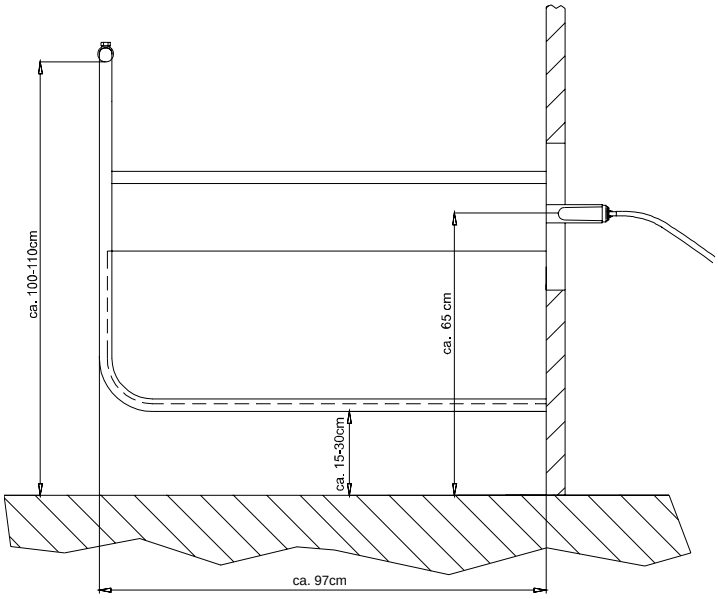
February 1, 2007

Instruction Manual

Automatic Calf Feeder
CE1 and VE1 Combi
Program version 03.00

TAK5-CE1-25 / TAK5-VE1-38

Mounting the feeding station



Identification systems with Squelch values and identification ranges

System	**Squelch** (default values)	**Identification range**
Collar (X-Responder-System)	0	20 - 25 cm
Eartag in the collar Eartag (Nedap-System)	0	15 - 18 cm
Eartag in the collar Eartag (Tiris-System)	-	15 - 18 cm

1 Introduction

Dear customer, we would like to congratulate you on the purchase of this automatic feeder. Depending on the machine type, this feeder can be operated as a Stand Alone or it can be connected to a feed computer.

> Carefully read and understand this instruction manual before installing the automatic feeder. This is an important precondition for safe and trouble-free operation.

> Always keep this instruction manual ready to hand and pass it on to the next user.

> Correct operation and proper care and maintenance are the prerequisites for trouble-free functioning of the automatic feeder.

1.1 Safety instructions

> Only qualified and authorized service personnel is allowed to install, operate and repair the automatic feeder.

> In addition to the instruction manual, please follow any regulations for accident prevention in force in the operator’s country as well as the rules of engineering practice for safe and expert working.

> Incorrect inputs may cause harm to animals’ health. Therefore, always check whether all inputs are correct and the automatic feeder is running properly.

> Constantly check your livestock and the functions of the automatic feeder. If the animals are not or insufficiently provided with feed by the automatic feeder, make sure to feed them elsewhere.

> Remove any prominent parts from the animal’s house (e. g. pipe ends), because collars with transmitters may get caught in them.

> Make sure that a pipe disconnector is installed. Pipe disconnectors are devices that prevent pollution by backflow (cleaning water or milk) of potable water.

1.2 Application

1.2.1 Intended use of the automatic feeder

> Use the automatic feeder only for liquid calf feeding.

> Only use commercially available milk powders and additives.

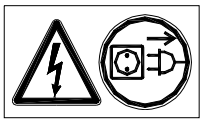
> Make sure that the microbiological composition of the milk being fed to the calves is immaculate. Otherwise, severe scours may be the consequence thus affecting animals' health.

1.2.2 Adverse use of the automatic feeder

Do not use the automatic feeder to feed e.g.:

- milk starting to turn sour in case it should be heated before being fed.

1.3 Safety signs



Danger! Hazardous voltage! Electric shock hazard!
Do not touch any live parts, otherwise current will flow through your body. This may cause severe physical injury.
Turn off and lock out power before carrying out any kind of operations on the labeled parts.

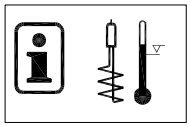
Warning!
Automatic start-up!

Keep hands clear from the crushing danger area as long as parts can move. For cleaning, use the tools contained in the scope of delivery.

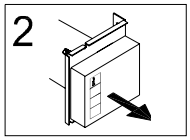
1.4 Information signs on the automatic feeder

Below you will find the description of each individual information sign located in or on the automatic feeder.

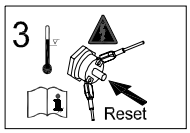
Reset the safety temperature limiter.



Guidelines for resetting the safety temperature limiter.

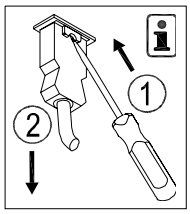


Remove the metal covering.



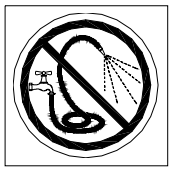
Push the red Reset button. Follow the instructions in this manual.

Cut off the power supply of the boiler.



Before removing the boiler, it is imperative to cut off power supply. To do so, loosen the clamps and pull the plug.

Do not spray wash the automatic feeder.



Wipe the automatic feeder only with a moist cloth. Never use a high-pressure cleaner or similar to clean the automatic feeder.

1.5 Icons used in this instruction manual

Below you will find the icons and abbreviations used in this instruction manual.

SA The text passages marked with this icon are only valid if the automatic feeder Compact is operated as a Stand Alone.

SM The text passages marked with this icon are only valid if the automatic feeder is connected to a feed computer.

C The text passages marked with this icon are only valid for the automatic feeder Compact.

V The text passages marked with this icon are only valid for the automatic feeder Vario.

VF The text passages marked with this icon are only valid for the automatic feeder Vario with Farmer-equipment.

VP The text passages marked with this icon are only valid for the automatic feeder Vario with Profi-equipment.

\+ Option: a white plus on a black background marks the description of optional functions or equipments.

 **Warning**: it is imperative to follow the instructions contained in this manual to prevent damage to both humans and animals.

 **Caution**: please observe this information to prevent damage to the mechanical or/and other components of the automatic feeder.

 **Note** and **example**: this icon points out examples, important information and additional explanations on the operation of the automatic feeder.

Links to additional explanations are represented as follows: Example (→ **calibration**). Where to find the corresponding notes on the subjects in brackets (here: calibration) is indicated in the index.

1.6 Specific terms

In this chapter you will find an explanation of specific terms used in this instruction manual.

Service personnel

This term stands for

- electricity specialists
- trained on operating, servicing and repairing the automatic feeder and its accessories.

Electricity specialist

An electricity specialist is defined as a specifically trained person able to detect and avoid dangers which may arise from electricity.

1.7 Abbreviations used in this instruction manual

Abbreviation	Meaning
abs.	absolute
add. disp.	additive dispenser
adlib	ad libitum
B-ant.	B-antenna
circ. pump	circulation pump
cl. mixer	mixer cleaning
clean teat	clean teat
close?	close?
conc.	concentration
deterg. pump	detergent pump
deviations	deviations
dos.	dosage
drain. time	draining time
empty v. teat	empty via teat
feed. speed	feeding speed
full mixer	full mixer
gr A (B)	group A (B)
gradient	gradient control
GZ	flexible time
HE	heat exchanger
hose	hose
IV	interval
MAP	manual training pump
max.	maximum
milk ratio	milk ratio
min. temp.	minimum temperature
mixer drain	mixer draining valve
MP	milk powder
n.	not
No.	number
P1-5	period 1 - 5
powd. motor	powder motor
rel.	relative
sensor	feed sensor
servo	servo control
temp.	temperature
train. pump	training pump
turn off delay	turn off delay
turn-on delay	turn-on delay
unknown	unknown
w. add.	with additive
w. entit.	with entitlement
water bo.	boiler water
with add.	with additive
w.o. add.	without additive
w.o. entit.	without entitlement

1.8 Contact details of Förster-Technik

If you have further questions or need a specific advice, contact us directly at any time. Before calling us, please write down the information indicated on the rating plate (device type, device number) which is located at the left of the chassis, as well as the program version.

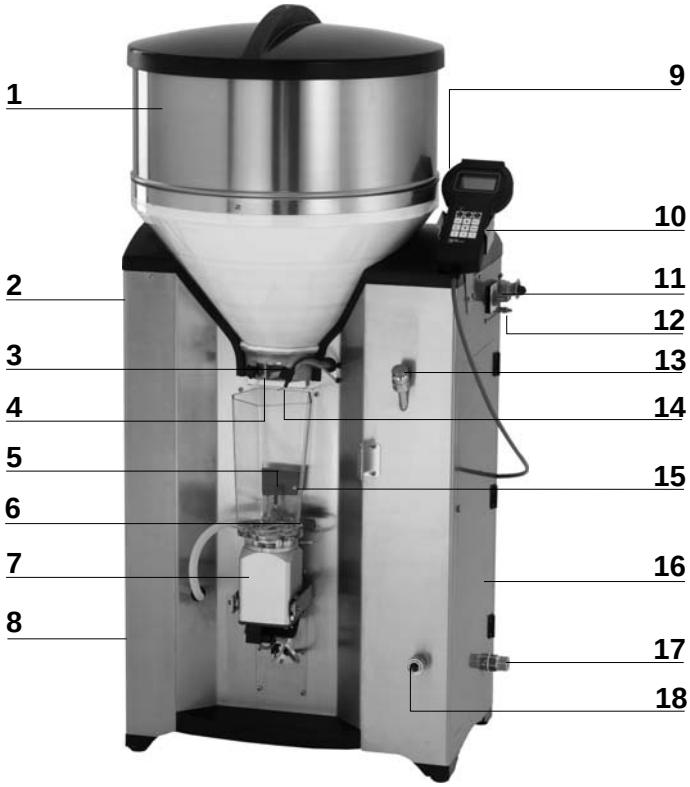
Our address:
Förster-Technik GmbH
Gerwigstraße 25
D-78234 Engen
fon: +49 / (0)7733 / 9406 - 0
fax: +49 / (0)7733 / 9406 - 99
info@foerster-technik.de
www.foerster-technik.de

