validator by inserting coins and without any configuration software.

The G-40 cctalk features

- Operating and manipulation security thanks to optical accepted coin sensor and sorting control in coin outlet area
- Acceptance speed of two coins per second
- 16 coin channels which can be blocked individually for each of the both memory blocks which have different configurations and can be selected depending on application area
- Serial interface
  - less susceptible to faults and repairs because of reduced number of signal lines and electronic components
  - flexible and extensive communicating with the machine control
  - straight-forward transmission and control of device functions
  - possibility to connect to additional peripheral equipment
  - economical device design
- Optional teach mode for three coin channels
- Optional 5-fold longitudinal or transverse sorting
- Optional string sensor
- Top or front entry, front or bottom return
- Optional 4-fold sorting adapter
- Selection from four different return levers depending on machine type
- Interface for connection to WinEMP PC programming station which makes immediate reaction to the use of false coins possible
- Optional licence to update the complete coin and device configuration (data block download) using machine with PC-based control system (without WinEMP PC programming station)
- Flash technology for uncomplicated and time saving firmware updates

Models

The G-40 cctalk is available in different models. The difference is in where the coin insert and the return area are positioned and whether the coin validator is equipped with an internal 5-fold longitudinal or transverse sorting mechanism or not.

Moreover the G-40 cctalk can be delivered as ACMI model for the Italian gaming industry.

Top entry and bottom return (G-40.61xx/G-40.62xx)

With this model of the G-40 cctalk, the coins are inserted into the device from the top and, if they are not accepted, returned via the return area at the bottom.
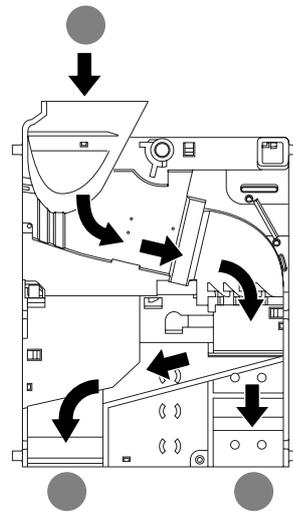
Front entry and bottom return (G-40.71xx/G-40.72xx)

With this model of the G-40 cctalk, the coins are inserted into the device from the side and, if they are not accepted, returned 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 (see section "Accessories" in Chap. 9 "Technical data"). However, this model is also available without front plate.
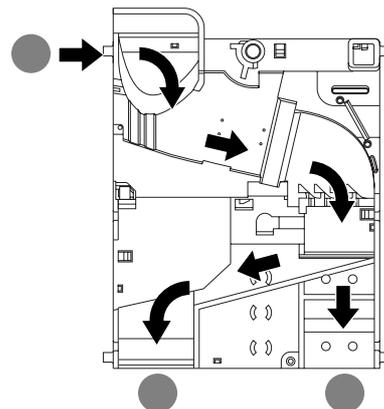
Front entry and front return (G-40.81xx/G-40.82xx)

With this model of the G-40 cctalk, the coins are inserted into the device from the side and, if they are not accepted, returned via the return area also situated on the side. The coin validator with front entry and a front return generally has an NRI front plate fitted to the left-hand side of the device (see section "Accessories" in Chap. 9 "Technical data"). However, this model is also available without front plate.
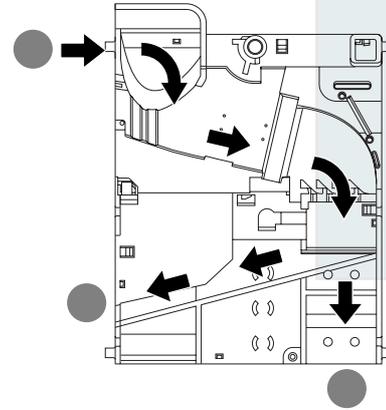
Internal 5-fold longitudinal sorting mechanism (G-40.62xx/G-40.72xx/G-40.82xx)

In order to be able to sort the accepted coins into the cash-box or, e.g., into change tubes or hoppers, the G-40 cctalk is also available on an optional basis with an internal 5-fold sorting mechanism, the sorting chutes of which are arranged behind one another (see section "Sorting of accepted coins" in Chap. 4 "Function").

Internal 5-fold transverse sorting mechanism (G-40.F2xx)

In order to be able to sort the accepted coins into the cash-box or, e.g., into change tubes or hoppers, the G-40 cctalk is also available on an optional basis with an internal 5-fold sorting mechanism, the sorting chutes of which are arranged next to one another (see section "Sorting of accepted coins" in Chap. 4 "Function").

The G-40 cctalk with transverse sorting is not available as front entry or front return model.

ACMI model

By default, the programming of the G-40 cctalk ACMI meets all requirements of the Italian gaming machine law "legge 289 – comma 6" which was passed in July 2003. The ACMI model of the G-40 cctalk is saved by means of a write protection, so that the factory-made programming cannot be altered using the PC programming station WinEMP.

2   Safety instructions

Before operating the device for the first time, please read through these instructions carefully at least once, and most importantly the safety instructions. This is to ensure you have understood the contents of these instructions as well as how to operate the coin validator.

Proper use

The electronic coin validators G-40 with serial cctalk interface are intended for use in amusement machines which have the serial cctalk interface and are supposed to check the coins inserted into the machine for specific properties. Only use the coin validator 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 changers have been constructed in compliance with the state of the art and recognized safety regulations. Nevertheless this equipment can be a source of danger. Therefore please observe the following safety regulations.

Protecting yourself and equipment

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

Only use the coin validator according to 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 at risk due to static.

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 machine's mains plug before you install, clean or remove the coin validator.

Contact NRI if you wish to alter the construction of the device to a greater extent than that described in these instructions.

Keep water and other liquids away from the coin validator.

**If the device is no longer required, please dispose of it correctly.**

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

3 Design

This chapter describes
- the main parts the G-40 cctalk consists of, and
- all parts which you need to operate the coin validator.
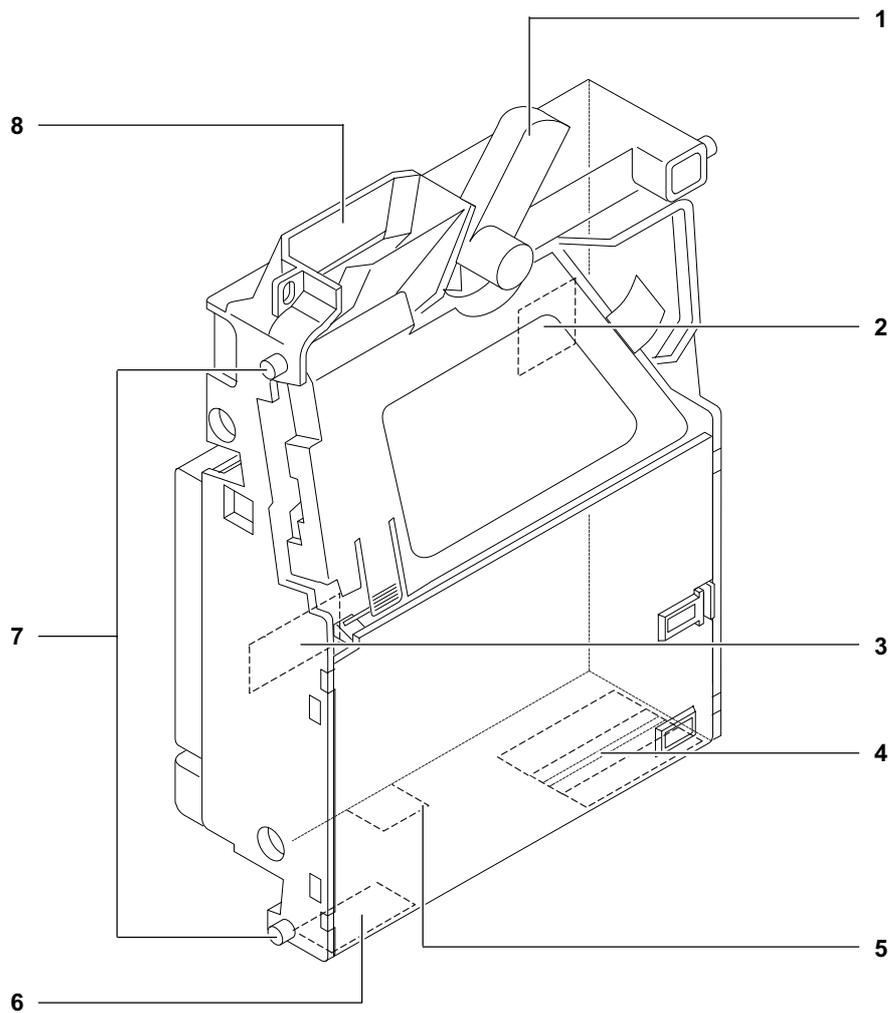
Fig. 1: Design

1	Return lever	**6**	Coin outlet – return area
2	Switching block	**7**	Mounting studs
3	Interface – mchine/tester (cctalk)	**8**	Coin insert funnel
4	Coin outlet – cash-box/sorting		
5	Interface – PC programming station WinEMP		

The coin validator G-40.F200 with transverse sorting differs in the coin outlets (see section "Sorting principle of the transverse sorting (G-40.F200)" in Chap. 4 "Func tion").

Switching block

The coin validator has a switching block **2** (Fig. 1) with six DIL switches S1–6 on the rear of the device. Using the DIL switches you can activate or deactivate certain device functions.

on

off
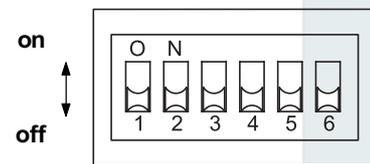
DIL-Schalter		off	on
S1	Memory block	0	1
S2	Defined coin channels	enabled	inhibited
S3	Teach mode	–	teach coin channel 14
S4	Teach mode	–	teach coin channel 15
S5	Teach mode	–	teach coin channel 16
S6	Mode	normal operation	teach mode

For details on how to use the switching block to set the individual functions, see Chap. 6 "Operation".

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

Return lever

The return lever **1** (Fig. 1) on top of the device is operated using the return button on the machine or the front plate, 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. When the return lever is operated, the measurement and validation area of the coin validator opens so that all objects in the coin validator are directed to the return area.

The coin validator G-40 cctalk can be equipped, depending on the dimensions of the machine, with four different return levers (see section "Mounting dimensions" in Chap. 9 "Technical data").

Interfaces

For details of the machine interfaces **3** (Fig. 1) please refer to Chap. 9 "Technical data".

