

Feed Station

Type 6854-71

Operating Instructions



Software version 1.10

BA 171020

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Document: BA 171020 (Original instructions)
Revision: Software version 1.10
Authors: W. Binder / K. Hacker

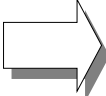




Valid from: 03.17
06.12.2017

1 General information

1.1 Information about the Operating Instructions

Pictograms and symbols

The following pictograms and symbols in this manual are used to highlight places in the text which require particular attention.

	<p>Information This arrow refers to special features which must be taken into consideration during operation.</p>
	<p>Warning This pictogram draws attention to passages in the text which, if disregarded or not followed exactly, can lead to operational malfunctions or damage to parts of the unit or to their being destroyed.</p>
	<p>Caution! This pictogram highlights passages in the text which, if disregarded, can result in a risk to health and life.</p>
	<p>Reference This pictogram refers to further information in other places in the manual.</p>
	<p>Procedural instruction This pictogram indicates required activities which are described. The following work procedures are marked by bullet points, e.g:</p> <ul style="list-style-type: none"> • Place the hood on the shaker and bottle opener. • Place the hood on the shaker and bottle closer.

Liability disclaimer

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1.2 Manufacturer information

1.2.1 Service and Hotline of the manufacturer

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1.2.2 Type plate



1.2.3 EU Declaration of Conformity

EU-Konformitätserklärung
EU-Declaration of Conformity
Déclaration UE de Conformité

Seite / Page 1 von / of / sur 1

BARTEC BENKE GmbH
 Schulstraße 30
 94239 Gotteszell



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Zuführstation
Typ 6854-71

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EN ISO 13849-1:2016-06, EN 62061:2016-05
EN ISO 12100:2010, EN 349:1993+A1:2008
EN ISO 13857:2008, EN 61000-6-2:2005
EN 61000-6-3:2007/A1:2011

Kennzeichnung

Marking

Marquage



Gotteszell, 10.04.2017

ppa. Alois Süß
 Alois Süß
 Techn. Leitung

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Toute modification non
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Konf 6854-71 20170410

2 Safety information

The products have been manufactured in compliance with the applicable regulations and have left the factory in perfect condition after having undergone thorough safety tests.

- The products must be installed and maintained by qualified technical personnel.
- Make sure that the data and operating conditions specified by BARTEC BENKE are complied with.
- Read the operating instructions before installing and starting the equipment. If you have any questions concerning any particular aspects, please contact our customer service for expert advice.
- Before connecting the mains power supply, make sure that the mains voltage is compatible with the operating voltage of the equipment.
- Do not reach into the conveyor mechanism during operation. Even the power-reduced drives can pinch fingers painfully!
- Do not look directly into the laser beam of the barcode scanner. The beam can damage your eyes.
- During operation, the round magazines with sample bottles must be put on and taken off periodically. We recommend that you wear safety shoes for your protection.
- If there is any reason to suppose that the unit is not safe to operate (e.g. visible signs of damage), shut it down immediately and secure it to prevent it from being started again.
- Do not place magnetic memory cards (EC cards etc.) on the feed station. The card data may be corrupted by the magnetic fields.

2.1 Warning symbols

Warning symbols are attached to all areas of the feed station where there is a danger to health.

Implement the appropriate safety measures to prevent injuries.



Warning against dangerous electrical voltage

Only touch the areas indicated after switching off the current.



Warning against hand injuries

Hands are in danger of being crushed, pulled in or otherwise injured.



Warning against laser radiation

Important: the laser beam can damage the eyes. Never look directly into the source of the beam.

Class 2 laser



Engage safety bars

When opening the tabletop, make sure that the locking bar engages. Fold back the bar before closing the table.

2.2 Qualification of operating personnel

The following skills are required of persons appointed to operate the unit:

- They must be physically and mentally fit.
- They must be in good health.
- They must be trained to operate the machine.
- They must have proved their aptitude for the job to the owner.
- They must be reliable and capable of carrying out the duties assigned to them.
- The owner must clearly define the scope of responsibility and skills required of the personnel appointed to use the unit.
- Persons who are in training and who are learning to use the unit may only work on the unit under the constant supervision of an experienced person.
- Before deploying personnel, we recommend conducting a health & safety briefing session and keeping records with their signatures confirming their attendance.

2.3 Intended use

The feed station is solely designed to remove type 6845 milk sample bottles from round magazines, to shake them, open them, prepare them for analysis, close them and then finally to convey them to the target round magazine or linear buffer.

The sample bottles are exclusively intended for milk. Operating with other media apart from water is not permitted.

BARTEC BENKE GmbH shall not accept liability for damage as a result of improper use. The user alone shall bear the risk.

2.4 Residual risks

Despite the measures taken to integrate safety into the designs, along with appropriate safety precautions and preventive measures, the user will be exposed to certain residual risks if they do not use the feed station correctly. The device operator and user should be conscious of these risks and take them into consideration when taking action.

Residual risks during operation:

Machine part	Risk	Measure to be taken
Pusher Star wheel Conveyor belts	Crushing Pinching	User instruction: Do not reach into the conveyor mechanisms.
Shaker	Crushing	User instruction: Do not reach into the shaker shaft Warning label
Bottle opener Bottle closer	Crushing	User instruction Do not reach in through the hood openings.
Round magazines	Dropping Weight	User instruction: Lift and carry correctly Personal protective equipment: Work shoes
BC scanner	Laser beam	User instruction: Do not look into the beam. Warning label
Vibratory conveyor	Danger from vibration	User instruction: Handle the vibratory conveyor correctly.
Vibratory conveyor	Danger from noise	User instruction: Handle the vibratory conveyor correctly Personal protective equipment: Ear defenders (if necessary)

Additional risks with fault elimination and maintenance work:

Machine part	Risk	Measure to be taken
Removed hoods	Dropping	Personal protective equipment: Work shoes
Open table top	Crushing	User instruction: Do not reach under the table top when closing. Warning label
Cover plates	Dropping	Instruction for service technician: "Exercise caution when taking action" Personal protective equipment: Work shoes
Open Chain drive	Crushing	Instruction for service technician: "Exercise caution when taking action"
Shaker Bottle closer Bottle opener	Crushing	Instruction for service technician "Exercise caution when taking action"
Motors	Danger from heat	Instruction for service technician "Exercise caution when taking action"

3 Description of the unit

This operating manual is based on the software version 1.10.

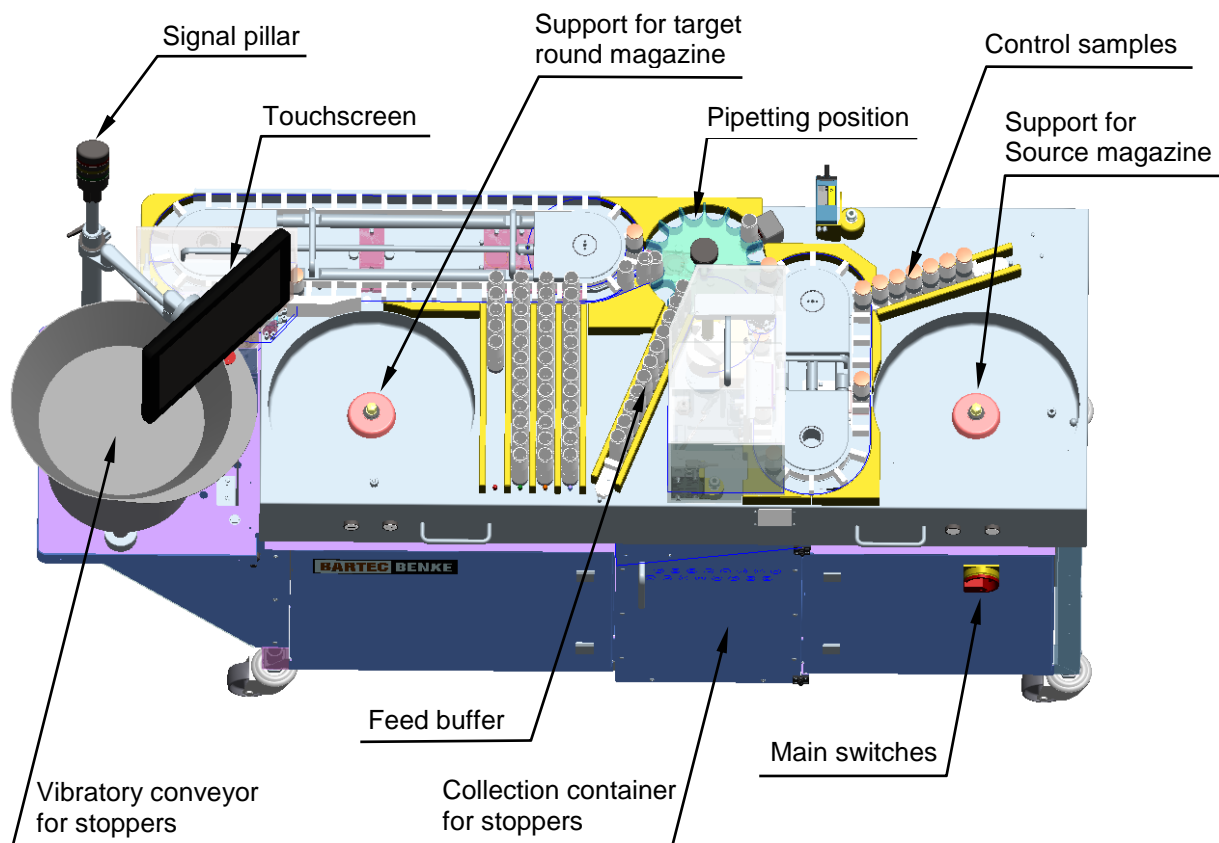
The operating procedure or screen displays described here may deviate slightly from those on your unit if the software conditions or configuration are different.

3.1 Functions

The feed station carries out the following functions:

- Directs sample bottles from the entrance round magazine.
- Supplies control samples from a linear buffer at configured intervals or intervals specified by data transfer.
- Shakes the samples (over head at least 150°)
- Opens the sample bottles.
- Reads the barcode and measures the temperature of the sample bottles.
- Supplies the sample bottles to the stirring and pipetting position.
- Transfers the data to a data logger control PC (CPC).
- Takes away and re-closes the sample bottles.
- Directs the samples into the outlet round magazine or into the linear buffer specified by the CPC.
- Automatically ejects bottles with unreadable barcodes into the read error buffer.
- Automatically ejects the control samples to the linear buffer (optional).
- Returns the samples back to the pipetting star (repetitions) as specified by the CPC
- Feeds special lots from the linear buffer.
- Displays bottle data and table parameters on a colour touchscreen.
- Detects and displays faults and marks their location.
- Signals alarm or fault states via a traffic light display.
- Creates log files.
- Tracks total operating hours and total sample counters.

3.2 Layout of the feed station



Signal pillar

The signal pillar shows different operating conditions and program messages (see Page 24).

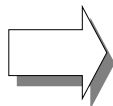
- Red: (flashing) An alarm message has been output on the control computer. The program has stopped or will stop shortly.
- Yellow: A warning message has been output on the control computer.
- Green: Normal program operation

3.3 Technische Daten

Technical data	
Electrical connections/interfaces	
Power supply	230V AC 16A, power consumption < 600 VA 3 m connection cable with shockproof plug Protective earth conductor leakage current < 8 mA
Data exchange	Ethernet - RJ45 socket
All connections are at the left-hand side of the unit.	
Other connections	
Compressed air	6-8 bar quick-release 9 mm nominal size
Ambient conditions	
Operating temperature	+5°C to +40°C
Storage temperature	0°C to +50°C
Relative humidity	< 95% non-condensing
Protection type	IP53 according to DIN 60529
Performance data	
Sample throughput	Maximum 360/hour (cycle 10 seconds)
Bottle and data supply	<1 second
Noise	
Operating noise at 50 cm distance	< 65 dB(A) (vibratory conveyor power: 45%)
Dimensions	
Width x Depth	1935 mm x 675 mm (without bottle closer 1700 mm x 600 mm)
Table height	880 mm - 920 mm
Distance table edge to pipetting position	35 mm
Weight	
Weight empty	290 kg
Operating weight	300 kg (1 full round magazine, 150 stoppers in the round conveyor)
Display and control	
Screen	TFT-LCD, resolution: 1024x768 pixels, screen size: 15" / 38 cm, horizontal viewing angle: 160°, vertical: 140° Backlighting LED
Operation	SAW Touch 4 buttons for round magazines Adjustment knob for round conveyor
Buffer and magazines	
Round magazines	1 x feed, 1x removal
Linear feeds	6 control samples, 10 special samples
Linear buffer	Read error 4 bottles, Control samples, double samples, reserve samples, every 10 bottles
Bottle closer	
Stopper feed	Round conveyor Ø 400 mm
Capacity	150 stoppers
Order details	
Part	Order number
Feed station Type 6854-71	368575

3.4 Uninterruptible power supply

- In the event of an interruption to the voltage supply, all currently available data are saved automatically.
- If the mains voltage is restored within 10 seconds, the feed station continues to operate.
- If the voltage is not restored within 10 seconds, the control computer shuts down.
- The control computer restarts automatically if the voltage is restored after 7 minutes has elapsed.



The computer will not restart automatically if the voltage is not restored before 7 minutes has elapsed.

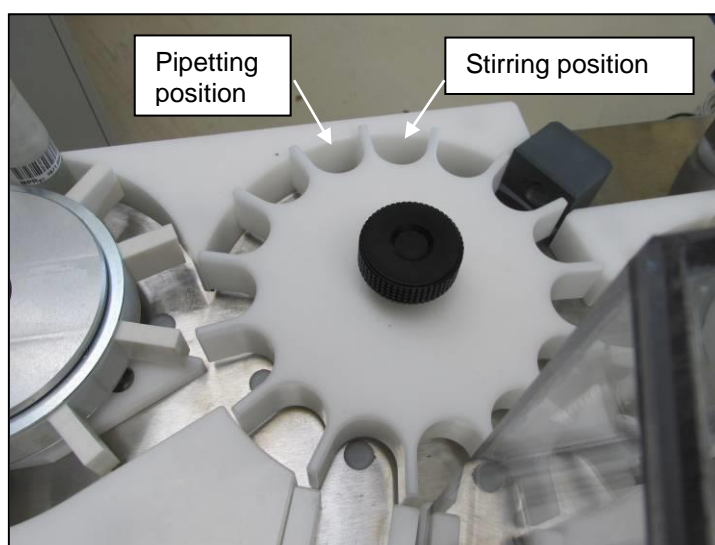
You can force the computer to restart when the mains voltage is restored before 7 minutes has elapsed if you switch the circuit breaker 6F2 (left control cabinet) off and on again.

- Once the control computer has started again, the feed station will start operating again from the place where it was interrupted.

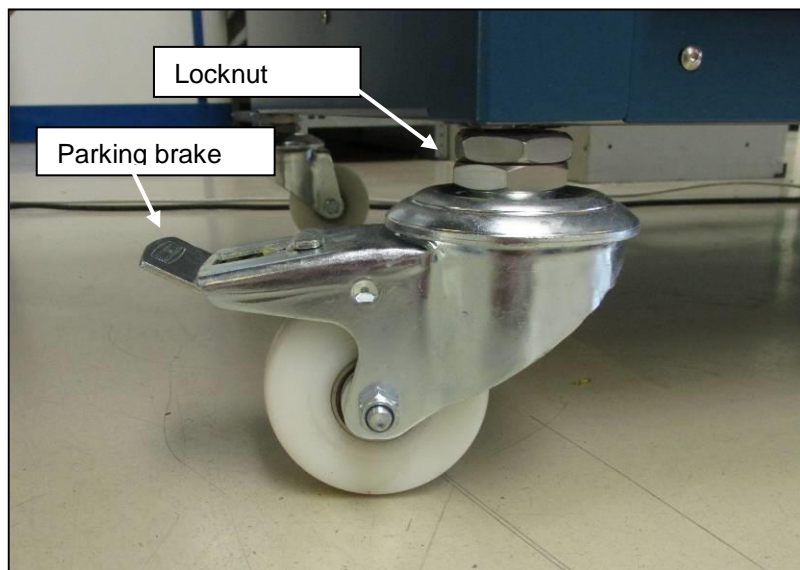
4 Installation

4.1 Setting up the feed station

- The ground on which the unit is to be set up must be flat and level and must have sufficient load-carrying capacity.
- The feed station has 4 swivel castors to position it where it is to be set up. The front two castors are fitted with parking brakes.
- When moving the feed station, maintain a clearance of 77 mm above the floor.
- The feed station must be set up before the analytical unit so that the stirrer and pipette of the analytical unit are immersed in the centre of the bottles in their stirring or pipetting position and are approx. 5 mm above the bottom of the bottles when lowered.

