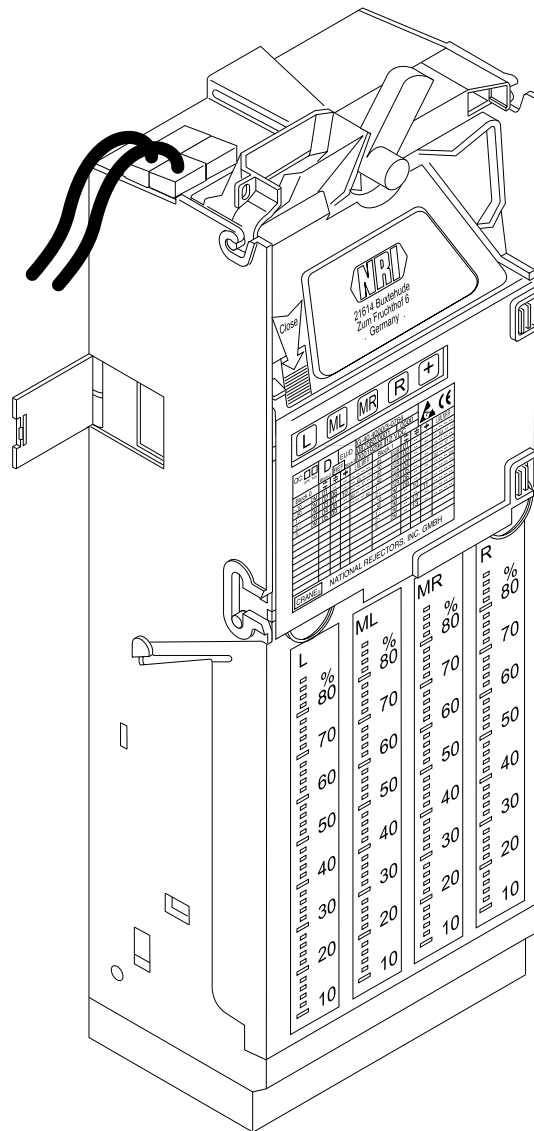




Manual

Coin-Changer Series G-46



01.02 ds/
Edition 4.4
HBG46GB



4-Tube-Changer G-46

The advantages at a glance:

- A programmable coin validator enables a fast reaction to changing market situations or new false coins
- Programming by use of the proven KUNEMP programme
- Easy conversion to EURO coins, due to 2 x 16 coin channels
- Reliable sensing and optimum rejection of false coins due to the proven electronic coin validator G-40
- Universal payout mechanism for all coin diameters and thicknesses
- Optional payout combinations by simply changing the tubes
- Longer tubes and an additional 4th tube offer an optimum change capacity
- Universal application in almost all machines simply by using a different connecting cable or interface module
- Fast service due to error diagnosis
- Individual combination with peripheral devices and adaptation to all market demands
- Splash-proof electronics
- Monitored coin run and forced sorting guarantee an improved operating reliability and protection against manipulation

This description gives you a survey of the most important technical features and options of the G-46 changer series.

If you have any questions, please do not hesitate to contact us. Our sales staff will provide the necessary information.

National Rejectors Inc. GmbH

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Appendix: Glossary

1 The most important information first

Brief information on the 4-tube coin changer

The 4-tube changers of the G-46 series are designed for application in vending and service machines. By changing the connecting cable and/or the interface module, they can easily be adapted to different machines. They support the following machine interfaces:

- 2-price relay output (parallel interface)
- 4-price relay output (parallel interface, also combined with MDB)
- 4-price API (parallel interface, also combined with MDB)
- Simplex V (serial interface, also combined with MDB)
- BDV (serial interface, also combined with MDB)
- MDB (serial interface)
- VCCS (serial interface)
- 4-price transistor

In comparison to the former 3-tube changers, the 4-tube changers do not only have an additional tube, but also lengthened tubes, more coin channels and further functions. The coin validator offers a reliable sensing system and rejection of false coins with the proved and well known coin validator G-40.

Due to the modular design, you can individually combine your changer with accessories (see chap. 3 "Options"). Programming is carried out via a PC or via the setting module. The programme menu is clearly divided into programming functions (PRO), display functions (DIS) and service functions (SER). Some of the programming functions (adjusting prices and emptying tubes) can also be carried out directly on the device via the internal keyboard.

Information regarding this manual

This manual is intended to be a reference book for workshop staff. However, if you still have any questions please do not hesitate to contact us.

So that you can quickly find your way around the manual, the following information is provided:

- Page numbers are situated in the top corner of each page.
- Safety precautions are indicated in bold type and with a triangle.
- Additional precautions are indicated in italics and with a hand.

2 For your safety

The 4-tube changers of the G-46 series are designed for application in vending and service machines. Their state of the art design meets all technical safety requirements. However, accidents could occur, so please follow the safety precautions below.

- The changer must only be connected by a qualified electrician.
- Please contact NRI if you want to extend or alter the device in a way that is not described in this guide.
- Always transport the changer without any coins in it and never carry it by means of the cables.
- Select the correct voltage for each changer. (see label)
- Ensure a correct potential equalization in the machine and in the mounted changer (option: metal housing).
- Never remove the coin validator's connecting cable from the changer when it is live.
- Remove the vending machine's plug from the socket before installing, cleaning or removing the changer.
- Protect the changer against contact with water or any other liquids.
- Dispose of the device in accordance with environmental laws.

3 Options

In order to adapt the coin validator to your individual needs, NRI offers the following peripheral devices:

String sensor

Due to the monitored coin run and a string sensor, the device is further protected against manipulation.

Setting module G-55.0460

The setting module enables you to

- read out error messages
- read out audit data (DIS mode, only if equipped with internal audit module)
- check or change adjustments (PRO mode)
- carry out service functions (SER mode).

Chapter 6 "Connecting and operating the setting module" will give you further information about its function.

Programming stations

NRI offers a programming station by means of which you can change adjustments of the G-46. The programming station enables you to

- check the coin acceptance and payout of the changer,
- find out what causes malfunctions,
- programme channels of the coin validator,
- programme the coin sorting,
- display the actual measured values of a coin inserted,
- programme coin channels by inserting selected coins (teaching the coin validator),
- adapt the adjustments of the changer to your machine.

The programming station includes

- G-19.0641 tester,
- G-19.0643 test stand for the complete changer,
G-19.0584 test stand for the coin validator,
- KUNEMP software (on 5.25“ or 3.5“ disc),
- software description.

The KUNEMP programming software cannot only be used with the G-46 changer, but also with NRI coin validators of the G-40, G-18.3000 and G-13.0000 series if you have the corresponding programming station for these series.

With another programming station you can update the program of the new G-40.4000/3 series. This programming station includes

- G-19.0641 tester,
- G-19.0646 programming adapter,
- software available at NRI upon request.

The programming stations can be operated by means of a PC or laptop. For this purpose a main storage of at least 512 KB, MS-DOS operating system (3.3 or later versions), a mouse (or something comparable) and a serial interface are required.

Mobile data retrieval unit (MDE) G-55.0555

The MDE retrieves sales and vend data of your machines easily and effectively. It can be applied together with changer, bill validator, card system (GLOBO Card) and audit programme to monitor the flow of money and goods electronically.

The necessary data from individual changers is read and registered in the MDE, by means of infrared transmission. Therefore an internal audit module mounted in the changer is required. At the company's headquarters all data registered can then easily be read from the MDE to a PC where it can be evaluated by means of an audit programme.

You cannot only retrieve data with the MDE, but also

- initialize and programme machine controls,
- initialize and programme changers,
- store data of the machine control in the temporary memory (e.g. when changing a control system),

- enter the filling quantities,
- enter sales and vend data by using the keyboard, enter reports (e.g. about service contents),
- block and enable the audit unit,
- determine the tour.

The device can be programmed with different access levels for drivers, service technicians and tour managers.

The communication with MDE is realised via the MDE adapter G-55.0343. This interface is a bi-directional infrared interface. The optimum distance between MDE and MDE adapter is between 5 and 20 cm.

Data transmission from the MDE to the audit module is in accordance with the EVS-DTS protocol.

Printer G-55.0510

When the changer has an internal audit module you can print sales and vend data from the DIS mode with this compact and easy to use printer, to prepare sales audits. The printer is a simple alternative to the mobile data retrieval unit (see also chap. 9).

Card system (GLOBO Card)

The GLOBO Card System is NRI's cashless payment system, which can be adapted to your individual requirements.

The GLOBO Card is an intelligent chip card with EEPROM memory which enables the client to pay for product at the machine. The corresponding amount is simply debited from the card credit. Depending on the system configuration the credit can be reloaded by inserting coins in the changer. In addition, by means of a GLOBO Card programming station various special functions can be programmed on the card (e.g. discounts, expiry date).

An opening must be provided in the door of the machine for the card reader. It can be installed either vertically or horizontally.

Bill validator

If you want to utilise a bill validator together with the changer, an NRI bill validator converter is required. Without converter you can only use an MDB bill validator.

The converter receives the signals from the bill validator, evaluates them and transmits the bill value to the changer. Every converter type is adjusted especially for one bill validator. The following table shows the bill validator and the corresponding converter type.

Bill validator	NRI Converter
ARDAC S2000	G-55.0562-001
Armatic AL 07	G-55.0562-002
Coges LMB/1-LMB/8	G-55.0562-003
Landis & Gyr BSN 40, BSN 45	G-55.0562-004
CBV, IVO	G-55.0562-006
NSM	G-55.0562-007
Bill Coin BCD-20/BCD-24	G-55.0562-008
Dynamics NV1/4	G-55.0562-009
OTR D7 SM1000Pulse	G-55.0562-011

Every combination of bill validator and converter enables you to manage up to 10 different bills. The converter can be programmed by means of the setting module.

Internal audit module

If you want to register and evaluate audit data you will need an internal audit module (see chap. 9 "Reading out and printing audit data"). Some machine types register audit data via the machine control. In this case, an internal audit module is not necessary.

The audit module has its own CPU with battery-supported RAM and clock. The interface to the changer consists of the 12 V supply voltage and 4 data lines for serial communication.

The module has three serial interfaces:

- Open Collector for printer connection
- TTL for PC or printer
- Optical interface for MDE (timed at approx. 25.5 KHz)

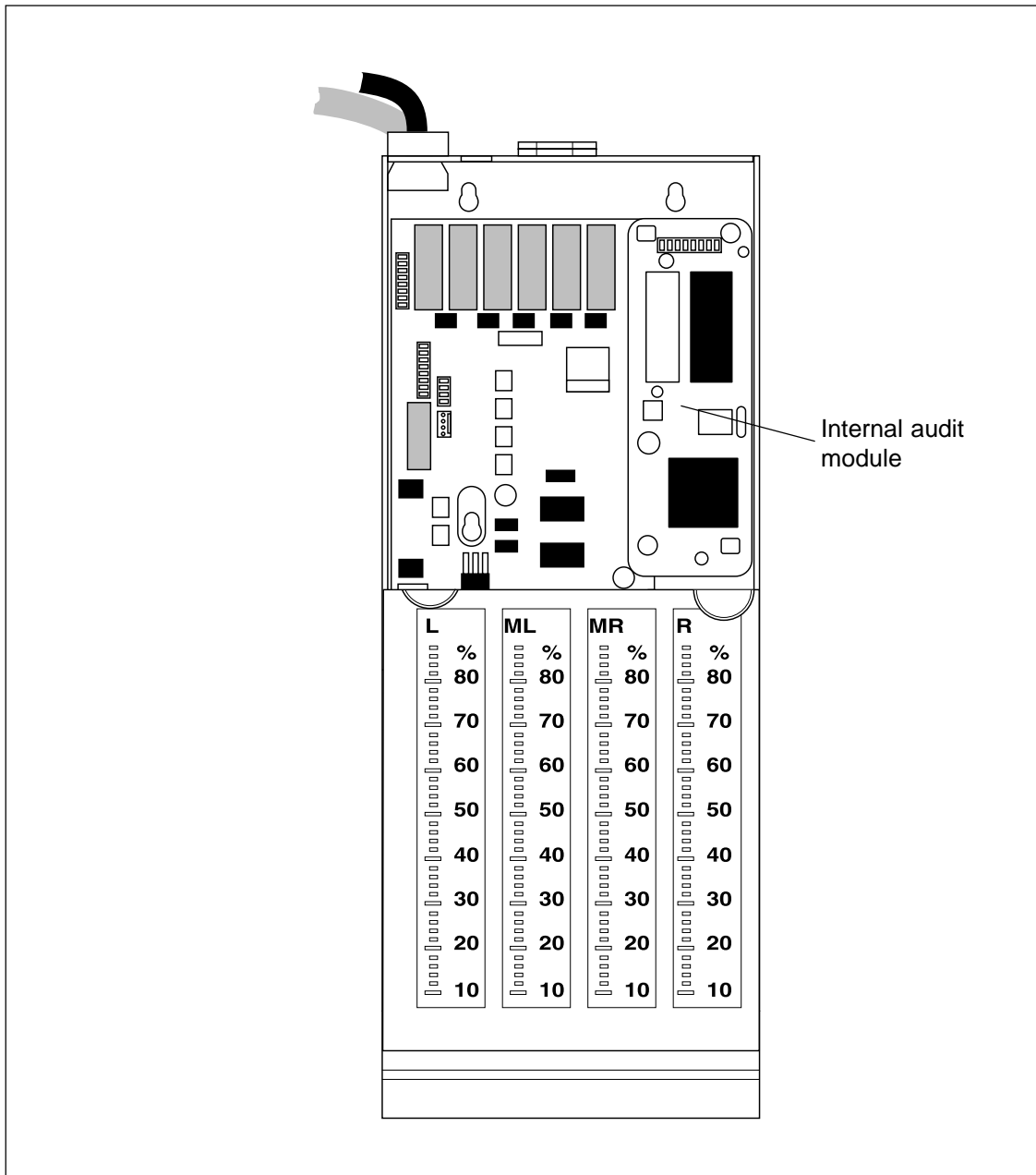


Fig. 1: Internal audit module

MDB peripheral bus

The MDB peripheral bus enables you to connect MDB card systems and MDB bill validators to the changer with coin validator G-40.4000/3. A bill validator converter is not necessary.

BDV peripheral bus

The BDV peripheral bus enables you to connect BDV card or key systems as well as the NRI bill validator converter G-55.0562 to the changer.

Card systems with "protocol A" (executive protocol) can also be connected to changers with the G-40.4000/3 coin validator from program version 92 00 311-007 on.