Label

The label of the coin validator contains all the data defining the device such as device number and nominal voltage as well as customer specific default values such as coin type and sorting:

Block 0	16	15	14	13	12
-,05	01	08	--	06	4
-,10	02	09	--	05	4
-,20	03	10	--	01	4
-,50	04	11	--	02	4
1,-	05	12	--	03	4
2,-	06	13	--	04	4

Block 1					
1,-N	03	--	--	03	4
5,-	04	--	--	02	4
10,-N	05	--	--	01	4
20,-	06	11	--	05	4
1,-NN	08	--	--	03	4
5,-N	09	--	--	02	4

QC: — 06/03 — EMP - cctalk — EU N — B-0 REF B-1 — G - 40.6200 -0002 — 12 VDC — 004 — 12345678 123456 1234 — CRANE   NATIONAL REJECTORS, INC. GMBH
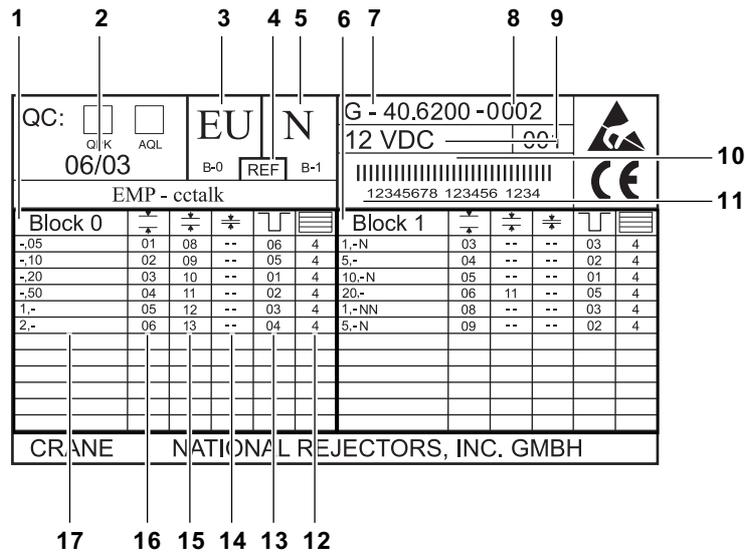
Fig. 2: Label

1 Coin information – memory block 0

2 Date of manufacture

3 Currency – memory block 0

4 Reference data for data block update

5 Currency – memory block 1

6 Coin information – memory block 1

7 Device type

8 Data block number

9 Nominal voltage

10 Bar code

11 Ordering code (8-digit),
order number (6-digit),
serial device number per order number (4-digit)

12 Sorting chute – memory block 0

13 cctalk coin information 1–16 – memory block 0

14 Channel number, very narrow coin channel – memory block 0

15 Channel number, narrow coin channel – memory block 0

16 Channel number, normal coin channel – memory block 0

17 Coin type – memory block 0

4   Function

This chapter describes how the coin validator works:
- Coin acceptance and coin channels
- Memory blocks
- Accepted coin sensor and sorting control
- Sorting of accepted coins
- Coin (channel) inhibition (e.g. activation of narrow acceptance bands)
- Teach mode (optional)
- String recognition (optional)
- Configuration (optional)

Coin acceptance and coin channels

For the purpose of coin acceptance, the coin validator possesses 16 "memory slots" that can be assigned up to 16 different coin types or tokens. These "memory slots" are termed coin channels. The acceptance band of a coin type/token is allocated to a coin channel and the coin type/token is accepted in that channel.

To be able to reject false coins reliably, channels with a narrow or even a 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 coin channel is inhibited by the control unit or using the switching block of the coin validator (see section "Inhibiting coins/activating narrow coin channel" in Chap. 6 "Operation"). Narrow and very narrow coin channels, however, also possess a lower acceptance rate.

In addition, it is possible to allocate coins with different measured values but identical coin values to different coin channels. This is how the coin validator can, for example, accept old and new coins of the same type.

However, a coin channel is not only assigned the acceptance band of a coin type but also other coin information which defines further processing of the coin after its acceptance: e.g. cctalk coin information 1–16 or sorting information for a sorting device.

WinEMP

Since in most cases the manufacturer's customer-specific programming does not take up all the coin channels, channels which are still vacant can be assigned coin types and the desired further information at any time using the PC programming station WinEMP. Existing configurations can be changed.

The last coin channels 14–16 are intended to be used for the teach mode. In these coin channels new tokens/coin types can also be taught without configuration software, directly on the coin validator using the switching block; i.e. a coin channel is assigned a coin type or also a token (see section "Teach mode" in this chapter).

Memory blocks

The G-40 cctalk data-manages two separately programmed (memory) blocks 0 and 1 (see label). In each block different coin types (also currencies), sorting information, etc. can be assigned to the 16 coin channels. Only one block can be active at a time and be used for the coin measurement and for further coin processing. You can use the switching block on the device to select the desired block (see section "Selecting memory block" in Chap. 6 "Operation").

Accepted coin sensor and sorting control

To ensure that accepted coins actually arrive in the cash-box or sorting device and that the acceptance has not been tampered with, an accepted coin sensor (light barrier) and sorting control (light barrier) check whether the inserted coin drops unhindered through the coin outlet in the direction of the cash-box or sorting device. Only when the coin has passed these checking functions is the coin acceptance transmitted to the machine.

Sorting accepted coins

In order to guide the accepted coins into either the cash-box or an external sorting device, such as change tubes or hoppers, the coin validator can be equipped with a 5-fold longitudinal or transverse sorting mechanism at the coin outlet.

In case a payout unit transmits a full-signal to one of the two NRI sorting systems, four sorting chutes/cctalk sorter pathes can be specified for each coin programmed, so that the chute/sorter path of the full payout unit can be inhibited and coins can then be sorted into the next (override) chute/via the next sorter path using command 222/221 "Modify Sorter Override Status"/ "Request Sorter Override Status".

If all sorting chutes/cctalk sorter pathes specified for a coin signal "Tube full", the coin is directed into the cash-box (default sorter path).

Sorting principle of the longitudinal sorting (G-40.62xx/G-40.72xx/G-40.82xx)

With the longitudinal sorting mechanism the five sorting chutes which are arranged behind one another are controlled via a flap sorting system constructed using three solenoids. The individual coin types can be distributed across the five chutes independently of their size. Each chute can be defined as a cash-box chute.

For the purpose of splitting-up and for better further transport of the coins to be sorted, you have the option of an NRI 4-fold sorting adapter (manifold) which can be screwed onto the bottom of the coin validator.

Standard sorting

WinEMP

Which coin type is to be sorted into which of the five chutes and which chute is to be the cash-box chute (default sorter path), is programmed by the manufacturer according to the customers' specifications (see label, section "Label" in Chap. 3 "Design") or is set via the control system of the machine.

In principle, the cctalk protocol can address eight sorter pathes, however, for the G-40 cctalk only five pathes are provided.
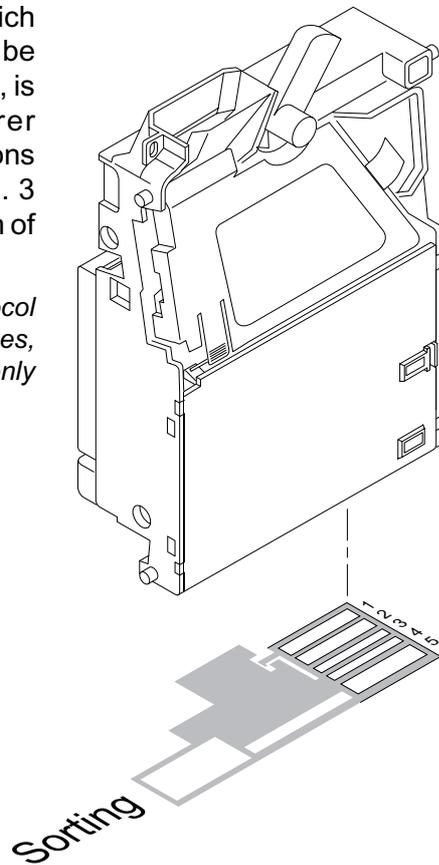
Sorting

The following table lists which sorting chute is assigned to which cctalk sorter path:

Sorting chute	cctalk sorter path
1	2
2	3
3	4
4	5
5	1

## Sorting with NRI sorting adapter (manifold)

If the NRI manifold is installed to the longitudinal sorting mechanism, four sorting chutes are available (see also section "Accessories" in Chap. 9 "Technical data").

WinEMP

Which coin is to be sorted into which of the four manifold chutes (cctalk sorter pathes) and which chute is to be the cash-box chute (default sorter path) is set via the machine's control system.

In principle, the cctalk protocol can address eight sorter pathes, however, for the manifold only four pathes are provided.
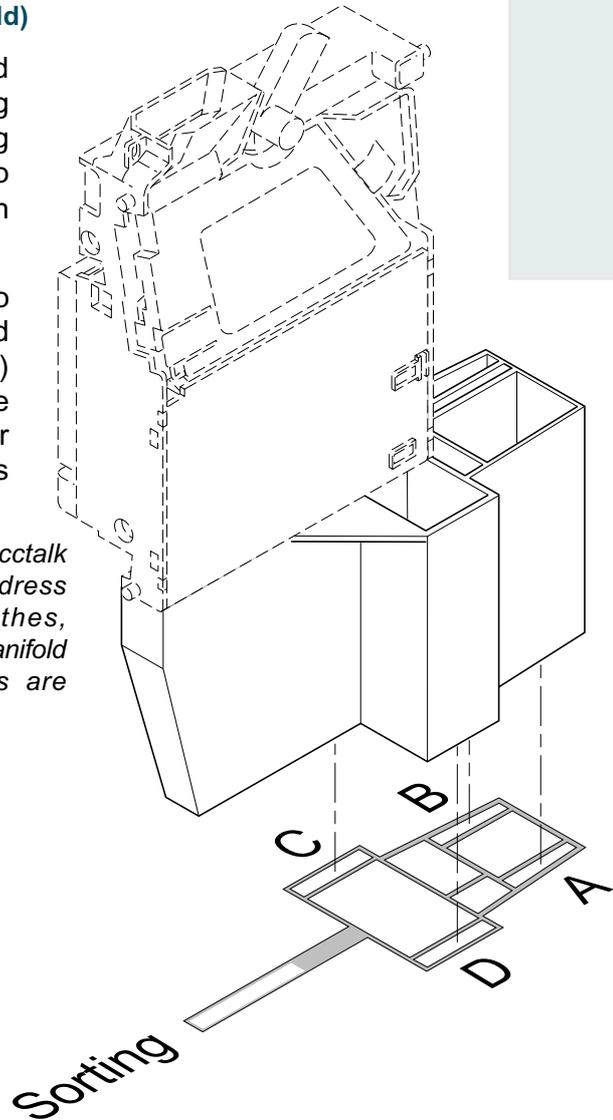
The following table lists which manifold chute is assigned to which coin validator chute and to which cctalk sorter path:

Manifold chute	Coin validator chute	cctalk sorter path
A	3	4
B	2	3
C	1	2
D	5	1

Sorting principle of the transverse sorting (G-40.F200)

With the transverse sorting mechanism the four/five sorting chutes which are arranged next to one another are also controlled via a flap sorting system constructed using three solenoids. The cash-box chute is positioned behind the right-hand sorting chute. Which coin may be sorted into which chutes, depends on the diameter of the coins:
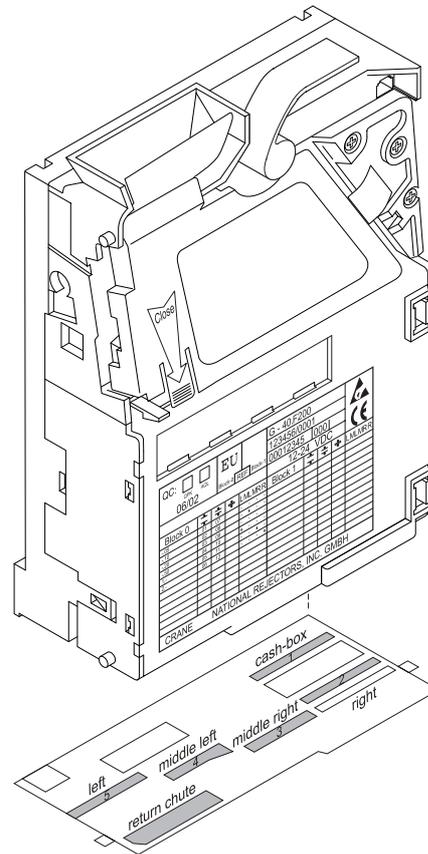
Chute	left (5)	middle left (4)	middle right (3)	right (2)
Diameter max. (mm)	29	23.5	26	32

WinEMP

Which coin type is sorted into which of the four sorting chutes or the cash-box chute, is programmed at the manufacturer according to the customers' specifications (see label, section "Label" in Chap. 3 "Design") or is set via the control system of the machine.

The cash-box chute is programmed in default sorter path 1 and cannot be altered.

In principle, the cctalk protocol can address eight sorting pathes, however, for the G-40 cctalk only five pathes are provided.

The following table lists which sorting chute is assigned to which cctalk sorter path:

Sorting chute	cctalk sorter path
Cash-box	1, 6–8
Left tube	5
Middle left tube	4
Middle right tube	3
Right tube	2

The G-40 cctalk with transverse sorting system is equipped with a full-sensor for the sorting chutes left, middle left, middle right and right. When a payout unit is full, this sensor directs the coins in one of the three override sorting chutes or in the cash-box using command 221 "Request Sorter Override Status", if command 222 "Modify Sorter Override Status" does not activate any sorter override.

Coin (channel) inhibition (activation of narrow acceptance bands)

One switch of the coin validator's switching block is provided for inhibiting a single coin or a coin group on site.

WinEMP

The DIL switch inhibits all coin channels which have been assigned to the DIL switch at the manufacturer according to the customers' requirements, e.g., channels with normal acceptance bands, so that the coins inserted can be accepted in channels with narrow acceptance bands; or channels of one coin (normal, narrow, very narrow ones), if the coin is to be no longer accepted for payment at the machine.

Section "Inhibiting coins/activating narrow coin channel" in Chap. 6 "Operation" describes how to inhibit those coin channels.

Teach mode (optional)

If the G-40 cctalk has been prepared at the factory accordingly, coin channels can be taught directly in the teach mode without configuration software via the switching block on the coin validator, i.e. a coin channel is reassigned a token or even a coin type. The new acceptance band is generated by inserting the tokens/coins. For this you do not need to remove the validator from the machine. For the teaching procedure, the last three coin channels 14–16 (teach channels) of the activated memory block are available (see section "Teaching coin channels in the teach mode" in Chap. 6 "Operation").

String recognition (optional)

To ensure that coins which are suspended by a string are not accepted by the coin validator or to ensure that the coin acceptance cannot be manipulated, the coin validator can be equipped with an optical sensor in the acceptance area which recognizes both tight and loose strings.

If the sensor recognizes a piece of string, the coin validator transmits error code 20 "Coin-on-String Mechanism activated" to the control system and the coin is not accepted. As a start coin acceptance is inhibited for a 30 second time period. 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 released automatically.

Configuration (optional)

Apart from configuration using the PC programming station WinEMP (see Chap. 8 "The PC programming station WinEMP" and web pages for product accessories on the internet (www.nri24.com)) you can use the cctalk interface to update the complete coin and device configuration; provided that the machine is controlled by a PC-based system.

This download only requires special NRI data blocks, which will be placed at your disposal on request, and no further accessories.

5   Start-up

1 Disconnect the machine from the mains supply.

2 Hang the coin validator in the machine using the lateral mounting studs **1** (see Fig. 3).

3 Connect the coin validator to the machine using the 10-pole cctalk interface **2** provided and the appropriate connecting cable (see Fig. 3).

4 Reconnect the mains supply to the machine.

⚠ **Make sure the correct supply voltage is connected (see label).**
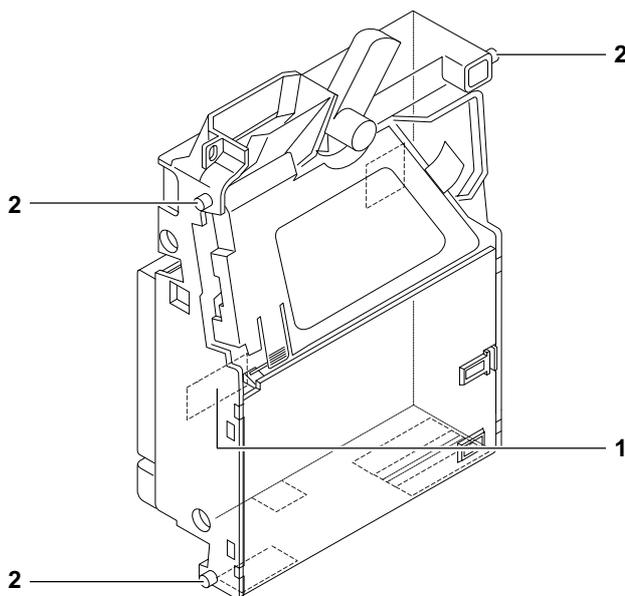
1 Interface – machine
2 Mounting studs

Fig. 3: Installation

6   Operation

This chapter describes the operation, i.e. the setting of specific functions on the coin validator itself:

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

The settings that are performed directly on the validator are described. To find out how to perform settings using the PC programming station WinEMP, please refer to the separate WinEMP instructions (cp. also Chap. 8 "The PC programming station WinEMP" and web pages for product accessories on the internet (www.nri24.com)).

Chapter 4 "Function" describes the function of the adjustable device options.

Selecting the memory block

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

1 Unhook the coin validator from the machine.

2 For memory block 1, switch DIL switch S1 upwards to ON, and for memory block 0 downwards (to OFF).

3 Hang the coin validator back in the machine.

Memory block 0 selected   **Memory block 1 selected**

4 Switch the power off then on again.
The required memory block is activated.

5 Check coin acceptance of the new memory block.

Inhibiting coins/activating narrow coin channel

To inhibit the coin channels assigned to DIL switch S2:

1 Unhook the coin validator from the machine.

2 Switch DIL switch S2 upwards to ON.

3 Hang the coin validator back in the machine.
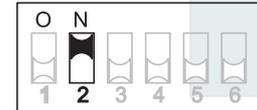
4 Switch the power off then on again.
All coin channels assigned to the DIL switch at the manufacturer or using WinEMP are inhibited for coin acceptance.

5 Check coin acceptance.

Teaching coin channels in the teach mode (optional)

If the G-40 cctalk has been programmed at the factory accordingly, three coin channels (teach channels) can be taught using the switching block on the coin validator to generate new acceptance bands. You will need at least ten coins of the new type. The following DIL switches have the following functions:

DIL switch		off	on
S2.3	Coin channel 14	–	teach
S2.4	Coin channel 15	–	teach
S2.5	Coin channel 16	–	teach
S2.6	Teach mode	off	on
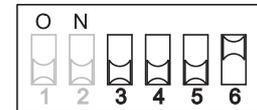
To assign a coin type/token to coin channel 14, 15 or 16, please proceed as follows:

1 Unhook the coin validator from the machine.

2 Switch DIL switches S3–S6 downwards (to OFF).
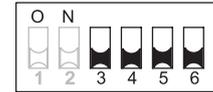
3 Switch DIL switch S6 upwards to ON.
The device is in teach mode for teaching the coin channels.

4 Release the coin channel to be taught (14–16, here: 15) by switching the appropriate DIL switch (S3–6, here: S4) upwards to ON.
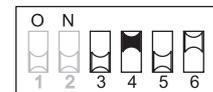
5 Insert at least 10 coins of the new coin type/token into the coin validator.
After the 10th coin has been inserted, the acceptance gate is operated once (brief clacking sound). Further coins can be inserted.

> *If there is no signal after the 10th coin has been inserted, the coins inserted could not be used.*

Now you can save the measured values generated by the inserted coins in either 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) Switch DIL switch S6 downwards (to OFF) again. Successful saving is signalled by the acceptance gate attracting once. An error when saving is indicated by the acceptance gate attracting twice (brief clacking sounds), if for example the acceptance band of the coins inserted and the acceptance band of an already programmed coin channel overlap, or the measured values generated are too different and the tolerances would become too large.

> *To cancel the process first switch the DIL switch of the appropriate coin channel (S3–S5, here: S4) downwards (to OFF) and then DIL switch S6.*

To save with a wide acceptance band

6b) Switch a further DIL switch S3–S5 (here: S3) upwards to ON.
The acceptance band has been widened.