1.9 Components

1.9.1 ⓒ Compact Combi

1 Milk powder hopper with top section	9 Rear side of the chassis: control unit with boards
2 Rating plate (not illustrated)	10 Hand-held terminal
3 Milk or water outlet	11 Connecting screw for equipotential bonding
4 Milk powder outlet	12 Control switch
5 Bar electrode	13 Nozzle for sponge cleaning
6 Temperature sensor	14 Right side of the chassis: water and milk valve, electronic heat exchanger, safety temperature limiter, milk pump
7 Mixer (mixer jar + mixer motor)	15 Water supply
8 Left side of the chassis: box valve(s), training pump, ⊕ mixer draining valve, ⊕ detergent container, ⊕ detergent dosing pump	16 Milk supply

1.9.2 Vario Combi

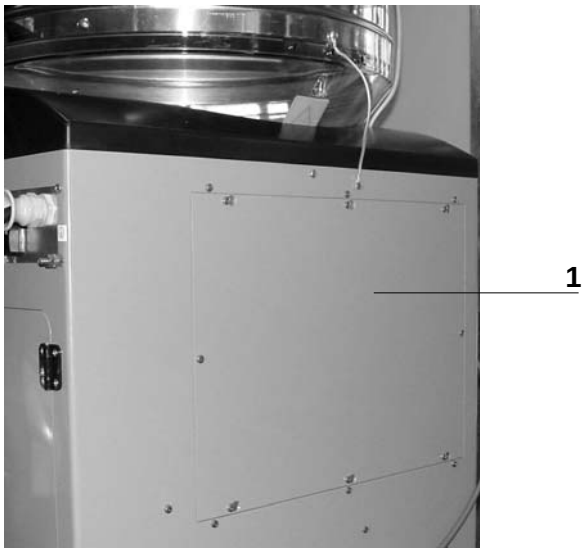


1	Milk powder hopper with top section	10	Hand-held terminal
2	Rating plate (not illustrated)	11	Main switch
3	Milk or water outlet	12	Connection screw for equipotential bonding
4	Milk powder outlet	13	Nozzle for sponge cleaning
5	Bar electrode	14	Supply electrode
6	Temperature sensor	15	Spot electrode for 250 ml-portions
7	Mixer (mixer jar + mixer motor)	16	Right side of the chassis: water and milk valve, electronic heat exchanger, safety temperature limiter, stainless steell milk pump
8	Left side of the chassis: box valve(s), training pump, mixer draining valve, ⊕ detergent container, ⊕ detergent dosing pump	17	Water supply
9	Rear side of the chassis: control unit with boards	18	Milk supply

1.9.3 Processor and relay power board

The processor and the relay power board are located at the rear (1) of the chassis.

Warning: the control unit is to be opened and servicing of the processor and the relay power board is to be carried out only by service personnel.



(→**Wiring diagram**)

1.9.3.1 Relay power board

On the relay power board are located among others:

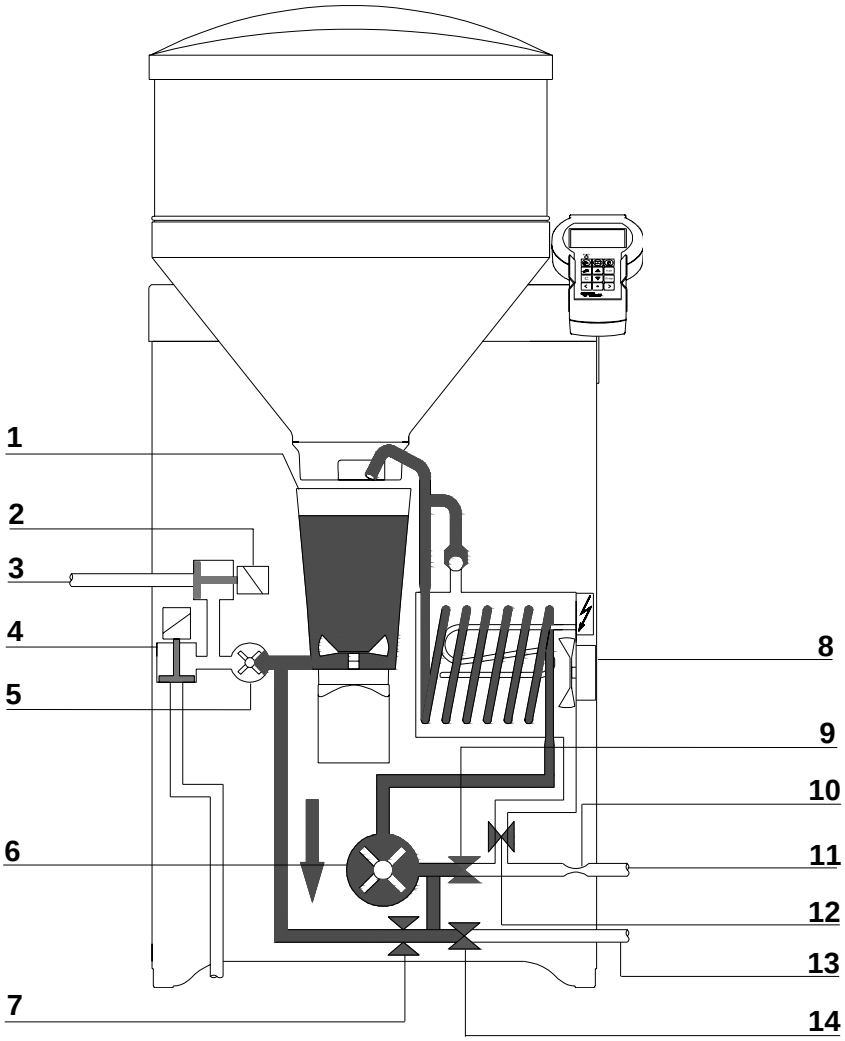
- the transformer for the low voltage supply of the processor control,
- the relays and connecting terminals for external components as well as the microfuses,
- the SA interface for the PC or the SM interface board for the connection to the feed computer,
- the toggle switch (right) to switch the heating of the milk powder outlet (vapour screen) on and off,

- the toggle switch (left) to switch the heating cable and the mixer heating on and off.

(→ **wiring diagram**)

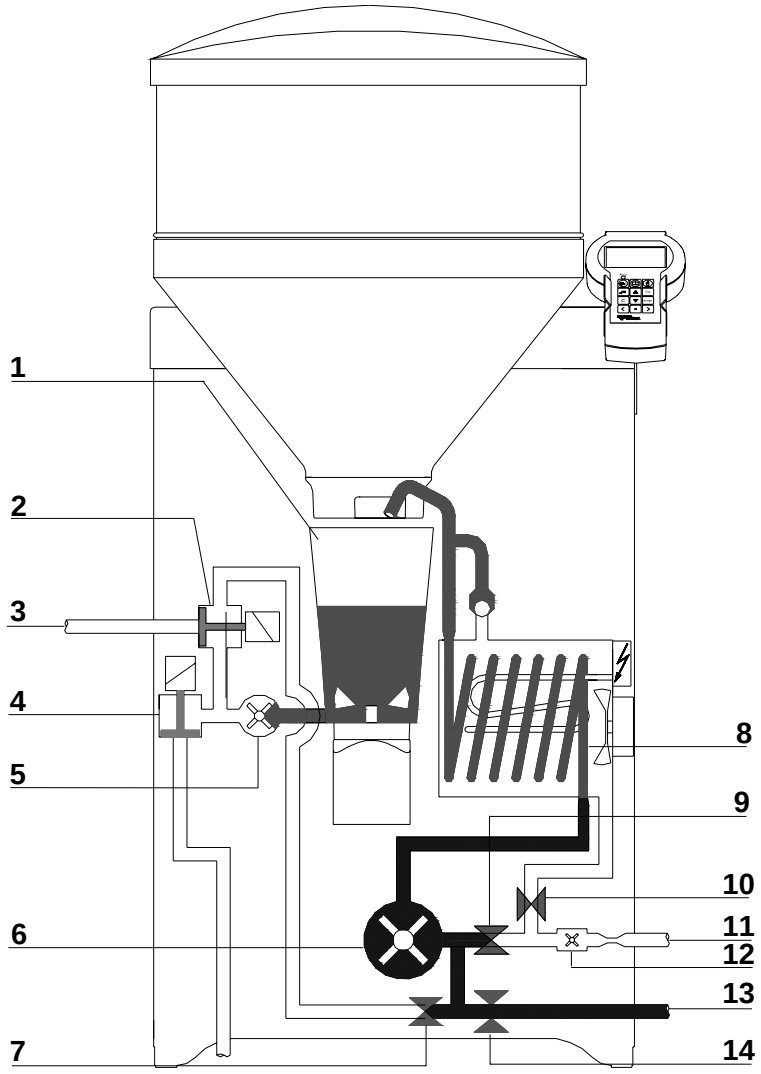
1.10 Heat exchanger with separate heating circuits for milk and water