4 Design and function of the G-46

Overview of the device

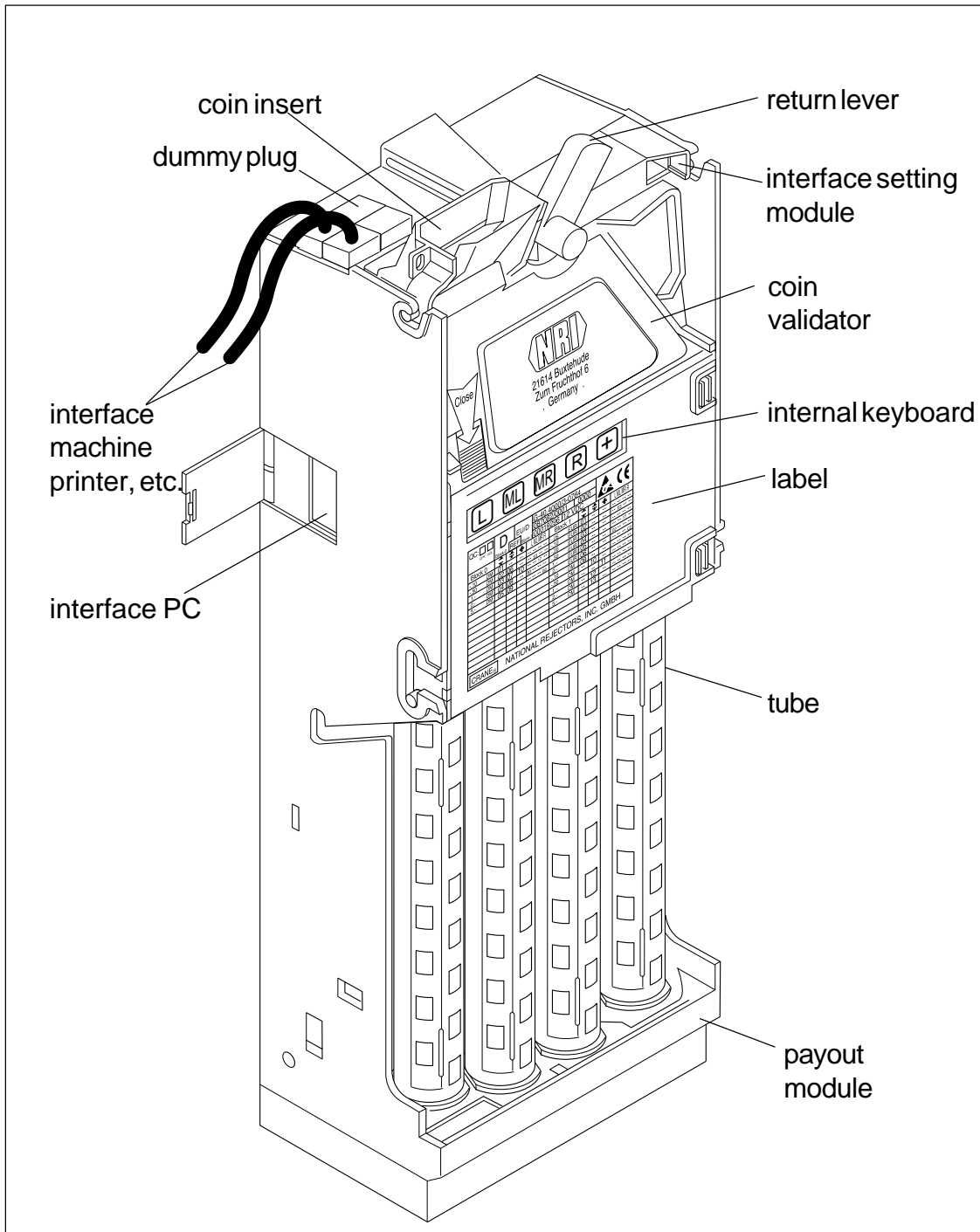


Fig. 2: Design of the G-46

Sorting the coins

A coin inserted into the machine first enters the electronic coin validator, where coin characteristics such as alloy, diameter, weight and embossing are checked by means of probes and light barriers. If the measured values do not lie within the programmed limit values the recognized false coin will be rejected via the coin return. Otherwise, the acceptance gate opens to the sorting system. The coin validator now checks if the coin is to be sorted into one of the four tubes. When the coin cannot find an associated tube (see coin validator label), or when the light barrier of the appropriate tube indicates a full tube, the coin falls into the cashbox.

Payout set with interchangeable tubes

The payout set consists of the payout module and 4 coin tubes. In order to guarantee a reliable payout of coins with different diameters, you can choose the suitable tubes from various coin tubes. The following table describes which coin size is assigned to the tubes.

Tube	Coin diameter min–max(mm)
M	29.50–32.50
A	29.01–32.00
B	26.01–29.00
C	23.51–26.00
I	22.00–24.50
D	21.01–23.50
K	20.50–22.50
E	19.01–21.00
F	17.51–19.00
G	16.01–17.50
H	15.00–16.00

Due to the payout module's compact design each tube can only be placed in certain positions. The following table shows the possible arrangements. The mm-specifications assigned to the positions correspond to the coin diameters allowed.

	left 19–29 mm	middle/left 15–23.5 mm	middle/right 16.01–26 mm	right 21.01–32.05 mm
M				•
A				•
B	•			•
C	•		•	•
I	•		•	•
D	•	•	•	•
K	•	•	•	•
E	•	•	•	
F		•	•	
G		•	•	
H		•		

Every tube has a size acceptance limit which adapts the tube in the payout module to the respective coin thickness (1.2–3.5 mm). In this way it is assured that it is only the tube that is adapted to the coin size (diameter and thickness). The payout mechanism, however, will not be changed. The following size acceptance limits are offered:

Size acceptance limitation	Coin thickness min–max
6	3.0–3.5 mm
1	2.4–3.0 mm
2	2.0–2.6 mm
7	1.7–2.4 mm
3	1.6–2.0 mm
4	1.2–1.6 mm
5	to 1.2 mm

You can adjust any payout combination by simply exchanging the tubes. If you change the payout combination, it is necessary to adapt the programming of the validator by means of a PC or setting module. An optimum change capacity can be achieved by installing several tubes for one coin denomination. The storage capacity of the tubes depends on the thickness of the coin denomination.

Measuring principle

In total an inserted coin results in 11 measured values:

nfa = amplitude measurement with low frequency (measuring material)

bod = measuring the coin edge

hfp = phase measurement with high frequency

lft = measurement by air-core coil (measuring volume, material)

hfa = amplitude measurement with high frequency

mas = mass measurement

gro = diameter measurement upper light barrier

gru = diameter measurement bottom light barrier

slf = sum of measurement by air-core coil (average of CP2)

lsa = voltage value of nfa when passing the 1st light barrier

lsb = voltage value of bod when passing the 2nd light barrier

Due to tolerances with respect to material and dimensions, the measurement for each coin denomination will result in several values, which are almost identical. Therefore it is required to adjust a maximum and minimum limiting value for the acceptance of coins (acceptance band).

From the 11 possible measurements (see above) 6 will be selected (acceptance bands) which then define one channel. It depends on the coin parameters which measurements are selected.

Programmed coin channels

When the coin validator accepts a coin, its measured values regarding the coin characteristics (alloy, thickness, volume, embossing depth, diameter, mass) lie within two programmed nominal values. The nominal values assigned to one coin characteristic form an acceptance band. Several acceptance bands define a coin channel. All coins assigned to one channel are of the same coin denomination.

In order to guarantee optimum rejection of false coins, apart from the normal bandwidth of a channel, additional narrow or very narrow bandwidths can be created with the limiting values lying closer together. Due to narrow channels, false coins with similar measured values will be rejected. Coins of the same value can be assigned to different channels. Thus, the coin validator can accept, e.g., new and old coins.

The coin validator has been extended to 16 independent coin channels in order to meet the requirements for impending conversion to the EURO.

The label indicates which coin denominations are assigned to which channels (s. fig. 3).



QC: <input type="checkbox"/> QPK <input type="checkbox"/> AQL		D		EU/D		G-40.4000/3-0764		087082/0001 0000			
Block-0		REF		Block-1		00019296		12 VDC			
Block 0					LMLMR R	Block 1				LMLMR R	
-.10	DM	01	--	--	-- -- --	-.05	EUR	01	--	--	-- -- --
-.50	DM	02	06	--	-- E3 -- --	-.10	EUR	02	--	--	-- E3 -- --
1.-	DM	03	07	10	-- -- 17 --	-.20	EUR	03	--	--	-- -- 17 --
2.-	DM	04	08	--	B3 -- -- --	-.50	EUR	04	--	--	-- -- 17 --
5.-	DM	05	09	--	-- -- -- B2	1.-	EUR	05	--	--	D2 -- -- --
						2.-	EUR	06	--	--	-- -- -- C2
						-.10	DM	09	--	--	-- -- --
						-.50	DM	--	10	--	-- -- --
						1.-	DM	--	--	11	-- -- --
						2.-	DM	--	--	12	-- -- --
						5.-	DM	--	--	13	-- -- --
 NATIONAL REJECTORS, INC. GMBH											

Fig. 3: Label G-46

Inhibiting coin channels with DIL switches



With EUromatic changers coin channels must be inhibited by means of function Pro 15.

The 16 coin channels can be inhibited by means of the setting module (Pro 15, s. chap. 8). In addition, it is possible to inhibit channels 1–8 by means of DIL switches, which are situated on the rear of the coin validator. In order to get free access to the switch block, the coin validator must be removed (s. fig. 4). In order to inhibit a channel, push the corresponding switch to the right to the ON position (fig. 5).

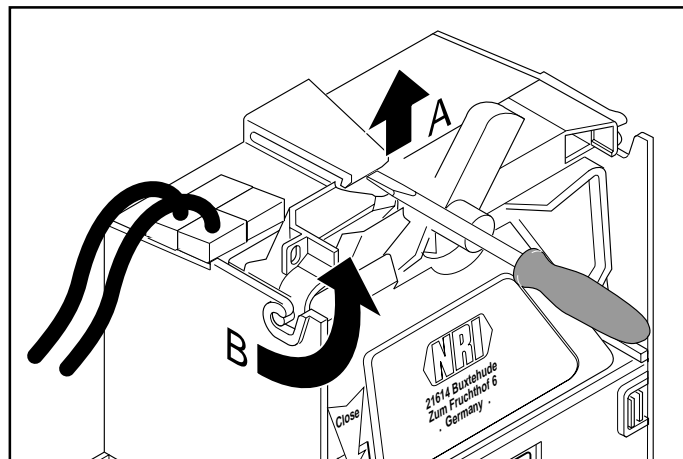


Fig. 4: Removing the coin validator

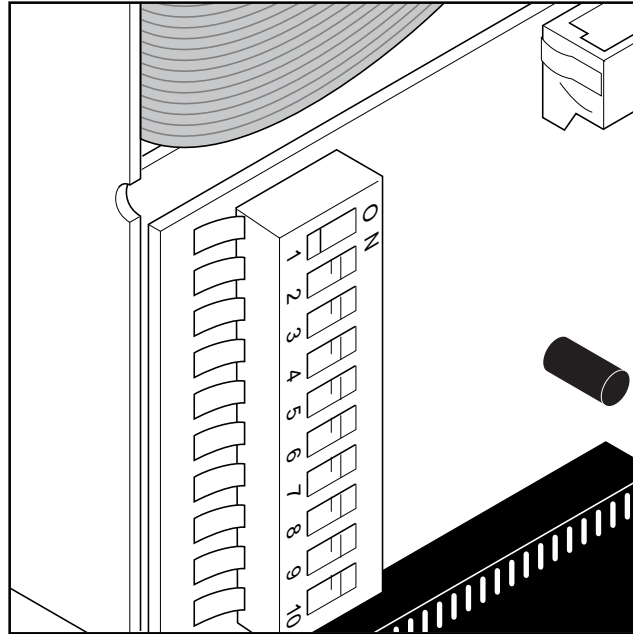


Fig. 5: DIL-switches on the rear of the coin validator (CPU card)



For coin validator G-40.4000/3:

With switch 9 of the Dual-In-Line switch the G-46 can be switched over to MDB-protocol. This may be necessary when a new coin validator has to be installed in a changer with an old MDB interface module.

5 Transporting and installing the changer

Transporting the changer



Empty the tubes, before transporting the device (see chap. 7 "Putting the changer into operation"). If not, loose coins could damage the pc-board.

To prevent damage, transport the device only in the original packaging and never carry it by means of the cables.

Installing the changer

Before installing, to prevent damaging the device you must ensure

- that the interface module and the connecting cable of the changer are suitable for the machine,
- that the supply voltage of the changer coincides with the specification given on the label.



Changers with a connecting voltage of 110–240 V have a rotary switch on the interface module. Here you can adjust the connecting voltage with a screwdriver to 110/115 V or 220/230 V (fig. 6)

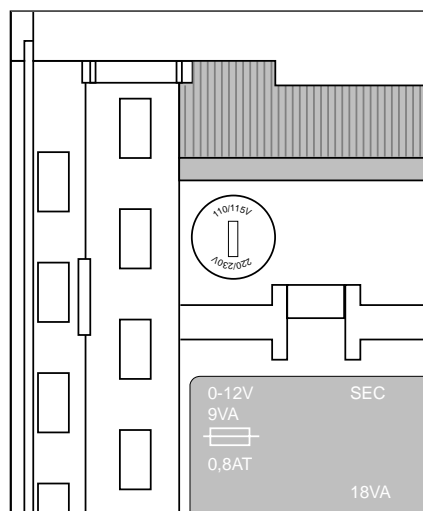


Fig. 6: Adjusting the connecting voltage

Here are the instructions for installing the changer:

- Remove the machine's plug from the mains socket.
- Fit the changer into the machine:
 - Mount the changer (3 holes) (fig. 7).
 - Remove coin validator (fig. 8).
 - Screw on changer's housing.
 - Reinsert coin validator.



Ensure that there is a gap between the return lever of the machine and the changer.

- Connect the changer to the machine and other plug connections if necessary (e.g. for external digital display (fig. 9) or bill validator).



If both the machine and the changer have two interfaces you may only connect one interface. Otherwise, the changer may be damaged. Never connect both plugs!

- Reconnect machine to mains supply.