Now you can switch DIL switch S6 downwards (to OFF) again.
Successful saving is signalled by the acceptance gate attracting once. An error when saving is indicated by the acceptance gate attracting twice (brief clacking sound), if for example the acceptance band of the coins inserted and the acceptance band of an already programmed coin channel overlap, or the measured values generated are too different and the tolerances would become too large.
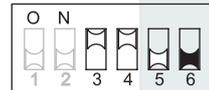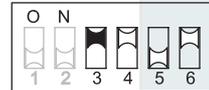
To cancel the process first switch the DIL switch of the appropriate coin channel (S3–S5, here: S4) as well as the DIL switch for the wide acceptance band (here: S3) downwards (to OFF) and then DIL switch S6.

7 Switch DIL switches S3–S5 (here: S4 and if necessary S3) downwards (to OFF).
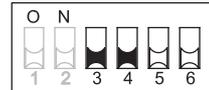
8 Hang the coin validator back in the machine.

9 Switch the power off then on again.

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

The new coin type/token will now be accepted for payment by the coin validator.

7   Maintenance and service

In this chapter you will find out how to
*   clean the G-40 cctalk, and
*   remedy the cause of malfunction.

Cleaning coin validator

Only the coin validator's flight deck must be wiped clean from time to time with damp cloth (luke warm water with some washing up liquid). Over and above there is no further maintenance work to do.

> ⚠ **Under no circumstances may the cloth be so wet that fluid runs into the device. Other the PCB will be damaged.
> Do not use any solvents or scouring agents which attack the plastic of the device.**

1 Pull the machine's mains plug.

2 Press lever **1** downwards and open the coin validator (see Fig. 4).

3 Wipe the coin runway inside the coin validator clean.

4 Press "Close" arrow **2**, so that the metal spring engages behind lever **1**, in order to close the coin validator (see Fig. 4).

5 Reconnect the machine to the mains supply.
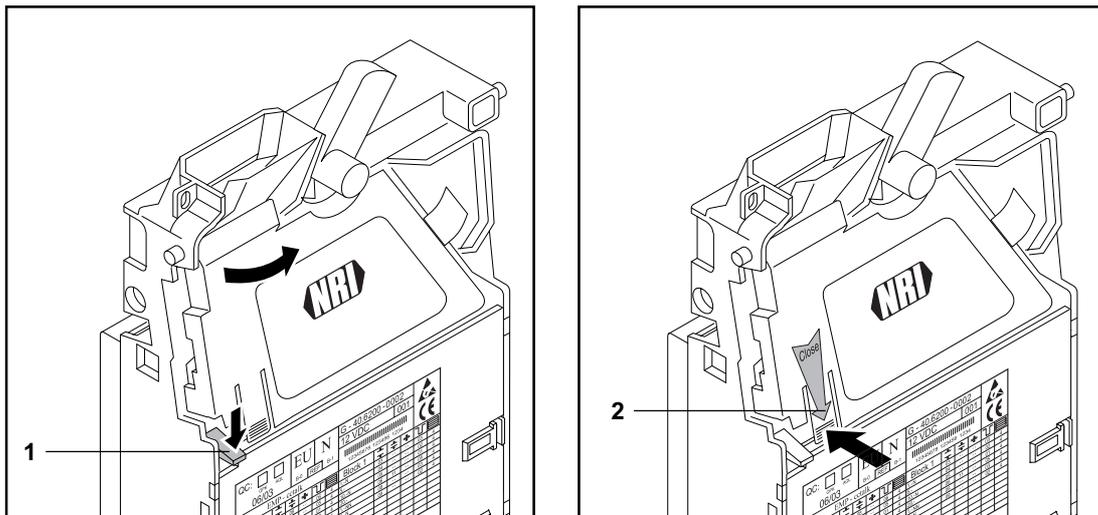
Fig. 4: Open up the coin validator flight deck and close

National Rejectors, Inc. GmbH, Buxtehude

Troubleshooting

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

Problem	Possible causes	Remedy, hints
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	Make sure, that return lever is not inadvertently pressed
	Coin runway dirty	Open flight deck and clean coin runway (see section "Cleaning coin validator" in this chapter)
	Flight deck is not locked	Make sure, that spring is engaged behind lever (see section "Cleaning coin validator" in this chapter)
	Coin inhibited	• Make sure, that machine control system does not inhibit coin acceptance • Make sure, that the coin is not inhibited using DIL switch S2 on the rear of the device or not only the narrow coin channel is enabled and the normal one is inhibited (see section "Inhibiting coins/ activating narrow coin channel" in Chap. 6 "Operation")
Coin validator accepts coin, but no credit is given	Coin does not exit the device	Make sure, that the coin outlet is not jammed by foreign objects or devices connected to the bottom of the coin validator

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

8   The PC programming station WinEMP

This chapter provides gerenal information concerning the PC programming station, the WinEMP software and the G-40 functions that can be configured with the help of these tools.

To ensure that the injunctions of the Italian gaming machine law "legge 289 – comma 6" are observed, the ACMI model of the G-40 cctalk is not allowed to be configured.
Please contact NRI, if you want to change the factory settings.

Function

The PC programming station WinEMP serves the purpose of diagnosis and individual configuration of NRI coin validators as well as the updating of the complete coin and device configuration using data blocks currently provided by NRI (data block download).

The WinEMP software identifies the coin validator connected to the PC and the device-own data and presents that data on the screen of your PC.

Composition

The PC programming station for the workshop consists of (see also web pages for product accessories on the internet (www.nri24.com)):

•   WinEMP PC software

•   Card reader G-19.0647 incl. chip card with authorization licences

•   Voltage supply and PC interface for coin validator:
    PC interface G-55.0359 + 12-V wall power supply (400 mA)

If you already possess the NRI tester G-19.0641, this tester can be used instead of the PC interface G-55.0359.

For details on how to connect this device environment to your PC and how to use WinEMP, please refer to the separate operating instructions for the WinEMP software.

Which functions can be set?

- Acceptance of genuine coins and rejection of false coins (acceptance band adjustment following the insertion of genuine coins and false coins)
- Coin ID via assignment of coin channel
- Coin value via assignment of coin channel to cctalk coin information 1–16
- Sorting via
  – assignment of coin channel to sorting chutes/cctalk sorter pathes (max. 4)
  – definition of a cash-box chute (default sorter path)
- Inhibition of coins via assignment of coin channel to DIL switch S2
- New coins/tokens (creating a new acceptance band and assigning the cctalk coin information 1–16)
- Data block download for current coin and device data

9   Technical data

This chapter contains information about
- all relevant G-40 cctalk data
- the CE certification
- the machine and sorting interfaces
- ordering codes for G-40 cctalk accessories

Device data

Supply voltage	10 V to 28 V DC

Current consumption

U_{nom} = 12 V

Standby mode: approx.   40 mA
Measuring mode: approx.   65 mA (for approx. 220 ms)
Coin acceptance
... without sorting: approx. 350 mA (for approx.   30 ms)
                                    approx. 130 mA (for approx.   90 ms)
... with sorting: approx. 600 mA max.

U_{nom} = 24 V

Standby mode: approx.   40 mA
Measuring mode: approx.   65 mA (for approx. 220 ms)
Coin acceptance
... without sorting: approx. 310 mA (for approx.   30 ms)
                                    approx. 120 mA (for approx.   90 ms)
... with sorting: approx. 550 mA max.

Temperature range	0 °C to 60 °C
Temperature change	Max. 0.2 °C/min.
Rel. humidity	Up to 93 %
Condensation	Not permitted
Machine interface	9600 baud, 8-bit, N, 1, 1, 5 V TTL, common transmitting and receiving line, active low
	Protocol in compliance with cctalk 4.2, Money Controls
	For pin assignment see section "Interface" in this chapter

Coin acceptance	Max. 32 coin types in 2 x 16 channels Coin diameter: 15–31 mm (optionally up to 32 mm, with thickness of max. 2.4 mm) Coin thickness: 1.5–2.4 mm (optionally up to 3.4 mm) Speed: 2 coins/sec.
Device dimensions	Height: 181.3 mm Width: 127.0 mm (+ 2 x 4.5 mm for mounting studs) Depth: 64.0 mm (for mounting dimensions see section "Mounting dimensions" in this chapter)
Mounting position	Vertical, max. deviation: ± 2°
Mark of conformity	CE (see next section)

CE Certification

The CE certificate (CE = Communautés Européennes) confirms that our products comply with specified basic requirements of the applicable directive. The CE certificate is not a quality assurance certificate in terms of the quality expected by the manufacturer but only in terms of the quality demanded legally. It is a pure administrative certificate and is intended only as proof of compliance with the directives for the monitoring authorities and not directed at clients or final customers.

Which directives were applied can be seen in the declaration of conformity. The manufacturer must keep this declaration available for the monitoring authorities only (for a minimum period of 10 years after the last product has been introduced to the market). However, upon request we can provide copies of this declaration for our customers.

The following directives and their subsequent changes can be partially applied to our devices:

1. The EMC Directive (89/336/EEC)
   for devices which cause electromagnetic interference or are interfered with by such.
2. The Low Voltage Directive (73/23/EEC)
   for electrical equipment which is used with a nominal voltage of between 50 and 1000 V AC and 75–1500 V DC.
3. The CE Certificate Labelling Directive (93/68/EEC)
   Modification directive regarding the application and use of CE labels.

Interface (pin assignment and status/error messages)
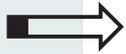
The following pages deal with pin assignment, cctalk commands as well as standard settings after a reset for the connection of the G-40 cctalk to the machine.

Pin assignment

	Meaning – CCT	Level
Pin 1	Data	hi
Pin 2	Data 0 V	(GND)
Pin 3	–	hi
Pin 4	–	GND
Pin 5	– (Reset)	–
Pin 6	–	–
Pin 7	12 V DC supply	–
Pin 8	0 V supply	GND
Pin 9	– (Serial mode)	0 V = serial
Pin 10	–	–

```
1 [ . . ] 2
  [ . . ]
  [ . . ]
9 [ . . ] 10
```
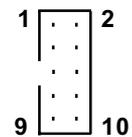
You will find a detailed description of the serial cctalk interface with different connection diagrams in the specification "cctalk Serial Communication Protocol, Generic Specification 4.2", available on the internet at "www.cctalk.org".

You may only connect the cctalk interface or the PCB direct plug (for connection to a PC) and not both interfaces at the same time.

Status and error messages

In the following three tables you will find status and error messages, which are sent to the machine from the coin validator and are implemented as headers in the cctalk protocol.