1.10.1 Ⓒ Compact Combi



1 Mixer to mix up the feed components	8 Heat exchanger with stainless steel coil
2 Box valve	9 Water valve stainless steel coil
3 Hose connection between box valve and teat	10 Volume regulator
4 ⊕ Mixer draining valve	11 Hose connection to the water pipe
5 Training pump	12 Water valve boiler
6 Milk pump to deliver and dispense the milk	13 Hose connection to the milk tank
7 ⊕ Circulation valve	14 Milk valve

1.10.2 Vario Combi



1 Mixer to mix up the feed components	8 Heat exchanger with stainless steel coil
2 Box valve	9 Water valve stainless steel coil
3 Hose connection between box valve and teat	10 Water valve boiler
4 Mixer draining valve	11 Hose connection to the water pipe
5 Training pump	12 Water meter
6 Stainless steel milk pump to deliver and dose the milk	13 Hose connection to the milk tank
7 Circulation valve	14 Milk valve

1.11 Technical data

Electrical connection

TAK5-CE1-25 (400 V)

TAK5-VE1-38-F2 (400 V)

TAK5-VE1-38-P2 (400 V)

230V / 400V / 3 / N / PE / 50 Hz / 16 A

TAK5-VE1-28-P2

240V / L1, L2 / Grd / 60 Hz / 15 A

TAK5-VE1-30-P2

200V / L1, L2 / Grd / 50/60 Hz / 20 A

TAK5-VE1-32-F2

TAK5-VE1-32-P2

230V / L / N / PE / 50 Hz / 20 A

TAK5-CE1-25 (230V)

230V / L / N / PE / 50 Hz / 16 A

Note: the data of the electrical connection are indicated on the rating plate at the left of the chassis!

Dimensions of the automatic feeder

Height:	126 cm
Width:	76 cm with closed lateral doors 115 cm with open lateral doors
Depth:	57 cm without additive dispenser Powder 66 cm with additive dispenser Powder

Weight

approx. 80 kg

Water supply

½-inch hose with ¾-inch-threaded hose coupling.The local water pressure must be between

V 1 and 6 bar

C 2.5 and 6 bar

Heat exchanger

Boiler capacity: approx. 7 L

C Capacity of the stainless steel coil: 0.25 L

V Capacity of the stainless steel coil: 0.5 L

Milk powder hopper

Capacity with top section: approx. 35 kg

Number of feeding stations and animals

Each automatic feeder can feed approx. 20 - 30 rearing calves with one feeding station and with two feeding stations C maximum 50 or V maximum 60 rearing calves.

2 Operation

2.1 Keyboard

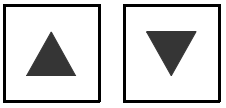
In this instruction manual the keypresses are represented by the icons given below.

Control

Main menu

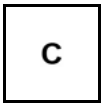
Manual functions

Training pump



Arrow Up/Arrow Down

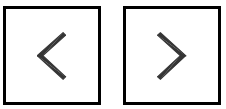
Escape



Delete

Enter

Asterisk

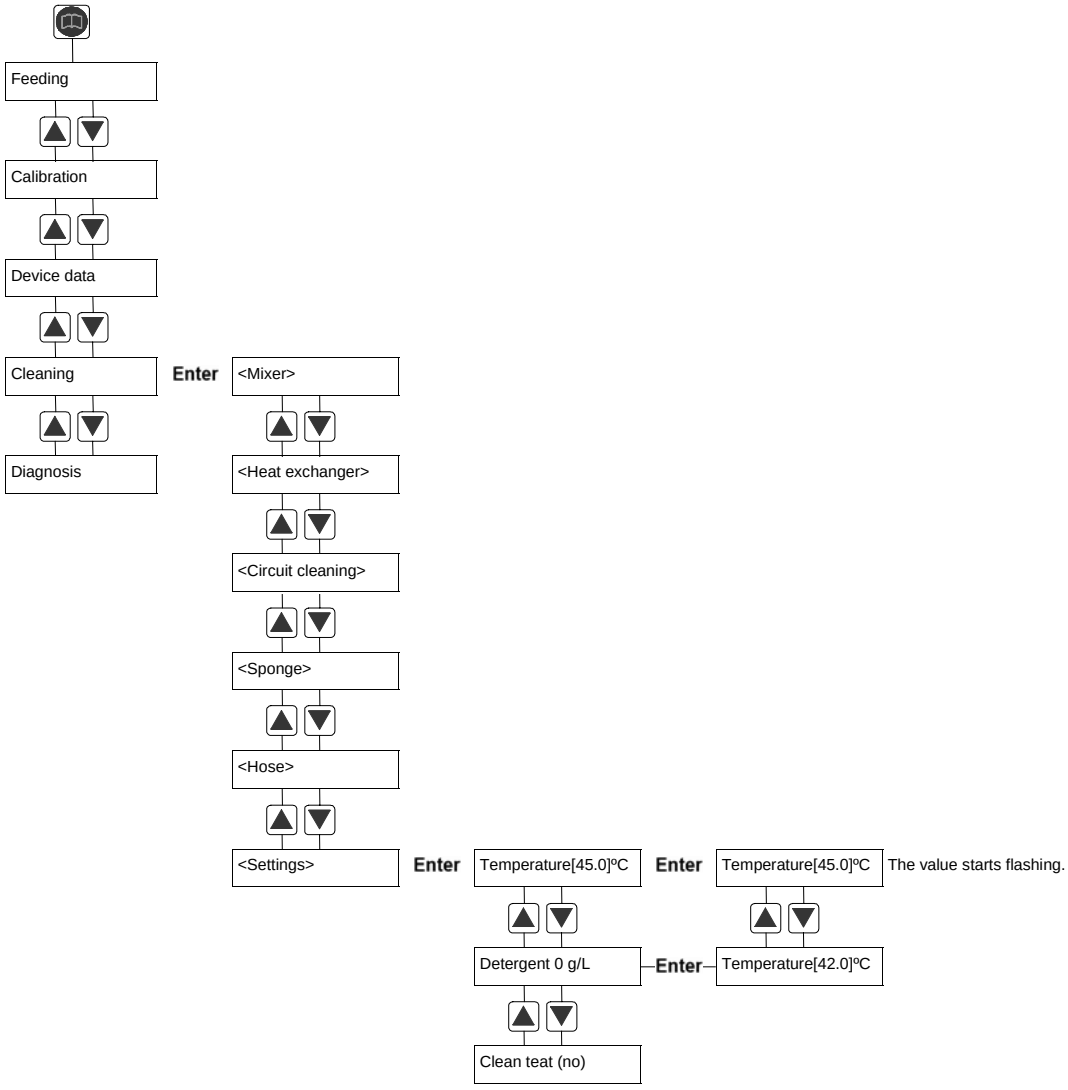


Arrow Left/Arrow Right

2.2 Operating elements and menu structure

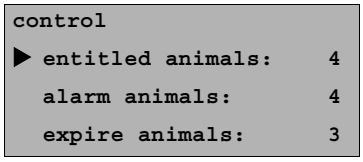
If you press  ,  or  , a menu will be displayed to which further menus may follow.

How to navigate within a menu is hereafter exemplified by the key  > **cleaning** > **settings** > **temperature**.



2.2.1 SA Control

If you press this key, the following menu will be displayed:

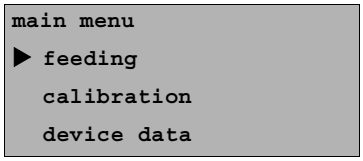


- Entitled animals
- Alarm animals
- Expire animals
- SA Animals with additive (only displayed when an additive dispenser is connected)
- Marked animals
- Unknown transmitters
- All animals

(→ **animal control**)

2.2.2 Main menu

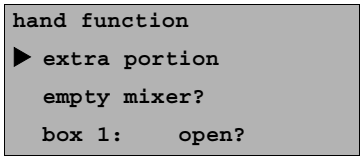
If you press this key, the following menu will be displayed:



- SA Feeding
- Calibration
- Device data
- Cleaning
- Diagnosis

2.2.3 Manual functions

Press this key to manually activate certain functions of the automatic feeder:



- to activate additional (extra) portions,

- to empty the mixer via the mixer draining valve, if available, or by the training pump via the teat,
- to suck in the milk (select this function if there is some air in the milk-supplying pipes. Press Enter until the milk comes out bubble-free),
- to open the milk valve and actuate the milk pump,
- to fill the stainless steel coil of the heat exchanger with water via the milk pump,
- to fill the boiler with water,
- to actuate the mixer,
- to open the box valve(s),
- to automatically fill the boiler of the heat exchanger with water.

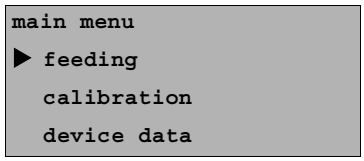
2.2.4 Training pump

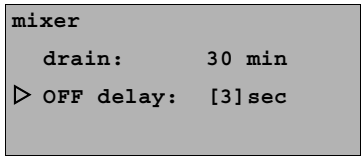
Press this key to activate the training pump. The training pump is intended to easily accustom the animals to automatic feeding and to stimulate slowly drinking animals.

2.2.5 Arrow Up / Arrow Down

Press these keys to navigate within the menus.

Moreover, these keys allow you to change values and terms in the square brackets.





2.2.6 Enter

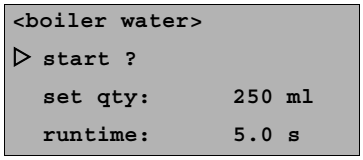
Press this key to

- open the menus,
- select figures / parameters in the square brackets,

- call up figures and terms or confirm them when they start flashing.
- confirm the inputs.