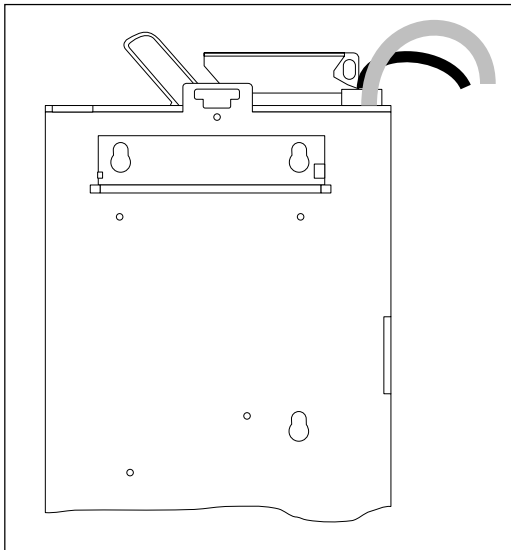


Fig. 7: Mounting the changer

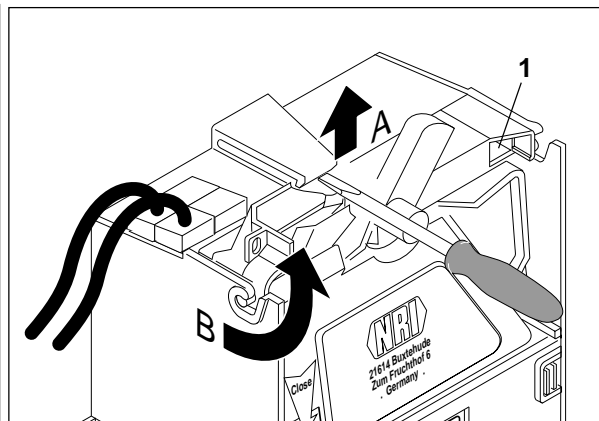


Fig. 8: Removing the coin validator

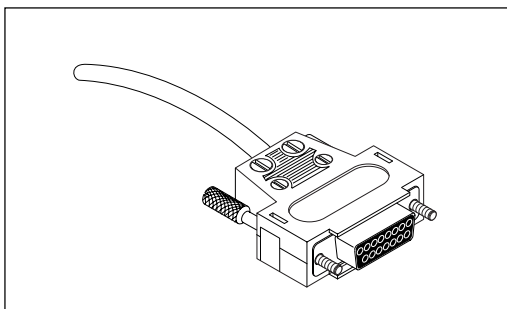


Fig. 9: Plug for connecting the external digital display

6 Connecting and operating the setting module

The setting module G-55.0460 enables you to

- read out error messages,
- read out audit data (dIS),
- control or change adjustments (Pro),
- carry out service functions (SEr).

Connect the setting module (fig. 10) to the socket (1) which is situated on the frontside of the changer at the top right.

General key functions

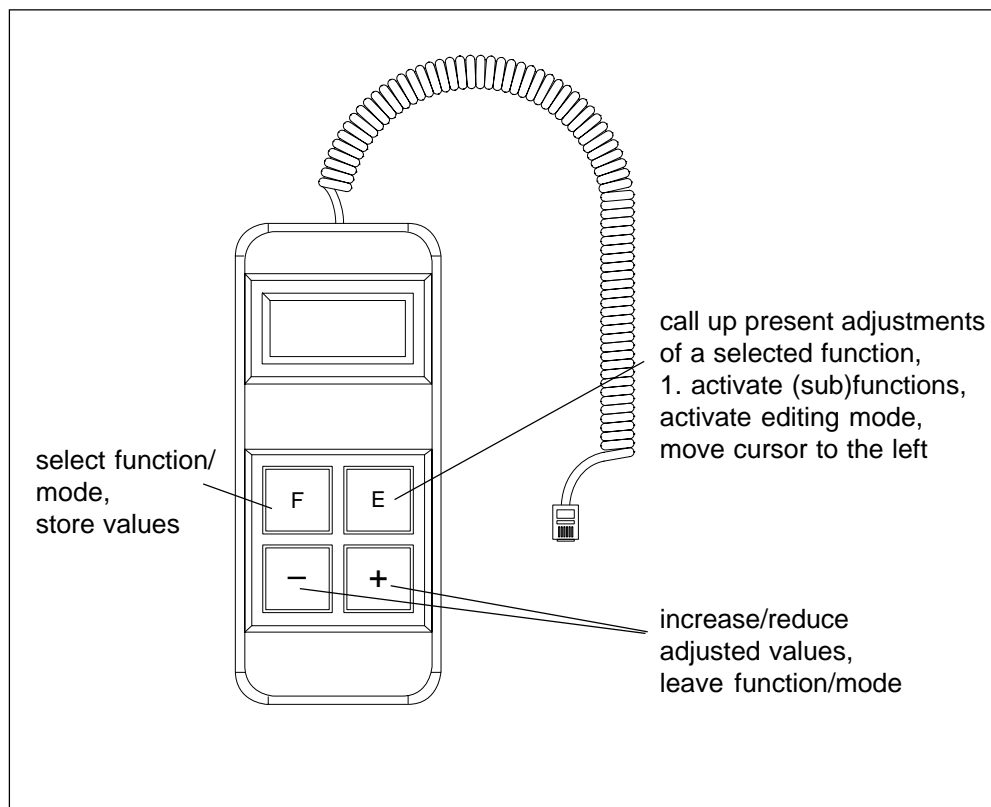


Fig. 10: Key functions of the setting module



Pressing key \boxed{E} displays the software version as well as the current block setting, and key $\boxed{+}$ directly calls up the function SEr 05 "Filling tubes" (s. Chap. 7 "Putting the changer into operation").

Menu structure

Via the \square -key of the setting module, three modes can be selected:

dIS mode	Here you can read out the audit data (s. chap. 9 "Reading out and printing audit data").
Pro mode	Here you can adjust different parameters (s. chap. 8 "Programming functions")
SER mode	Here you can find service functions (s. chap. 10 "Service functions")

Via the display, you can check in which mode you are.

Basic steps of programming

Primarily, the programming basics describe the general programming steps. However, the instructions for changing the values are explained in a different chapter. The subfunctions in the Ser-mode can be selected in the same way as in the Pro-mode.

Basic programming

Starting from the normal mode, which means the display is off, you can activate the programming mode by pressing the \square -key two times and afterwards the \square -key. The display then indicates Pro 01 which is the first programming function. Once you are in the programming mode, you need to follow these steps:

Programming step	Press	Display
select function	$\boxed{\text{E}}$ <i>until</i>	Pro x (two digits) <i>appear</i>
activate function	$\boxed{\text{E}}$	value of function or number of first subfunction
when subfunction is selected, call up its adjustments	$\boxed{\text{E}}$	value of the first selected, subfunction
or call up different subfunction	$\boxed{\text{E}}$ <i>until</i>	Pro xy (four digits) <i>appear</i>
activate editing mode	$\boxed{\text{E}}$	Pro xy (four digits) and value of desired subfunction
change value (s. next chapter)		
store value	$\boxed{\text{E}}$	no. of selected (sub)function

If you do not want to adjust any more functions by following basic programming, keep pressing the $\boxed{\text{E}}$ -key until the display shuts down. Otherwise the display will shut down automatically after 40 seconds.

When you only want to read the adjustments of a function, the step "change values" is generally omitted.

Changing data

Here, a change in price (Pro 0203) serves as an example to explain how to change data. The price will be increased from DM 0.50 to DM 2.60.

Programming step	Press	Display (example)
(activate editing mode)	$\boxed{\text{E}}$	Pro 0203 00. <u>50</u>
increase flashing digit by 1	$\boxed{+}$	Pro 0203 00. <u>60</u>
select next higher digit	$\boxed{\text{E}}$	Pro 0203 <u>00</u> .60
increase flashing digit by 2	$\boxed{+}$ 2 times	Pro 0203 <u>02</u> .60

In the same manner you can reduce the values by means of the \square -key.

Example: Adjusting price 3

In this example the price is to be increased from DM 0.50 to DM 1.10.

Programming step	Press	Display (example)
select the Pro-mode	F 2 times	Pro
activate the Pro-mode	E	Pro 01
select function Pro 02	F	Pro 02
activate function	E	Pro 0201 00.80
call up 3rd subfunction	F 2 times	Pro 0203 00.50
activate editing mode	E	Pro 0203 00. <u>5</u> 0
decrease flashing digit by 4	\square 4 times	Pro 0203 00. <u>1</u> 0
select next higher digit	E	Pro 0203 <u>0</u> 0.10
increase flashing digit by 1	+	Pro 0203 0 <u>1</u> .10
store value	F	Pro 0203 01.10

7 Putting the changer into operation (minimal adjustments)

Setting operation modes (Pro 04)

Call up the settings for the function Pro 0401. The following will be displayed:

0401
00000000

Erase (1), do not erase (0) residual credit
which cannot be paid out

MDB: Accumulate (1), erase (0) credit, which cannot be displayed

For Simplex V changers only:

Table of prices from Pro 02 active (1), not active (0)

Internal keyboard blocked, can be enabled by means of an MDB- or
BDV-vending machine control (1)

Internal keyboard enabled (0)

For MDB changers only:

Security stock in tubes can be paid out with DISPENSE (1)

**For changers with parallel interface only and when
"external reset" is adjusted:**

Reset with joint reset/blocking line L6 (1)

Reset with reset line L8 (0)

For changers with parallel interface only:

External reset (command by the machine) (1)

Internal reset (no command by the machine) (0)

Committed to vend (1):

Change will only be returned after a vend has been carried out, so the
changer cannot be misused as a change-giver.

Uncommitted to vend (0):

Inserted money is available.

Single vend (1):

Accepts coins only up to a value of the highest price set. Change is returned
after each vend.

Multi vend (0):

Customer can buy several products at a time without having to insert money
each time. Change is returned only when customer activates the return lever.

Further special operating modes can be adjusted in Pro 0402 by entering **1**.

The following adjustments are only possible for G-46 with parallel interface:

0402
00000000

For changers with a parallel interface:

Activate eco-function with line 8. When 0 is set, the eco-function can be activated by using price line 4.

Condition: eco-function is on.

For BDV 001 changers:

Changer settings cannot be modified by means of the vending machine control (1), can be modified (0)

Displays price after selection of product (2 seconds).
(with price tables for 4 price and Simplex V)

2 price lists activated (normal + happy-hour). The two price lists (prices 1-4 + prices 5-8) are activated at different times which can be programmed in Pro 23.

Condition: internal audit module

Eco-function. This means, the customer who provides his own cup receives a discount. Adjust discount in Pro 3301.

Condition: the cup cancellation button is connected on the 4th price line or on line 8.

Cigarette mode. This means, when the vending machine delivers no products and no reset signal appears within the time adjusted in Pro 5301, another vend attempt is possible. 4 seconds waiting time if Pro 5301 is not set.

Condition: "external reset" in Pro 0401 is set.

Delayed reset of the price line (300 ms)

With return line (1) (4-price transistor only)

Display of the time when there is no credit.

Condition: internal audit module and digital display

Setting prices (Pro 02)

A maximum number of 4 prices can be adjusted (for the Simplex V there is a total of 30. For 2-/4-price changers additionally 4 happy-hour prices can be adjusted. Condition: internal audit module).

For changing the prices, select function **Pro 02**. The subfunctions Pro 0201–Pro 0204 are assigned to the prices 1–4. (see also example in chapter 6 "Changing data")

The lowest-value-digit, usually the decimal digit of the pennies, can only be changed in steps of the lowest coin value.

For changers with parallel interface, the prices can also be adjusted by means of their **internal keyboard**:

- Press return lever and keep it pressed.
- For changing the 1st price press .
For changing the 2nd price press ML .
For changing the 3rd price press MR .
For changing the 4th price press R .
The adjusted price will be indicated on the machine display.
- Change adjustment:
increase with ,
reduce with ML.
- Stop pressing the return lever, to store the adjustment. The changer returns to normal mode.

For single vend the highest price set in the machine determines the maximum money a customer may insert. This stops the changer being misused as a change-giver. All the prices which are not used should be set to zero.

Determine channels to be inhibited for "tube empty" (Pro 17)

When one or more tubes are empty, the channels should be inhibited for high value coins, to psecurity change store. With the setting in Pro 2201 you can determine which tubes must be empty, in order to inhibit acceptance of high value coins (see following page "Setting of "tube empty"-condition").

If you want to inhibit one of the channels 1–8, call up Pro 1701. The first digit (on the right) of the indicated binary number is assigned to channel 1, the last digit is assigned to channel 8.

If you want to inhibit one of the channels 9–16, call up Pro 1702. Here, the first digit on the right is assigned to channel 9 and the last digit to channel 16. Setting the channel to 1 inhibits the relevant coin.

Setting of "tube empty"-condition (Pro 22)

You can determine which tubes must be empty so that the machine signals "tube empty". Only then Pro 17 (channels to be inhibited when "tube empty") is active. When a bill validator is connected and it is adjusted appropriately, the bill acceptance will also be inhibited (see chap. 8 "Programming functions" in "Adjusting the communication with peripheral devices").

When you call up the setting in Pro 22, the display indicates the following:

Pro 2201
00

That means the "tube empty" signal is given, either when the tube with the lowest coin value (tube A) signals empty or both tubes with the next higher coin values (tubes B and C) simultaneously signal empty. You can adjust a different code by means of the \square -key according to the following table.

Code "tube empty" condition	A<B<C<D (values of the tube coins)
00 A empty or B and C empty	
01 A and B and C empty	
02 A empty and B empty	
03 A and B empty or A and C empty	
04 only A empty	
05 A empty or B empty	
06 A or B or C empty	
07 A empty and C empty	
08 A empty or C empty	
09 B empty and C empty	
10 only B empty	
11 B empty or C empty	
12 only C empty	
13 only D empty	

Filling tubes (internal keyboard, SEr 05)

Before filling the tubes you should empty the cashbox, because coins that route to the cashbox during filling will not be counted.



This measure does not need to be taken, if in function 0404 is set, that only coins to be sorted into tubes are accepted while filling the tubes.

When there are no coins in the tubes, but the coin counter of the tubes indicates an amount of money, set the coin counter to zero by means of SEr 06 (s. chap. 10 "Service functions" in "Resetting the coin counter of the tubes").

Limit tube filling if necessary in Pro 25 (s. chap. 8 "Programming functions" in "Setting the maximum coin number per tube").

Fill the tubes as follows by using the **internal keyboard**:

- Press \square -key. An acoustic signal confirms that you are in the tube-filling mode.
- Insert coins.



When inserting the first coin in each tube, make sure that the coin lies flat in the tube.

- Press \square -key. The display shuts down.

If you additionally want to control the filling level of the tubes, the tubes can also be filled by means of the service function **SEr 05**:

- Select SEr 05. When all tubes are empty, the display of the setting module now indicates the following (s. also table on next page):






SEr 0501
uuuu 00

Amount of the inserted coins (2/4 price, Simplex V, BDV) or coin channel of the inserted coins (MDB and VCCS)


Filling levels of the 4 tubes

- Insert coins. The display indicates the counted coins and changes the display of the filling levels and the amount or coin channel of the inserted coins.
- Press the \square -key. The display shuts down.