Bacta serial alarms

Alarm function	BACTA code	Suplmntl code	Machine alarm Message text	Data port text	Alarm type	cctalk error no.
Status messages (do not generate an alarm)						
Inhibited coin	None	-------------			None	2
Coin return mechanism activated (flight deck open)	None	-------------			None	254
2nd close coin error (coin insertion rate too high)	None	-------------			None	8
Reject coin						
Reject coin (sends header only message)	Header only $1F	-------------			None	1
Coin mech jam						
Credit sensor blocked	80	$11	COIN MECH JAM	COIN MECH JAM	Critical	14
Coin mech fault						
EPROM checksum corrupted	81	$11	COIN MECH FAIL	MECH EEPRM FAIL		PST*
Fault on sorter exit sensor	81	$15	COIN MECH FAIL	SORTER FAULT		10
Coin mech tamper						
Credit sensor time out	82	$11	COIN MECH TAMPER	CRD SENS TIMEO	None-crit	16
Coin going backwards	82	$12	COIN MECH TAMPER	COIN BACKWARDS	Critical	17
C.O.S. mechanism activated (coin on string)	82	$13	COIN MECH TAMPER	COIN ON STRING	Critical	20
Reject coin (repeated sequential trip)	82	$14	COIN MECH TAMPER	SEQUENTIAL REJ	None-crit	24

* depends on cctalk message 232 "Perform Self Check" (see section "cctalk message table" in this chapter)

cctalk message table

Header	Command		Optional protocol deviations (e.g for Italy)
254	Simple poll		
253	Address poll		
252	Address clash		
251	Address change		
250	Address random		
249	Request polling priority:	200 ms	
248	Request status:	0 = OK, 1 = return lever actuated, 2 = string recognized	
246	Request manufacturer ID:	„NRI"	
245	Equipment category ID:	„Coin acceptor"	
244	Request product code:	„G40"	
243	Request database version:	0 = remote coin database not available	
242	Request serial number:	4 bytes	3 bytes
241	Request software revision:	„340003"	
240	Test solenoids:	Bit 0: gate 0, Bit 1: gate 1, Bit 2: gate 2, Bit 3: gate 3	
236	Read opto states:	Bit 0: LU1, Bit 1: LU2, Bit 2: LO1, Bit 3: LO2, Bit 4: CP3, Bit 5: CP4	
232	Perform self check:	0 = no error, 1 = EEPROM checksum corrupt, 8 = sorting sensors error	
231	Modify inhibit status		
230	Request inhibit status		
229	Read buffered credit or error codes:	see section "Buffered Error Code Table" in this chapter	
228	Modify master inhibit status		
227	Request master inhibit status		
222	Modify sorter override status:	4-way override	1-way override
221	Request sorter override status		
219	Enter new PIN		
218	Enter PIN		
210	Modify sorter paths:	5 bytes	2 bytes
209	Request sorter paths:	4 bytes	1 byte
192	Request build code:	"DEV" (ACMI write protection: DE1/VDAI write protection: DE2)	"ITA" (IT1/IT2)
189	Modify default sorter path		
188	Request default sorter path		
184	Request coin ID		
4	Request comms status revision:	1, 4, 2	
1	Reset device		

Buffered error code table

Error no.	Cause
1	Rejected coin
2	Inhibited coin
8	2nd close coin error
10	Credit sensor not ready
14	Credit sensor blocked
16	Credit sequence error
17	Coin going backwards
20	Coin-on-string mechanism activated
24	5 rejected coins in sequence
254	Coin return mechanism activated
255	Unspecified alarm code

Standard settings (after reset)

Header	Command	Active	Passive
222	Modify sorter override	X	
228	Modify master inhibit status		X
231	Modify inhibit status	X	

Mounting dimensions

G-40.61xx/G-40.62xx (top entry model/with longitudinal sorting)

View from front
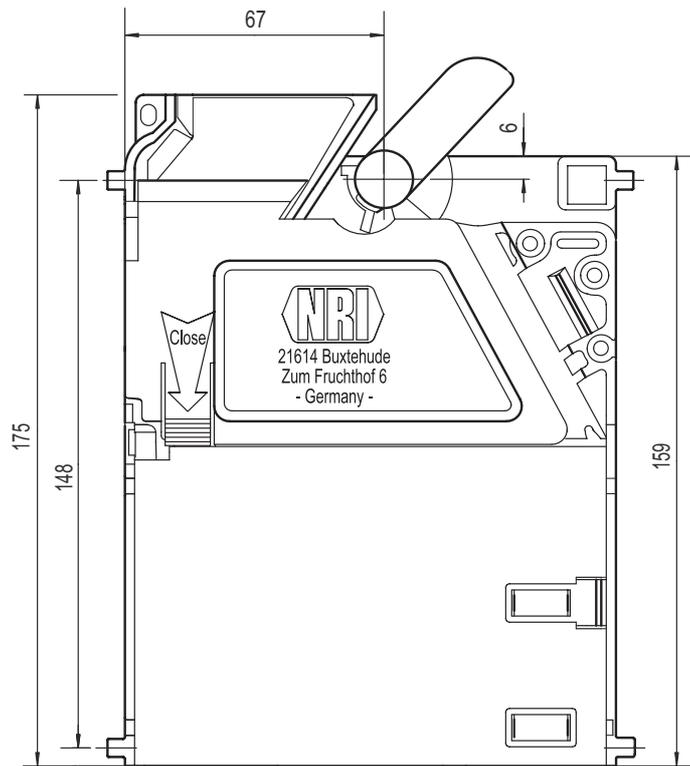
View from rear
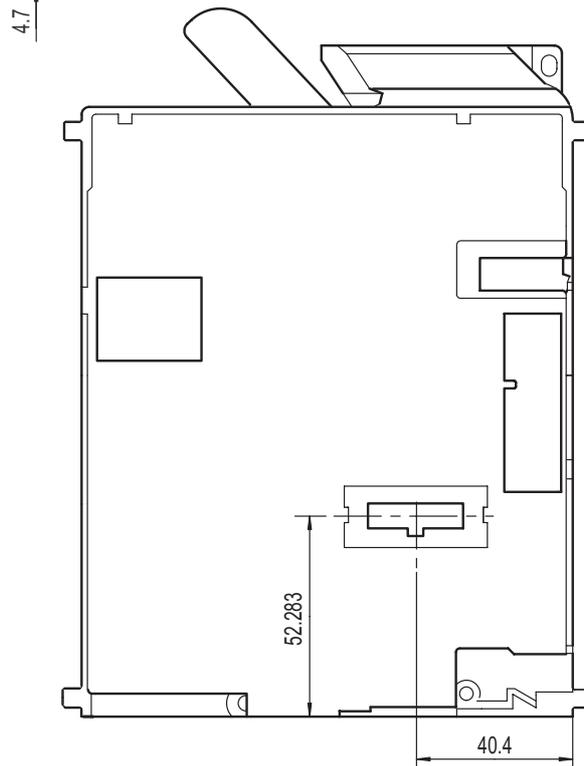
View from above   **Centre of insert funnel**
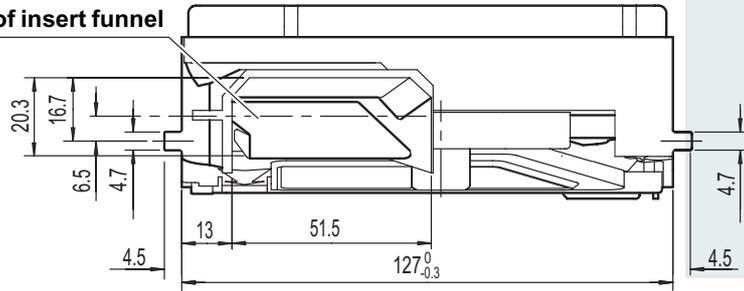
View from below
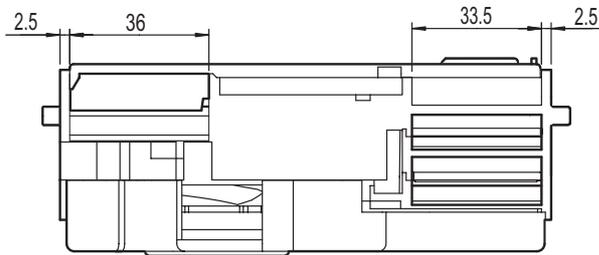
Sorting chutes   **Top view**

**Axis of
mounting
studs**
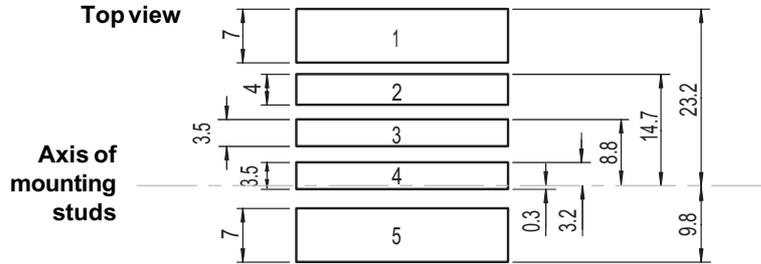
**Sorting chute 3
(standard: cash-box)**

View from the side
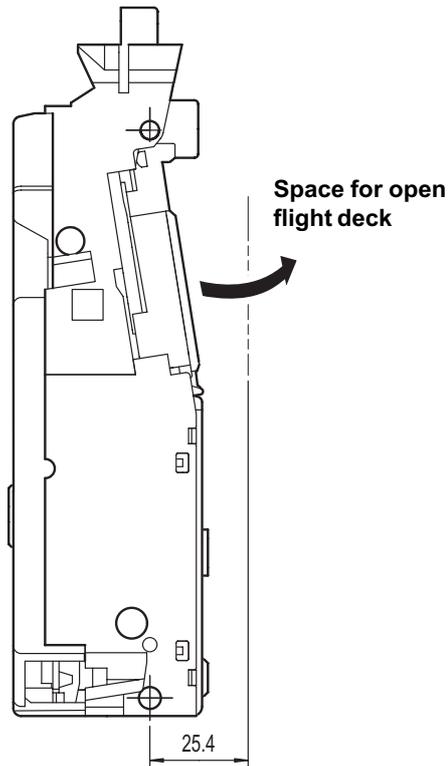
**For dimension "X"
see section
"Return levers" in
this chapter**

X

7.5

**Space for open
flight deck**

25.4

13.5   36

15
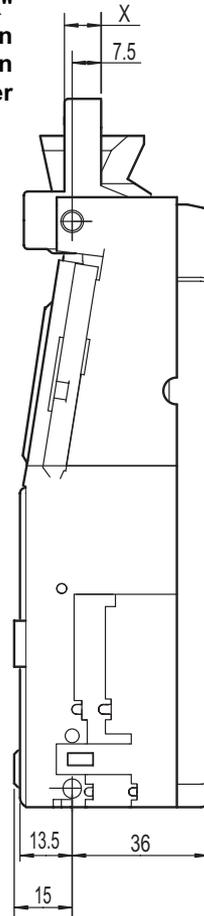
G-40.71xx/G-40.81xx/G-40.72xx/G-40.82xx (front entry model/with longitudinal sorting)