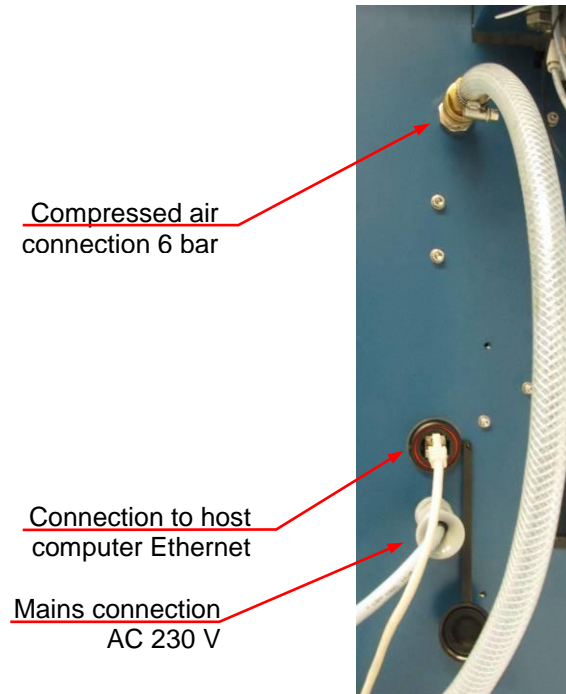


- When you have positioned the feed station, step on the parking brakes on the front castors to stop it from moving.
- You can correct the table height by adjusting the feet.
 - Take the weight off the castors.
 - Undo the locknuts (AF 36).
 - Adjust the height by turning the castor flange.
 - Tighten the locknuts again.
 - Repeat the procedure for the other three castors.
 - Check the table height and whether it is horizontally stable.
- Repeat the adjustment if the table height is still not right or the table is not horizontally stable or wobbles.



4.2 Connections

- Make all the necessary connections before starting. The connections are at the left side of the station.



- Connect the feed station to a shockproof socket via the existing mains cable protected with a fuse rated at least 10 A.
- Connect to the host computer (“CPC”) via the Ethernet interface.
- Connect the compressed air line.

4.3 Initial operation



- Place the hood on the shaker and bottle opener.
- Place the hood on the shaker and bottle closer.
- Check all the connections (☞ Section 4.2).
- Switch on the main switch to start. This also opens the compressed air supply via a solenoid valve.
- Check and, if necessary, adjust the air pressure (☞ Section 8.2).
- Make all the necessary adjustments to adapt the feed station to the actual or intended operating conditions. The adjustments are described in chapter Kapitel 6.

5 Operation

5.1 Start-up

After the feed station is switched on, all recorded operating parameters are displayed on the screen.

The operating conditions which have to be created by the operator are displayed on the screen in plain text. The signal pillar also indicates that there is a message (☞ Page 11).

The feed station program is started by the corresponding data logging software via the Ethernet connection on the computer which is designated as the control PC (CPC).

A prerequisite is that the Ethernet connection between CPC and feed station is working. The host IP and port on the station must also be configured (☞ Section 6.2.4). LAN adapter 1 in the Windows system control panel may also have to be reconfigured.

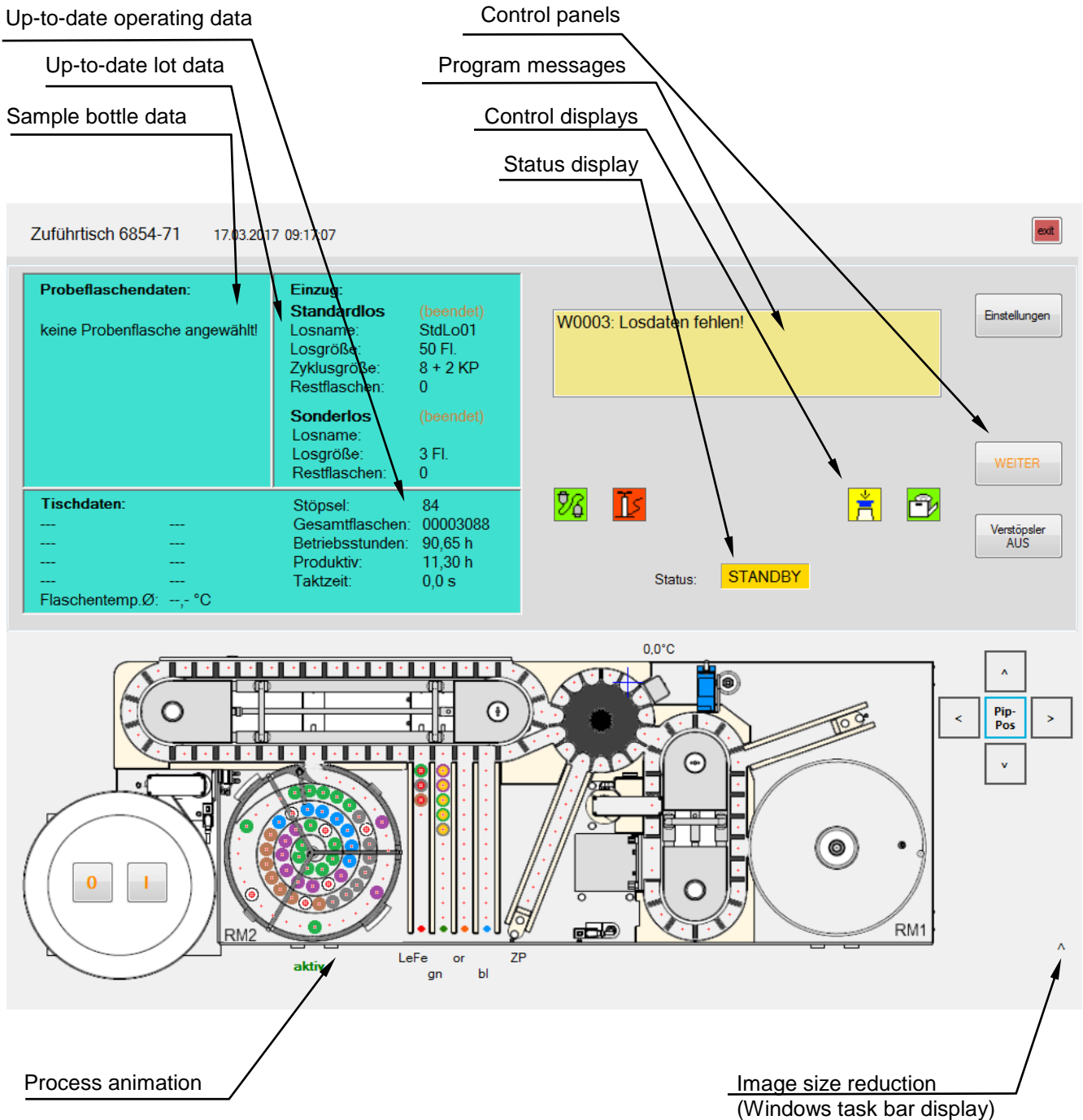
Lot data which is transferred from the CPC must be available when the program starts.

The program starts when all the required operating conditions are fulfilled.

5.2 Process visualisation

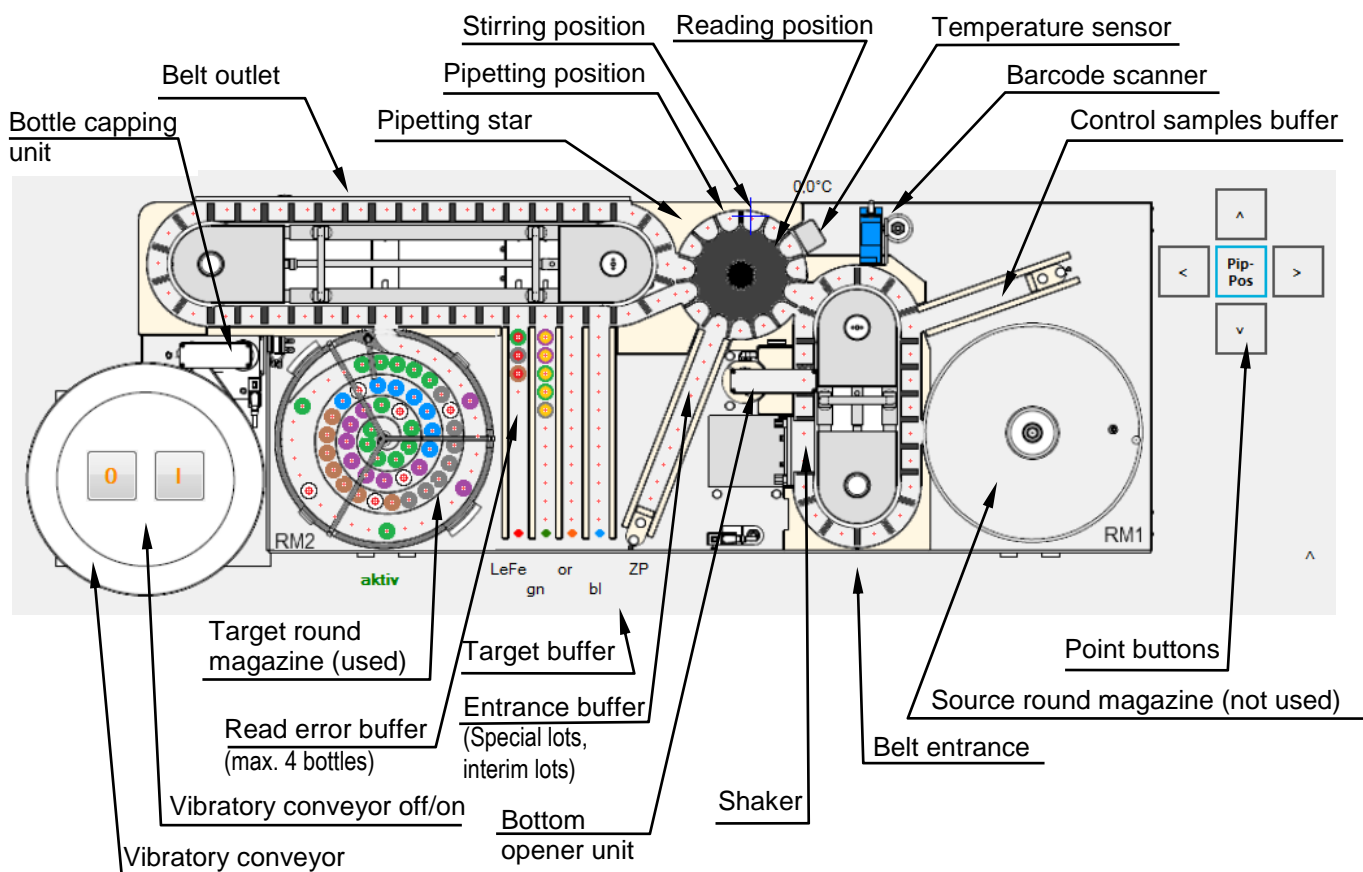
Visualisation is on a 15" (38 cm) touchscreen with a resolution of 1024 x 728 pixels.

5.2.1 Screen layout



5.2.2 Process animation

The modules of the feed station which are responsible for bottle transport appear on the lower part of the screen. The possible bottle positions are marked by small orange crosses.



Bottle indicator



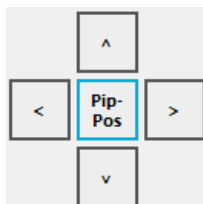
The bottle indicator, which appears as a blue hair cross, is at the pipetting position after the program has started but can be repositioned as desired by touching the screen in the overview pane.

After the placing the pointer in the approximate position, it can be moved anywhere in the overview pane by touching the pointer keys.

Touching them continuously moves it in the desired direction.

The “Pip-Pos” key brings the pointer back to the pipetting position.

When the pointer is on a bottle, its data is output in the sample bottle data field (☞ Page 21). A snap function makes it easier to select a bottle.



Presentation of bottles

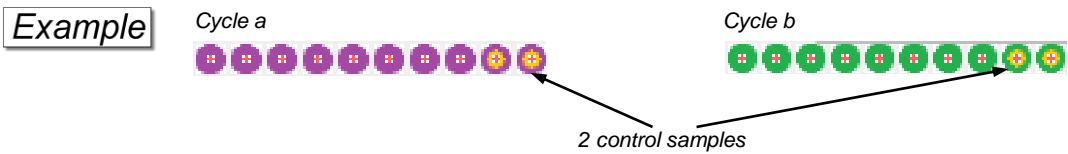
The bottles move through the schematic presentation of the station as coloured points. They start at the entrance positions of the entrance belt (right) and finally land in the round magazine or in one of the linear buffers.

The control program knows the current positions of all the bottles and guides them to the mechanical units accordingly.

Movement occurs in the visualisation after positive feedback from the relevant unit.

A lot is divided into cycles according to the control sample intervals specified in the lot data or control sample interval configured in the unit, where each cycle contains the specified or configured number of control samples. In order to find the cycles later they, and thus the bottles within them, are displayed (for repetitions) alternately in brown, blue, violet, green and grey, and the control samples are given a yellow core.

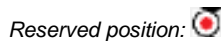
Two cycles at control sample interval 8 + 2 control samples



If the barcode is not readable, the bottle concerned is given a red core.



For bottles destined for the round magazine, the corresponding position is reserved there in each case when the barcode is not readable. The bottles taken out of the read error buffer should then be placed there.



Bottles from the special feed or feed buffer are black.



Bottles which are to be repeated are half white.



Sample bottle data

The data for the bottle which is under the blue bottle pointer is output to the “sample bottle data” field in the upper half of the screen, where individual fields change with the type of the bottle.

Sample Bottles Data:		
ident no:	5315	← Identification number (unique)
normal sample:	281	← Serial no. (since the program started)
source:	RM1	← Sample comes from Round Magazine 1
from lot:	StdLo01	← Bottle belongs to lot “StdLo03”
sample in lot:	15	← Number of sample in lot
bottles cycle:	3	← No. of cycle
no in cycle:	9	← No. of bottle in the cycle
barcode:	00001029	← Barcode, if not readable “-----”
temperature:	9.0 °C	← Temperature
target:	RM2	← Target Round Magazine 2

ident no:	This number clearly identifies each bottle. It is assigned as soon as the bottle leaves the round magazine, the supply buffer or the control sample buffer. The number increases with each bottle, regardless of whether it is a normal, control or special sample and is never reset.
normal sample: or control sample:	Shows whether it is a normal or control sample and the number of the sample this is since a regular program start. A regular program start is after the feed station has been shut down empty .
source:	Names the buffer or the magazine from which the bottle comes. Possible sources are: “RM1” = Round Magazine 1, “CSB” = Control Sample Buffer, or “FB” = Feed Buffer.
from lot: or to lot:	This gives the name of the lot where the normal sample has come from or to which the control sample belongs. Bottles from the supply buffer which do not belong to a special lot are designated here as “No lot”.
sample in lot: or c-sample in lot:	The number is the number of the normal or control sample in the lot.
bottles cycle:	Number of the cycle to which the sample belongs. The number is reset each time a standard lot starts (feed via the entrance belt).
no in cycle:	Numbers the sample within a cycle.
barcode:	Barcode of the sample bottle without test number. If the barcode is not readable, “-----” appears on the display.
temperature:	The bottle temperature measured by the infrared sensor at the read position.
target:	Shows the bottle destination, normally “RM2” = Round Magazine 2 or the destination specified by the CPC. Destinations specified beforehand are: “RM2” = Round magazine 2, “Bu. Green”, “Bu. Orange”, “Bu. Blue”, or repeat (Target = “Pip.-Star”). Bottles with unreadable barcodes are automatically assigned to the destination “Error buffer”. Control samples with the corresponding configuration automatically land (☞ chapter 6.2.5.3) in the “Bu. Green”:

Lot data

The data from the data specified by the CPC for a standard lot and special lot is displayed in the “Entry:” field:

The screenshot shows the 'Entry:' field with two sections: 'standard lot' and 'spezial lot'. Each section has an 'END' button. Red arrows point from the text labels to the corresponding values in the screenshot.

Field	Value	Description
standard lot		
lot name:	StdLo01	Designation of lot
lot size:	300 bo	Number of samples in the lot without control samples
clcle size:	8 + 2 CS	Interval + number of control samples
remainig bottles:	269	Number of bottles still to be supplied from RM1
spezial lot		
lot name:	SoLo02	Designation of lot
lot size:	20 bo	Number of samples in the lot
remainig bottles:	20	Number of bottles still to be supplied from FB

Where there is no CPC specification, the values for the cycle size are inferred from the settings (☞ Section 6.2.5.3) and are then marked with an “∅”.