Meaning of the display for the filling levels:





Display	Meaning
	Tube empty
	Tube not empty
	Tube full
	Contradictory message from the tube filling sensors
	Programmed tube filling level achieved



When the display indicates , check the filling level sensors.

Emptying tubes (internal keyboard, SEr 01)

When you need some coins for test vends or you want to empty the tubes before transporting them, you can empty the tubes by means of the internal keyboard on the frontside of the changer:

-  pay out a coin from the left tube
-  pay out a coin from the middle/left tube
-  pay out a coin from the middle/right tube
-  pay out a coin from the right tube

If you press a key for more than 4 seconds, the coins will be paid out continuously. Simply press another key if you want to stop this process.



If with MDB and BDV changers in function 0401 the third digit from the right is set to "1", the machine control must enable inventory for emptying the tubes via the internal keyboard. (See description of the machine control.)

When the machine control does not enable inventory via the internal keyboard, the inventory can be carried out by means of the service function SEr 01.

- Select the required tube:
 - SEr 01 01 tube left
 - SEr 01 02 tube middle/left
 - SEr 01 03 tube middle/right
 - SEr 01 04 tube right
 The filling level will be indicated for each tube.



The filling levels of national coins in changers with EUROmatic, which are switched over to the Euro, are displayed on the left and the filling levels of Euro coins on the right.

- Press \square in order to return a coin.

Carrying out test vends without coins (SEr 3002) (for changers with parallel interface only)

Test vends will be carried out by means of the setting module and the selection buttons of the machine:

Programming step	Press	Display
select service mode	\square 3 times	SEr
activate service mode	\square	SEr 01
select SEr 30	\square 4 times	SEr 30
call up "test vends"	\square 2 times	SEr 30 02 Fr

Now you can carry out a test vend by pressing one of the selection buttons on the machine. The machine's display indicates the corresponding price. At a price of DM 0.50 the setting module's display indicates:

SEr 30 02
Fr 00.50

Quit the service function by pressing the \square -key.

8 Programming functions

Structure of the Pro functions

Function	Meaning of the adjusted value
----------	-------------------------------

0101	machine-no.
------	-------------

0201	price 1
------	---------

0202	price 2
------	---------

0203	price 3
------	---------

0204	price 4
------	---------



A Simplex-V changer with internal audit unit enables you to adjust a total number of 30 prices (Pro 0201–Pro 0230).

0301	acceptance limit
------	------------------

0302	change limit
------	--------------

0303	credit limit for card system
------	------------------------------

0401	operating modes 1
------	-------------------

00000000

0	erase (1), do not erase (0) residual credit which cannot be paid out
0	MDB: Accumulate (1), erase (0) credit, which cannot be displayed
0	table of prices active (1), inactive (0)
0	block internal keyboard (1), enable it (0)
0	MDB: Security stock in tubes can be paid out with DISPENSE (1)
0	reset with line 6 (1), with line 8 (0)
0	external reset (1), internal reset (0)
0	committed to vend (1), uncommitted to vend (0)
0	single vend (1), multi vend (0)

Function	Meaning of the adjusted value
0402	<p>operating modes 2</p> <p>00000000</p> <p>eco-function with line 8 (1) eco-function with price line 4 (0) (for changers with a parallel interface) changer settings cannot be modified by means of the vending machine control (1), can be modified (0) (for BDV 001 changers) indicate price when selecting product (1) (with price table for 4 price and Simplex V) 2 price lists (happy-hour) (1), 1 price list (0) eco-function on (1) cigarette mode on (1) delayed reset on (1) with return line (1) (4-price transistor only) time display (1)</p>
0403	<p>printing mask</p> <p>00000000</p> <p>sales data will not be printed (1), will be printed (0) price-related vend data will not be printed (1), will be printed (0) time will not be printed (1), will be printed (0) erase audit data by reading it out with driver MDE (1), after printing process (0) monitoring the "print key" line (1) no monitoring of the "print key" line (0) printing at 1200 baud (1), at 110 baud (0) counting the cash (1), not counting the cash (0) (storage of previous audit data, then audit data set to zero) G-46 was adjusted with MDE (1)</p>
0404	<p>operating modes 3</p> <p>00000000</p> <p>while filling the tubes, only accept coins to be sorted into tubes (1) reserved for MDB</p>

Function	Meaning of the adjusted values
1401	time (HH.MM)
1402	date (DD.MM.YY)
1501	individual inhibiting of channels 1–8 (1) 00000000 channels 1–8 (right to left) 8 1
1502	individual inhibiting of channels 9–16 (1) 00000000 channels 9–16 (right to left) 16 9
1701	individual inhibiting of channels 1–8 when "tube empty" (1) 00000000 channels 1–8 (right to left) 8 1
1702	individual inhibiting of channels 9–16 when "tube empty" (1) 00000000 channels 9–16 (right to left) 16 9
1801	communication with audit unit on (1)
1901	adjustments for card system 00000 communication with BDV card system on (1) machine cannot change adjustment (1) discount granted by card system (1) subsidised sales allowed (1) communication with MDB card system on (1)
2001	communication with bill validator converter 00000 communication with BDV bill validator converter on (1), off (0) Inhibiting bill validator when tube empty (00) Not inhibiting bill validator when tube empty (01) Enable bill validator only when card in card reader (10) Enable bill validator only when card in card reader or tubes not empty (11) communication with MDB bill validator on (1)
2101	sensitivity of the string sensor

Function	Meaning of the adjusted value								
2201	general condition for "tube empty" message								
2202	no. of coins, after which "not empty" is indicated for left tube								
2203	no. of coins, after which "not empty" is indicated for middle/left tube								
2204	no. of coins, after which "not empty" is indicated for middle/right tube								
2205	no. of coins, after which "not empty" is indicated for right tube								
2301	time period when 2nd price list is switched on								
2302	time period when 2nd price list is switched off								
2501	maximum number of coins in left tube								
2502	maximum number of coins in middle/left tube								
2503	maximum number of coins in middle/right tube								
2504	maximum number of coins in right tube								
2601	security stock of coins in left tube								
2602	security stock of coins in middle/left tube								
2603	security stock of coins in middle/right tube								
2604	security stock of coins in right tube								
3001	value of token A								
3002	value of token B								
3003	value of token C								
3101	<table border="0"> <tr> <td>000</td> <td></td> </tr> <tr> <td> </td> <td>token A is free vend token (1)</td> </tr> <tr> <td> </td> <td>token B is free vend token (1)</td> </tr> <tr> <td> </td> <td>token C is free vend token (1)</td> </tr> </table>	000			token A is free vend token (1)		token B is free vend token (1)		token C is free vend token (1)
000									
	token A is free vend token (1)								
	token B is free vend token (1)								
	token C is free vend token (1)								
3301	subsidy amount for using the card system or eco function								
5001	value of the smallest coin								
5201	telephone code (indicates the printout language) 0049, 0043, 0041=German 0033 = French 0031 = Dutch 0034 = Spanish any others = English								
5301	time period cigarette mode								

Function	Meaning of the adjusted value										
5401	coins to be sorted into left tube, channels 1–8 (1) 00000000 channels 1–8 (right to left)										
5402	coins to be sorted into left tube, channels 9–16 (1) 00000000 channels 9–16 (right to left)										
5501	coins to be sorted into middle/left tube, channels 1–8 (1) 00000000 channels 1–8 (right to left)										
5502	coins to be sorted into middle/left tube, channels 9–16 (1) 00000000 channels 9–16 (right to left)										
5601	coins to be sorted into middle/right tube, channels 1–8 (1) 00000000 channels 1–8 (right to left)										
5602	coins to be sorted into middle/right tube, channels 9–16 (1) 00000000 channels 9–16 (right to left)										
5701	coins to be sorted into right tube, channels 1–8 (1) 00000000 channels 1–8 (right to left)										
5702	coins to be sorted into right tube, channels 9–16 (1) 00000000 channels 9–16 (right to left)										
6001	temporary block switch over block 1 (1), block 0 (0)										
6101	0000 <table border="0" style="margin-left: 20px;"> <tr> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="padding-left: 10px;">EUROmatic enabled (1), EUROmatic inhibited (0)</td> </tr> <tr> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="padding-left: 10px;">reserved</td> </tr> </table> Dual Currency enabled (1) (for MDB changers)					EUROmatic enabled (1), EUROmatic inhibited (0)					reserved
				EUROmatic enabled (1), EUROmatic inhibited (0)							
				reserved							
6201	date for EUROmatic block switch over (DDMMYY)										
6202	date for EUROmatic, inhibiting the national currency (DDMMYY)										
7001	Coin channel of hopper 1										
7002	Coin channel of hopper 2										
7101	00 <table border="0" style="margin-left: 20px;"> <tr> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="padding-left: 10px;">hopper 1 enabled (1)</td> </tr> <tr> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="border-right: 1px solid black; width: 10px; height: 10px;"></td> <td style="padding-left: 10px;">hopper 2 enabled (1)</td> </tr> </table>			hopper 1 enabled (1)			hopper 2 enabled (1)				
		hopper 1 enabled (1)									
		hopper 2 enabled (1)									

Setting the machine number (Pro 01)

In Pro 01 a 6-digit machine number can be assigned to each changer. By this process, the changer is newly initialised and all audit data registered since the last initialisation will be reset.



If you invoice by means of MDE, the machine number cannot be changed.

Setting prices (Pro 02)

A maximum number of 4 prices can be adjusted (for the Simplex V there is a total of 30 prices, for 2-/4-price changers additionally 4 happy-hour-prices can be adjusted, condition: internal audit module).

For changing the prices, select function Pro 02. The subfunctions Pro 0201–Pro 0204 are assigned to the prices 1–4 (see also example in "Changing data", chap. 6).

The lowest value digit, usually the decimal digit of the pennies, can only be changed in steps of the lowest coin value.

In case of single vend, the price set the highest determines how much money the customer is allowed to insert. In order to prevent the customer from using the changer as change-giver, set all prices not used to zero.

Setting the acceptance, change and credit limit (Pro 03)

Acceptance limit for coins and bills (Pro 0301)

In function Pro 0301 you can adjust the maximum amount of money which can be accepted for a vend. As soon as the amount is exceeded, the acceptance of coins and bills will be blocked. In this way, you can prevent the changer from being misused as a change-giver.

Change limit for residual money (Pro 0302)

In function Pro 0302 you can adjust the maximum amount of residual money which can be returned by the changer. The customer is thus committed to buy until the residual money corresponds to the adjusted amount or is below it.

Credit limit for cards (Pro 0303)

In function Pro 0303 you can adjust the maximum value by which the cards can be reloaded.

Setting operating modes (Pro 04)

Select the adjustment of function Pro 0401. The following is displayed:

0401
00000000

erase (1), do not erase (0) residual credit
which cannot be paid out

MDB: Accumulate (1), erase (0) credit which cannot be displayed

for Simplex V changers only:

price table from Pro 02 active (1), inactive (0)

internal keyboard blocked, can be enabled by an MDB- or BDV-
vending machine control (1)
internal keyboard enabled (0)

for MDB changers only:

security stock in tubes can be paid out with DISPENSE (1)

**for changers with parallel interface only and when „external
reset” is adjusted:**

erasing with combined reset/blocking line 6 (1)

erasing with reset line 8 (0)

for changers with parallel interface only:

external reset (command by machine) (1)

internal reset (no command by machine) (0)

0401
00000000

committed to vend (1):
change will only be returned after a vend was carried out, so the changer cannot be misused as a change giver

uncommitted to vend (0):
inserted money will always be returned

single vend (1):

accepting coins only up to a value of the highest price adjusted. Change is returned after each vend

multi vend (0):

customer can buy several products at a time without having to insert money each time. Returning change only when customer is activating return lever.

Further special operating modes can be adjusted in function Pro 0402 by entering **1**:

The following adjustments are only possible for the G-46 with parallel interface:

0402
00000000

activate eco-function with line L8. When 0 is adjusted, the eco-function can be activated by using price line 4.

Condition: eco-function is switched on.

Changer settings blocked for vending machine control. If 0 is set, the settings can be modified by means of the vending machine control. (for BDV 001 changers)

indicating price after selection of product (2 seconds).
(with price table for 4 price and Simplex V)

2 price lists activated (normal + happy-hour). The two price lists (prices 1–4 + prices 5–8) are activated at different times, which can be programmed in Pro 23.

Condition: internal audit module.

Eco-function. I.e. customer who has his cup receives a discount.

Adjust discount in Pro 3301.

Condition: The cup cancellation key is connected on the 4th price line or on line 8.

0402
00000000

cigarette mode. I.e. when the vending machine delivers no goods and no reset signal appears within the time adjusted in Pro 5301, another vend attempt is possible. Waiting time of 4 seconds, if Pro 5301 is not adjusted.

Condition: "external reset" in Pro 0401 is adjusted

delayed reset of the price line (300 ms)

with return line (4-price transistor only)

time display, if the credit equals zero

condition: internal audit module and digital display

You can configure the printer interface of the internal audit module in Pro 0403. There are 8 setting options:


0403
00000000

sales data is printed (0), is not printed (1)

price-related vend data is printed (0), not printed (1)

time is printed (0), not printed (1)

no monitoring of line „print key“ (0),
monitoring of line „print key“ (1)


 *The line must constantly be active while printing. Otherwise the printout is interrupted.*

printing at 110 baud (0), at 1200 baud (1)

counting the cash (1), not counting the cash (0)

when changing over from national currency to Euro

storage of previous audit data, then audit data set to zero.

 *Select adjustment 00000000 for printer G-55.0502 and adjustment 00110000 the printer G-55.0510 .*

For setting further operating modes select function Pro 0404. The following is displayed.

0404
00000000

With setting 1 only those coins are accepted while filling the tubes, which are sorted into tubes. Coins to be sorted into the cash-box are rejected. The amount of the accepted coins is displayed if it is a Simplex V- or BDV-control.



Concerning function Ser 05, the cash-box does not need to be emptied before filling the tubes with this setting.

reserved for MDB

Setting of time and date (Pro 14)



This function can only be set when the changer has an internal audit unit.

Time (Pro 1401)

The time can be set in function Pro 1401. The display corresponds to HHMM.

Example: 8 h

Display: Pro 1401
0800

Date (Pro 1402)

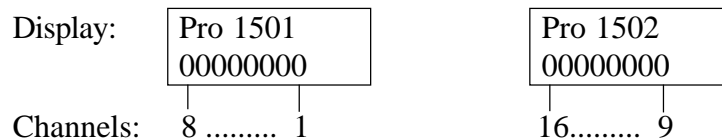
The date can be set in function Pro 1402. The display corresponds to DDMMYY.