View from front

View from below

Section A–A

Sorting chute 3 (standard: cash-box)

Return area with bottom return model

View from the side

Insert funnel
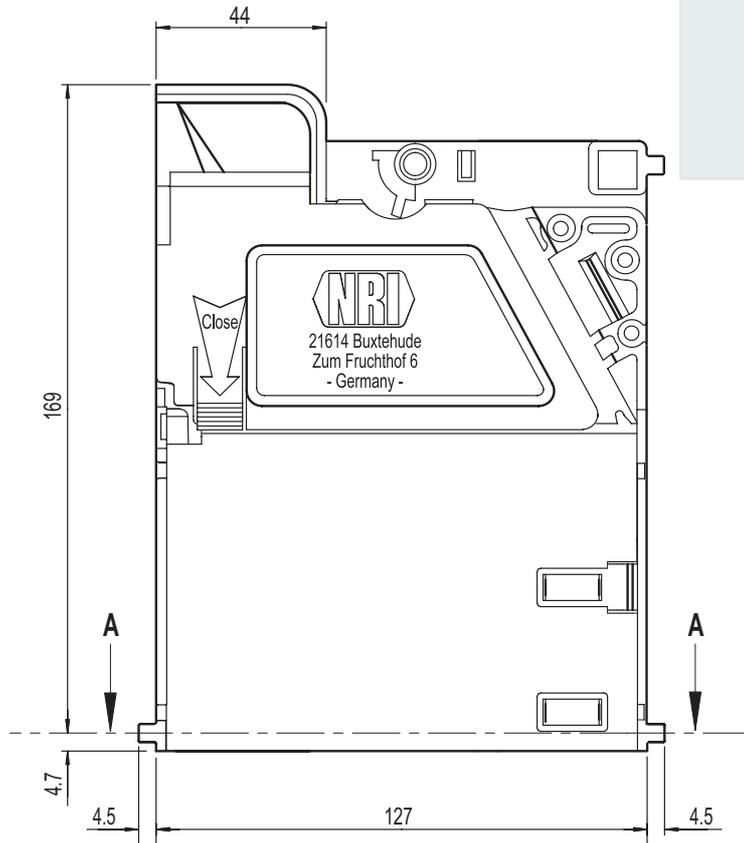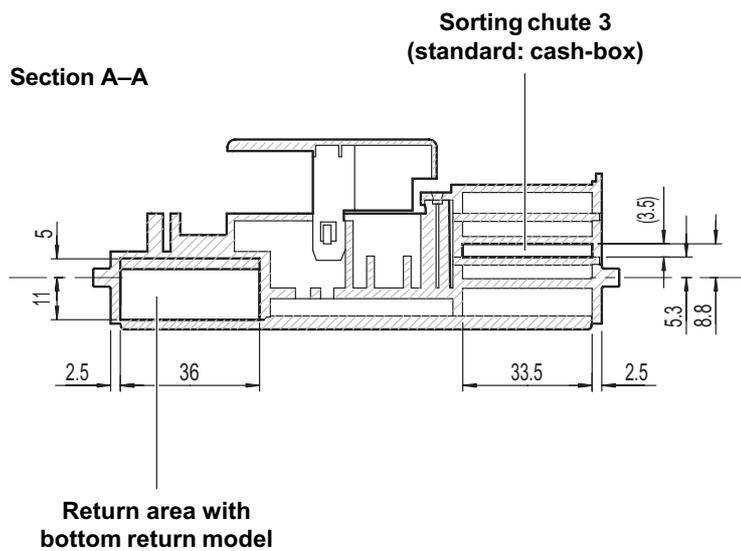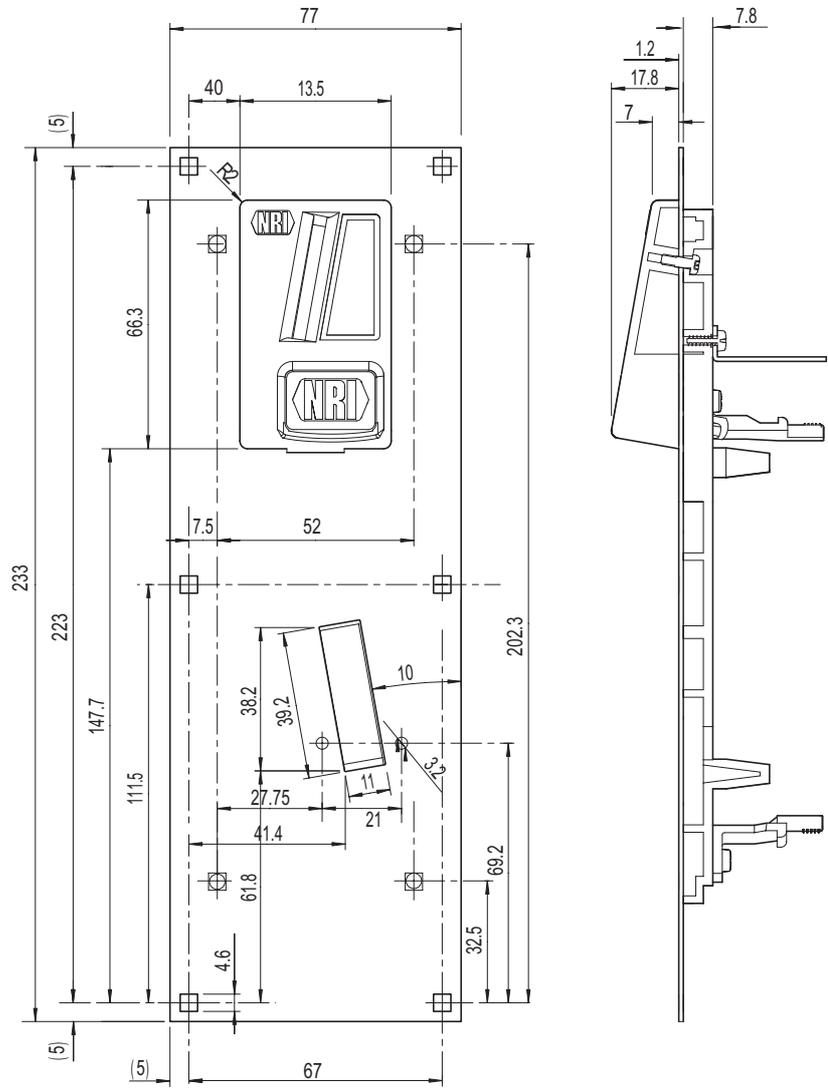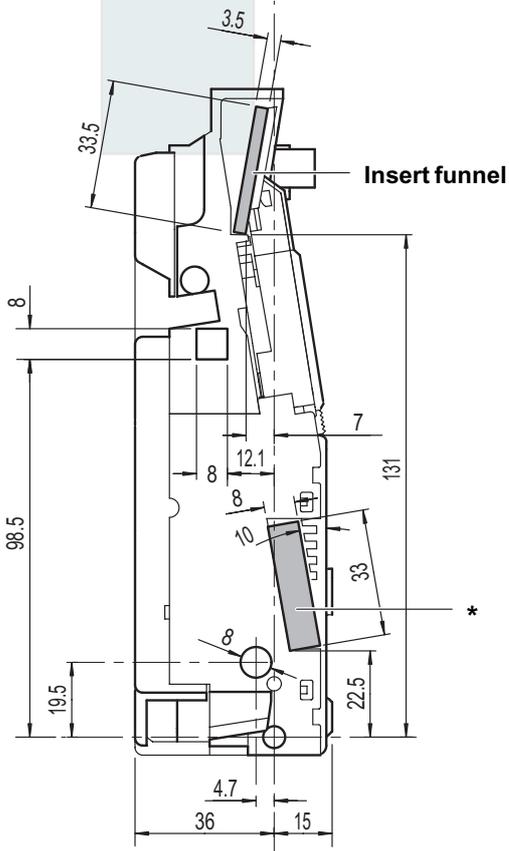
*Return area with front return model
(this coin outlet of the bottom return
model is closed by corresponding
sorting cover)

G-40.F200 (with transverse sorting)

View from front/rear

Dimension depends on return lever (see section "Return levers" in this chapter)