2.2.7 Arrow Right / Arrow Left

[<] [>] Press Arrow Right or Arrow Left to move to equivalent menus within the angle brackets.

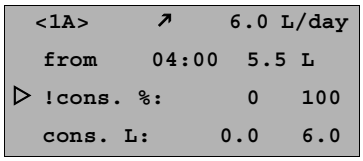


2.2.8 Asterisk

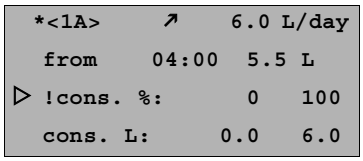
[*] This key has two functions:

First function = Marking

Those animals to which particular attention should be paid can be marked by [*]. This is only possible when an animal number is displayed.



Press [<] or [>] to select the desired animal and press [*]. An asterisk preceding the animal number indicates that this animal is marked.



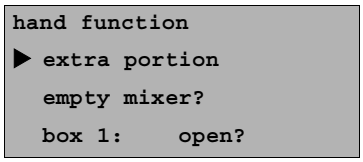
Repress [*] to delete marking.

All marked animals can be viewed in menu **control** under **marked animals**.

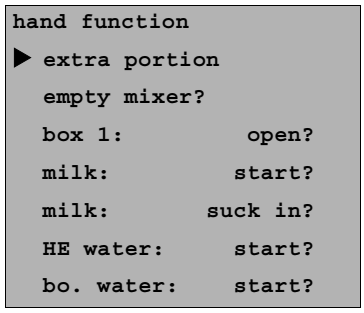
Second function = Shift

If the automatic feeder is operating in the automatic mode, press [*] to move from the

4-row



to the 8-row display and viceversa.



2.2.9 C (=Delete)

C Press this key to delete failure notices and warnings as well as alarms.

2.2.10 ESC(=Escape)

Esc This key has three functions:

First function

If you want to **go back to the automatic mode** after having carried out program settings, press Esc until the diode below **auto** restarts glowing.

Second function

Press Esc to access **the one higher level in the menu tree**.

Third function

Press Esc to **break off processes,** such as e.g. the calibration of powder or liquid feed components.

2.3 Display indication

2.3.1 Display icons

Positioning marks

There are two different positioning marks:

▶ The **black positioning mark** indicates that by pressing Enter one further menu is going to follow.

▷ A **hollow mark** displayed at the beginning of a line indicates that there you can change settings or start actions.

Angle brackets

< > Angle brackets indicate that you can select equivalent menus.

Example taken from the calibration menu. Besides **boiler water** you will find e.g. the menus **MP**, ⊕**detergent** and ⊕**additive**.

```
<boiler water>
▷ start ?
  set qty:      250 ml
  runtime:      5.0 s
```

Press < or > to change the figures or terms that appear in the angle brackets.

Square brackets

[ ] The square brackets contain figures or terms. To change them, proceed as follows:

1. Press Enter. The value/term in the square brackets starts flashing.

```
mixer
  drain:      30 min
▷ OFF delay:  [3]sec
```

2. Press ▲ or ▼ until the desired value/term is displayed. Press Enter to confirm the input.

```
mixer
  drain:          30 min
▷ OFF delay:      [5]sec
```

Note: if you keep ▲ or ▼ pressed, you will achieve the target value more rapidly. Once you have achieved the maximum or minimum value, the display will stop. You have to repress ▲ or ▼ to restart the counting mechanism.

Bar electrode free/covered

This symbol is displayed when the bar electrode is free.

This symbol is displayed when the bar electrode is covered.

```
Automatic  1
  1A↗ 6.0 L/day
  from 12:00 1.2 L
  !cons. %: 40 100
```

Identification

If this symbol is displayed next to the station number (here: => 1), an animal is being identified.

```
Automatic  1
  1A↗ 6.0 L/day
  from 12:00 1.2 L
  !cons. %: 40 100
```

- A dash next to the station number indicates that no animal is being identified.

  (→ **antenna test**)

```
Automatic  1-
  mixer:          40.5 °C
  time:          14:29:39
  date:          01.02.07
```

SA Plan tendency

↗ The Arrow Right next to the animal number indicates animal's current feeding phase.

The arrow shows

- up to the right: the feed quantity continuously increases (e.g. at the beginning of the feeding plan),

```
  <1A>      ↗     6.0 L/day
  from     04:00   5.5 L
▷ !cons. %:        0    100
  cons. L:       0.0    6.0
```

- rightwards: the feed quantity remains unchanged (e.g. in the middle of the feeding plan),

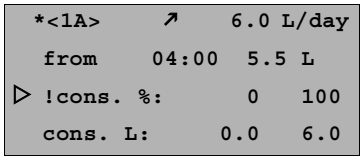
```
<1A>        →    6.0 L/day
  from    04:00    5.5 L
▷ cons. %:         0    100
  cons. L:       0.0    6.0
```

- down to the right: the feed quantity is continuously reduced (e.g. at the end of the feeding plan).

```
<1A>        ↘    6.0 L/day
  from    04:00    5.5 L
▷ cons. %:         0    100
  cons. L:       0.0    6.0
```

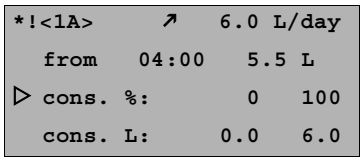
SA Marking

***** An asterisk to the left of the animal number indicates that the animal has been marked (→ **asterisk**).



SA Alarms

! An exclamation mark to the left of the animal number indicates that an alarm was triggered by this animal. This may happen e.g. because the drinking speed is too low or the animal did not consume enough feed.



The alarms can be deleted in the menus of [i] by pressing [C].

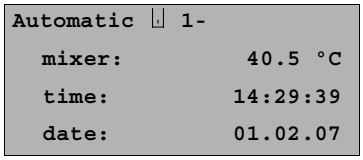
2.3.2 Displays in the automatic mode

Auto ○ The automatic feeder is operating in the automatic mode, when the diode below **Auto** is shining.

Note: In the automatic mode two different readouts are displayed corresponding to: No animal is identified and The animal is identified.

No animal is identified

If no animal is identified (a dash „-“ is displayed next to the station number), the following information can be viewed:



- SA the number of entitled, alarm and expire animals,
- whether the cleaning process has been started,
- whether the mixer jar and/or the heat exchanger were cleaned,
- the temperature of the boiler water resp. of the liquid in the mixer jar,

- the date and time.

The animal is identified

If an animal is identified (the antenna symbol ⍭ is displayed next to the box number), the readout will change. The following appears:

with SA

- in line **2**: the animal number, the plan tendency and the feed amount to which the animal is entitled on the current day according to the plan.

```
Automatic 1
  1A ↗ 6.0 L/day
  from 12:00 1.2 L
  !cons. %: 40 100
```

- in line **3** (this line may vary):
- the animal is entitled to feed. The display shows: the time as of which the animal is entitled to feed and the feed amount saved till check time.

```
Automatic 1
  1A ↗ 6.0 L/day
  from 08:00 4.0 L
  !cons. %: 0 100
```

Example: the animal saved up to 4.0 liters of feed since 8 a.m.

- the animal is not entitled to feed (here: till 1 p.m.).

```
Automatic 1
  1A ↗ 6.0 L/day
  from 13:00 0.0 L
  !cons. %: 100 100
```

- the animal saved up more feed than it is allowed to consume all at once: If this animal consumes up to the maximum feed quantity (→**Maximum quantity**), it will then be blocked for two hours.

```
Automatic 1
  1A ↗ 6.0 L/day
  till 18:11 block
  !cons. %: 100 100
```

Example: the animal saved up 4 liters, the maximum quantity is limited to 2 liters. If this animal consumes 2 liters of feed, it will be blocked.

- the animal has saved up more feed than it is allowed to consume all at once: If this animal consumes less than the maximum quantity, the display shows the time up to which the difference between consumed and maximum quantity will be available.

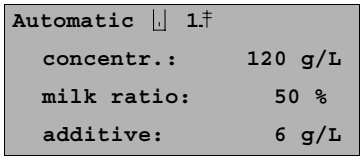
```
Automatic 1
  1A ↗ 6.0 L/day
  till 18:00 max. 1.5 L
  !cons. %: 50 100
```

Example: the animal saved up 4 liters, the maximum quantity is limited to 2 liters. The animal consumes 0.5 liters. This means that the animal can currently consume 1.5 liters at most.

- in line **4**: the consumed quantity as a percentage of the save-up quantity for today (left column) and yesterday (right column).
- in line **5**: the feed amount consumed till check time (consumed quantity in liters [L]) for today and yesterday.
- in line **6**: the feed concentration for today and yesterday.
- in line **7**: the milk ratio of the feed portion for today and yesterday.

with SM depending on the interface:

- which transmitter number is being detected by the identification,
- feed entitlement and feed consumption,
- additive entitlement and additive consumption,
- feed concentration,
- milk ratio of the feed,
- additive dispense.



3 Start-up

3.1 Electrical connection by customers

> The local electrical connection must be installed by qualified electricians.

> Observe the local regulations and protective measures.

> A fault-current circuit breaker (30 mA) in the local power supply is compulsory in order to operate the automatic feeder.

> The automatic feeder must have its own power supply.

> Observe rated voltage and rated frequency. The mains voltage indicated on the rating plate of the automatic feeder must correspond to the one of the mains supply.

> In the case of overvoltage risk, an overvoltage protector must be installed in the main distribution frame.

Equipotential bonding

For animals' safety and to prevent electrical interferences, carry out equipotential bonding of all metal parts such as water pipe, feeding station, race-way and automatic feeder. At the right of the chassis, next to the power lead, is located the connection screw for the equipotential bonding of the automatic feeder. It is imperative to connect this screw to the local earth electrode via a short and flexible copper conductor (minimum cross section: 4 mm^2).