Table data

This field shows the current operating data of the station.





The screenshot shows the 'Station Data:' field with the following data:

stoppers:	130
total bottles:	00005335
operating hours:	198,70 h
productive:	38,50 h
cycle time:	9,7 s
bottle temp. ∅:	9,0 °C

bottle temp. ∅:	Average temperature of the last 8 sample bottles
stoppers:	Number of stoppers in the stopper bucket. The counter can be reset when opening the drawer.
total bottles:	Total number of bottles which have passed over the unit.
operating hours:	Total software operating time in hours.
productive:	Time in “AUTO” or “TRANS” state
cycle time:	Last cycle time in seconds.

Control displays

The control displays signal the presence of required operating parameters and provides a quick overview of the operating conditions of the unit.

	Connection to the CPC	Green	connection exists
		Red	no connection
		White	attempting to connect
	Compressed air	Green	compressed air available
		Red	no compressed air / pressure too low
	Bottle closer	Green	bottle closer ready
		yellow	no stoppers ready
		Grey	bottle closer switched off
	Drawer - stopper bucket	Red	bucket full or drawer open
		yellow	bucket 80% full
		Green	bucket empty (<80%), drawer closed

Status indication

status: STOP	Initial status, the CPC can delete the bottle image if necessary.
status: STANDBY	Waiting, the station has stopped.
status: TRANS	Samples are moved forward to the read position independently, or transported to the end into the buffers.
status: AUTO	The sample bottles are transported on command from the CPC.

Program messages

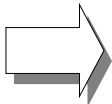
Warnings

W0003: Lot data are missing!
W2023: Green buffer full!

Events which require a response from the user but which initially do not hinder the process are output as warnings.

When the cause is eliminated, the relevant message is also deleted.

Pending warnings with the exception of “W0003: lot data are missing” and “W2005/6 average bottle temperature above/below...” cause the traffic light display to flash yellow.



A list of all the possible warnings is provided in the supplementary document “Datenaustausch_EPC_Tisch71_17...”.

Alarms

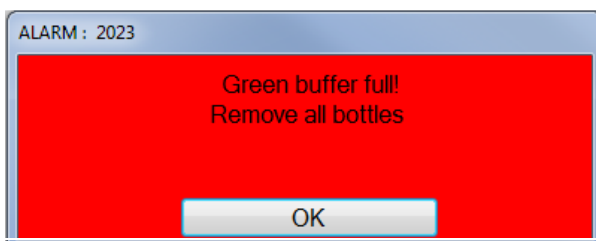
Conditions which hinder the process trigger an alarm.

The alarms are output in separate overlaying windows which close after the fault has been eliminated or the alarm has been cancelled. The uppermost (visible) window contains the alarm which appeared first. If necessary, the alarm windows can be moved by touching the upper area and dragging them across the screen.

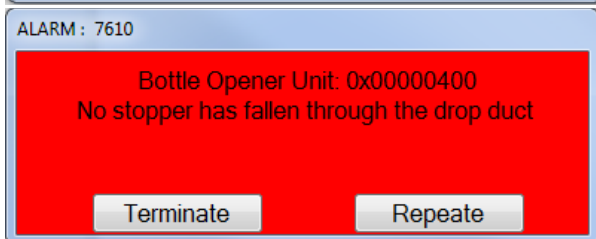
Pending alarms cause the traffic light display to flash red.



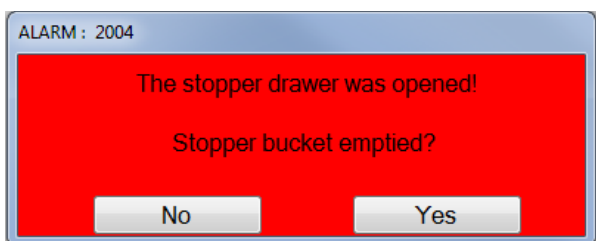
Alarm windows without control elements automatically disappear after the cause of the fault has been eliminated.



Alarm windows with "OK" buttons must be confirmed after the cause of the error has been eliminated. These can also be short-term faults which only need to be cancelled and require no direct action from the user.



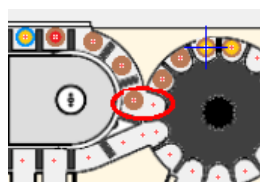
In this alarm window, the user must choose between "Cancel" and "Repeat" the function.



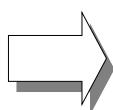
Here, the user is asked a question which he must answer with "Yes" or "No". If "Yes" in this case, the stopper counter is set to zero.

If an alarm refers to a certain area or bottle position, this location will be circled red in the visualisation.

Example

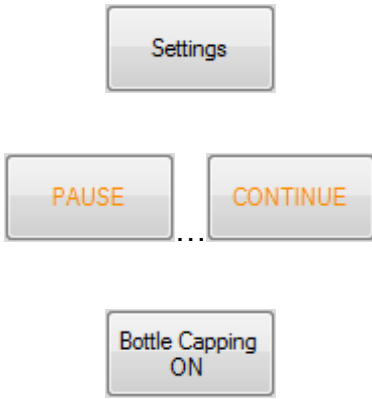


There is a problem at the pusher from the pipetting star to the outlet belt.



A list of all the possible alarms is provided in the supplementary document "Datenaustausch_EPC_Tisch71_17...".

Control panels



Opens the settings
“PAUSE” sends the request to the CPC to stop (STANDBY), and “CONTINUE” the request to continue (AUTO).
Touching the control panel switches the bottle closer on and the button text changes to "Closer OFF". Touching the panel again switches the bottle closer off again.

Buttons



This button appears after the last bottle has been pushed from the control sample buffer into the star and is used to cancel the warning: “Control sample buffer empty”.
This button appears beneath a (supposedly) empty source round magazine and enables re-activation without removing and remounting the magazine.
The buttons make it possible to switch the vibratory conveyor on and off. When the station takes over control, the symbols “0” and “1” appear grey. The buttons no longer work.
Touching the small arrow in the bottom right hand corner shifts the bottom edge of the picture upwards. This makes the Windows task bar accessible.

5.3 Preparing for operation

Source Round Magazine

- Place a full round magazine on position "RM1". Note that the round magazine only engages in a certain position.

The outlet opening of the round magazine must point towards the belt.



Important: Dropping or constantly lifting the round magazines in the wrong way can endanger your health. (☞ chapter 2).

Control samples

- Place the control **samples** in the control sample buffer.



Target Round Magazine

- Place an empty round magazine on position "RM2". Note that the round magazine only engages in a certain position.

The outlet opening of the round magazine must point towards the belt.

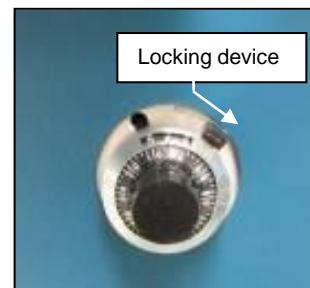
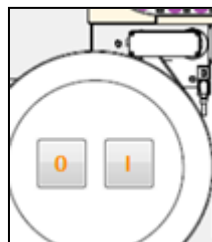


Bottle Closer

- Place 150 (the max. number) washed stoppers in the vibratory conveyor.



- Adjust the feed rate of the vibratory conveyor by switching on the vibratory conveyor at the screen, adjusting the feed rate with the associated rotary button and securing it from turning accidentally with the locking device.



Stopper Bucket

- Place an empty bucket under the stopper drop chute and close the door.



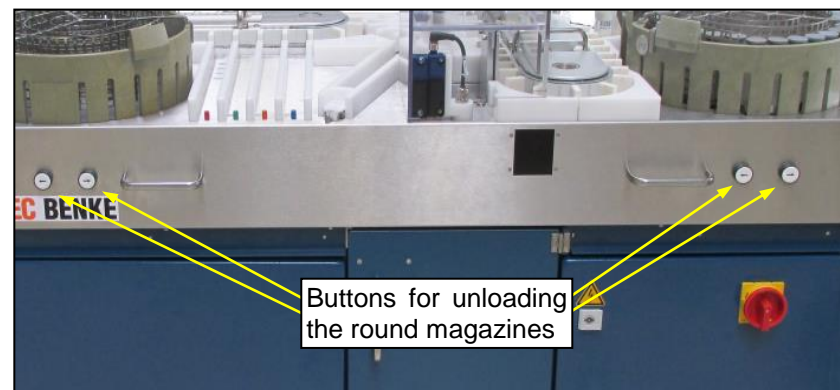
5.4 Program run

All the information which relates to the current program and is required during operation is displayed on the screen in plain text.

The operator will be notified or alerted on the display to any actions and interventions which are needed. Follow the instructions where necessary.

Changing the magazine

If you have to change a round magazine, you can move the drive journals using the buttons on the side of the feed station to unload it. The magazine is then easier to remove.



5.4.1 Processing standard lots

(feeding via the entrance belt)

After preparing the table, putting on the round magazines and placing the control samples in the buffer, the relevant data is transferred from the CPC to the station and the process is started by the CPC via the "AUTO" command.

The station itself controls the movement of samples to the read position in "TRANS" mode (approx. 3 second cycle). Control samples at the beginning of the lot are pushed from the control sample buffer at defined intervals (control sample interval) according to the configuration (☞ Section 6.2.5.3) or specification from the CPC.

To better differentiate between the cycles consisting of normal samples + control samples, the associated bottles are displayed in five repeating colours. Control samples are identified by a yellow core.

The shaker ensures the milk is mixed with a configured number of shaker movements (☞ Section 6.2.5.1).

After the bottles are opened, the barcodes read and the temperatures measured, the samples arrive at the stirring position and then finally at the pipetting position.

At the stirring or pipetting position, the station transmits the associated data (serial no, sample type, barcode and temperature) to the CPC along with the delivery notification.

After the first bottle has reached the read position, the station goes into "AUTO" mode. From now on, the CPC in association with the analytical unit requests the next bottle in each case and therefore determines the cycle. Af-

ter the request, the pipetting star immediately turns and the data for the new bottle on the stirring or pipetting position is sent to the CPC. After the test, the CPC can specify a target buffer for each bottle read between the read position and the bottle closer or earmark the sample for the repetition.

With the bottle closer switched on, all the sample bottles (except those earmarked for repetition) are closed before they are distributed into the target buffers.

Bottles with non-readable barcodes are given a red core in the visualisation and are automatically directed into the read-error buffer.

Control samples with the corresponding configuration automatically land (☞ Section 6.2.5.3) in the "green" buffer. The station directs bottles without a target specification into the Round Magazine "RM2".

5.4.2 Special samples

During the process, a shaken open sample can be placed on the transfer point (feed buffer → pipetting star) in the star for analysis and other bottles can be placed in the feed channel if necessary. Additional sample bottles in the feed channel are tightened automatically. If treatment of these samples is given priority and a bottle escapes from the standard feed between successive control samples, the entrance belt ceases to feed samples, with the corresponding warning, until the special samples have passed this position. During this process, a gap appears in the pipetting star no larger than the number of control samples.

Special samples appear black in the visualisation.

5.4.3 Repeating cycles (Bayern)

To repeat the cycles, after the "STANDBY command", the CPC initially gives the command to empty the pipetting star. The entrance belt stops feeding the sample bottles and they are transported from the star.

Important: the last bottles are neither registered nor tested yet!

Associated control samples may be separated

The user can now place the samples from the last cycle in the feed buffer.

As soon as a bottle on the transfer point (feed buffer → pipetting star) is placed in the star and the CPC requests "AUTO", entrance starts in "TRANS" mode. After the first bottle has reached the read position, the station goes into "AUTO" mode. From now on, the process continues the same as for normal samples. After the last bottle has left the pipetting position, the process continues with the original standard samples from the entrance belt.

5.4.4 Special lots

Special lots are processed like cycle repetitions from the feed buffer. Unlike the cycle repetitions, a sample may not be placed here in the star or the alarm will appear: "Please remove the unexpected bottle upstream of the FBI!" By transferring the lot data, the CPC reserves the feed buffer and the visualisation shows the sample bottles expected there. Finally, the CPC starts the process with the "AUTO" command.

5.4.5 Lot cancelled

Active lots can be detected by the relevant “END” button next to the lot data and terminated or cancelled by touching this button.

The process is reported to the CPC and logged where necessary.

With a standard lot, control samples are still appended according to the configuration (☞ Section 6.2.5.3).

The CPC can also trigger a cancel if necessary via command.

5.4.6 Treatment of control samples


The number of control samples and the interval are specified with the lot data. If not specified, the configured settings apply. (☞ Section 6.2.5.3)

The normal samples form a **cycle** together with the control samples.

In standard mode, control samples are automatically fed to produce a cycle without gaps.

With appropriate configuration, control samples are introduced at the beginning and/or at the end of the lot. With lots directly following one another, double supply (lot end of previous lot and lot beginning of current lot) is suppressed.

Control samples are likewise appended after “END” by the user or the CPC (depending on the configuration) if control samples have not preceded, depending on the cycle.

If the control sample buffer is running empty, the **warning** “Control sample buffer empty” initially appears, which can be cancelled once the buffer is full by touching the  button. If the buffer is empty and control samples are needed, the **alarm** “Control sample buffer empty” appears and the process is interrupted until the alarm is cancelled. The control sample buffer can take up to six bottles.



Associated control samples are kept together where possible.

If samples from the special feed (feed buffer) in the pipetting star between successive control samples escape from the standard feed, the entrance belt will cease to feed bottles with the warning “Bottle would get between control samples”, until the special samples have passed this position.

Control samples are marked with a yellow core on the display. Samples from the feed buffer can also be identified as control samples by their special barcode “9999999x” and marked accordingly.

5.4.7 Handling the round magazine

Source Round Magazine (RM1)

If a round magazine has not been installed at the outlet position, the **warning** "Source round magazine is missing!" initially appears after the program starts. As soon as a sample is needed from the magazine, the **alarm** "A filled source round magazine is needed!". It disappears automatically when a round magazine is put on.

An empty round magazine initially triggers the **warning** "Round magazine RM1 empty!". As soon as a sample is needed from the magazine, the **alarm** "A filled source round magazine is needed!" appears. It disappears when a new round magazine is put on or the lot is terminated.



Round magazines which appear empty because of jammed sample bottles etc. can also be re-activated again by touching the **empty** button without removing and reinstalling the magazine.

Target Round Magazine (RM2)

If a round magazine has not been installed at the target position, the **warning** "Round Magazine RM2 is missing!" initially appears when the program starts. As soon as a sample is to be pushed into the magazine, the **alarm** "Round magazine RM2 is needed!" appears. It disappears automatically when a round magazine is put on.

A full round magazine initially triggers the **warning** "Round magazine RM2 full!". As soon as a sample is to be pushed into the magazine, the **alarm** "Round magazine RM2 is full!" appears. It disappears when the round magazine is changed.

5.4.8 Treatment of read errors

Unreadable sample bottles will land in the read error buffer and must be removed from there individually (by the user), from front to back.

Sensors enable the table program to detect an incorrect sequence of removal and will request the bottle to be put back in the error buffer with the message "Put the bottle back in the error buffer!" "Always remove the front bottle first".

When the front bottle has been removed, the station reports the event with the bottle number to the CPC.

The error buffer can take up to four bottles. A full buffer will generate an initial **warning** "Error buffer full" and with the attempt to introduce another bottle, the **alarm** "Error buffer full".

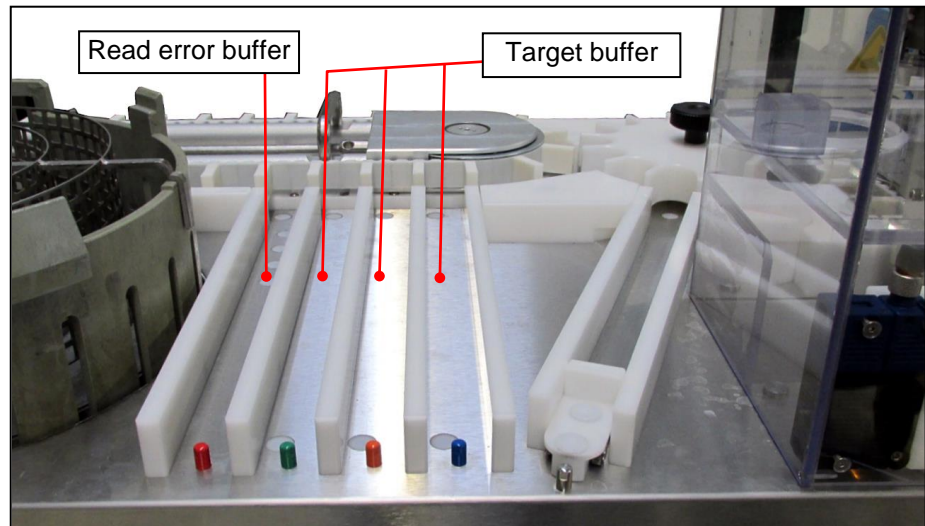
5.4.9 “Green”, “orange”, and “blue” buffers

The CPC directs bottles specified with a target into the linear buffers marked with the corresponding colours. The CPC can also address each sample bottle read between the pipetting position and the bottle closer via the barcode and assign the desired target to it.