Example: 4th October 1997

Display: Pro 1402
041097

Inhibiting individual coins (Pro 15)

In the subfunctions of Pro 15 the coin channels can individually be inhibited, by setting the digits assigned to the channels to 1.



Determine channels to be inhibited for "tube empty" (Pro 17)

When one or more tubes are empty, the channels should be inhibited for high value coins, so that the changer pays out as little change as possible. With the setting in Pro 2201 (see page 8-13 "Setting of "tube empty"-condition") you determine, which tubes must be empty in order to inhibit the acceptance of high value coins.

If you want to inhibit one of the channels 1–8, call up Pro 1701. The first digit (on the right) of the indicated binary number is assigned to channel 1, the last digit is assigned to channel 8.

If you want to inhibit one of the channels 9–16, call up Pro 1702. Here, the first digit on the right is assigned to channel 9 and the last digit to channel 16. Set the channels to be inhibited to 1.

Adjusting the communication with peripheral devices

Audit unit (Pro 18)



You must only change this function (Pro 18) in BDV or Simplex V changers. The binary digit 1 (communication on) must only be programmed when the machine is equipped with an audit unit. Otherwise the error code 32 will be indicated. As a result, neither coins will be accepted nor products will be sold.

Card system (Pro 19)



The binary digit 1 (communication on) must only be programmed when a card system is connected. Otherwise error code 33 will be indicated.

For communication with the card system, five adjustments can be made in Pro 19:

00000

communication with BDV card system off (0), on (1)

machine can change (0), cannot change (1) adjustment

changer does not accept discount from BDV card system (0),
changer accepts discount from BDV card system (1),

discount level (0–100 %, adjusted in the card system) will be deducted
from the selling price.

subsidised sales by means of cards are not possible (0), are possible (1)

Condition: Changer contains an internal audit module.

communication with MDB card system off (0), on (1)



The communication with the BDV card system must not be switched on at the same time as the communication with the MDB card system.

With subsidised sales, the customer either gets the product for free or is granted a discount. The subsidy amount (=discount) can be programmed in function Pro 33 (see "Adjusting the subsidy amount" in chap. 8). The number of subsidised sales is programmed on the card. When subsidised sales are enabled, alternately the number of subsidised sales and the credit value will be displayed.

When error code 33 is indicated, either

- the card system is busy,
- the card system is not connected,
- the card system is defective, or
- the connecting cable is defective.

After 2 minutes, the error code disappears when a BDV card reader is connected. The communication with the card system is interrupted. Every time the machine is switched on, it will automatically check whether the card system can be contacted and, if possible, it will start the communication.

When a BDV card reader is connected, the changer attempts to contact the card reader in intervals of 20 seconds and keeps on operating without card reader for this time.

Bill validator (Pro 20)



The binary digit 1 (communication on) must only be programmed when a bill validator is connected. Otherwise error code 34 will be indicated.

For communicating with the bill validator, the following adjustments can be made in Pro 20:

00000

communication with BDV bill validator converter off (0), on (1)

inhibit bill validator when tube empty (00)

do not inhibit bill validator when tube empty (01)

enable bill validator only when card in card reader (10)

enable bill validator when card in card reader or tubes not empty (11)

communication with MDB bill validator off (0), on (1)



The communication with the BDV bill validator must not be switched on at the same time as the communication with the MDB bill validator.

When error code 34 is indicated, either

- the bill validator is busy,
- the bill validator is not connected,
- the bill validator is defective, or
- the connecting cable is defective.

After 2 minutes, the error code disappears when a BDV bill validator converter is connected. The communication with the converter is interrupted. Every time the machine is switched on, it will automatically check whether the converter can be contacted and, if possible, it will start the communication.

If a MDB bill validator is connected, every 20 seconds the changer attempts to contact it and keeps on operating without bill validator for this time.

Setting the sensitivity of the string sensor (Pro 21)

This function is of special interest for validators with string sensor. With function Pro 21 you can change the sensitivity of the sensor. The maximum sensitivity is set by a value of 00. With a value >50 the sensor is only activated, when the accepted flap is opened by the string or the coin.

Setting of "tube empty"-condition (Pro 22)

You can determine which tubes must be empty so that the machine signals "tube empty". Only then function Pro 17 (coin channels to be inhibited when "tube empty") gets active. When a bill validator is connected and it is adjusted appropriately the bill acceptance will be inhibited (see chap. 8 "Programming functions" in „Adjusting the communication with peripheral devices”).

When you call up the adjustment in Pro 22, the display indicates the following:

Pro 2201
00

That means the "tube empty" signal is given, when either the tube with the lowest coin value (tube A) signals "empty" or both tubes with the next higher coin values (tubes B and C) simultaneously signal "empty". You can adjust a different code by means of the \oplus -key according to the following table:

Code	"tube empty"-condition	A<B<C<D
00	A empty or B and C empty	(values of tube coins)
01	A and B and C empty	
02	A empty and B empty	
03	A and B empty or A and C empty	
04	only A empty	
05	A empty or B empty	
06	A or B or C empty	
07	A empty and C empty	
08	A empty or C empty	
09	B empty and C empty	
10	only B empty	
11	B empty or C empty	
12	only C empty	
13	only D empty	

Setting the minimum coin number per tube for message "tube not empty" (Pro 2202–2205)

In subfunctions 02 to 05 of Pro 22 you can set the minimum number of coins for each tube, from which on the message "tube not empty" will be displayed. If the coin number in a tube falls below the programmed number, the vending machine displays "tube empty" depending on the setting in Pro 2201 (above-mentioned).

If 0 is programmed, the filling level sensor of the correspondent tube triggers the message.

For each tube a subfunction is assigned:

- Left tube Pro 2202
- Middle/left tube Pro 2203
- Middle/right tube Pro 2204
- Right tube Pro 2205

Switching on/off time for second price table (Pro 23)

The G-46 is able to manage two prices for each product. The prices are entered in two price lists. Thus the changer can be adjusted in such a way, that for a particular time period (happy hour) the products are sold for a lower price. In the subfunctions of Pro 23 you can set at what time the second price list (happy-hour prices) is valid.

Conditions:

- changer with parallel interface (2-price, 4-price relay output)
- internal audit unit in the changer
- The function "two price lists" must be switched on in Pro 0402. (see "Setting operating modes"). Only then can the happy-hour prices be adjusted in Pro 0205–0208.

In Pro 2301 the switch-on time can be programmed (HH.MM).

In Pro 2302 the switch-off time can be programmed (HH.MM).



When the switch-on and the switch-off time are set to an identical time, the changer will only operate with price list 1 (no happy-hour prices).

Setting the maximum coin number per tube (Pro 25)

In the subfunctions of Pro 25 you can set the maximum number of coins to be accepted by each tube. When the programmed number of coins is achieved for a tube, all following coins for this tube will be led into the cashbox. Only when coins have been paid out from this tube, is the tube able to accept coins again.

When 0 is programmed, coins will be sorted into the tube until the upper filling level sensors indicate "tube full".

For each tube a subfunction is assigned:

- Left tube Pro 2501
- Middle/left tube Pro 2502
- Middle/right tube Pro 2503
- Right tube Pro 2504

Setting the security stock per tube (Pro 26)

In the subfunctions of Pro 26 you can set the number of coins not to be paid out for each tube. Usually, the default is 1. For critical coins the setting value can also be higher. When paying out, only values from 1 to 9 are accepted.

For each tube a subfunction is assigned:

- Left tube Pro 2601
- Middle/left tube Pro 2602
- Middle/right tube Pro 2603
- Right tube Pro 2604

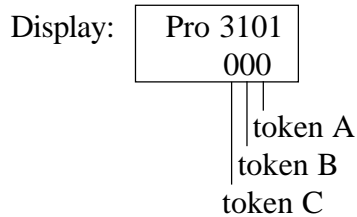
Carrying out the token adjustments

Either by means of token values (Pro 30)

In the subfunctions Pro 3001–3003 you can programme values for three tokens (A, B, C). The programmed value does not need to correspond to the selling price. When the token value is above the selling price, the difference will not be paid out. When the value is lower, the customer can pay the difference. The changer does not accept multiple tokens for one vend.

Or by means of free vend tokens (Pro 31)

In Pro 31 you can programme the tokens A, B, C as free vend tokens, by means of which the customer can buy the products for free. For this purpose, the corresponding digit must be programmed with 1.



Machines which have a display will indicate „FrEE“ when a free vend token is inserted. In changers with BDV 001 or Simplex V interface, the amount programmed in Pro 30 will be transferred to the machine.

Adjusting the subsidy amount (Pro 33)

With subsidised sales, the customer either gets product for free or at a lower price. Subsidies can be granted for

- using the GLOBO card system,
- using own cup

The subsidy amount (=discount) can be programmed in Pro 33.



When the subsidy amount is higher than the selling price, the full selling price must be paid!

Condition for granting subsidies when using the card system:

Subsidised sales for the card system must be enabled in Pro 1901.

The number of subsidised sales for the card system is programmed on the customer's credit card. When the subsidised sales are enabled, the number of subsidised sales and the credit are alternately indicated.

Condition for granting subsidies when own cup is used:

- eco-function switched on (Pro 0402, see "Setting operating modes"),
- cup cancellation button connected (see "Setting operating modes").

Adjusting the lowest coin value (Pro 50)

In Pro 50 the lowest coin value can be adjusted.



By modifying the lowest coin value, the prices and the token values can also change. Therefore the adjustments in Pro 02 and Pro 30 must also be checked after having modified the data in Pro 50.

Setting the cigarette mode time (Pro 53)

If no product is delivered by a machine and if there is no reset signal from the machine, within the time adjusted in Pro 53 (in seconds) another vend attempt is possible. There is, however, no commitment to vend. When no time is programmed, a cigarette mode time of 4 seconds is valid.

Conditions:

- changer with parallel interface
- external reset adjusted (Pro 0401)
- cigarette mode time activated (Pro 0402)

Setting of the coin sorting to the tubes (Pro 54–57)

In the functions Pro 54–57 you can adjust which coins are to be sorted in which tubes. Each tube has a corresponding function:

- Left tube Pro 54
- Middle/left tube Pro 55
- Middle/right tube Pro 56
- Right tube Pro 57

The coin denomination to be sorted into a tube can be defined via its channels (see example).

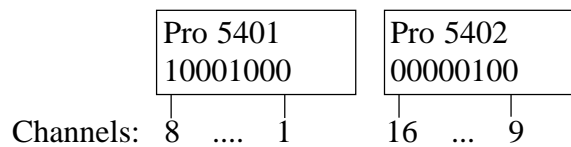
Example:

Left tube is to be changed from DM 1 to DM 2.

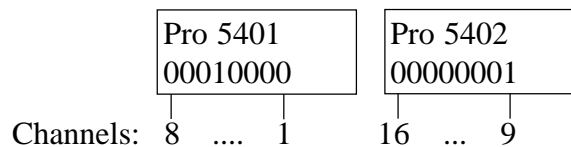
DM 1 is programmed in the channels: 4 (normal), 8 (narrow), 11 (very narrow),

DM 2 is programmed in the channels: 5 (normal), 9 (narrow)
(see label in chap. 4)

Before: The channels corresponding to DM 1 are set to 1.



After: The channels corresponding to DM 2 are set to 1.



*Only sort coins of the same denomination into one tube.
Make sure to consider **all** coin channels of a coin (normal and narrow!).*

After changing the sorting, it may be necessary to adapt the tube of the new coin at the payout set (see chap. 13 "Repairing and exchanging components").

Changeover to EURO

After having changed from the block of national currency (block 0) to the Euro block, the Euro tube coins are sorted into the tubes onto the national coins and the national coins are sorted into the cash-box. The changer first pays out the national coins, which are still in the tubes. Only when those have been paid out, the Euro coins will be paid out.



The MDB changer can only be changed to the Euro, if the vending machine control pays out with "Alternative Payout". I.e. the manner of payout must not depend on certain tube coins.

The processing when changing over to the Euro depends on the type of changer. However, each type of changer enables you to program Euro prices or other Euro relevant data before changing over to the Euro. The latter guarantees a smooth and quick changeover to the Euro currency.

Switching over the block temporarily (Pro 60)

Before changing over to the Euro, the data block with the national currency is active (block 0). Nevertheless, it is already possible to adjust data in the Euro block. For this, first of all switch over to block 1 in function Pro 6001. The switch-over is only active as long as you are in the programming mode. Afterwards block 0 is automatically set again.

Changeover to EURO via EUROMatic (Pro 61)

For changing over to the Euro the following adjustments can be made in Pro 61:

0000

EUROMatic enabled (1), EUROMatic inhibited (0)

With this function the EUROMatic can be switched on or off.



The changer must have been prepared for EUROMatic at NRI.

reserved

For MDB changers:

Dual-Currency enabled (1)

With this setting, credit amounts are indicated on the vending machine display in the national currency as well as in the Euro currency. At the same time the changeover of the coin sorting to Euro coins into tubes and national coins into the cash-box is carried out by means of the date set in the vending machine control.

Condition: EUROMatic is enabled (first place on the right)

Changeover from a programmed date on (Pro 62) (4-price, Simplex V with price table)

These types of changers, which are operated with price tables, can automatically be changed over to the Euro from a programmed date on, as the prices are programmed directly in the changer and thus are changed over by means of the switch-over of the block.

For changing over via EUROmatic proceed as follows:

- Program in Pro 6201 the date from which the Euro coins shall be sorted and put into the tubes and the national coins into the cash-box. The display has structure DDMMYY.

Example: 1st January 2002

Display:

Pro 6201 010102

- Program in Pro 6202 the date from which the national coins shall be inhibited. The display has structure DDMMYY.

Example: 1st March 2002

Display:

Pro 6202 010302

- Switch on the EUROmatic in Pro 6101 (set to 1).



The changer must have been prepared for EUROmatic at NRI.

Changeover to EURO via DIL-switches (BDV, Simplex V Standard, MDB)

With these changers the prices are programmed in the vending machine control. Thus, it is only possible to switch over to the Euro currency, if the prices are changed over in the vending machine.