Lightning protection

As it is technically impossible to protect such an installation against lightning stroke separately, it is to the owner to install an adequate lightning protection (e.g. a lightning protection system for the entire building). We recommend to conclude a lightning protection insurance.

3.2 Locating the automatic feeder

> Place the automatic feeder ideally in a dry location, if possible separate from the animal area, e.g. in the fodder storage or the milk room.

> Protect the automatic feeder against dirt and flies, e.g. by means of the ⊕large guard door.

> Be sure to protect the automatic feeder against frost, e.g. by means of the ⊕equipment against frost.

3.3 Mounting the protective grating of the top section of the powder hopper

The protective grating for the top section of the powder hopper prevents injuries due to rotating tools in the powder hopper. Injuries may occur e.g. when filling the milk powder into the hopper.

1	Hole on the top section of the powder hopper to screw in a self-cutting screw.

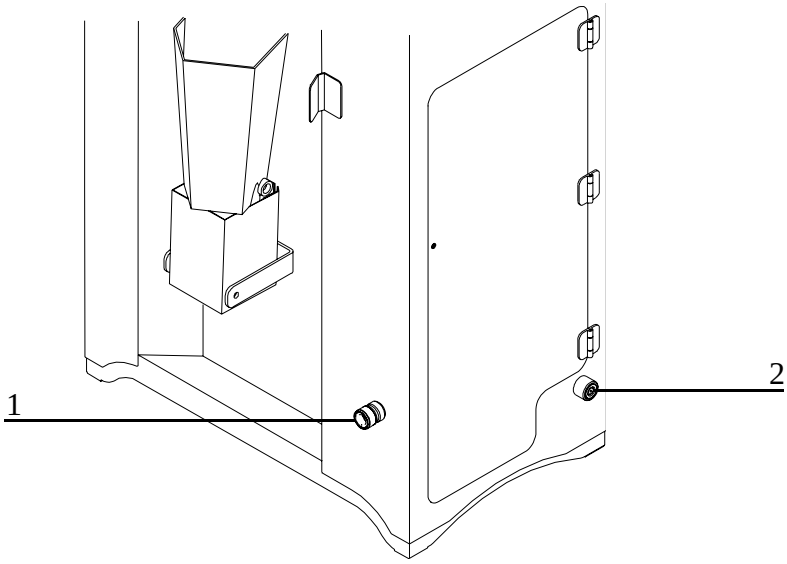
Warning!

Automatic start-up!

1. Remove the bags with the small pieces and the hoses as well as the instruction manual from the milk powder hopper.
2. Mount the protective grating on the top section of the powder hopper.
3. Screw the three self-cutting screws into the holes intended for them.

Warning: During operation the protective grating must always be mounted.

3.4 Water and milk supply



1	Milk supply
2	Water supply

3.4.1 Water supply

> Make sure that the water pressure is constant. The water pressure supplied by customers has to be min. 2.5 bar and should not exceed 6 bar.

> If the minimum water pressure of 2.5 bar cannot be guaranteed, convert to the ⊕water box. In this case, the standard water valve of the automatic feeder is replaced by a low pressure valve. Therefore, you must unexceptionally use the water box.

> For the water supply of the automatic feeder, use a separate water stopcock.

Note: if the water pipe has a small cross section, water pressure may drop during operation. The same applies to a water line from which water is exctracted at different spots simultaneously.

Drinking water quality is compulsory. Please consider that a high lime, iron and manganese content may lead to untimely wear. In this case it is reasonable to install appropriate filter systems.

3.4.2 Milk supply

> Place the milk storage tank ideally next to the automatic feeder.

> Make sure that the hose connection between the milk tank and the automatic feeder is short. If a long hose connection is inevitable, use a hose with larger cross section.

> Install the milk hose on the bottom of the milk tank. Do not hang the milk hose topdown into the milk tank. In this way you will avoid the creation of air bubbles which may impair milk dosage.

> If the milk pipe consists of several sections, make sure that the connection pieces are reliably tight. The same applies to the connections on the milk tank and the automatic feeder.

> For hygienic reasons, avoid wide differences in cross sections.

> Only use connection pieces easy to clean.

> If the automatic feeder solely operates in the water mode, close the milk connection of the automatic feeder by means of a blind plug.

Note: air-containing pipes, very long and thin, as well as thin-walled pipes prone to contract, may break-off the feeding mode or lead to unintentional change-over to the MP-mode.

3.5 Mounting the feeding station

> Install an appropriate race-way in front of the feeding station. This prevents the animals from being pushed aside by other animals.

> Mount the feeding station according to the enclosed manufacturers' instructions.

3.6 Connecting the antennas

3.6.1 Notes on how to mount the antennas

> Mount the antennas according to the mounting instructions.

> Keep the distance between the antenna and the transmitter as short as possible.

> The identification range of the antennas is approx. 15 to 20 cm. Only the animal which should be identified in the station has to be within the compass of this antenna.

> Check the identification range of the antennas by the antenna test (→**Antenna test**).

> The antenna type is decisive for the identification range. With the micro-identification Nedap you can adjust the range via the Squelch value.

On the rear of the cover page of this instruction manual you will find the Squelch values and identification ranges for the different identification systems. These Squelch values are empirical and factory-set.

> If an entitled animal is staying outside the feeding station but within the identification range of the antenna, it may happen that a feed portion is prepared which is not consumed by the animal. Block the area next to the feeding station, if necessary.

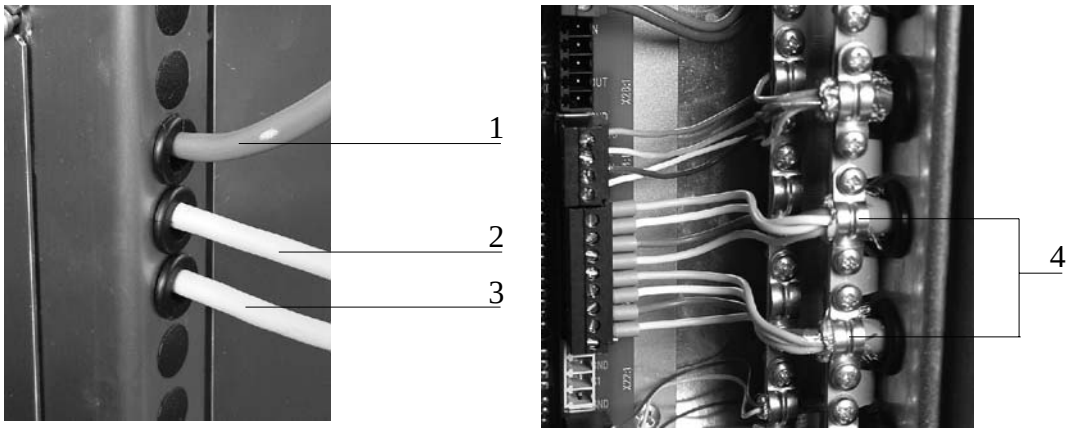
If an antenna identifies two animals simultaneously, animal identification will be disrupted for both animals.

> The distance between two antennas should be approx. 100 cm, in order to avoid overlaps of the identification range. In case of double or foreign identifications, you have to screen the antennas by means of grounded plates.

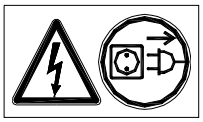
Lay the antenna cables in such a way as to prevent the animals from damaging them.

3.6.2 Connecting the antenna cable to the motherboard

Only **service personnel** is allowed to connect the antenna cables.



1 Cable of the hand-held terminal	3 Antenna cable of feeding station 2
2 Antenna cable of feeding station 1	4 Cable clamps

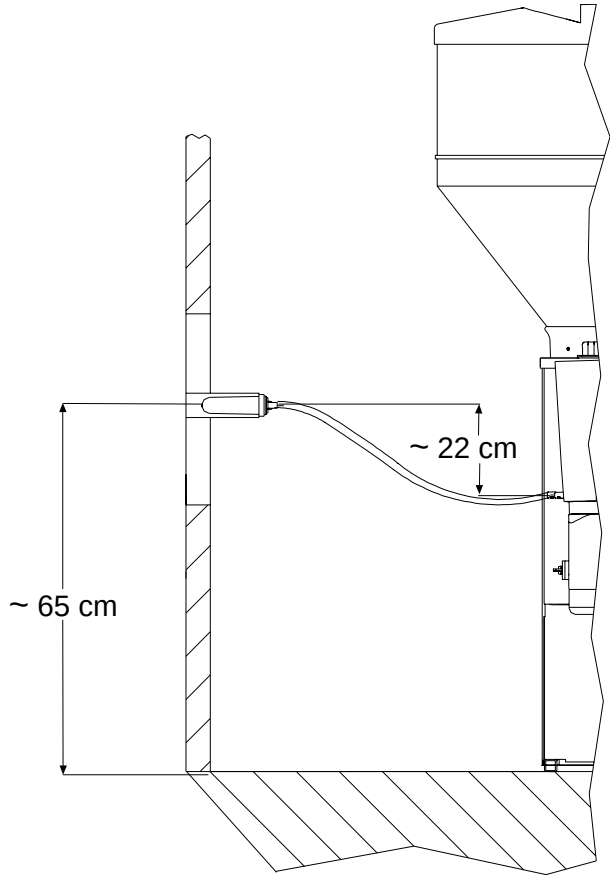


Danger! Hazardous voltage! Electric shock hazard. Pull the mains plug.