Schnittstelle
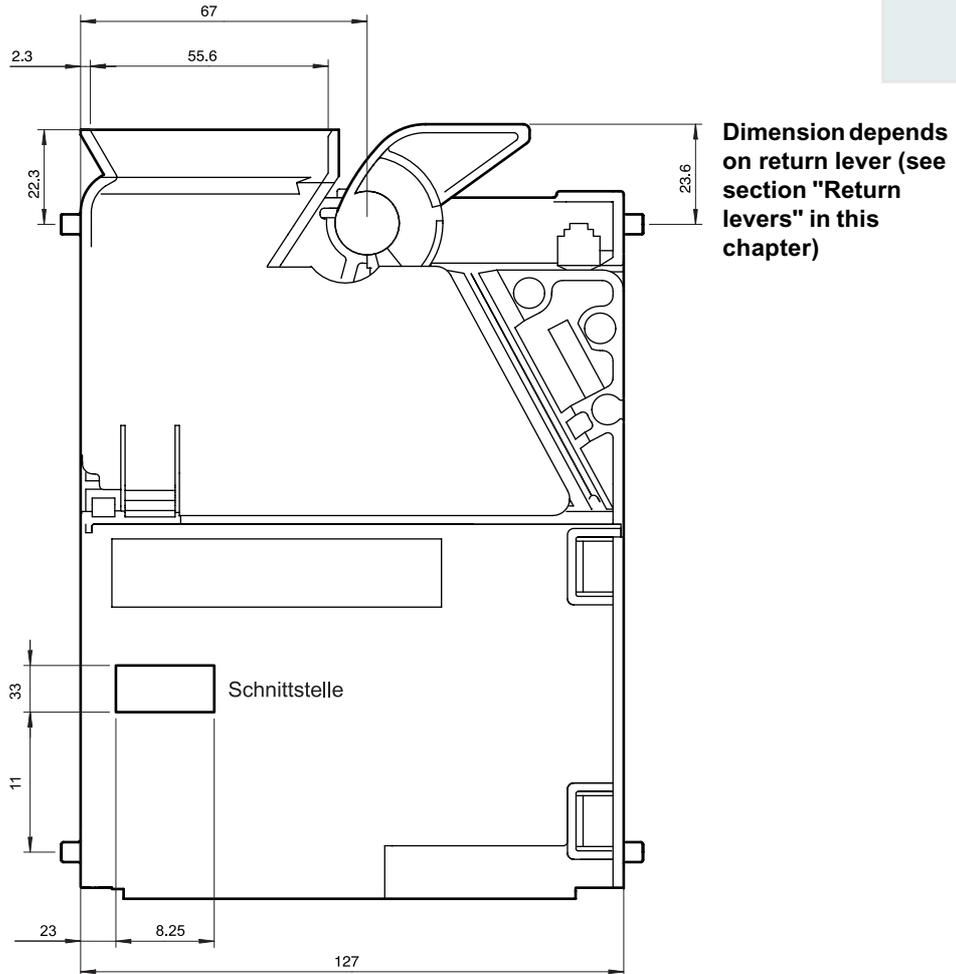
View from above
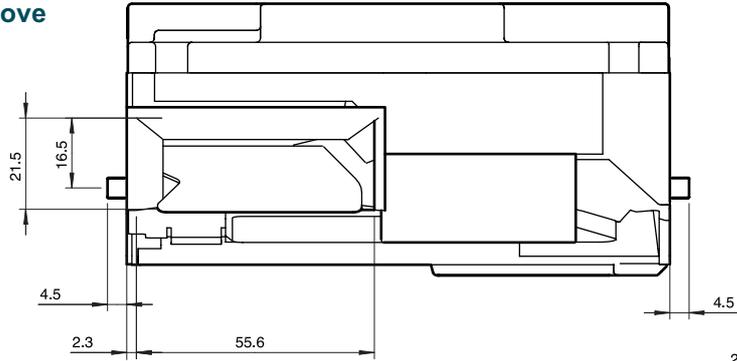
View from the side
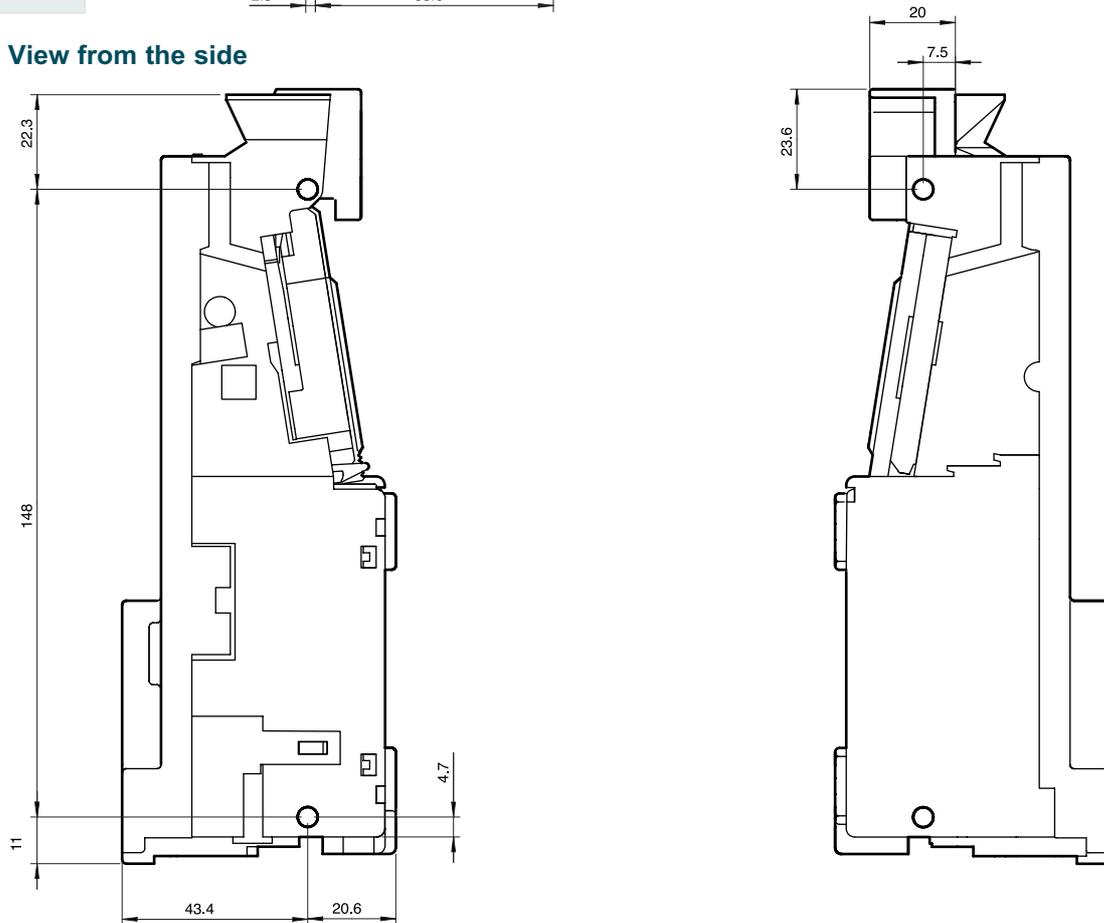
View from below

Return levers

38

17.3

top edge of device

Depth "X" = 20

29.3

1.8

Depth "X" = 20

33.3

25.5

top edge of device

Depth "X" = 9.5

26

39.4

Depth "X" = 20
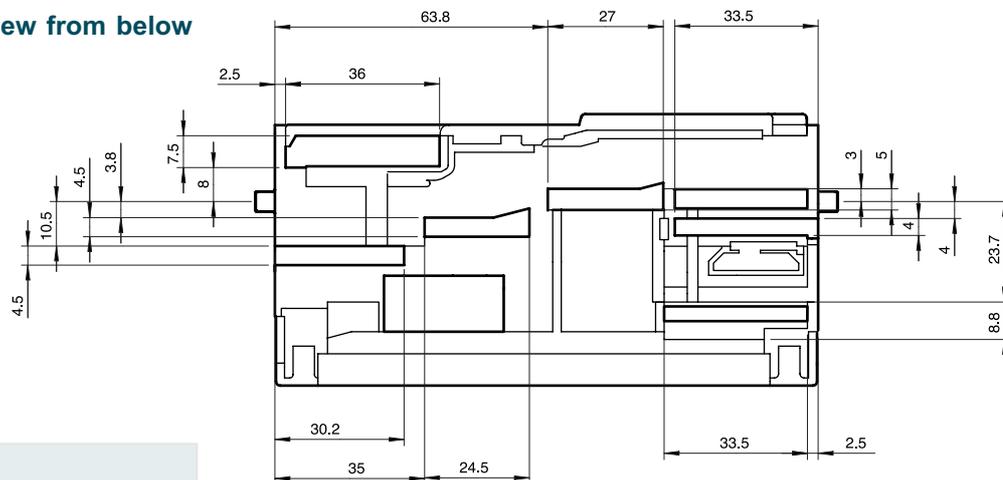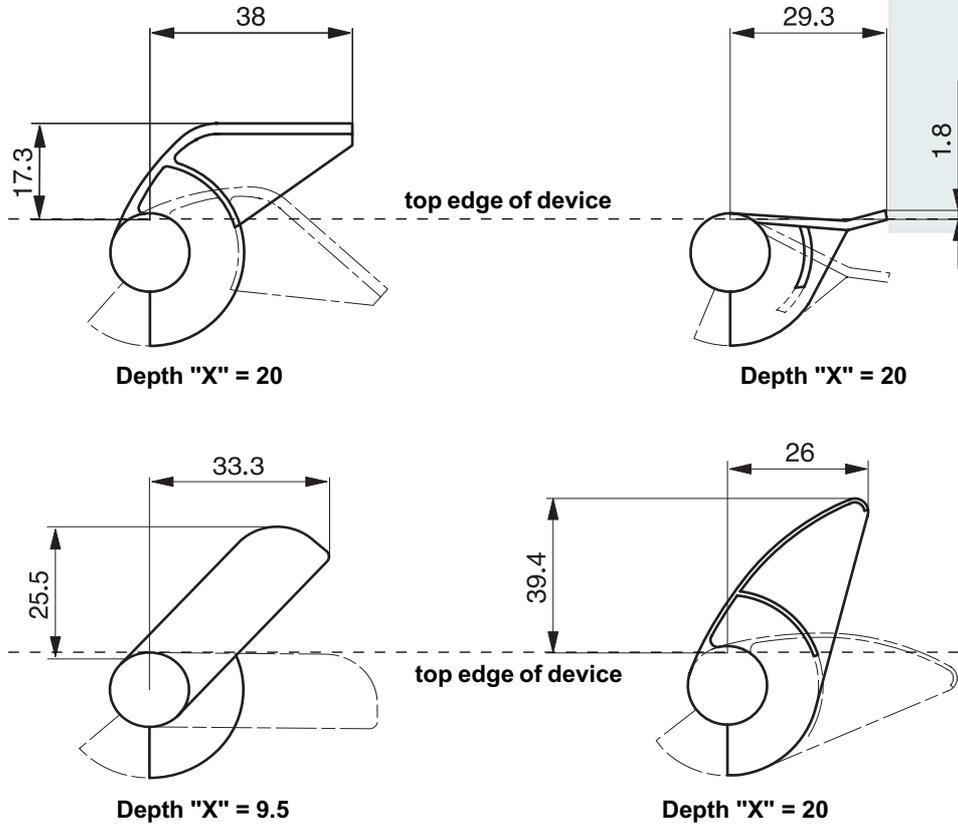
Manifold for longitudinal sorting
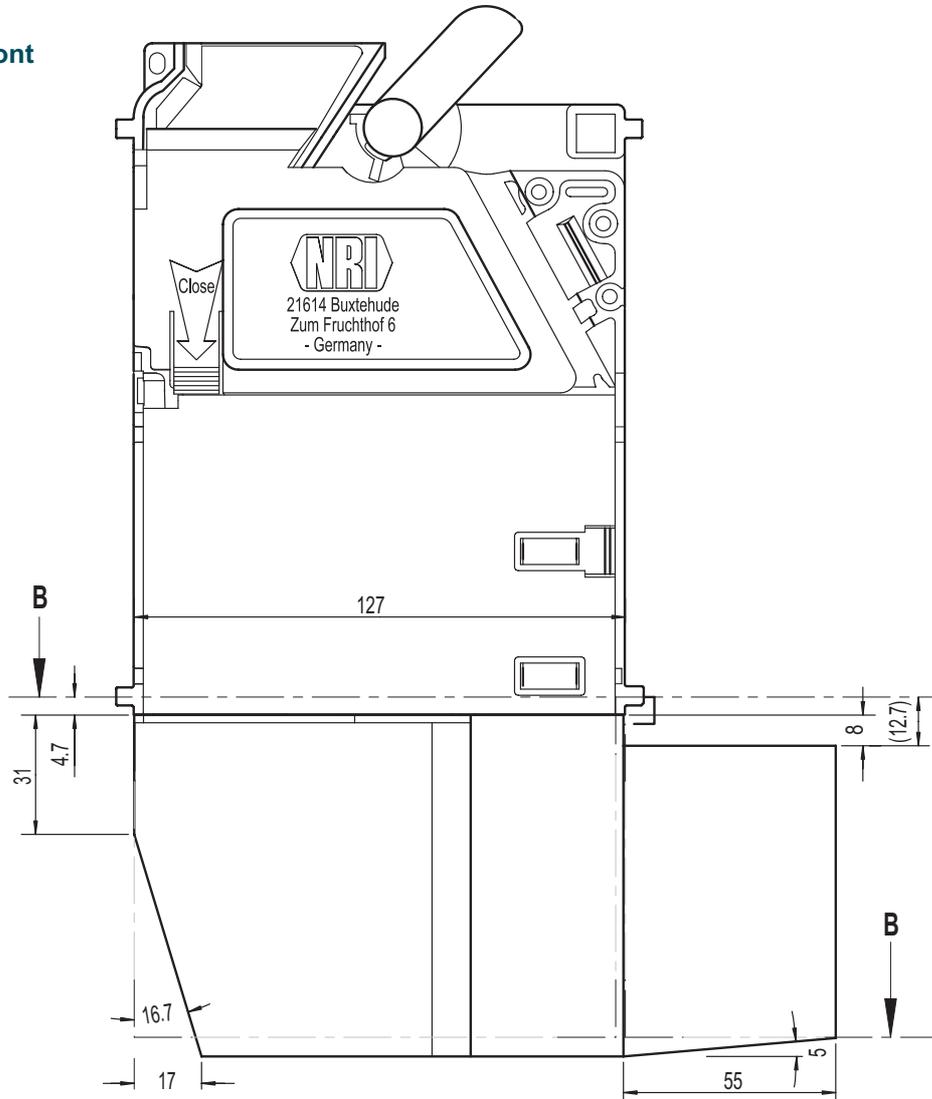
View from front