Via switch 10 of the DIL-switch block the G-46 can be switched over from the corresponding national currency to the Euro currency (set to the right to position ON). Then switch off and on the power. Doing this, all of the vending machine adjustments such as prices, blocking masks, acceptance limits, etc. (as far as they are managed in the G-46) are changed over to the Euro, too. (Fig. 11)

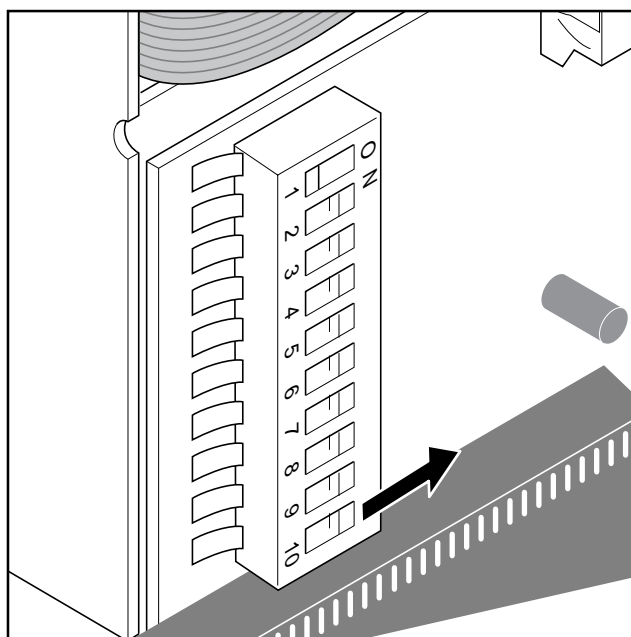


Fig. 11: DIL-switch on the rear side of the coin validator (CPU pcb)

Programming the hopper values (Pro 70)



This function is only supported by MDB changers with hopper interface.

With this function one coin out of channels 1 to 16 is assigned to hopper 1 or hopper 2. It is only possible to pay out one of the coin types from the hopper, that is available as tube coin in the changer. The hopper is used, if one coin type is particularly often payed out as change.

For the coin channel of both hoppers a subfunction is assigned each:

- Coin channel of hopper 1 Pro 7001
- Coin channel of hopper 2 Pro 7002



The hoppers must be enabled in function Pro 7101.

Enabling the hoppers (Pro 71)



This function is only supported by MDB changers with hopper interface.

00

Hopper 1 enabled (1)

Hopper 2 enabled (1)

9 Reading out and printing audit data

Reading out and printing audit data is possible only when the changer is equipped with an internal audit unit.

Structure of the DIS functions

Function	Meaning of the data
0101	machine no.
0102	number of printouts/readouts since installation of changer
0103	number of printouts/readouts since initialisation
0104	number of power resets since last readout
0201	sales of all types since initialisation
0202	sales of all types since last readout
0301	cycles of all types since initialisation
0302	cycles of all types since last readout
0401	sales by cash vends since initialisation
0402	sales by cash vends since last readout
0501	cycles by cash vends since initialisation
0502	cycles by cash vends since last readout
0601	sales by card system since initialisation
0602	sales by card system since last readout
0701	cycles by card system since initialisation
0702	cycles by card system since last readout
0801	sales by tokens since initialisation
0802	sales by tokens since last readout
0901	cycles by tokens since initialisation
0902	cycles by tokens since last readout
1001 ff.	sales per selection line since last readout
1101 ff.	cycles per selection line since last readout

Function	Meaning of the data
1201	discount (value) of the machine since initialisation
1202	discount (value) of the machine since last readout
1301	discount (cycles) of the machine since initialisation
1302	discount (cycles) of the machine since last readout
1400	free vends (value) in total since last readout
1401 ff.	free vends (value) per selection since last readout
1500	free vends (cycles) in total since last readout
1501 ff.	free vends (cycles) per selection since last readout
1600	test vends (value) in total since last readout
1601 ff.	test vends (value) per selection since last readout
1700	test vends (cycles) in total since last readout
1701 ff.	test vends (cycles) per selection since last readout
1801	free vends with free vend tokens (value) since last readout
1901	free vends with free vend tokens (cycles) since last readout
2001	money into cashbox since initialisation
2002	money into tubes since initialisation
2003	money into tubes during tube filling, since initialisation
2004	change paid out since initialisation
2005	inventory amount since initialisation
2006	reset credit since initialisation
2007	accepted bills (value) since initialisation
2008	credit by the machine since initialisation
2101	money into cashbox since last readout
2102	money into tubes since last readout
2103	money into tubes during tube filling since last readout
2104	change paid out since last readout
2105	inventory amount since last readout
2106	reset credit since last readout
2107	accepted bills (value) since last readout
2108	credit by the machine since last readout
2201...16	coin counter for channels 1–16 since initialisation
2301...16	coin counter for channels 1–16 since last readout

Function	Meaning of the data
2401 ...04	Counter: coins into tubes (L, ML, MR, R) since initialisation
2501...04	Counter: coins into tubes (L, ML, MR, R) since last readout
2601...04	Counter: counted coins from tube L, ML, MR, R since initialisation
2701...04	Counter: counted coins from tube L, ML, MR, R since last readout
2800	tube content in total
2801...04	tube content per tube (L, ML, MR, R)
2901	number of accepted bills since initialisation
2902	number of accepted bills since last readout
3001	debited amount from the card since initialisation
3002	number of debits from the card since initialisation
3003	credit to card since initialisation
3004	discount (value) granted by card system, since initialisation
3005	discount (number of cycles) granted by card system, since initialisation
3006	amount of subsidised vends since initialisation
3007	number of subsidised vends since initialisation
3101	debited amount from the card system since last printout
3102	number of debits from the card system since last printout
3103	credit to card since last readout
3104	discount (value) granted by card system, since last readout
3105	discount (number of cycles) granted by card system, since last readout
3106	amount of subsidised vends since last readout
3107	number of subsidised vends since last readout
3201	tokens into cashbox since initialisation
3202	tokens into tube since initialisation
3203	reset token credit since initialisation
3204	number of accepted free vend tokens, since initialisation
3301	tokens into cashbox since last readout
3302	tokens into tube since last readout
3303	reset token credit since last readout
3304	number of accepted free vend tokens

Example:**Display sales of selection line 2 and number of sales**

In dIS 10 the sales per selection line are indicated. The number of cycles (vends) will be indicated in dIS 11.



All display functions containing sales and cycles are indicated alternately (dIS 02–19).

Programming step	Press	Display
select dIS mode	Ⓕ	dIS
activate dIS	Ⓔ	dIS 01
select function	Ⓕ 5 times	dIS 10
activate dIS 10 (sales price 1)	Ⓔ	dIS 1001 4.50
display next value (cycles price 1)	Ⓕ	dIS 1101 9
display next value (sales price 2)	Ⓕ	dIS 1002 12.50
display next value (cycles price 2)	Ⓕ	dIS 1102 25
back to standby mode	Ⓖ	display shuts down

Printing audit data

The sales and vend data can be printed by means of the printer G-55.0500 or G-55.0510 to produce audits and sales audits.

Conditions:

- The G-46 is equipped with an internal audit unit.
- The printer interface has been configured in Pro 0403.
- The printout language has been selected in Pro 52.

Both required programming processes are explained later in this chapter.

Connect the printer to the printer interface (9-pole plug on the changer).

After a printout, the audit data will only be reset after a coin has been inserted. Until then, the printout can be repeated as often as required.

MACHINE:	
	123456
	18.02.97
VOUCHER0: 1	
VOUCHER1: 1	
TOTAL VENDS	
UMS	120.00
ZYK	24
CARD SYSTEM	
UMS	20.00
ZYK	4
ABG	10
GUT	10.00
=====	
OFF/ON	1
TO CASHBOX	
	5.00
	0.00
TO TUBES	
	5.00
	0.00
CHANGE	
	5.00
	0.00
	0.00
TUBE CONTENT	
	0.00
SALES	
	20.00
CYCLES	
	4
	0
	0
TOKENS	
	0.00
	0.00
UMS	0.00
ZYK	0

Example for a printout:

machine number
 initialisation date (=adjusting the machine no.)
 number of printouts since installation (cannot be reset)
 number of printouts since initialisation

total sales cash, card and token since initialisation
 total number of vends since initialisation

sales with card system since initialisation
 number of all vends with card system since initialisation
 amount debited from the card system since initialisation
 credit to the card system since initialisation

number of power resets since last printout

coins inserted into cashbox since last printout
 bills inserted into cashbox since last printout

customer coins to tubes since last printout
 inserted coins during tube filling (since last printout)

change paid out since last printout
 change paid out by inventory (SEr 01) since last printout
 reset residual credit (s. Pro 04)

present amount of money in tubes

total sales cash, card and token since last printout

number of vends since last printout
 number of test vends since last printout
 number of free vends since last printout

tokens inserted by customer since last printout
 reset token amount (when token amount > selling price)
 since last printout

sales by tokens since last printout
 number of vends by tokens since last printout

.....
 continuation next page

CARD SYSTEM		
SALES	10.00	sales by card system since last printout
CYCLES	2	number of vends by card system since last printout
DISCOUNT	0.00	discount granted by card system since last printout
	0	number of subsidised vends by card system since last printout
DEBITED	5.00	amount debited from the card system since last printout
CREDIT	5.00	credit to card system since last printout
=====		
SALES/SELECTION		
U1	20.00	sales of price 1 since last printout
Z1	1	number of vends of price 1 since last printout
U30	0.00	sales of price 30 since last printout
Z30	0	number of vends of price 30 since last printout
	16:53	printout time
	30.09.97	printout date

Setting the language of the printout (Pro 52)

The language of the printout is programmed by means of the entry of the telephone code. In Pro 52 the following country codes can be entered:

Code	Language of the printout
0049	German
0043	
0041	
0031	Dutch
0033	French
0034	Spanish
all others	English

Configuring the printer interface (Pro 0403)

In Pro 0403 the printer interface of the internal audit module can be configured. There are 8 setting options:

00000000

sales data is printed (0), not printed (1)

price-related vend data is printed (0), not printed (1)

time is printed (0), not printed (1)

no monitoring of line "print key" (0),

monitoring of line "print key" (1)



The line must constantly be active while printing. Otherwise the printout is interrupted.

printing at 110 baud (0), at 1200 baud (1)

counting the cash (1), not counting the cash (0)

when changing over from national currency to euro

counting the cash: Storage of previous audit data, then audit data set to zero.



Select adjustment 00000000 for printer G-55.0502 and adjustment 00110000 for printer G-55.0510.

10 Service functions

Structure of the SER functions

Function	Meaning	
0101	empty left tube] see chap. 7
0102	empty middle/left tube	
0103	empty middle/right tube	
0104	empty right tube	
0401	initialise card system	
0501	fill tubes	see chap. 7
0601	reset coin counter for left tube	
0602	reset coin counter for middle/left tube	
0603	reset coin counter for middle/right tube	
0604	reset coin counter for right tube	
0701	teach token A in channel 14	
0702	teach token B in channel 15	
0703	teach token C in channel 16	
3001	check connections	see chap. 11
3002	carry out test vends	see chap. 7

Emptying tubes (SEr 01)

When you need some coins for test vends or you want to empty the tubes before transporting them, you can empty the tubes by means of service function SEr 01.

- Select required tube:
 - SEr 01 01 left tube
 - SEr 01 02 middle/left tube
 - SEr 01 03 middle/right tube
 - SEr 01 04 right tube

The filling level is incated for each tube.



The filling levels of national coins in changers with EUROmatic, which are switched over to euro, are indicated on the left and the filling levels of euro coins on the right.

- Press  for paying out one coin.

Initialising the card system (SEr 04)

After replacing the changer or the card control unit, the card system must be reinitialised. For this proceed as follows:

- Switch on the communication with the card system in Pro 19.
- Insert master card into the card reader.
- Select SEr 04 (2nd SEr function)
- Press \square . The card system will be initialised. Afterwards the setting module indicates control numbers.
- Quit the SER mode by pressing \oplus .

Filling tubes (SEr 05)

Before filling the tubes, you should empty the cash-box, because coins, that are in the cash-box will not be counted.



This measure does not need to be taken, if in function Ser 0404 is set, that only coins to be sorted into tubes are accepted while filling the tubes.

When there are no coins in the tubes, but the coin counter of the tubes indicates an amount of money, use SEr 06 to set the coin counter to zero (see "Resetting the coin counter of the tubes").

Limit the tube filling in Pro 25 if necessary (see chap. 8 "Programming functions " in "Setting the maximum coin number per tube").

Fill the tubes as follows:

- Select SEr 05. If all tubes are empty, the display of the setting mode now indicates (see table on the next page):






SEr 0501
uuuu 00

amount of the inserted coin (2-price, 4-price, Simplex V, BDV)
or coin channel of the inserted coins (MDB and VCCS)


filling level of the 4 tubes

- Insert coins. The machine display counts the coins and changes the filling level displays and the amount or the coin channel of the coins inserted.
- Press \oplus -key. The display shuts down.

Meaning of the display for the tube filling levels:














Display	Meaning
	tube empty
	tube not empty
	tube full
	contradictory messages from the tube filling level sensors
	programmed tube filling level reached



When  is displayed check the filling level sensors.

Resetting the coin counter of the tubes (SEr 06)

Before refilling the tubes (e.g. after transporting the changer), the coin counter must be reset to zero. For this proceed as follows:

Programming step	Press	Display
select SER mode	 3 times	SEr
activate SER mode		SEr 01
select function	 <i>until</i>	SEr 06 <i>appears</i>
call up "left tube"		SEr 0601 032
 <i>The filling levels of national coins in changers with EUROmatic, which are switched over to the euro, are displayed on the left and the filling levels of euro coins on the right.</i>		
reset coin counter	 ,  , 	SEr 0601 HHH 000
call up "middle/left" tube		SEr 0602 050
reset coin counter	 ,  , 	SEr 0602 HHH 000
select and reset the other coin counters in the same way		
back to standby mode		display shuts down

Teaching tokens (SEr 07)

In the service sub-functions SEr 07 01 to 07 03, using the setting module tokens can also be programmed directly on the changer without the use of a PC. Doing this, token values are assigned to a coin channel by inserting tokens:

SEr 07 01 teach token A in channel 14

SEr 07 02 teach token B in channel 15

SEr 07 03 teach token C in channel 16

Additionally, you can choose between a normal ("LO" is displayed) and a wide ("HI" is displayed) acceptance band of the relevant coin channel. However, a wide acceptance band is only to be programmed, if only a small number of tokens is available to generate the measuring values, or if the tokens have large tolerance values. Otherwise the changer will accept too many false coins.