1. Remove the casing cover of the control unit.
2. Below the cable bushing for the cable of the hand-held terminal are located two further cable bushings. Push the antenna cables through these bushings into the control unit.
3. Connect the cables of the identification or antenna to the motherboard, according to the connecting diagram.
4. Fasten the cables to the cable clamps. In order to ensure grounding it is imperative to clamp approx. 1 cm of the shield (if available) together with the cable. Make sure that the shield does not lie on the cable insulation but on the cable sheath.
5. Close the control unit.

3.7 Mounting the feeding station

1. Mount the teat at approx. 65 cm above the shed floor. The teat in the feeding station has to be approx. 22 cm above the suction hose connection on the mixer.
2. The suction hose should not be more than two meters long.
3. Secure the teat bracket with splash guard towards the bottom.
4. To avoid feed accumulation, make sure that the hose between the teat and the box valve (restricted mode) or the mixer jar (ad libitum-mode) does not sag.



Caution: it is imperative not to extend the hose that leads from the mixer draining valve to the drain!

3.8 Filling the boiler

Before the heating switches on, the boiler of the heat exchanger must be filled with water, otherwise it will be damaged. In that case there is no guarantee that the automatic feeder will operate reliably.

1. Plug in the mains plug and press the C control switch or turn the V main switch to position ON.

Note: after you have switched the automatic feeder on, the program version of the hand-held terminal will be briefly displayed. Only then the automatic feeder will carry out a check routine.

2. > **fill HE ?**
3. Press Enter to confirm **fill HE ?**

```
hand function
  water HE start ?
  mixer start ?
▷ fill HE ?
```

The boiler of the heat exchanger is automatically filled with water.

Note: if you commission the automatic feeder without having filled the heat exchanger before, the display shows the message opposite. Press Enter to confirm the input.

```
  HE filling
  start ?
```

3.9 Portion

In this menu you can enter the settings relating to the feed portion:

- V the portion size

- the target temperature of the feed in the mixer jar
- the minimum temperature of the feed in the mixer jar
- the distribution pause

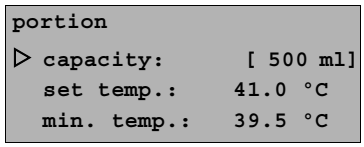
Moreover with SM

- the concentration
- the milk ratio of the feed portion
- additive dosage

3.9.1 V Adjusting the (portion) size

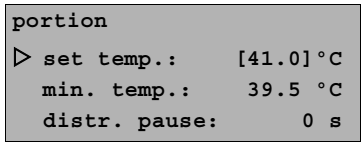
This menu is only displayed when in **Setup** under **Machine** > **HE size** you set **500 ml**.

1. > **device data** > **portion** > **capacity**
2. In **capacity** enter the desired portion size. You can choose between 250 ml and 500 ml.



3.9.2 Adjusting the target and the minimum temperature

1. > **device data** > **portion** > **set temp.** or **min. temp.**
2. Enter the desired target temperature of the feed in the mixer jar in **set temp.**
3. Enter the desired minimum temperature of the feed in the mixer jar in **min. temp.**



Note: the figures you keyed in for the target and minimum temperature are converted into those for the target and minimum temperature of the boiler water. If the temperature of the boiler water falls below the minimum temperature, feed preparation will be broken off until the minimum temperature has been restored.

Recommendations for temperature settings

The heat exchanger is designed in such a way that also milk powders with higher fat melting point can be used without any problems. Make sure that the feed temperature in the mixer jar is between 42 ºC and 43 ºC.

If you solely use whole milk or cold-soluble milk powders, the temperature of the feed in the mixer jar should be 38 ºC.

Warning: too low feed temperatures may cause digestive troubles. Too high temperatures may lead to inflammations of the mucosa in the abomasum.

Note: the first feed portion is always mixed with slightly warmer water in accordance with ambient temperature.

3.9.3 Setting the distribution pause

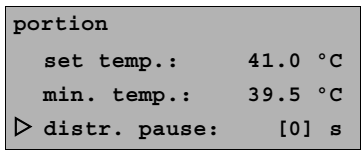
When the portion starts to be prepared, the box valves close and remain closed until the distribution pause has lapsed.

It is recommended to enter the distribution pause in case of:

- hardly soluble milk powders,
- very high concentrations (> 200 g/L),
- extremely high drinking speed (> 2 L/min).

Default value:	0 seconds
Potential input:	0 to 16 seconds

1. > **device data** > **portion** > **distr. pause**
2. Enter the desired value in **distr. pause** and confirm with Enter.



3.9.4 SM Setting the feed concentration and the milk ratio

If you have selected „no variable concentration“ or „fix concentration“ or/and „fix milk ratio“ in the feed computer, the feed concentration and the milk ratio will be displayed in menu **portion**. In this case, you can increase or reduce the feed concentration and/or the milk ratio.

1. > **device data** > **portion** > **concentration** or **milk ratio**
2. Select the desired quantity in **concentration**.

or

select **no** in **variabel.**

The line **concentration** will be displayed.

3. Enter the desired quantity in **concentration**.
4. Enter the desired milk ratio in **milk ratio** and press Enter to confirm the input.

3.9.5 SM + Setting the additive quantity

If the automatic feeder is equipped with an additive dispenser, in **additive** you can enter the additive quantity that should be dosed into 1 liter of feed.

1. > **device data** > **portion** > **additive**
2. Enter the desired quantity in **additive** and press Enter to confirm the input.

Note: take care that the settings of the feed computer correspond to the ones of the automatic feeder. Please consider that in the feed computer additive dispense refers to a feed portion, whereas in the automatic feeder to 1 liter.

3.10 ⊕Vapour screen for powder outlet, mixer jar heating and frost protection

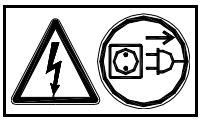
The heating on the milk powder outlet (vapour screen) prevents condensation.

Mixer jar heating prevents residual feed from cooling down.

The heating cable is activated as soon as the temperature falls below 3 ºC. It protects e.g. hose pipes, training pump and fittings against frost.

The heating cable becomes necessary when the automatic feeder is installed in an unprotected location or it is exposed to extreme cold.

Only for service personnel:



Danger! Hazardous voltage! Electric shock hazard!
The automatic feeder must be free of voltage before opening the rear cover behind which are located the processor and the relay power board. To do so, pull the mains plug.

Note: on the relay board are located two toggle switches side by side. The right switch is used to switch the vapour screen for the milk powder outlet on and off, the left one to switch the heating cable and mixer jar heating on and off.

3.11 Filling the milk powder hopper and the milk tank

3.11.1 Filling the milk powder into the powder hopper

Warning!
Automatic start-up!

Make sure that the automatic feeder is free of voltage, before carrying out any kind of operations on or in the powder hopper. To do so, pull the mains plug.

Note: there is no warning when the powder hopper is empty! The automatic feeder will operate without milk powder. This may effect that the animals are only fed with water, thus being insufficiently provided with feed.

Only fill in milk powder that is suitable for calf feeding.

Make sure that there is no paper or other foreign bodies in the powder hopper. Otherwise the dosing mechanism may be damaged or the dosing accuracy may be impaired.

3.11.2 Filling the milk tank

Note: the milk must always be clean. Straw, hay or other foreign bodies impair the operational reliability of the automatic feeder.

With cow milk and flaked milk use a slow-running interval stirrer to avoid creaming of the milk. Continuously or fast-running stirrers lead to creaming.

Warning: those animals being fed with too fat milk may suffer from digestive troubles.
Cool the milk or preserve it with formic acid (20 to 30 ml with a concentration of 10 % per liter of milk).

Do not use the automatic feeder to heat milk starting to turn sour. The stainless steel coil of the heat exchanger might get clogged.

3.12 Calibrating the feed components and the detergent

The feed components must be calibrated first to ensure the correct mixing ratio. The detergent must be calibrated, too.

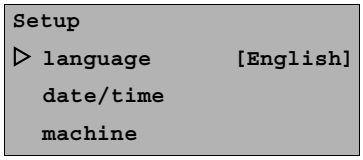
How to calibrate the individual components, (→**calibration**).

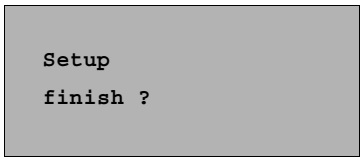
4 Setup

In Setup you will find the program menus in which the manufacturer or the service personnel carried out all basic settings relating e.g. to the equipment of the automatic feeder. Verify the settings before starting to feed the animals.

Note: the manufacturer disclaims any liability for incorrect settings carried out by the user!

1. Press [book] and keep this key pressed when switching the automatic feeder on. After a short time the display shows:
2. If you want to change the settings, press [Enter].
3. Press [Enter] to confirm the changes.
4. If you want to quit Setup, press [Esc] until the message opposite is displayed. Press [Enter] to confirm the input.





4.1 Overview of the menus in Setup

Language		English
Date		Date/time
Machine	Type	Powder
		Combi
		Milk
	Number	
	Address	
	Operating mode	SM / SA
	HE-capacity	250 / V500 ml
	Animals	50 / V150
	System	IV
	Boiler valve	Basic/brass
	HE valve	Basic/brass
SMInterface	Type	VC3
		Alcom
		Relay
		CAN
	Address	
Equipment	Mixer drain	Available yes / no?
	Training pump	Available yes / no?
	Add. dispenser	Available yes / no?
	Detergent pump	Available yes / no?
	Circulation valve	Available yes / no?
	VFCleaning valve	Available yes / no?
	Circulation pump	Available yes / no?
	Mixer sensor	Available yes / no?
	Supply electrode	Available yes / no?
	Spot electrode	Available yes / no?
Heating	Activated yes/no	
	Relay	Mechanical/electronical
Sensor type	Boiler	WL503
		833ET
	Mixer	WL503
		833ET

Identification	Type	Nedap
		Tiris
	Squelch	0 to 255
Feeding station	<Station 1/2>	Activated yes / no
		Extras (servo, gradient)
Terminal	Address	
Communication	PC	CAN
		Serial

4.2 Language

You may choose between German, English and the national language.