The buffers can take up to 11 bottles. A full buffer will generate an initial **warning** "Buffer x full" and with the attempt to introduce another bottle, the **alarm** "Buffer x full" (x = is the colour code of the buffer).

The buffers must always be emptied completely. Removal of the front bottle (by the user) deletes all the bottles in the visualisation. Any pending alarm will then need to be cancelled.

To empty a part-filled buffer, remove all the bottles and hold the last bottle briefly (approx. 1s) on the sensor at the front in the buffer. This will communicate to the controller that the buffer is empty and the buffer in the visualisation will also be emptied.



6 Settings

Different operating parameters and functions can be configured for operating the feed station.

6.1 Procedure for configuring

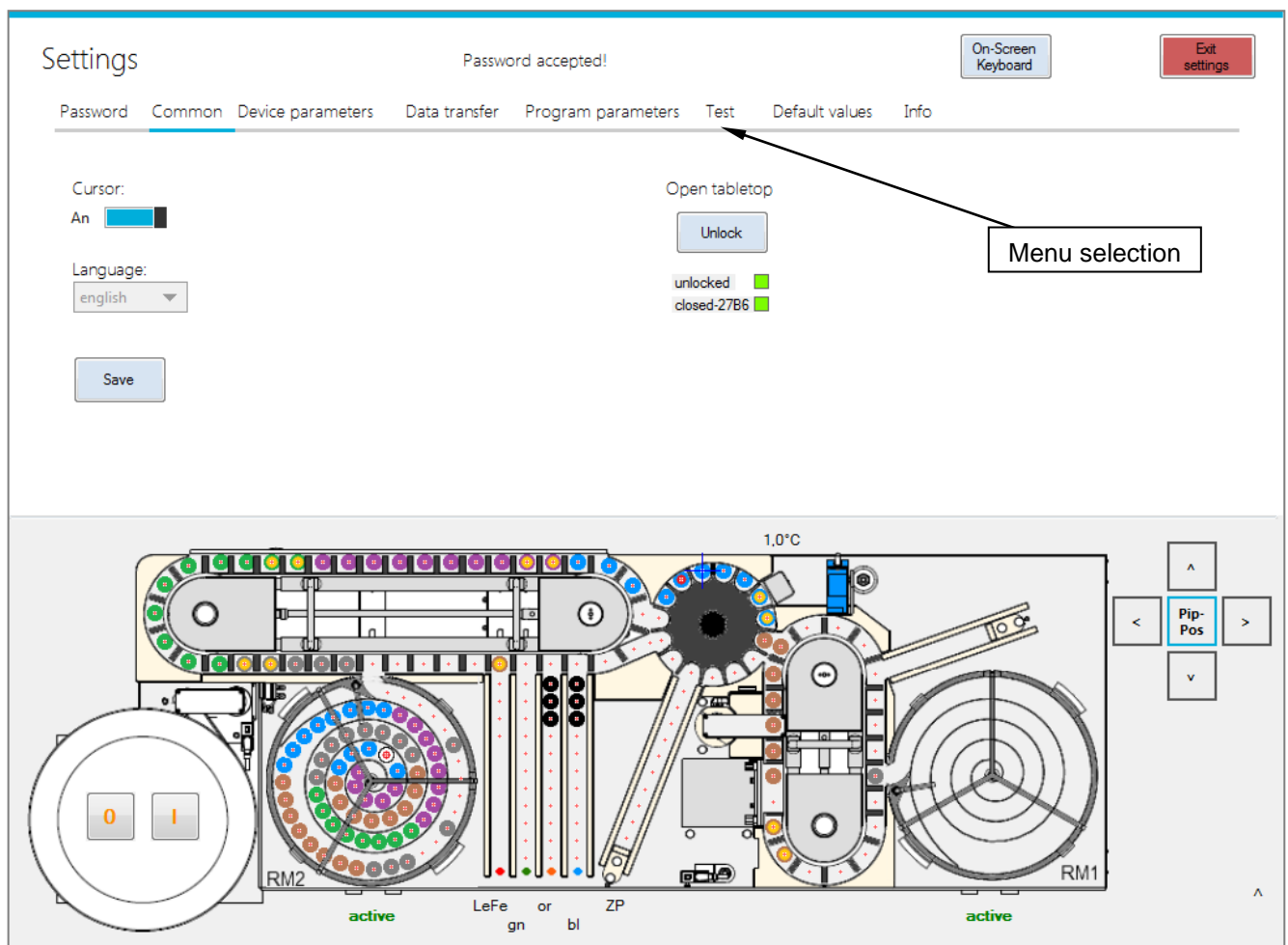
Opening the settings window



Touch the “Settings” button on the screen.

The Settings window opens in the upper half of the screen.

The Settings window can also be opened while the station is in operation. Any existing windows or windows with alarms will slip down and will also appear here in the foreground. You can drag these message windows if you need to.



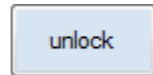
Password protection

You can protect the parameter settings with a password (☞ Section 6.2.1).

If you assigned a password, the entry field for the password will appear in the header bar of the “Settings” window.

If you do not enter the password, you can look at the settings but you cannot change them.

Password:



When you have entered the correct password and the “Unlock” button appears, touch the message “Password accepted!”.



The settings are enabled while the “Settings” window is open and up to 10 minutes after leaving the settings.

If no password has been assigned, the message “No password set” appears on the header bar. In this case, all the settings are freely accessible.

Menu selection

On the header bar, you can select different menus in order to adjust the feed station to the actual operating conditions.

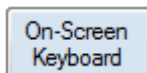
You can select the individual menus,

- by touching the relevant menu designation on the screen or - with the arrow keys ,  of the on-screen keyboard (☞ Buttons on the header bar)

The menu selected is underlined in blue.

Different menus contain several submenus. Selection takes place in the same way here also.

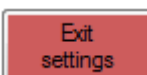
Buttons on the header bar



This button is used to show the on-screen keyboard. You can use this to enter or edit the values in the entry fields.



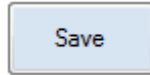
You can drag the keyboard to any position on the screen.



Use this button to leave the “Settings” window.

Entering and saving values

- Touch the relevant entry field.
- Enter the value using the on-screen keyboard.
- Repeat the entry if necessary for further entry fields on the menu.
- Touch the “Save” button to save the settings.

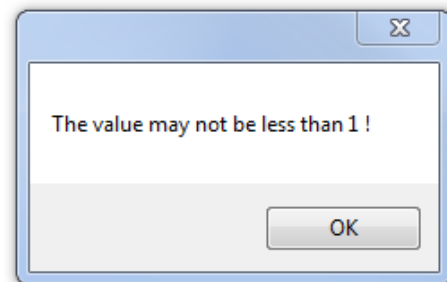
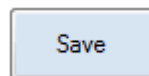


The entries are checked to make sure they are within the permitted range. If an entry exceeds the permitted range, a prompt appears and the entry field is marked red.

Example

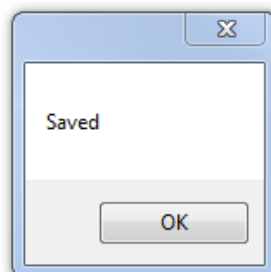
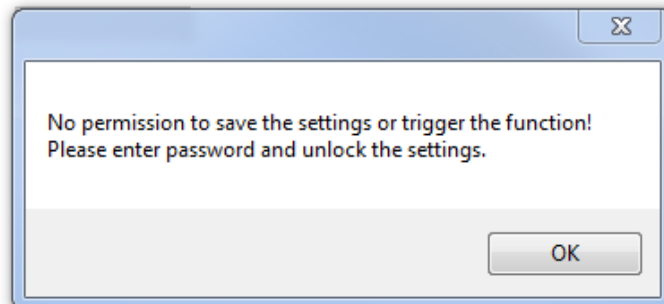
Station no:

-1



As soon as you confirm the prompt with **OK**, the maximum or minimum permitted value appears in the entry field.

If a password is set but has not been entered yet, you will be asked to enter the password.



If the save is successful, this will be indicated on the screen.

6.2 Changing the settings

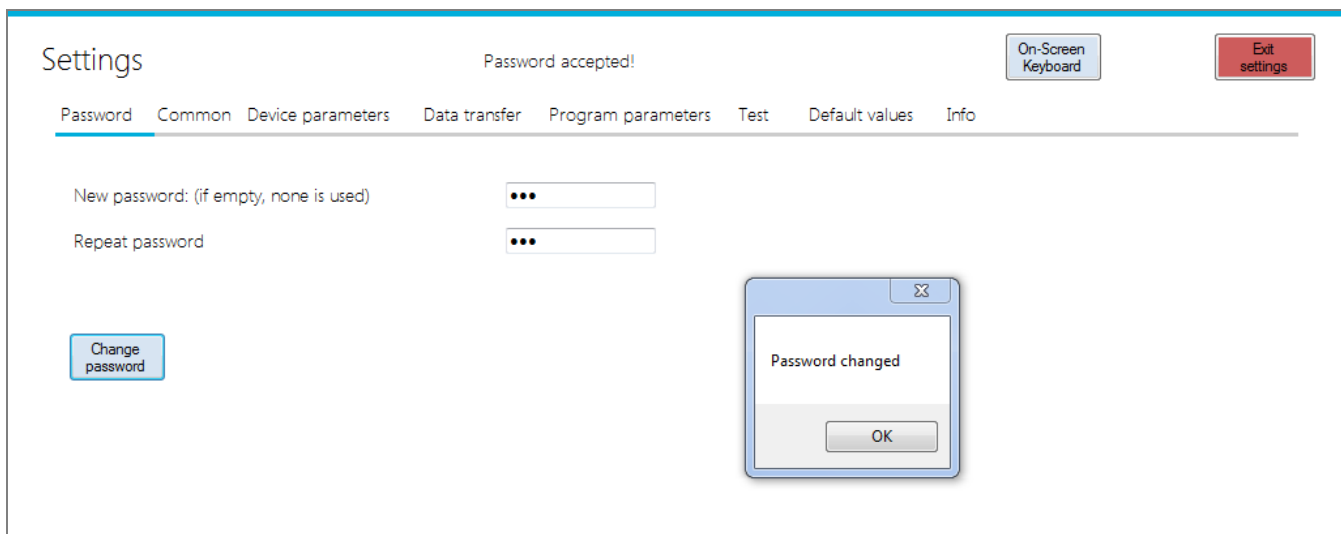
This section explains the meaning of the parameters on all the menus. The order corresponds to the order in which the menus and parameters appear. Only those values which are within a permitted range will be accepted. If the value entered is outside of this range, the message appears “Value entered not permitted”. This message must be confirmed with [Enter]. If the value is above the permitted range, the largest permitted value will be suggested. If the value is below the permitted range, the smallest permitted value will be suggested.

6.2.1 Password

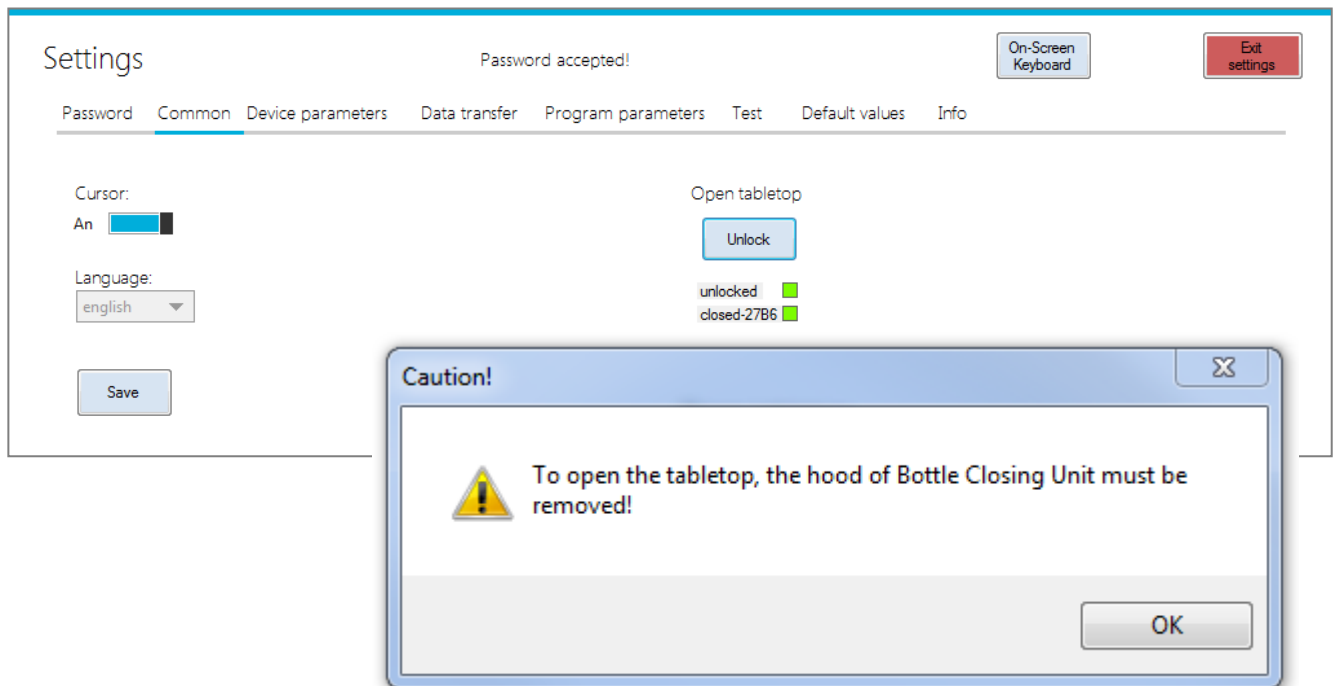
Here, you can assign, change or delete a password.

- Enter the password in both lines.
- Touch the “Change password” button.
The message “Password changed” appears.

If no password is to be used, both entry fields must be empty when touching the “Change password” button.



6.2.2 General information



Common

Cursor

On/Off

If the mouse pointer on the screen annoys you, you can switch it off here.

Language

Language:
 english
 german
 english

The dropdown menu shows the available languages and enables you to select one.

Open tabletop

Unlock

Releases the feed area lock. Unlocking only takes place after the cover of the bottle closer has been removed and the request has been confirmed. The display signals the status of the lock and the proximity switch on the stand.

6.2.3 Device parameters

Settings Password accepted! On-Screen Keyboard Exit settings

Password Common Device parameters Data transfer Program parameters Test Default values Info

Device numbers

ANr: 1703xxxxUE

Station no:

Save

Bottle temperature measurement

Reading: 8,0

Displayed value [°C]: 9,0

Target value [°C]:

Calibration

Restart

Device parameters

Device numbers

U no:	Shows the U no. (unit number) of the feed station according to the type plate
Station no:	Here, you can enter the number of the feed station (e.g. serial number when using several stations).

Bottle temperature measurement

Reading [°C]:	Value measured by the infrared sensor
Displayed value [°C]:	Appears under bottle data and is transferred to the CPC
Target value [°C]:	Here, enter the setpoint if necessary (actual measured temperature).
Calibration	The value displayed will be corrected to the value entered under "Setpoint display". The correction value is saved.
Restart	Restarts the temperature sensor.

6.2.4 Data transfer

Under this category, you can enter the interface parameters for connection to the host (CPC) and the PLC.

Settings Password accepted! On-Screen Keyboard Exit settings

[Password](#)
[Common](#)
[Device parameters](#)
[Data transfer](#)
[Program parameters](#)
[Test](#)
[Default values](#)
[Info](#)

Host

IP address:

Port:

PLC

IP address:

Save - Connect

Own IP: .169 (LAN-Verbindung)

Data transfer	
Host	
IP address:	IP address of the host computer
Port:	Port no. of the host computer
PLC	
IP address:	IP address of the PLC <i>(Default: 10.10.52.104)</i> <i>Do not change the preset value!</i>
Save / Connect	Saves the parameters and makes the configured connection.

6.2.5 Program parameters

Under the category “Program parameters”, 4 subcategories are available.