To teach token A in channel 14 take a note of the following programming steps:

Programming step	Key	Display
select service mode	\boxed{F} 3 times	SEr
activate service mode	\boxed{E}	SEr 01
select relevant function	\boxed{F} <i>until</i>	SEr 07 <i>appears</i>
activate sub-function	\boxed{E}	SEr 07 01
activate teach mode	\boxed{E} , $\boxed{+}$, $\boxed{-}$	SEr 07 01 LO 10
if necessary, select wide acceptance band	$\boxed{+}$ or $\boxed{-}$	SEr 07 01 HI 10
insert at least 10 different tokens		SEr 07 01 HI 00
store token values	\boxed{F}	SEr 07 01 -Pro-
quit teach mode	\boxed{F}	SEr 07 01



The tokens B and C are taught the same way using the service sub-functions 07 02 and 07 03.



If less than 10 tokens are inserted or if there is an overlap of the new acceptance bands and at least one acceptance band of a channel already programmed, the error is displayed with "Error". The process is aborted.

If necessary, a token value is to be assigned to token A, B and C in programming function Pro 30.

Checking the connections (SEr 3001) (for changers with parallel interface only)

Programming step	Key	Display
select service mode	☐ 3 times	SEr
activate service mode	☐	SEr 01
select SEr 30	☐ <i>until</i>	SEr 30 <i>appears</i>
call up "check connecting cable"	☐	SEr 30 01

When you press a key on the vending machine, you can see on the display which of the 9 lines is active and in this way check the connecting cables.

Meaning of the display:

- 1–4 = selection lines active. Corresponding product is selected.
- 6 = blocking line active. No coin acceptance in coin validator.
- 8 = reset line active. No coin acceptance.
- 9 = "tube empty"-line active. Vending machine asks for exact change.

Carrying out test vends without coins (SEr 3002) (for changers with parallel interface only)

Test vends will be carried out by means of the setting module and the selection buttons of the vending machine:

Programming step	Key	Display
select service mode	☐ 3 times	SEr
activate service mode	☐	SEr 01
select SEr 30	☐ <i>until</i>	SEr 30 <i>appears</i>
select "test vends"	☐ 2 times	SEr 30 02 Fr

Now you can carry out a test vend by pressing one of the selection buttons on the vending machine. The machine's display indicates the corresponding price. At a price of 0.50 DM the setting module displays:

SEr 30 02
Fr 00.50

Quit the service function by pressing the ☐-key.

11 Remediating faults

Solving actual problems

Problem	Cause	Procedure
coin validator rejects all coins	inhibition active	if necessary: refill machine clear expendable material (e.g. coffee filter)
coin validator rejects single coins	coin channel inhibited	check Pro 15 and enable inhibited channel Read out error message via setting module
coins fall into cashbox instead of the tubes	coins emptied without inventory before transport	check filling levels and set display to zero
	coin counter was not set to zero before filling the tubes	erase coin counter
motor default	payout slide blocked by coin	remove jammed coin, carry out test payout by means of keyboard
	flat cable between payout slide and power supply unit not connected	connect flat cable
	defective flat cable between payout slide and power supply unit	exchange payout slide (s. ch. 13)

Problem	Cause	Procedure
motor default	sensor for final motor position defective	exchange payout slide (s. ch. 13)
	motor control of power pack pcb defective	exchange power pack pcb

Error display via the internal LED

The internal LED that indicates errors is positioned on the connecting module between the top of the tubes and the coin validator. When there is no fault and the changer is ready to accept money it is flashing constantly.

Flashing	Cause	Procedure
1time	defective check sum	check all programming functions
2times	machine blocks G-46	check machine
3times	no serial communication	check connecting cable to machine and to peripheral equipment
4times	motor default	check payout slides by means of internal keyboard ("Solving actual problems" in chap. 11).
5times	data for machine control cannot be transferred	check connecting cable to machine
6times	acceptance limit or highest price (for single vend) is reached	buy products check acceptance
7times	inhibited by internal audit module	cancel the inhibition by MDE

Reading out error messages via the setting module

If the setting module is connected to the changer, when a fault occurs you can read out error messages with the setting module's display. The meaning is described in the following table.

Display	Meaning	Procedure
Ab -01	coin rejected as measured values do not lie within the acceptance band	change acceptance band or insert a different coin
Ab -02	coin inhibited	check Pro 15, Pro 17 and DIL switch, enable if necessary
Ab -03	measuring time over as CP2 not reached	check if coin validator is dirty
Ab -04	coins were inserted too quickly	insert coins more slowly
Ab -05	CP3 and CP4 active	if necessary clear jammed coins, check CP3 and CP4
Ab -06	no CP3	if necessary clear jammed coins, check CP3
Ab -07	no CP4	if necessary clear jammed coins, check CP4
Ab -08	CP4 too long	check CP4
Ab -09	string signal	clean or exchange string sensor

The acceptance of a coin will also be indicated, which is in the form of **An x yy**. Here yy indicates the channel number and x the sorting of the coins according to the following scheme:

- 0 = cashbox
- 1 = left tube
- 2 = middle/left tube
- 3 = middle/right tube
- 4 = right tube

Example:

An 0 12 = coin corresponding to channel 12 was sorted into the cashbox.

Display	Meaning	Procedure
FE -01	motor default left tube	press internal [L] -key
FE -02	motor default middle/left tube	press internal [ML] -key
FE -03	motor default middle/right tube	press internal [MR] -key
FE -04	motor default right tube	press internal [R] -key
FE -13	check sum error in acceptance bands	check all programming functions, by using PC (Kunemp)
FE -14	check sum error in coin values	check all programming functions, by using PC (Kunemp)
FE -15	check sum error in settings	check all programming functions, by using PC (Kunemp) or adjustment module
FE -31	machine control does not react	check connecting cable
FE -32	audit unit does not react	check connecting cable, check Pro 18
FE -33	card system does not react	check connecting cable, check Pro 19
FE -34	bill validator converter does not react	check connecting cable, check Pro 20
FE -38	Vending machine control does not communicate with changer (only MDB and VCCS changers)	Vending machine control did not send command to changer within 2 s. Check vending machine control or connecting cable

The following "error messages" can be indicating problems with the machine. The changer, however, always operates without fault.

Display	Meaning	Procedure
InFo-01	return active	check return lever
InFo-06	blocking line 6 active	check line
InFo-08	reset line 8 active	check line

Display	Meaning	Procedure
InFo-09	string sensor active, string was recognized by the string sensor	check sensor
InFo-15	check sum error in programming functions which, despite being incorrectly adjusted, only restricts G-46 function	check corresponding functions by means of setting module or PC (Kunemp)
InFo-30	internal audit unit does not react	check internal audit unit
InFo-41	file transfer due to machine control command	
InFo-42	file transfer due to audit unit command	
InFo-43	file transfer due to card system command	
InFo-44	file transfer due to bill validator converter command	
InFo-48	file transfer due to G-46 command	
InFo-51	vend active	
InFo-52	return of card	
InFo-80	machine blocks G-46 (not 2/4-price)	check machine
InFo-81	free vend by machine (Simplex V, BDV only)	check machine
InFo-82	changer blocked, because of credit = max. price for single vend or acceptance limit reached	check prices or acceptance limit and change if necessary
InFo-83	internal audit module blocks G-46 when editing audit data	

Checking the connections (SEr 3001)

For changers with parallel interface only

Programming step	Press	Display
select service mode	[F] 3 times	SEr
activate service mode	[E]	SEr 01
select SEr 30	[F] 4 times	SEr 30
call up "check connections"	[E]	SEr 30 01

When you press a key on the machine, you can see on the display which of the 9 lines is active and in this way check the connecting cable.

Meaning of the display:

- 1-4 = Active selection lines. Corresponding product is selected
- 6 = Blocking line active. No coin acceptance in coin validator
- 8 = Reset line active. No coin acceptance
- 9 = "Tube empty"-line active. Machine asks for exact change

12 Cleaning the changer

From time to time it is necessary to clean the coin validator by using a damp cloth:



You must prevent water from running into the device. Otherwise, the pc-boards will be damaged. Do not use solvents or scouring agents that can affect the plastic parts of the device.

- Switch off machine.
- Push lever (1) upwards and open coin validator (fig. 12)
- Clean coin channel in coin validator with damp cloth (lukewarm water plus detergent).
- Close coin validator.

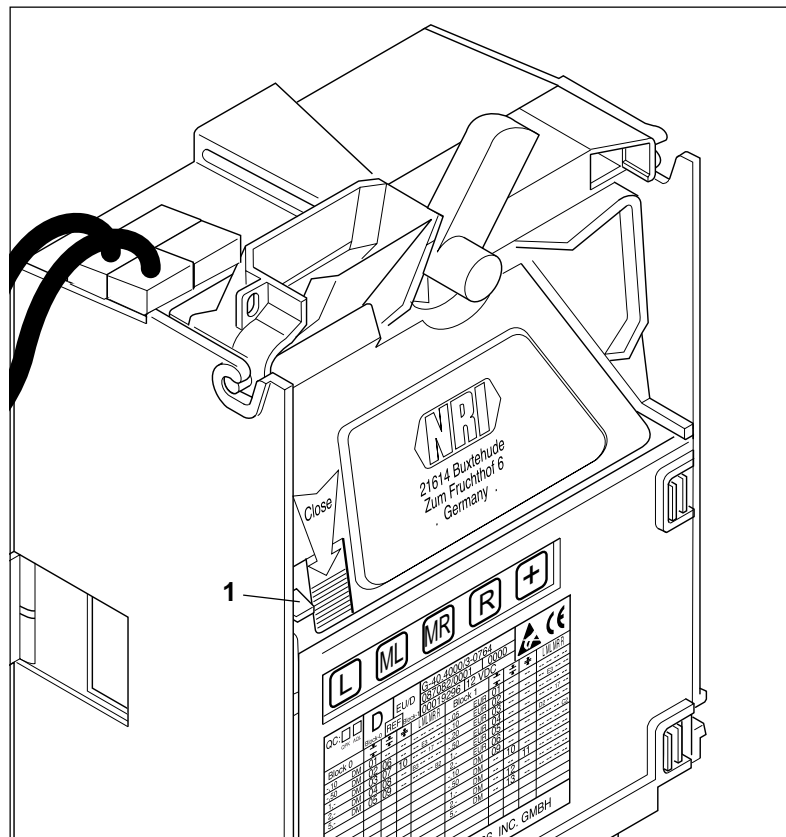


Fig. 12: Open the changer

13 Repairing and exchanging components

Exchanging tubes

For possible tube combinations see chap. 4 "Design and function of the G-46".

For the removal of tubes

- Remove coin validator, (see ch. 5 "Installing the changer").
- Remove tube cover towards the front by means of the recesses (1) (fig. 13).
- It is absolutely necessary to unfasten the fastening screw (1) for the cashbox channel on the right hand side of the housing (fig. 14).

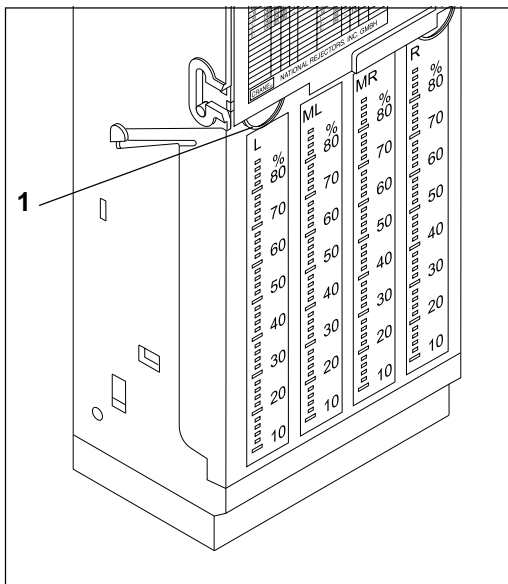


Fig. 13: Remove tube covering

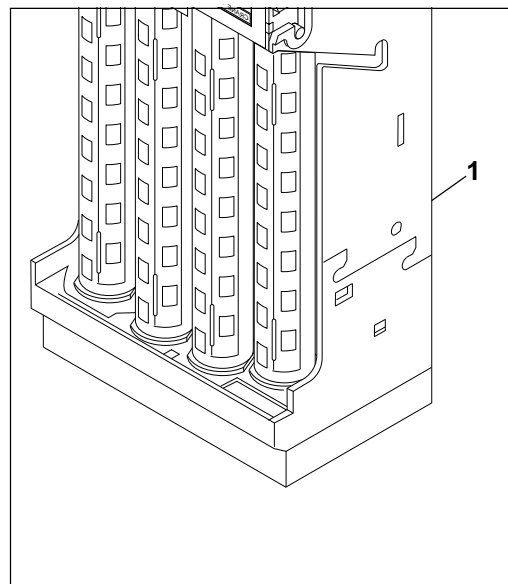


Fig. 14: Unfasten fastening screw

- Push one of the middle tubes downwards (**A**) and pull the tube next to it upwards (**B**) to lift the partition, now remove tube towards the front (**C**), (fig. 15).
- Push partition upwards with one hand (**A**) and if necessary remove the other tubes (**B**) in the following order: middle, left, right (fig. 16).

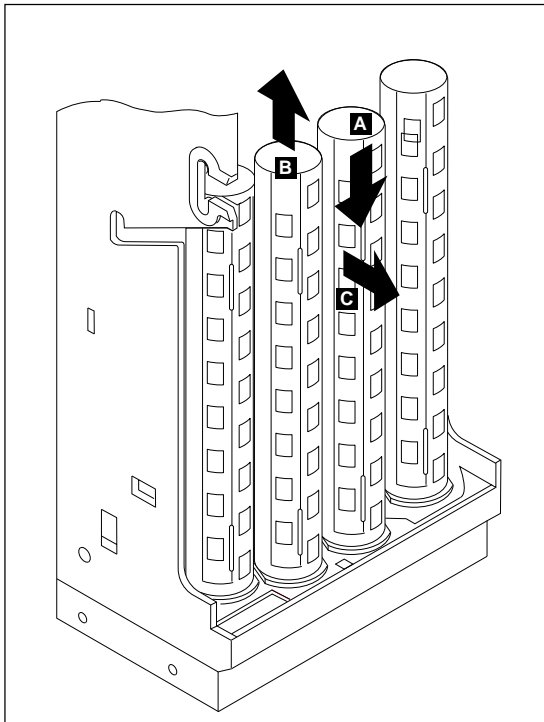


Fig. 15: Dismount first tube

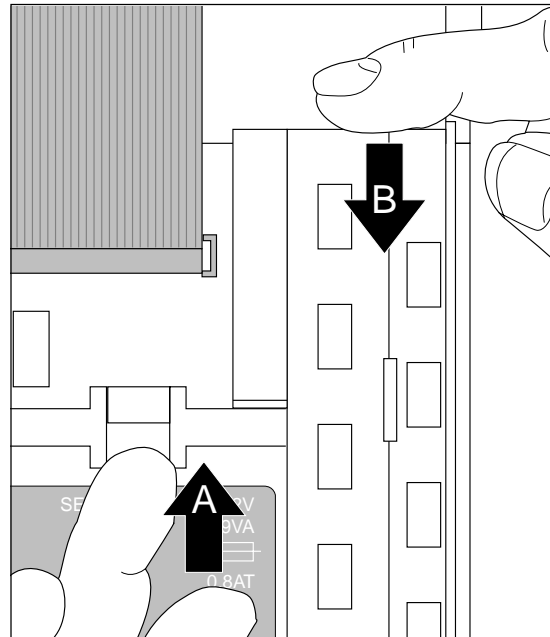


Fig. 16: Dismount remaining tubes

Begin the installation with the outer tubes:

- Insert left or right tube into payout set so that the 2 pins (**1**) on the bottom of the tube enter into the appropriate holes of the payout set (fig. 17).
- Push partition upwards and let the tube snap into the partition.
- Do the same with the remaining tubes, first the other outer tube and then the inner ones. For the installation of the last tube the partition must be pushed upwards by pushing one of the adjacent tubes upwards.
- Check if all tubes are snapped into position at the top and at the bottom.
- Tighten the screw for the cashbox channel on the right side of the housing.
- Insert tube cover to the payout set and push it into the housing with lateral locking levers slightly pressed outwards.
- Reinstall coin validator.