4.3 Date/time

Check and, if necessary, rectify date and time.

4.4 Machine

Types

Three machine types are available:

- Powder: this machine type feeds MP/water mixtures.
- Combi: this machine type can feed fresh milk as well as MP/water mixtures.
- Milk: this machine type only feeds fresh milk.

Number

If the programs UpdateManager and KalbManagerWIN are connected to the automatic feeder via a serial interface, the automatic feeder needs a number. Default number: 1.

Note: if several automatic feeders are networked, make sure that a number is assigned only once.

Address

This menu is only displayed if you have selected the following: **Setup** > **communication** > **CAN**.

If the programs UpdateManager and KalbManagerWIN are connected to the automatic feeder via a CAN-bus, the automatic feeder needs an address. Default address: 20.

Note: if several automatic feeders are networked, make sure that an address is assigned only once.

Operating mode

- SM = System-machine. Select this operating mode if you control the automatic feeder via a central feed computer.
- SA (only with C) = Stand Alone. Select this operating mode if the data should be entered and managed directly on the automatic feeder.

HE-capacity

With C the setting for HE-capacity must be 250 ml. With V you can choose between 250 ml and 500 ml. The entered value determines:

- the target quantity for the calibration of HE water and milk (→ **calibration**)
- the water quantity used to press the milk out of the stainless steel coil (→ **milk expelling**)

Note: if in **HE-capacity** you keyed in **250 ml**, the menu **capacity** will not be displayed in > **device data** > **portion**.

Number of animals

The factory-set inputs must remain unchanged.

System

Here you can view the feeding program of the sales partner.

Water valve boiler and heat exchanger

The factory-set inputs must remain unchanged.

4.5 SM Interface

Type

Here you have to select the interface in accordance with the feed computer.

Address (only valid for connection to a bus system)

As a rule the feed computer is connected to several devices via a bus system. For the sake of clear identification an address (number) has to be assigned to each of these external devices.

4.6 Equipment

Here you can enter whether the automatic feeder is equipped with specific components or options.

Mixer draining valve

The content of the mixer can be drained all automatically via the mixer draining valve, if available.

Training pump

The training pump is available as standard. It facilitates animals' accustoming to the automatic feeder. By the training pump you can also drain the liquid in the mixer jar via the teat.

Additive dispenser

To the automatic feeder you can connect either an additive dispenser for powder or one for liquid additives.

Detergent pump

If the automatic feeder is equipped with the cleaning kit, during the cleaning cycle detergent can be added all-automatically.

Circulation valve

The circulation valve is also part of the cleaning kit. It facilitates all-automatic heat exchanger cleaning.

Cleaning valve

The cleaning valve is part of the standard equipment of all Farmer models. It facilitates fully automatic cold water cleaning of the box valves (→ **cleaning the box valves)**.

Note: If in menu **circulation valve you have selected yes**, in menu **cleaning valve** you are only allowed to enter **no** and viceversa.

Circulation pump

The circulation pump ensures that the heat of the boiler water is rapidly and uniformly transferred to the liquid in the stainless steel coil.

Mixer sensor

The sensor in the mixer continuously records the temperature of the feed in the mixer jar. If the temperature does not comply with the target value, the boiler heating will be readjusted. This means that the animals are always fed with the desired temperature - irrespective of the season.

Supply and spot electrode

The setting in the lines supply and spot electrode must be **no**.

The setting in the lines supply and spot electrode must be **yes**.

4.7 Heating

In the line **activated** must be set **yes** and in **relay** Ⓒ**mechanical** or Ⓥ**electronical**.

4.8 Sensor type for boiler and mixer

Note: since october 1, 2004 the boiler / mixer of the automatic feeder is equipped with a new temperature sensor (WL503).

Default setting: sensor type **WL503**.

To be sure that you have selected the correct sensor type in Setup carry out the following:

Check the temperature display or determine the resistance values and compare them with the indications contained in the table.

Checking the temperature display

1. In order to check the temperature display, first of all you have to dose some boiler water into the mixer jar.
2. > **boiler water start** ?
3. Press Enter and keep the key pressed until there is enough water in the mixer jar:
4. Put a thermometer into the mixer jar.
5. Compare the temperature displayed by the thermometer with the one measured by the sensor:
6. > **diagnosis** > **sensors** > **boiler or mixer**
   In **boiler** or **mixer** the display shows the temperature measured via the corresponding sensor.

Measuring the resistance values

Measure the resistance values of the boiler / mixer sensor by means of an ohmmeter. Compare them with the values contained in the table.

NTC-temperature sensor table

date:	from 01.10.04	until 30.09.04
typ:	WL503	833ET
°C	kOhm	kOhm
0	175,5	277,4
5	134,5	213,8
10	103,9	166,3
15	80,9	130,5
20	63,4	103,2
25	50,0	82,3
30	39,7	66,1
35	31,7	53,5
40	25,5	43,6
45	20,7	35,7
50	16,8	29,5

4.9 Identification

Type

Here you can enter the identification system in accordance with the identification system of the sales partner.

Squelch

Via the Squelch value you can adjust the input and reading sensitivity of the identification. The higher the entered value, the smaller the identification range.

4.10 Feeding box 1/2

In menu feeding box you can register or cancel the feeding boxes. Here you can also enter whether the servo or the gradient control is connected.

4.11 Terminal

Address

If the automatic feeder is connected to a feeder-network, the hand-held terminal needs an identification number, too. Default number: 1.

Note: make sure that a number is always assigned only once.

4.12 Communication

PC

If you want to connect a PC to the automatic feeder, here you can select whether your PC shall exchange the data with the automatic feeder via a serial or a CAN-interface (via the ⊕Förster-gateway).

Note: if you want to update the control program of the automatic feeder via the Update-set, here you must generally select **serial**.

5 Device data

Device data contains the following submenus:

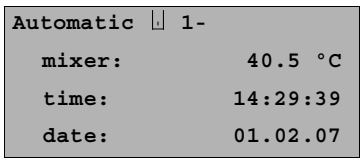
- **Portion** (see start-up)
- **Milk values**
- **Adlib mode**
- **Feeding box**
- **Mixer**
- **Automatic mode**
- **Date/time**
- **New installation**

5.1 Checking and adjusting date/time

At start-up you must first of all check and, if necessary, adjust date and time.

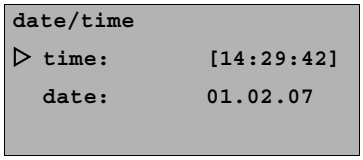
5.1.1 Checking date/time

Auto In the automatic mode you can view date and time.



5.1.2 Adjusting the date

1. > **device data** > **date** or **time**
2. In **date** enter the day first. Press Enter to move to the month and year.



Note: after you have changed the date, daily calculation will be immediately carried out.

3. For **time,** proceed as for **date**.

5.2 New installation

When starting up the automatic feeder you have to reset the program (software). Thereby redundant data and no longer current inputs as well as misentries will be deleted from the memory.

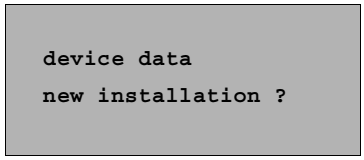
Animal data are defined e.g. as group membership, housing date, feeding days and total consumption.

Device data are defined as e.g. the feeding, concentration and additive plans.

Note: at installation time the **animal data** are deleted, the **transmitter numbers** are set to 0 and the **device data** are overwritten by default values.

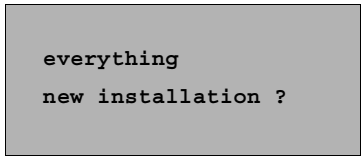
5.2.1 New installation of device or animal data only

1. > **device data** > **new installation**
2. Confirm **device data new installation ?** by pressing Enter.
3. For **animal data**, proceed as for **device data**.



5.2.2 New installation of everything

1. > **device data** > **new installation**
2. In **everything** press Enter.
3. Confirm **everything new installation ?** by pressing Enter.



5.3 Restricted/Ad libitum mode

The automatic feeder operates as a standard in the restricted mode but it can also commute to the adlib-mode.

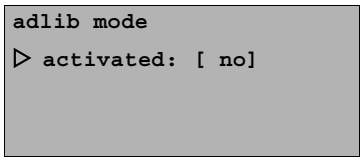
Restricted mode

In the restricted mode the automatic feeder operates with animal identification thus effecting that the animals are fed animal-specifically and in a restricted way.

Adlib-mode

In the adlib-mode the automatic feeder operates without animal identification. In the feeding mode a portion is prepared only when the bar electrode in the mixer jar is free. The box valves are always open.

1.  > **device data** > **adlib-mode**

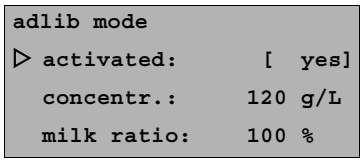


2. In **activated** select the desired setting.

Note: if the automatic feeder operates in the adlib-mode for a long period of time, the box valves will heat up considerably. Therefore slip the suction hoses directly on the nozzles of the mixer jar and remove the female power connector from the box valves.