6.2.5.1 Process parameters

Settings Password accepted! On-Screen Keyboard Exit settings

[Password](#) [Common](#) [Device parameters](#) [Data transfer](#) [Program parameters](#) [Test](#) [Default values](#) [Info](#)

[Process param.](#) [Bottle buffer](#) [Control samples](#) [Log](#)

Shaker movements:

 Bottle temperature monitoring: An


Stopper monitoring: An

 min. bottle temp. (8 bottles):

max. stoppers:

 max. bottle temp. (8 bottles):

Save

Program parameters	Process param.
Shaker movements:	Number of shaking movements to be carried out per bottle movement.
Stopper monitoring:	On:  Triggers an alarm when no stoppers pass the gravity feed chute. <i>If the stopper monitor in the gravity feed chute is switched off, bottle opening must be supervised by the operator and the program must be stopped manually if necessary! Otherwise, the program continues to run even if a bottle has not been opened. This can damage the stirrers and pipetting device.</i>
max. stoppers:	If the number of stoppers in the bucket entered exceeds this value, the alarm is triggered.
Bottle temperature monitoring:	On: the bottle temperature is monitored. The average value over 8 bottles is compared with the limits and the alarm is triggered if this value is outside the limits.
min. bottle temp. (8 bottles):	Lower limit for the bottle temperature monitor.
max. bottle temp. (8 bottles):	Upper limit for the bottle temperature monitor.

6.2.5.2 Bottle buffer

Settings
Password accepted!
On-Screen Keyboard
Exit settings

Password
Common
Device parameters
Data transfer
Program parameters
Test
Default values
Info

Process param.
Bottle buffer
Control samples
Log

Round magazine

max. bottles:

Wait after insertion: sec.

Labeling RM2:

Labeling of linear buffers

Buffer green:

Buffer orange:

Buffer blue:

Program parameters Bottle buffer

Round magazine

max. bottles:	An alarm is triggered if the number of sample bottles in the target round magazine exceeds the set value.
Wait after insertion:	Waiting period from inserting a round magazine to access.
Labelling RM2:	Max. four characters displayed next to RM2 (CPC default has priority)

Labeling of linear buffers

Buffer green:	Max. four characters displayed next to the green buffer.	} (CPC default has priority)
Buffer orange:	Max. four characters displayed next to the orange buffer.	
Buffer blue:	Max. four characters displayed next to the blue buffer.	

6.2.5.3 Control samples

In this pane, it is possible to set the relevant parameters for introducing the control sample.

Settings
Password accepted!
On-Screen Keyboard
Exit settings

Password
Common
Device parameters
Data transfer
Program parameters
Test
Default values
Info

Process param.
Bottle buffer
Control samples
Log

Control samples interval:

Number of control samples:

Control samples:

- at beginning of lot
- at end of lot
- out slide
- stoppering

Program parameters	Control samples
Control samples interval:	Number of samples after which control samples are introduced in each case. <i>If the CPC specifies the value in the lot data, this default has priority.</i>
Number of control samples:	Number of control samples supplied at the fixed interval. <i>If the CPC specifies the value in the lot data, this default has priority.</i>
Control samples:	<p>at beginning of lot: If this field is marked, control samples are introduced at the beginning of each lot.</p> <p>at end of lot: If this field is marked, control samples are appended at the end of each lot.</p> <p>out slide: If this field is marked, all the control samples are ejected into the green buffer.</p> <p>stoppering: If this field is marked, all the control samples are closed again.</p>

6.2.5.4 Log

Data logging is configured in this pane.

Settings
Password accepted!

On-Screen Keyboard
Exit settings

Password
Common
Device parameters
Data transfer
Program parameters
Test
Default values
Info

Process param.
Bottle buffer
Control samples
Log

Retention period

Log files [days]:

CSV files [days]:

Save

Write into log file:

Alarms: An

Warnings: An

Host communication: An

Bottle data: Aus

Settings: An

Program parameters Log	
Retention period	
Log files [days]:	Storage time for the log files in days.
CSV files [days]:	Storage time for CSV files in days.
Write into log file	
Alarms:	Switch on "On": Logs alarms.
Warnings:	Switch on "On": Logs warnings.
Host communication:	Switch on "On": Logs the telegrams sent to and received by the host.
Bottle data:	Switch on "On": Logs data for the sample bottle at the stirrer or pipetting position.
Settings:	Switch on "On": Logs changes to settings, triggering the test functions and opening and leaving the settings window.

6.2.6 Test

The various components of the unit can be tested in the first five groups of this pane. For this to happen, the unit must be in “STANDBY” or “STOP” mode. When critical transfer points are free of bottles, the test functions can also be carried out when the unit is full. However, any bottle movements will not be taken into account by the visualisation and must be reset manually before the unit continues to be used.

The “Micro-stepping right”, “Micro-stepping left” control panels available with some components are used for fine adjustment of the position. The position can then be saved via the “Zero setting” control panel.

The displays under the buttons signal the status of the associated sensors in each case. If a unit has several sensors, the designations begin with a reference to the position (“in front” or “at the back” etc.). If there is only one sensor, the designation begins with “PS” for proximity sensor. Sensors which begin with the designation “Bot”, are bottle sensors. The other part of the designation indicates the page on the electrical circuit diagram and the designation there.

6.2.6.1 Entrance I



Testing components: Control sample buffer, Round Magazine 1, Pusher from Round Magazine 1, entrance belt and pusher into the pipetting star.

Settings
Password accepted!

On-Screen Keyboard
Exit settings

Password
Common
Device parameters
Data transfer
Program parameters
Test
Default values
Info

Entrance I
Entrance II
Pipetting
Outlet
Capping unit
PLC
Test run

Ctrl samp. buffer <div style="margin-bottom: 5px;">Forward</div> <div style="margin-bottom: 5px;">Backward</div> <div style="font-size: x-small;"> front -28B2 <input type="checkbox"/> back -28B4 <input type="checkbox"/> Bot -27B7 <input type="checkbox"/> </div>	Round mag.1 <div style="margin-bottom: 5px;"></div> <div style="margin-bottom: 5px;">Stop</div> <div style="margin-bottom: 5px;"></div> <div style="font-size: x-small;"> PS -27B1 <input checked="" type="checkbox"/> </div>	Slider RM1 <div style="margin-bottom: 5px;">Move</div> <div style="font-size: x-small;"> PS -27B5 <input type="checkbox"/> Bot -27B3 <input checked="" type="checkbox"/> </div>	Belt entrance <div style="margin-bottom: 5px;">Step forward</div> <div style="margin-bottom: 5px;">Micro Step forward</div> <div style="margin-bottom: 5px;">Micro Step backward</div> <div style="margin-bottom: 5px;">Set zero</div>	Slider pip star <div style="margin-bottom: 5px;">Move</div> <div style="font-size: x-small;"> PS -28B6 <input type="checkbox"/> Bot -28B8 <input type="checkbox"/> </div>
--	---	--	---	--

6.2.6.2 Entrance II

Testing components: Shaker and bottle opener.

Settings Password accepted! On-Screen Keyboard Exit settings

Password Common Device parameters Data transfer Program parameters Test Default values Info

Entrance I Entrance II Pipetting Outlet Capping unit PLC Test run

Shaker Clamping Bottle opener Stopper claw Clamping

Up Down top -30B1 down -30B2 close-30B3 open-30B4

To drop duct To bottle top -30B6 down -30B5 P-Bot-30B8 P-Duc-30B7

Close Open drop-s.-27B8

Shakers and bottle openers operate with compressed air and only operate with an approved safety circuit. That means that the shaker/bottle opener cover and the bottle closer hood must be in place.

6.2.6.3 Feed

Testing components: Feed buffer, pipetting star, ejector (pusher star > outlet belt), an in-pusher (pusher outlet belt > pipetting star), rotary plate and barcode scanner.

The "Read BC" field under the control panel shows the result of the read attempt.

Settings Password accepted! On-Screen Keyboard Exit settings

Password Common Device parameters Data transfer Program parameters Test Default values Info

Entrance I Entrance II Pipetting Outlet Capping unit PLC Test run

Entrance buffer Pipetting Star Slider star out Slider star in Rotary plate Barcode scanner

Vorward Backward front -29B1 back -32B7 Bot -29B4

Step right Step left Micro Step right Micro Step left Set zero

Move PS -28B7 Bot -29B5 Move PS -29B2 Bot -29B3

Start Stop Read BC

6.2.6.4 Output

Testing components: Outlet belt, Round magazine 2, pusher in Round magazine 2, pusher in error buffer, pusher in green buffer, pusher in orange buffer, pusher in blue buffer.

6.2.6.5 Bottle closer

Testing components: Bottle closer.

The bottle closer operates with compressed air and only operates with an approved safety circuit. This means that the bottle closer hood and the shaker/bottle opener cover must be present.

6.2.6.6

PLC

Under these subcategories, it is possible to read out or describe registers from the PLC.

Settings
Password accepted!

On-Screen Keyboard
Exit settings

Password
Common
Device parameters
Data transfer
Program parameters
Test
Default values
Info

Entrance I
Entrance II
Pipetting
Outlet
Capping unit
PLC
Test run

Read register

Reg:

dec: -/-

hex: -/-

bin: -/-

Read

Write register

Reg:

Value: (Enter hex value as "0x...")


Write

Test
PLC

Read register

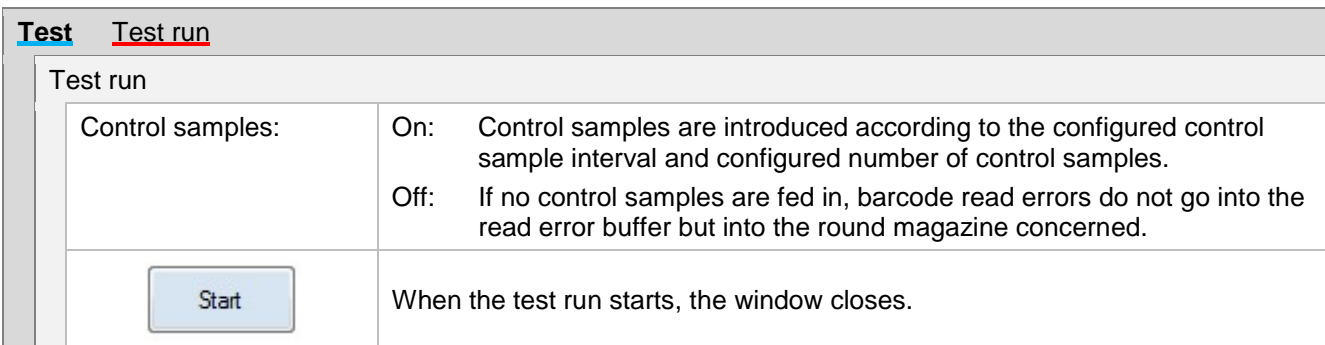
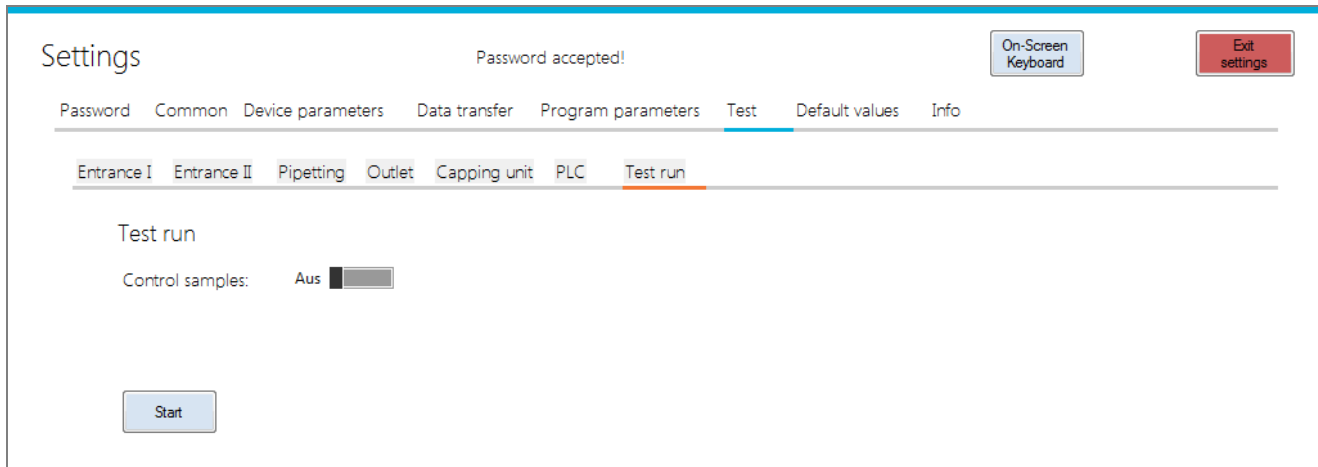
Reg:	Enter the decimal number of the register to be read here.
dec:	Result in decimal
hex:	Result in hexadecimal
bin:	Result in binary
Read	Implement read access

Write register

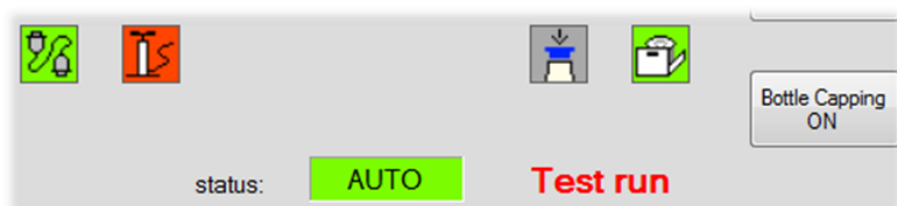
Reg:	Enter the decimal number of the register to be described here.
Value:	Value to be used to describe the register. (Only integral values are permitted, entries starting with "0x" are interpreted as hexadecimal values).
Write	Implement write access  <i>Describing registers can lead to PLC malfunctions. Values should only be read and written for service purposes.</i>

6.2.6.7 Test run

Here, you can start a test run with sample bottles without the CPC.



While a test run is running "**Test run**" appears on the screen next to the status display.



6.2.7 Default values

All bottles and lots can be deleted from visualisation under “Delete bottles / lots”.

Important: By pressing this button, any bottles still on the table will no longer exist for the controller and must be removed by hand.

Settings Password accepted! On-Screen Keyboard Exit settings

[Password](#) [Common](#) [Device parameters](#) [Data transfer](#) [Program parameters](#) [Test](#) **[Default values](#)** [Info](#)

Reset parameter to factory setting.

Caution:
By pressing the "DEFAULT" button, all settings are set to default (delivery) values!
The Change will only take effect after restarting the programm.

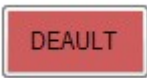
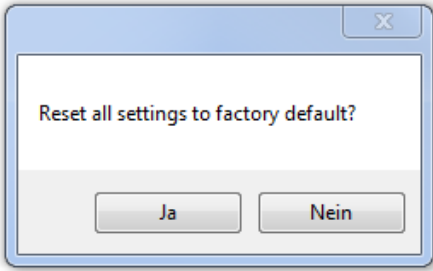

DEFAULT

Delete bottles / lots

Caution:
By pressing the "DELETE" button, the lots and all bottles will be removed from the visualization.
All bottles on the table must be removed by hand.

DELETE

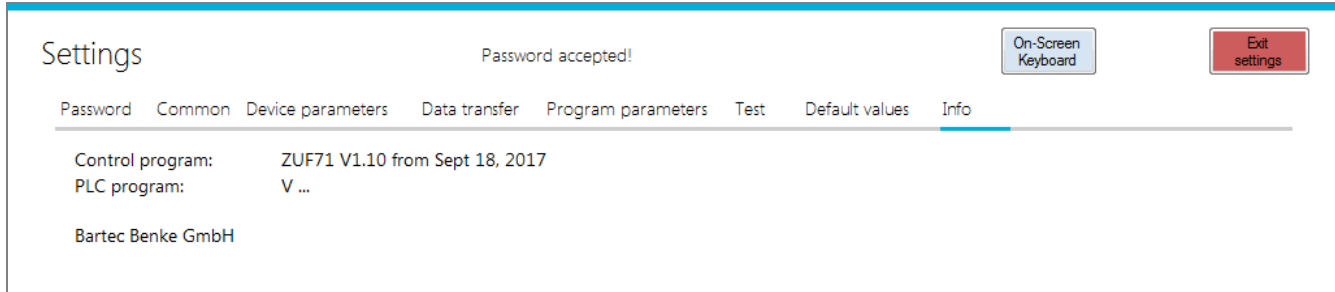
Default values

	<p>Reset parameter to factory setting</p> <p>All the settings are reset to the factory settings. The new values will only be implemented after the program is restarted.</p> <p>Important: <i>This action will also wipe the individual data necessary for normal operation (e.g. host connection). They must be re-entered again afterwards.</i></p> <p>They will only be implemented after the prompt has been confirmed with "Yes".</p> <div style="text-align: center;">  </div>
	<p>Delete bottles / lots</p> <p>Deletes all bottles and lots from the visualisation.</p> <p>Important: <i>By pressing this button, any bottles still on the table will no longer exist for the controller and must be removed by hand.</i></p>

6.2.8

About

Shows information about the unit.