After each change of the tube combination, the programming functions Pro 54 and Pro 57 must always be readjusted (see chap. 8 "Setting of the coin sorting in the tubes").

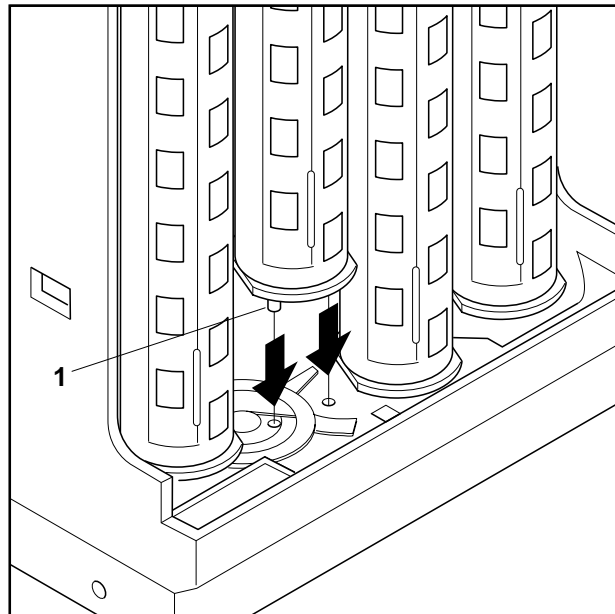


Fig. 17: Installing the tubes

Exchanging payout set

For the removal of the payout set

- Remove coin validator (see ch. 5 "Installing the changer" fig. 7).
- Remove tubes (see "Exchanging tubes" in ch. 13, fig. 13–16).
- Push side cover on the right side of the housing outwards and remove snapped in partition (1) together with cashbox channel (fig. 18).
- Push side cover on the left side of the housing outwards and remove snapped in partition (1) (fig. 19).
- Remove partition and cashbox channel from the housing towards the front.
- Disconnect flat cable (1) between payout set and pc-board (fig. 20).
- Simultaneously push the right and left stop levers (2) inwards and remove the payout set (3) towards the front of the housing (fig. 20).

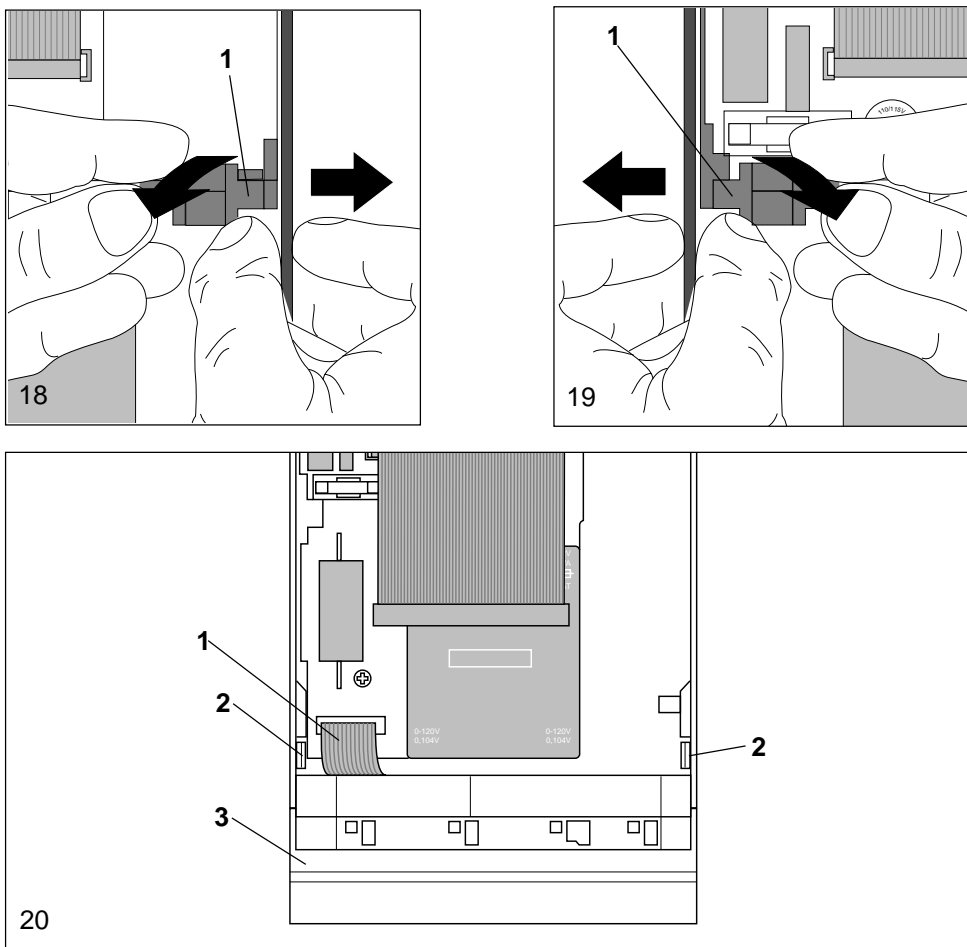


Fig. 18–20: Exchanging the payout set

For the installation of the new payout set

- Connect flat cable (1) (fig. 20).
- Push payout set into housing until both stop levers (2) snap into position (fig. 20).
- Push partition and cashbox channel into housing, beginning with the left side and then the right side.

Exchanging the interface module

For the removal of the present pc-board

- Remove coin validator (see ch. 5 "Installing the changer", fig. 7).
- Remove tubes (see "Exchanging tubes" in ch. 13),
- Remove partition and cashbox channel (see "Exchanging the payout set" in ch. 13).
- Disconnect cable from pc-board.
- If there is a dummy plug (1) remove it from the housing then remove cable from cable passages in the housing towards the front (fig. 20).
- Remove screws (2+3) (fig. 21).
- Lift the pc-board slightly on the right hand side and remove it from the housing.

The installation must be carried out in reverse order .

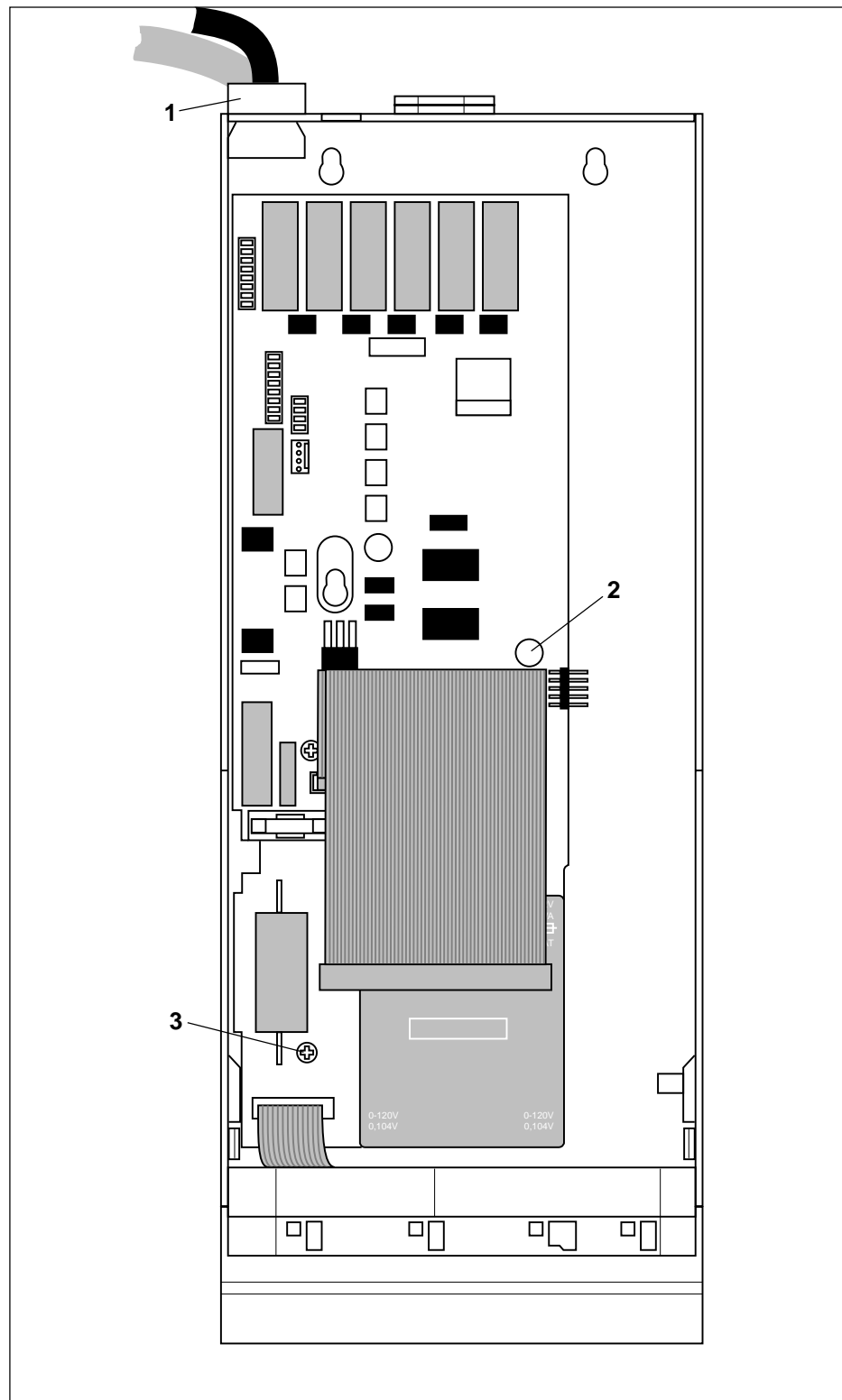


Fig. 21: Exchanging the interface module

14 Technical data

Acceptance of coins:	16 coin denominations max. (including up to 3 tokens) diameter: 15–33 mm thickness: 1.2–3.5 mm
Payout of coins:	4 coin denominations out of tubes diameter: 15–32 mm thickness: 1.2–3.5 mm
Dimensions:	height: 380 mm width: 133.5 mm depth: 76.5 mm (80 mm when activating the return lever)
Mounting position:	vertical (max. deviation 2°)
Operating temperature:	-25 °C to +75 °C
Air humidity:	max. 90 %
Operating voltage:	115/230 Volt (European standard) 110/220 Volt AC, 120/240 Volt AC 24 Volt AC, 24 Volt DC
Power consumption:	standby 3.5 VA, max. 15 VA
Switching capacity:	for alternating current max. 240 V, 2.5 A, 1200 VA
Peripheral bus:	For 4-price changers, there is a supply voltage of 15 V (-2 V/+5 V) on the peripheral bus. The max. output power is of approx. 6 VA. Peripheral devices, which require a higher voltage or output power, must be provided with an external power supply unit.
Noise immunity:	The device meets the present requirements regarding noise immunity and noise emission according to the EC guidelines (electromagnetic compatibility directive)
Safety precautions:	low-voltage guidelines

Information about CE sign (CE = Communautés européennes):

This sign indicates the conformity of our products with the corresponding basic requirements of relevant EC-directives. The CE sign is not a quality sign in the sense of quality expected from a manufacturer, but in the sense of legally pre-determined minimum standards. The CE sign is an administration sign and symbolises the compliance of a product with all appropriate directives. It is a proof for the surveillance authorities and confirmation for customers or users.

The declaration of conformity indicates the directive(s) for which the CE sign is obtained. This declaration of conformity has to be retained and kept available for the surveillance authorities for at least 10 years following the date of the last time it was put into circulation.

If a copy is required, the declaration of conformity will be forwarded.

For our devices the following directives can be applied as appropriate (including the modifications):

1. EMC directive (89/336/EEC)
for devices which cause electromagnetic disturbances, or can be disturbed by them.
2. Low voltage directive (73/23/EEC)
for electric production facilities which are operated with a nominal voltage between 50 V AC and 1000 V AC and between 75 V DC and 1500 V DC.
3. CE sign directive (93/68/EEC)
Directive for use of CE sign.

APPENDIX

Glossary

Acceptance band	Band of measurement values which can be accepted for a coin characteristic of a coin denomination . The band is defined by a maximum and a minimum limit value.
Setting module	External device which is mainly required for programming the changer, but also for service functions and for reading out audit data.
Initialisation	Preparation for the first application. Putting into operation.
Internal audit unit	Additional pc-board which is required for reading out data (e.g. via printer or MDE).
Card system discount	Discount (in %) which is granted for using the card system, any time a vend is carried out by means of a card. It is programmed in the card reader by means of an info card.
Coin channel	Coin channels serve for defining coin denominations by means of the different coin characteristics (alloy, size, etc.). The required coin characteristics of a coin denomination are defined by acceptance bands . These then determine a coin channel.
Coin characteristics	Characteristics of a coin which are measured when a coin is inserted. These include material, thickness, volume, embossing depth, diameter and mass.
Coin denomination	A coin denomination includes all coins of the same coin characteristics . Tokens are also included here.
Subsidies	Time-limited discount for using the card system or an own cup. The subsidy amount will be deducted from the price, the rest must be paid. When the subsidy amount is higher than the price, the full selling price must be paid.
Tube	Storage pipe for coins which is used for paying out the change.
Card	Chip card with one or two credit memories, which can be used for payment when a card system is provided.