View from below
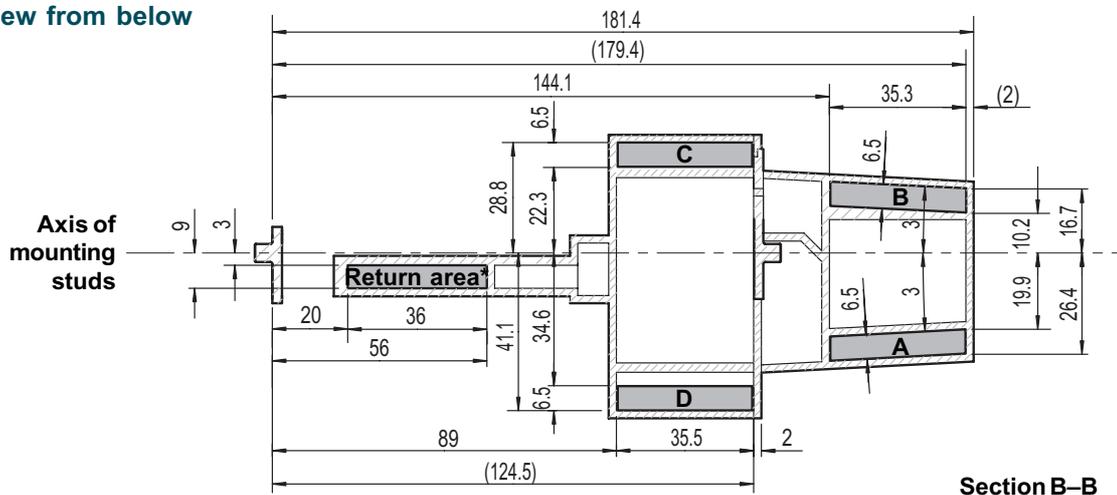
Section B–B

*with bottom
return model

View from the side
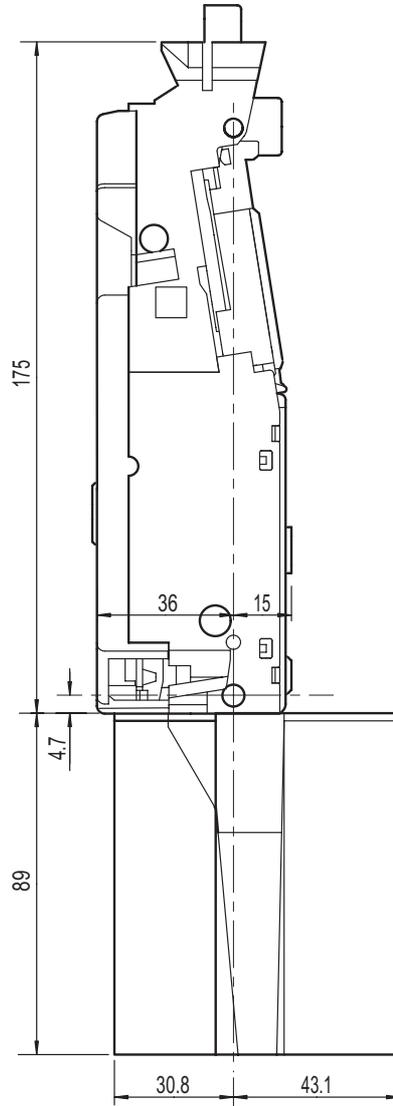
Accessories

In order to test the G-40 cctalk or adapt it to your individual needs, you can acquire the following accessories from NRI:

Front plates (not for G-40.F200)

Accessories	Ordering code
Front plate G-42.4002 for front entry and .... bottom return	12918
Front plate G-42.4001 for front entry and front return	10897

Sorting adapter

Accessories	Ordering code
4-manifold for longitudinal sorting	10402

Tester

Accessories	Ordering code
Tester G-55.0359 (only as power supply and PC interface) + ...	26125
12-V wall power supply (400 mA) (with international adapter)...	26482

WinEMP PC programming station

For all details regarding the WinEMP PC programming station please refer to our web pages for the product accessories on the internet (www.nri24.com).

Data block download via cctalk interface

On request

Index

Glossary

ACMI	www.acmi.ws
Acceptance band	A range of acceptable measured values of one → *coin type* with specific → *coin properties* defined by an upper and lower limit value. Coins with these acceptable measured values are accepted.
Acceptance gate	The acceptance gate diverts the inserted coins into the acceptance or return area of the coin validator.
Acceptance limit	The upper and lower acceptance limit values define the → *acceptance band*.
Accepted coin sensor	The accepted coin sensor is positioned in front of the coin outlet of the coin validator and checks whether accepted coins fall unhindered into the → *sorting chutes*.
Block	→ *Memory block*
cctalk	Serial communication protocol developed by Money Controls (formerly **C**oin **C**ontrols) to provide secure transfer of credit and status information between devices used in the automated money transaction business, such as coin validators, coin changers or bill validators.
Change tubes	A payout set with up to 4 or 5 change tubes can be installed on the coin validator, into which certain → *coin types* are sorted. If necessary, these coins are directed back to the customer as change via the return area.
Channel	→ *Coin channel*
Coin acceptance band	→ *Acceptance band*
Coin acceptance limit	→ *Acceptance limit*
Coin channel	Coin channels are used to describe → *coin types* using their different → *coin properties* (alloy, size, etc.). The required coin properties of a coin type are defined in → *acceptance bands* which are assigned to the coin channels, together with other coin information, for further processing.
Coin properties	Coin properties which are measured by the coin validator when a coin is inserted. These are e.g. material, thickness, volume, minting, diameter, mass, hardness etc.

Coin tubes   → *Change tubes*

Coin type   One coin type includes all coins for which the → *coin properties* agree.

Coin value   The value of a → *coin type*, which the coin validator transmits to the machine using a certain cctalk coin information 1–16.

Data block update   A data block update comes into question, if you want to update the complete coin validator configuration using WinEMP and data blocks currently provided by NRI instead of set single validator functions individually. When updating a data block set (2 data blocks), the data blocks for the connected coin validator are loaded quickly and easily from the internal hard disk of your PC into the coin validator. By doing this, a new data block is loaded into → *Memory block* 0 and memory block 1. The new data blocks contain different coin and device configurations e.g. current limit values of the → *acceptance bands* for a currency or new inhibiting or sorting information.
                          If the machine is controlled by a PC-based system, the coin validator data blocks can also be updated using the cctalk interface. In this case you require special data blocks but no WinEMP PC programming station.

Hopper   Payout unit (coin collector), which can be installed on the coin validator for sorting purposes, into which → *coin types* are collected. If necessary, these coins are then directed back to the customer as change via the return area.

Memory block   Memory of the coin validator. The coin validator has two (memory) blocks 0 and 1 and thus can data-manage two independent configurations of coin data (e.g. two currencies). However, for coin validator operation, only one memory block with 16 → *coin channels* can be active at a time, the other block is inhibited.
                          The memory blocks can be updated using WinEMP or the cctalk interface (→ *data block update*).

Sorting chute   To sort the accepted coins, → *coin types* can be sorted in 4 or 5 sorting chutes (with or without sorting adapter) and therefore directed into up to 4 or 5 → *change tubes* or → *hoppers* or into the cash-box. The G-40 cctalk is available with a longitudinal sorting mechanism (chutes arranged behind one another) or transverse sorting mechanism (chutes arranged next to one another).

String sensor   The coin validator's optional sensor recognizes a coin inserted with a piece of string attached to it. The coin is not accepted for payment.

Switching block   The switching block is located on the rear of the coin validator and incorporates a number of DIL switches. A function is assigned to the individual switches (e.g. selecting → *memory block,* → *teach mode*).

Teach mode   In the teach mode, the last three → *coin channels* can be assigned new → *coin types* or → *tokens* on site at the machine without configuration software, which means that these newly configured coins are accepted in the respective coin channel for payment.

Token   Tokens are accepted for payment at machines instead of coins in a currency.

Tubes   → *Change tubes*