7 Cleaning



- After unlocking the feed area, switch off the main switch of the unit before beginning maintenance and cleaning.
- Lay down any parts removed in a safe place. Falling parts which are heavy can injure you.

We recommend thoroughly cleaning the feed table at least once a week. While doing so, remove all removable parts.

With the exception of the shaker and the bottle guide on the back, you do not need any tools or other aids for dismantling and assembly. All parts plug in or are fastened with knurled screws.

Belts, star wheels and pushers can be cleaned in a dishwasher.



- The water temperature must not exceed 55 °C!
- The gripper of the bottle opener device must be cleaned by hand.
- When reassembling, make sure that all the parts are in the correct position and that the drivers of the driven parts are engaged correctly.

We recommend using a commercial plastic cleaner or water with detergent to clean the plastic hoods. Use a soft cotton cloth for cleaning.

Do not use a scouring agent, scouring sponge or solvent for cleaning.



Protect your hands with rubber gloves!



The illustrations on the following pages show examples for dismantling individual parts.

Many parts are of similar design and are interchangeable.

Some parts have special recesses or slightly deviate in shape to parts with a similar appearance. These must only be installed at the intended position.

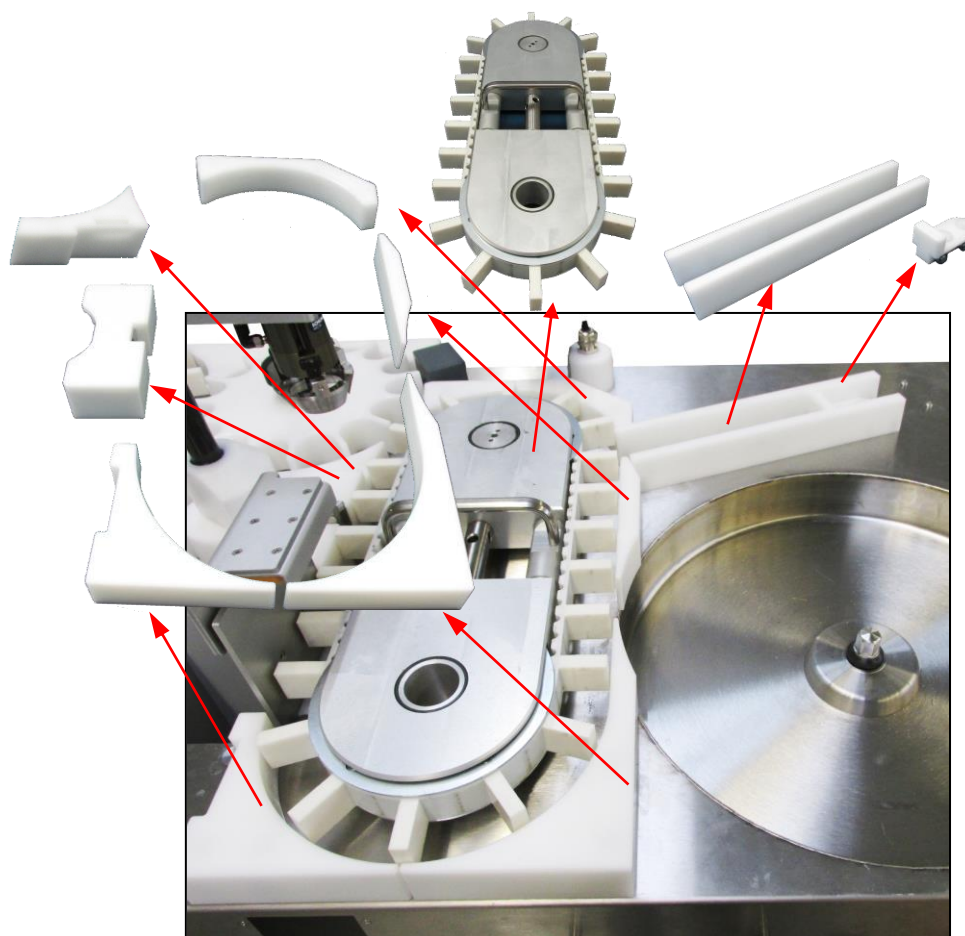
Make a note of or outline the best position and location of the parts before removing them.

7.1 Entrance area

The entrance area must be cleaned every day to prevent milk drying on the surface, particularly in the area of the shaker and bottle opener.

As shown in the illustration, most of the mountings can be removed without tools.

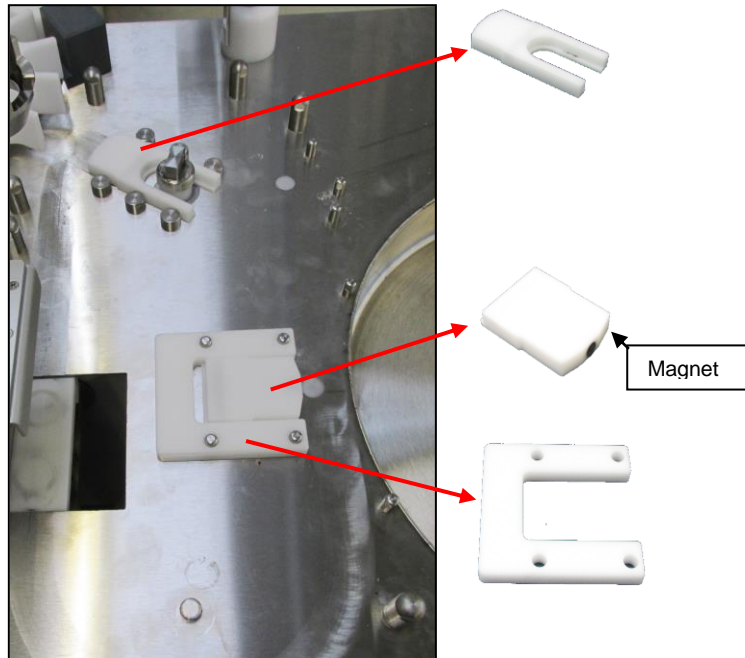
Bottle guides



- After removing the parts, use a damp cloth to clean the table surface, the conveyor belt and the reciprocating feeder of the control sample buffer.
- The belt parts can be cleaned in the sink or even in the dishwasher.

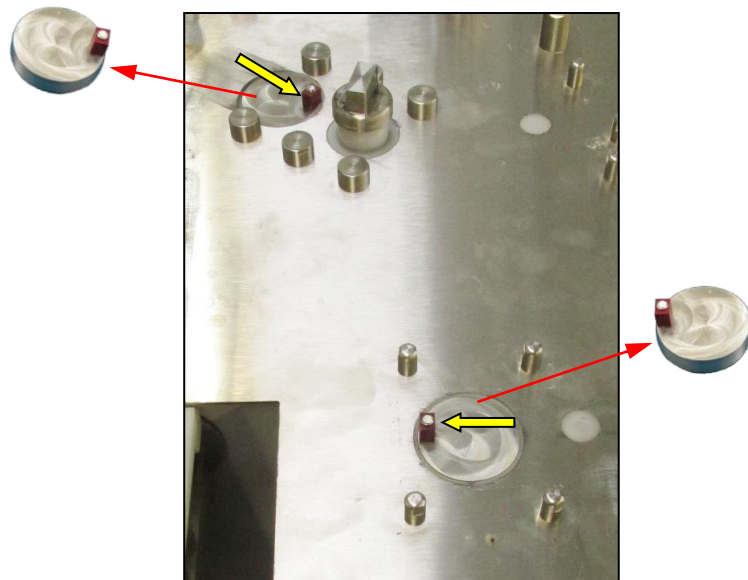
Pusher

- Clean the parts in the sink or in the dishwasher.



When reinstalling the pushers in the entrance area, make sure that the pusher contains a magnet facing the round magazine.

Pusher drive



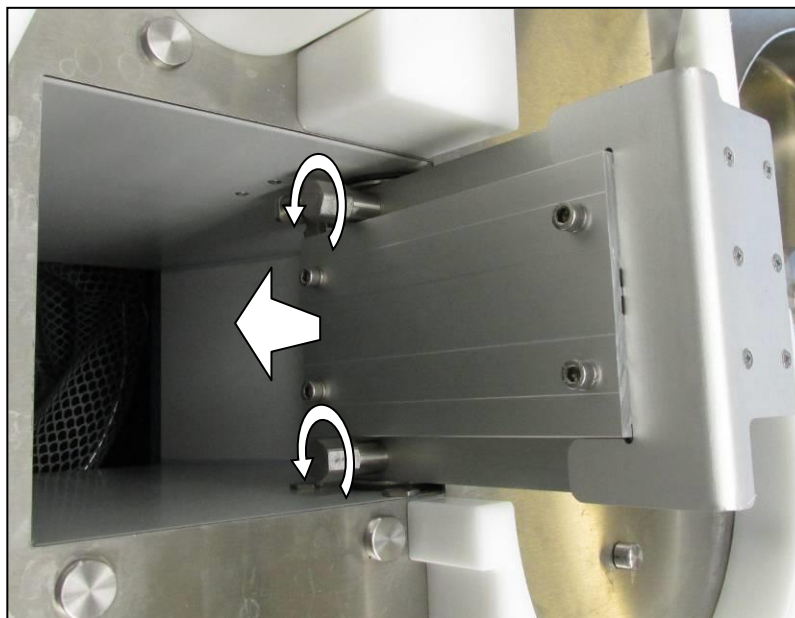
- Clean the pusher channels with a damp cloth.



Always install the pusher drives so that the drivers are in the position shown in the picture!

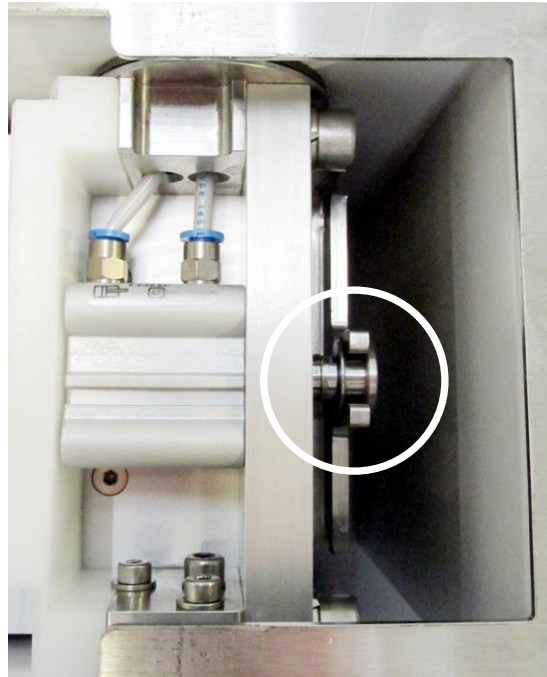
Shaker

- Remove the shaker hood.
- Remove the two threaded pins (ring spanner AF 14)
- Pull the shaker off towards the rear.



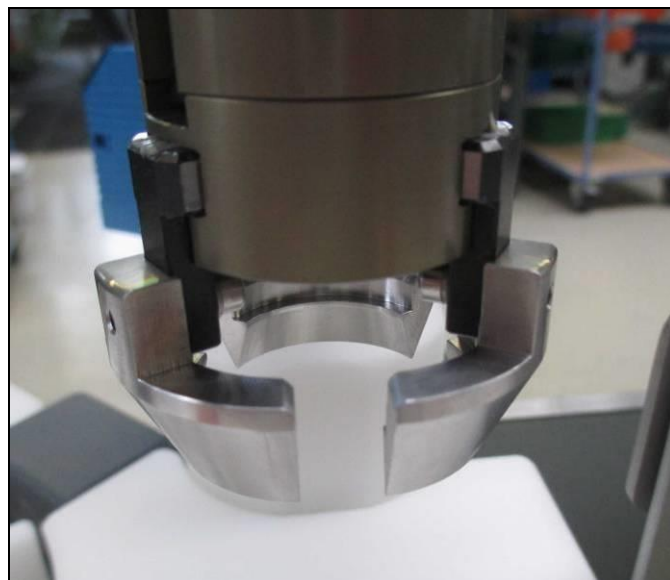
- Clean the shaker in the sink with a soft brush.
- Wipe the shaft with a damp cloth.

- When installing, push the fork of the shaker into the groove on the driver of the lock cylinder.



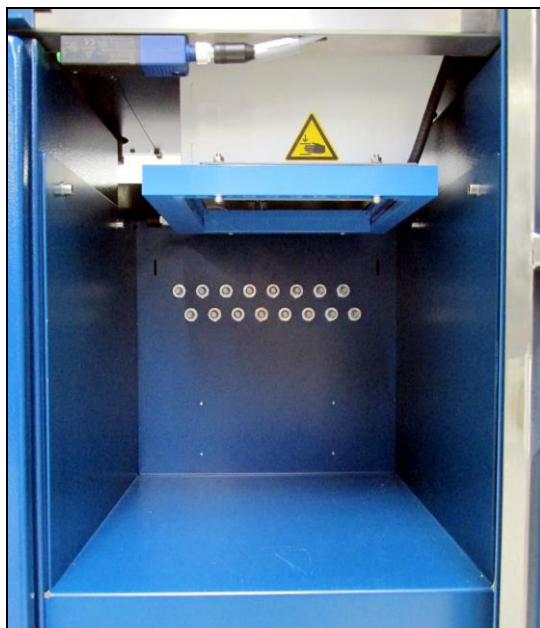
Bottle opener

- Clean the gripper jaws of the bottle opener with a damp cloth.



Box for stopper buckets

- Open the door and remove the stopper bucket.



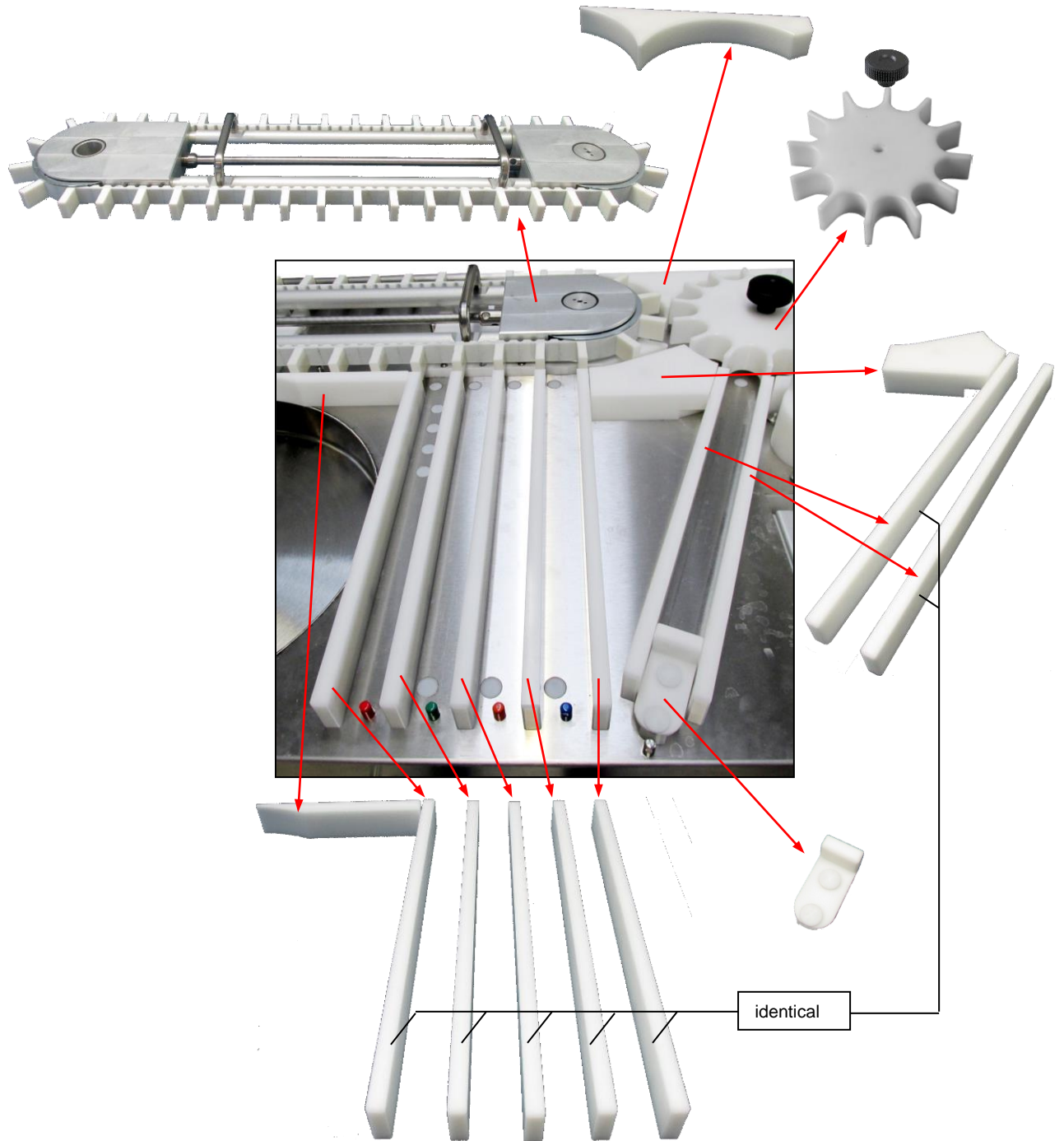
- Wipe out the box with a damp cloth and clean the stopper sensor.



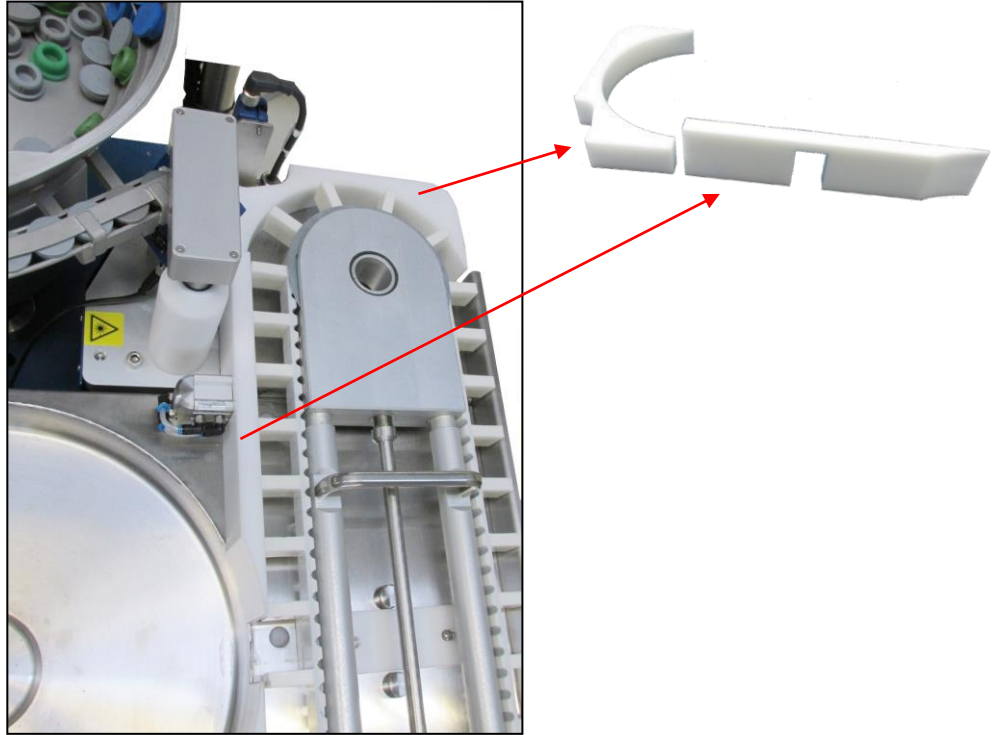
Ensure that the settings of the throttle valves on the rear wall of the box have not changed.

7.2 Feed and outlet area

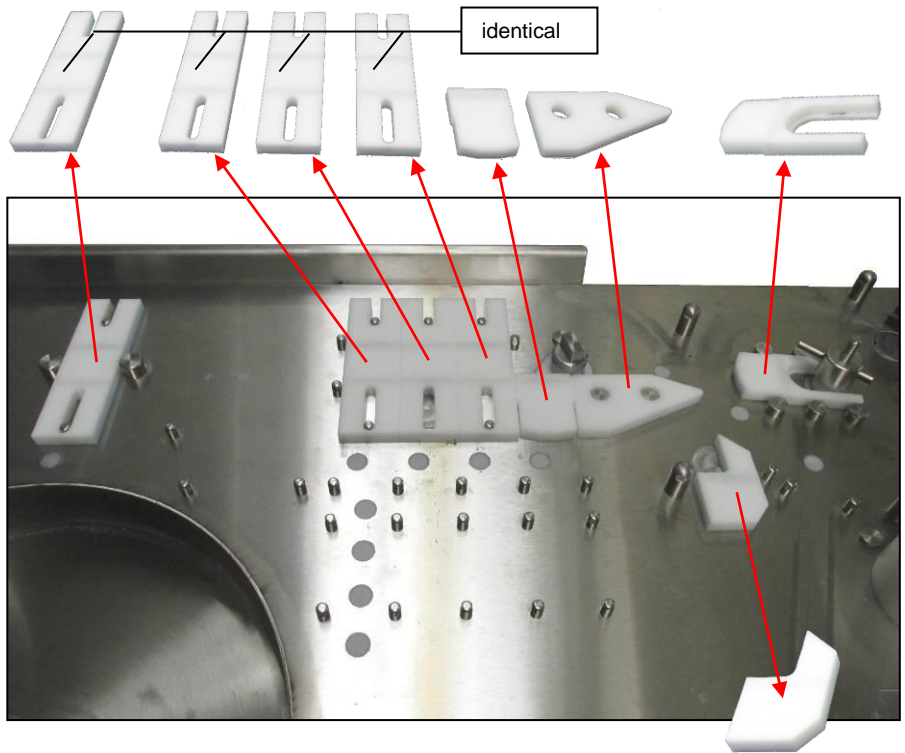
Bottle guides



- Use a soft brush to clean the conveyor belt and the reciprocating feeder of the supply buffer in the sink.
- The belt parts can be cleaned in the sink or even in the dishwasher.

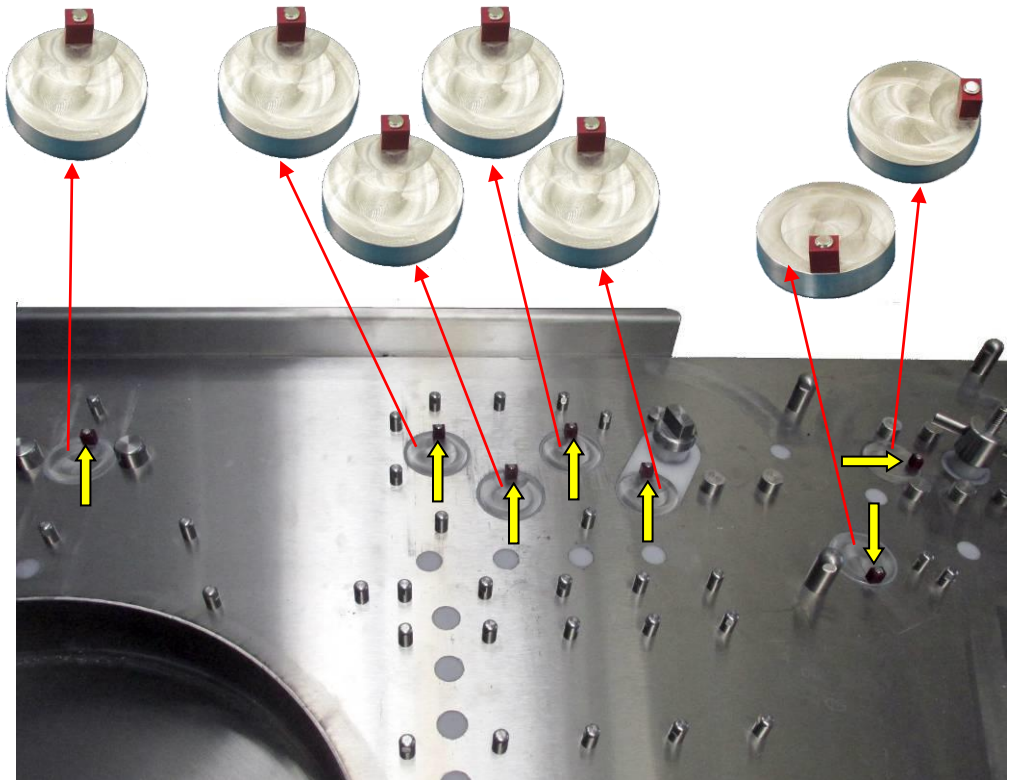


Pusher



- The pusher parts can be cleaned in the sink or even in the dishwasher.

Pusher drive



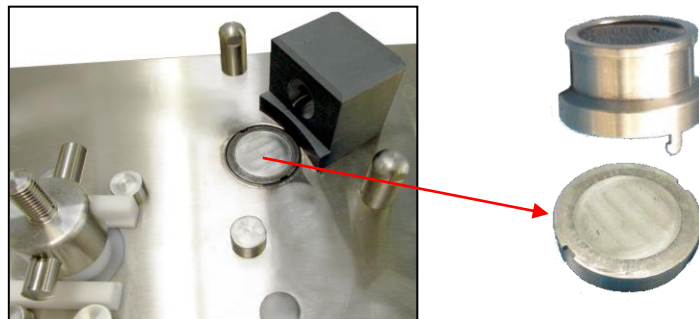
- Clean the pusher channels with a damp cloth.



Always install the pusher drives so that the drivers (red blocks) are in the position shown in the picture!

Magnetic plate

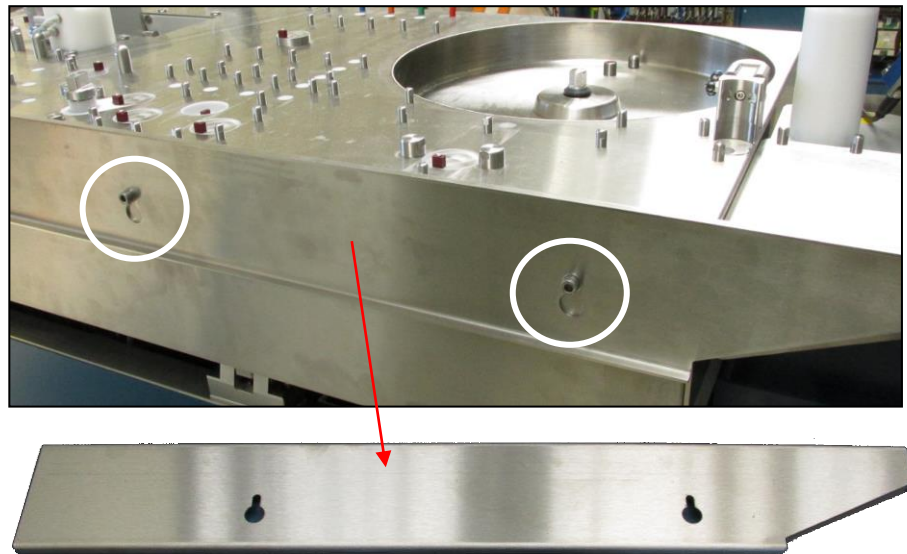
Hook the extraction tool into the magnetic plate by turning it slightly to the left and pull out the magnetic disc.



- Clean the magnetic plate and the channel with a damp cloth.

Bottle guide on the back

- Undo both Allen screws and remove the bottle guide.



- Clean the guide plate and the back of the table with a damp cloth.

Vibratory conveyor



- Empty the vibratory conveyor and wipe out the pot with a damp cloth.

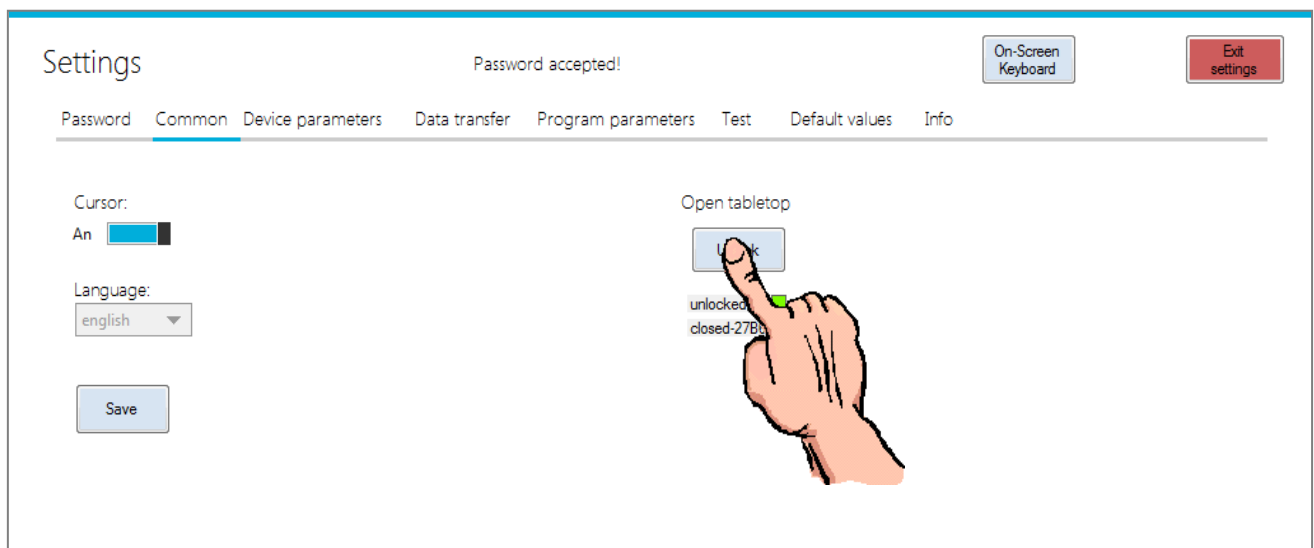
8 Maintenance

8.1 Opening feed area

The feed area will need to be opened for various different maintenance and repair activities.



- Remove the hood from the shaker/bottle opener.
- Remove any sample bottles from the table.
- Open "Settings" and unlock the feed area.



- Open the table.





After opening the table, make sure that the locking bar is resting against the left telescopic support to prevent it from lowering unintentionally.



Fold back the locking bar in order to close the table and slowly lower the table top. No longer reach in between table top and frame. (☞ chapter 2).



8.2 Compressed air service unit

After opening the table, the compressed air service unit is accessible (☞ Section 8.1).



- Check the pressure indicator at regular intervals. The pressure must be 5-6 bar. Adjust it if necessary by turning the black cap.



Shut off the compressed air supply and release the pressure from the line before starting further maintenance work on the compressed air service unit.

- Clean the filter element and the container if necessary.
- Replace the filter element if heavily contaminated.

8.3 Cleaning / maintenance schedule

Measure to be taken	every day	every week	every month	Comments
Cleaning the feed station (Section 7.1 and 7.2)				
Table and bottle guides	X			
Conveyor belts	X			
Pusher and drive discs		X		More often if necessary
Wipe shaker	X			
Stopper gravity feed chute	X			
Box for stopper bucket		X		More often if necessary
Remove shaker		X		More often if necessary
Bottle opener	X			
Shaker / bottle opener hood	X			
Magnetic plate		X		
Vibratory conveyor		X		More often if necessary
Bottle closer hood		X		
Maintaining the compressed air unit (Section 8.2)				
Check the pressure		X		
Clean / replace filter				as necessary
Lubrication				
Shakers - pivot bearings		X		a drop of oil
Belts - bearings		X		a drop of oil in each case

8.4 Wiring diagram

The circuit diagram can be requested from BARTEC if necessary.

8.5 Spare parts, drawings

Spare parts and drawings can be requested from BARTEC if necessary.

Special tools can be requested from BARTEC if necessary.

9 Eliminating faults

Faults may only be eliminated by authorised technical personnel.

9.1 Shutting down the feed station

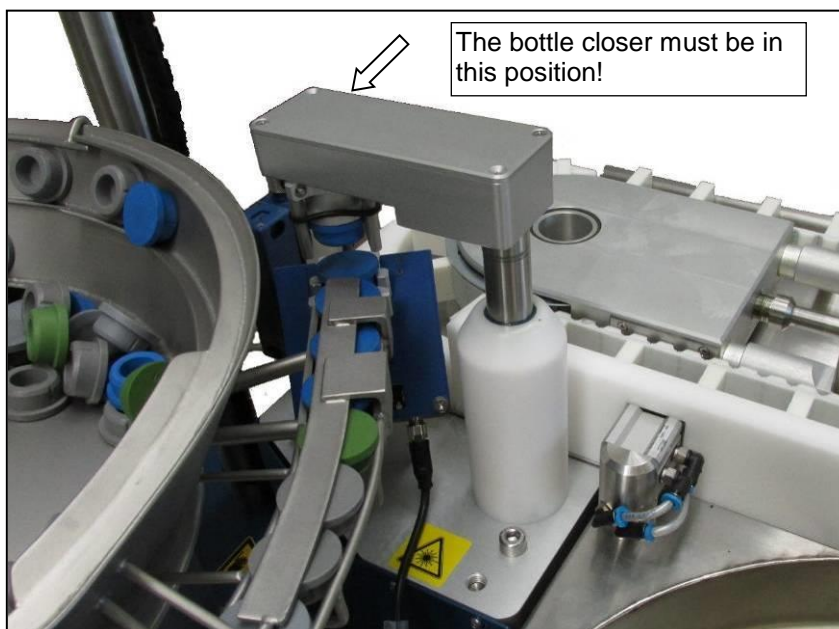
If the feed station can no longer be operated safely (e.g. if there is visible damage) it must be put out of operation immediately. Switch off the main switch and shut off the compressed air supply.



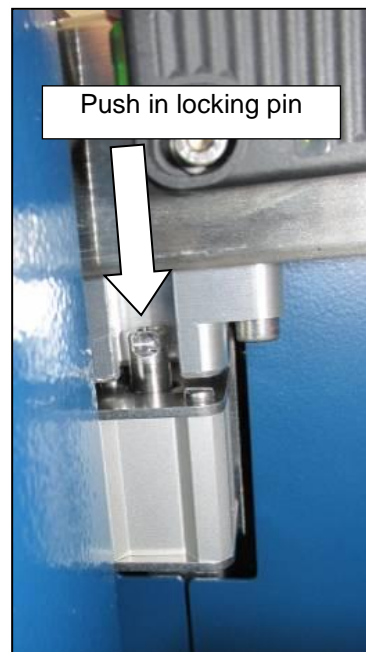
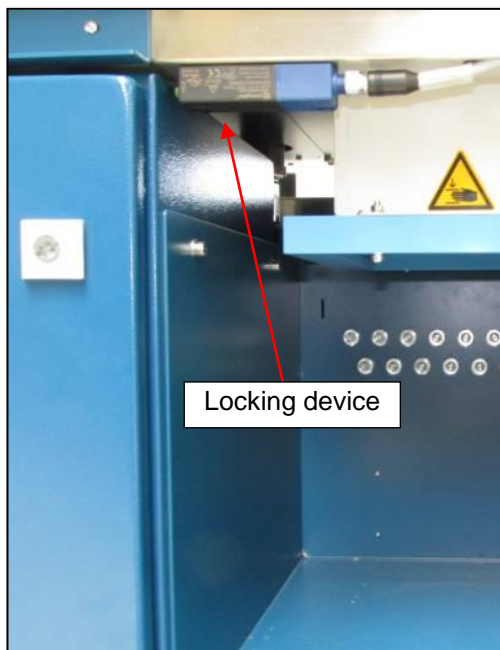
9.2 Opening the feed area with no compressed air and no electrical power



If the table is dead and without any electrical power or compressed air, you must remove the hood of the bottle closer and swing back the bottle closer to the stoppers holder by hand.



- Open the stopper bucket box to access the table lock (top left).

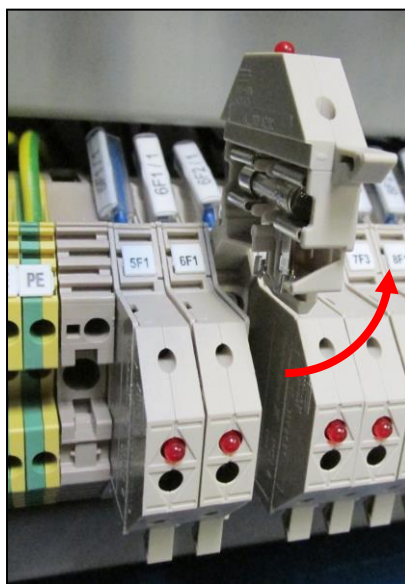


9.3 Changing fuses

The fuses are located in the two control cabinets on the left and right of the feed station.

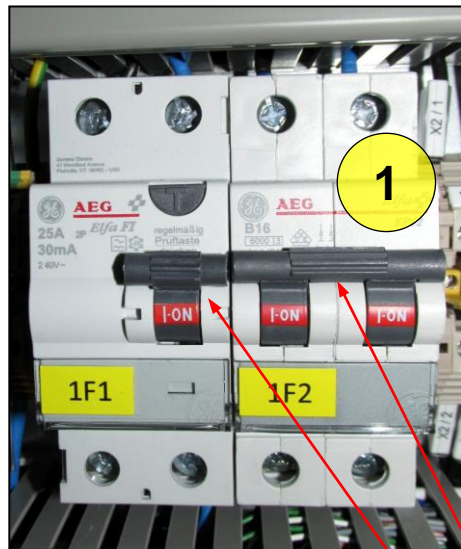
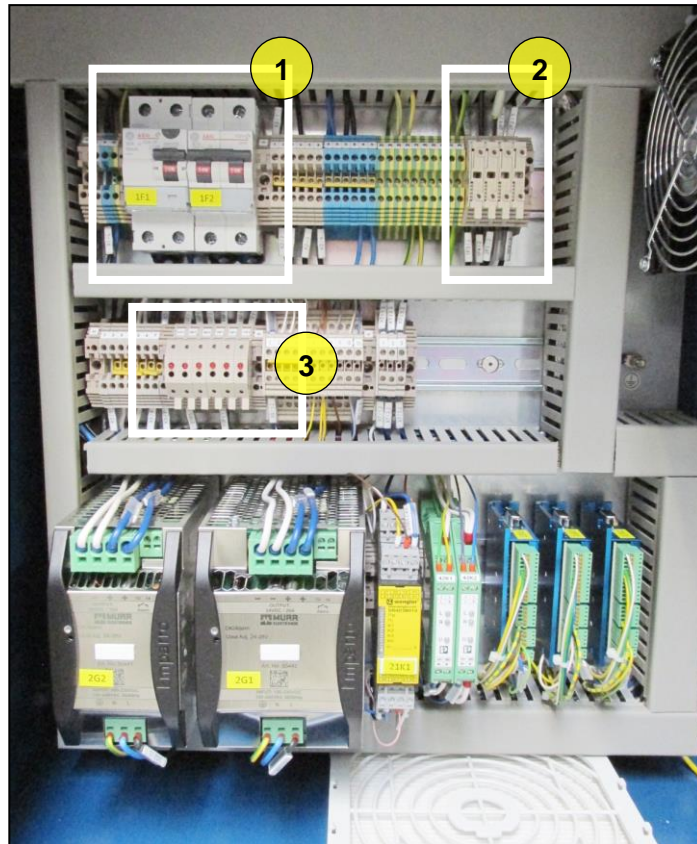


- Open the control cabinet with the key which belongs to it. You will recognise a defective 24V DC fuse if there is mains voltage at a red illuminated LED.
- Disconnect the unit from the mains if you need to change a fuse.
- Open the fuse holder upwards and change the defective fuse for a new one.



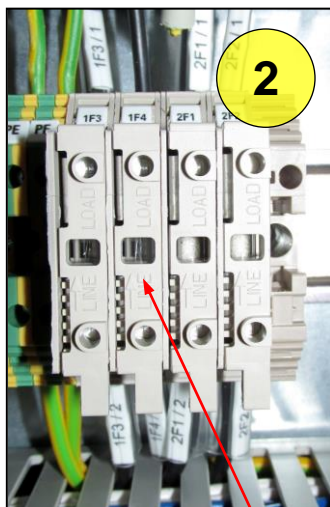
The following pages show the positions of the fuses and provide an overview table of all the fuses (🔗 Page 73, 74).

Control cabinet right (mains 230V AC / mains 24V DC)

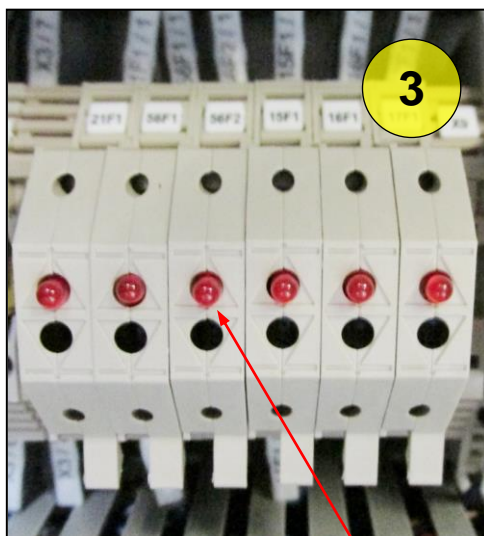


1F2 (line circuit breaker)

Residual current circuit breaker

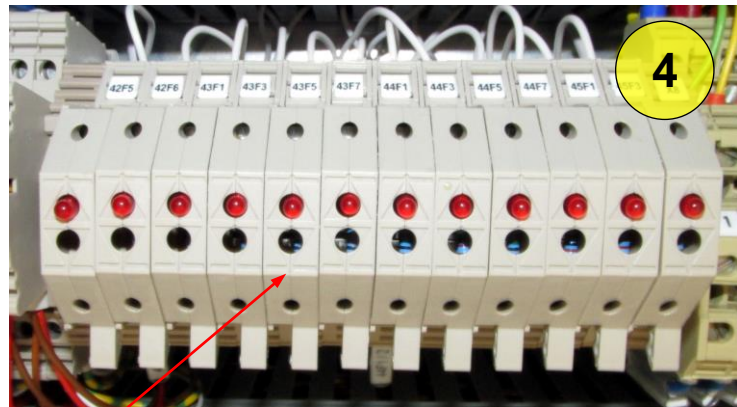
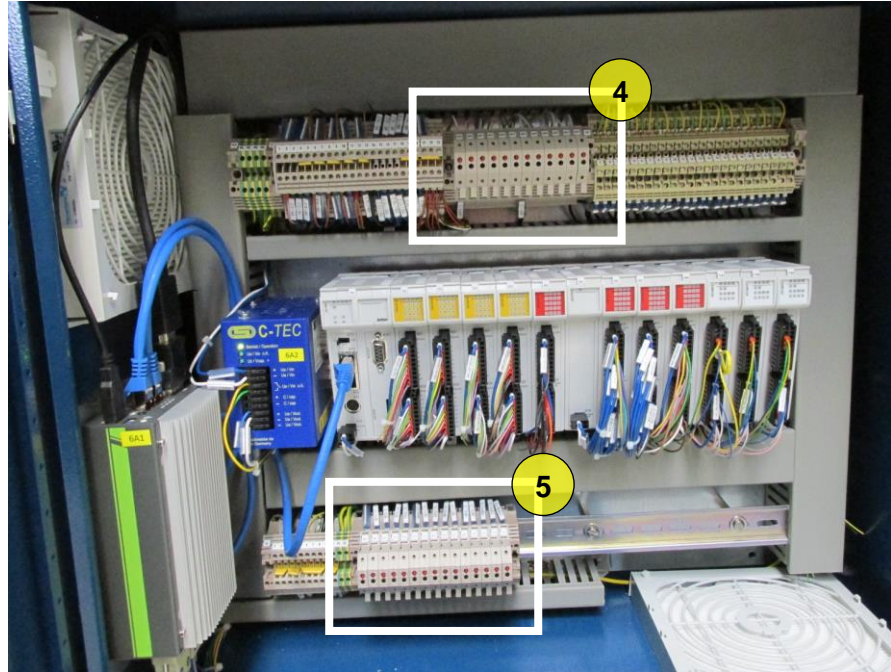


1F3; 1F4; 2F1; 2F2
(from left to right)

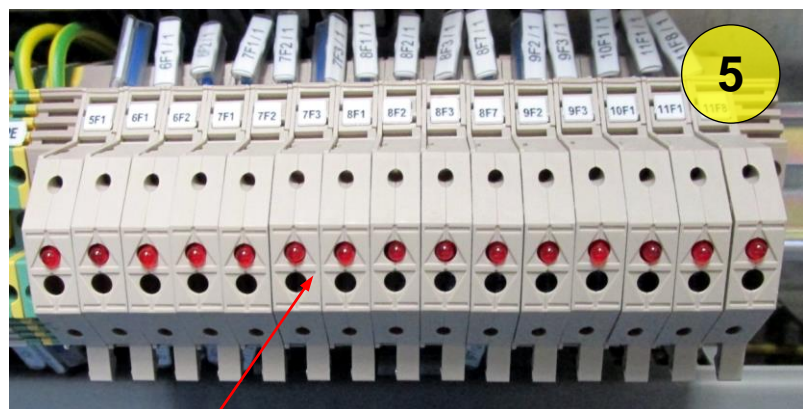


2F1; 56F1..2; 15..17F1
(from left to right)

Control cabinet left (controller 24V DC)



42F5..6; 43F1,3,5,7;
44F1,3,5,7; 45F1,3;
(from left to right)



5F1; 6F1,2; 7F1..3; 8F1..3,7;
9F2,3; 10F1; 11F1,8
(from left to right)

Table of fuses		
Labelling	Part	Function
Control cabinet right (mains 230V AC)		
+N-1F1	FI circuit breaker 25A 0.03mA	Residual current circuit breaker
+N-1F2	Line circuit breaker B16A 2pol	Main fuse
+N-1F3	Fine wire fuse 5x20 M1A	Cabinet fan
+N-1F4	Fine wire fuse 5x20 M1A	Monitor
+N-2F1	Fine wire fuse 5x20 M4A	Power supply 24VDC 20A
+N-2F2	Fine wire fuse 5x20 M2A	Power supply 24VDC 10A
Control cabinet right (mains 24V DC)		
+N-21F1	Fine wire fuse 5x20 M0,63A	Safety circuit
+N-56F1	Fine wire fuse 5x20 M2A	Motor RM1
+N-56F2	Fine wire fuse 5x20 M2A	Motor RM2
+N-15F1	Fine wire fuse 5x20 M3,15A	Stepper motor pipetting star
+N-16F1	Fine wire fuse 5x20 M3,15A	Stepper motor belt entrance
+N-17F1	Fine wire fuse 5x20 M3,15A	Stepper motor belt outlet

Table of fuses		
Labelling	Part	Function
Control cabinet left (controller 24V DC)		
+S-5F1	Fine wire fuse 5x20 M1A	Barcode scanner
+S-6F1	Fine wire fuse 5x20 M2A	Control computer buffer module
+S-6F2	Fine wire fuse 5x20 M2A	Control computer
+S-7F1	Fine wire fuse 5x20 M3,15A	PLC_24V
+S-7F2	Fine wire fuse 5x20 M0,63A	PLC Input DI_1_24V
+S-7F3	Fine wire fuse 5x20 M0,63A	PLC Input DI_2_24V
+S-8F1	Fine wire fuse 5x20 M0,63A	PLC Input DI_3_24V
+S-8F2	Fine wire fuse 5x20 M0,63A	PLC Input DI_4_24V
+S-8F3	Fine wire fuse 5x20 M0,63A	PLC Input DI_5_24V
+S-8F7	Fine wire fuse 5x20 M1A	PLC Input/Output DO16_9A3
+S-9F2	Fine wire fuse 5x20 M1A	PLC Output DO16_9A2
+S-9F3	Fine wire fuse 5x20 M1A	PLC Output DO16_9A3
+S-10F1	Fine wire fuse 5x20 M1A	PLC Output DO16_10A1
+S-11F1	Fine wire fuse 5x20 M2A	PLC MIX_24V
+S-11F8	Fine wire fuse 5x20 M2A	Encoder_24VDC
+S-42F5	Fine wire fuse 5x20 M1A	Motor control sample buffer
+S-42F6	Fine wire fuse 5x20 M1A	Motor pusher belt entrance > star
+S-43F1	Fine wire fuse 5x20 M1A	Motor pusher RM1
+S-43F3	Fine wire fuse 5x20 M1A	Motor pusher RM2
+S-43F5	Fine wire fuse 5x20 M1A	Motor pusher star > belt outlet
+S-43F7	Fine wire fuse 5x20 M1A	Motor feed buffer
+S-44F1	Fine wire fuse 5x20 M1A	Motor pusher error buffer
+S-44F3	Fine wire fuse 5x20 M1A	Motor pusher buffer gn
+S-44F5	Fine wire fuse 5x20 M1A	Motor pusher buffer or
+S-44F7	Fine wire fuse 5x20 M1A	Motor pusher buffer bl
+S-45F1	Fine wire fuse 5x20 M1A	Motor pusher repeat
+S-45F3	Fine wire fuse 5x20 M1A	Motor rotary plate