In the ad libitum-mode, the function **read in transmitters automatically** is deactivated (→ **reading in tranmitters automatically**).

When the adlib mode is activated, in the following lines you can set **feed concentration**, **milk ratio** and **additive dosing**.



Note: these settings are taken into account for the preparation of all feed portions.

5.4 Feeding station

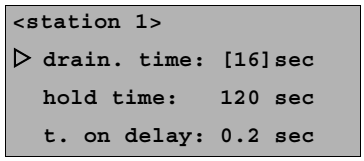
Draining time

Draining time starts when the bar electrode is not covered anymore by the liquid in the mixer after the last portion has been dispensed and ends when the corresponding box valve closes.

If the animals do not drink up the liquid in the mixer within the default draining time, you have the opportunity to extend draining time.

Default value:	16 sec
Potential input:	10 to 60 sec

1. > **device data** > **station** > **drain. time**



2. Enter the desired time in **drain. time**.

Entering hold time

Hold time begins with the preparation of the feed portion and ends with the closure of the corresponding box valve.

Those animals taking a long time to drink up the liquid in the mixer, will block feeding at the second feeding station longer than desired. In that case, it may be reasonable to reduce hold time.

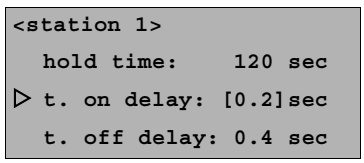
Default value:	120 sec
Potential input:	30 to 120 sec

1. > **device data** > **station** > **hold time**

2. Enter the desired time in **hold time**.

Entering turn-on and turn-off delay

If the automatic feeder is equipped with a servo or a gradient control, **t. on delay** and **t. off delay** will be displayed.



The values for turn-on or turn-off delay can only be changed after consultation with service personnel. You can enter values by 0.1 s-steps.

Default value:	Turn-on delay: 0.2 sec Turn-off delay: 0.4 sec
Potential input:	Turn-on delay: 0.0 sec to 2.0 sec Turn-off delay: 0.0 sec to 2.0 sec

1.  > **device data** > **station** > **t. on** or **t. off delay**
2. Enter the desired time in **t. on delay**.
3. For **t. off delay,** proceed as for **t. on delay**.

The pumps are switched on only after the turn-on delay has lapsed.

For those animals which break off feed intake for a short time, the input of turn-off delay prevents the valves from continuously switching on and off.

5.5 Mixer

Here you can enter after which time the mixer content should be drained **via** the **mixer draining valve**, if available, **or** the **teat**. Moreover in **OFF delay** you can extend the default mixing duration. Whether and how long the mixer should continue to run depends on milk powder's solubility.

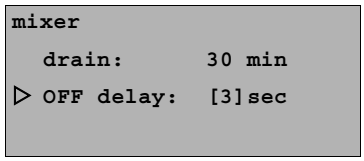
5.5.1 ⓿Emptying the mixer via the mixer draining valve

Default value:	for draining: 30 min. for OFF delay: 3 sec.
Potential input:	Draining: 0 / 5 to 120 min.OFF delay: 3 to 12 sec.

1. > **device data** > **mixer** > **drain** or **OFF delay**

2. Enter the desired time in **drain**.

3. For **OFF delay** proceed as for **drain**.



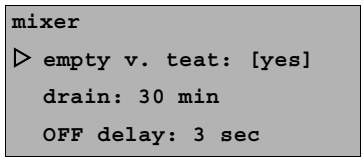
5.5.2 Emptying the mixer via the teat

If the automatic feeder is not equipped with a mixer draining valve, the cleaning water can be drained via the teat by means of the **training pump**.

1. > **device data** > **mixer** > **empty v. teat**

2. Select the desired setting in **empty v. teat**.

For **drain** and **OFF delay** (→**emptying the mixer via the mixer draining valve**)



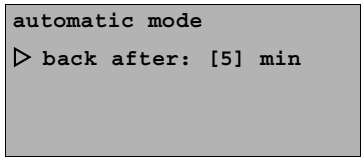
5.6 Automatic mode

If you press , or , the automatic mode will be broken off. Enter the time when the automatic feeder should automatically commute to the automatic mode.

Default value:	5 minutes
Potential input:	0 / 5 to 60 minutes

1. **> device data** > **automatic mode** > **back after**

2. Adjust the time in **back after**.



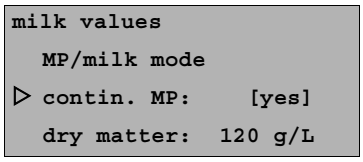
5.7 Milk values

If the automatic feeder should only operate with fresh milk or a mix of fresh milk and milk powder+water, make sure to carry out the corresponding settings in menu **milk values**.

5.7.1 Selecting the MP/milk mode or the MP-mode

If you want to feed fresh milk and MP, select **MP/milk mode**. If you want to feed only MP, select **MP-mode**. If only milk should be fed: see **contin. MP** hereinafter.

1. > **device data** > **milk values**
2. Select the desired setting in **MP/milk mode** or **MP-mode**.
3. If you select **MP/milk mode**, the following lines are displayed:



- **contin. MP**
- **dry matter**
- **drain**
- **1 circuit**

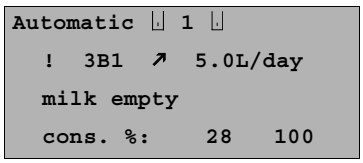
5.7.2 Continue with MP

Contin. MP yes means that the automatic feeder commutes to the MP-mode as soon as the milk tank is empty.

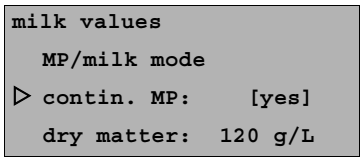
Note: make sure that the milk powder hopper is always filled with milk powder!

If you have selected contin. MP no, as soon as the milk tank is empty only the animals that should be given fresh milk will not be fed. Those animals that are given milk powder continue to be fed.

Example: The animal number 3B should be fed with milk. It enters the feeding station and is identified. If the milk tank is empty, the message opposite will be displayed. **Milk empty** indicates that the milk tank is empty and the animal is therefore not fed anymore.



1. > **device data** > **milk values**
2. Select the desired setting in **contin. MP**.



Note: the heat exchanger will be cleaned as soon as the milk tank is empty (→ **heat exchanger cleaning**).

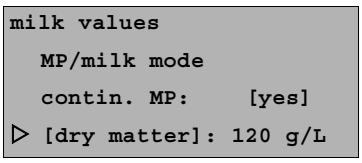
5.7.3 Entering the dry matter

The dry matter contents of whole milk is generally 120 to 130 g/L. The entered dry matter is daily compared automatically with the concentration plan. If the feed concentration is higher than the dry matter contents of the milk, milk powder will be dispensed into the mixer jar until the set concentration is achieved. If the concentration is below the dry matter contents of the milk, the milk or milk/MP-mixture will be diluted with water.

Default value:	120 g
Potential input:	whole numbers between 5 and 255 g

1.  > **device data** > **milk values**

2. Enter the desired value in **dry matter**.

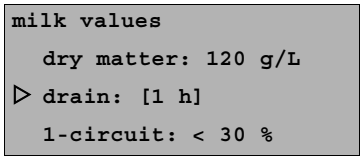


5.7.4 Activating milk expelling

When the automatic feeder operates in the **MP/milk mode**, there is always a warm milk portion in the stainless steel coil of the heat exchanger ready for demand. This milk portion can be replaced by a water portion after an adjustable time. The stainless steel coil is then filled with water.

Default value:	1 hour
Potential input:	whole numbers between 0 and 9 g

1.  > **device data** > **milk values**
2. In **drain** enter the desired value.



Note: if you select 0, **drain** is deactivated.

The pause begins after the last milk portion has been dispensed.

The mixer draining valve is available

If an animal with milk entitlement enters the feeding station, the water portion of the heat exchanger is dosed into the mixer and drained off via the mixer draining valve. Only then the milk is dispensed into the mixer.

The mixer draining valve is not available

If an animal with milk entitlement enters the feeding station, the water portion of the heat exchanger is dosed into the mixer, enriched with milk powder and then fed to the animal.

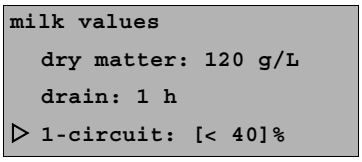
5.7.5 Commuting to the single heating circuit

As a rule the water is heated in the boiler of the heat exchanger and the milk in the stainless steel coil of the heat exchanger. If the milk ratio of a milk portion is too low, the automatic feeder will automatically commute to **1-circuit**. This means that both the water and the milk are heated in the stainless steel coil of the heat exchanger. That prevents the milk from staying too long in the stainless steel coil.

Default value:	<30 percent
Potential input:	0 percent, whole numbers between 30 and 70 percent and 100 percent

1.  > **device data** > **milk values**

2. Enter the desired value in **1-circuit**.



Example: according to the milk ratio plan the current milk ratio of the feed portion of animal number 1A is 30 %. If in **1-circuit** you selected 40 %, the automatic feeder will commute to **1-circuit** because the milk ratio has fallen below 40 %.

6 Calibration

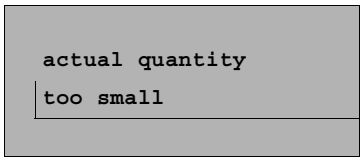
The automatic feeder must be calibrated first to ensure that the components water, milk, MP and additives are accurately dispensed and mixed. The same applies to the detergent dosing pump.

For calibration, keep the following objects at hand:

Liquid feed components (boiler water, HE water, milk, liquid additive) and detergent: graduated cylinder with ml-scale.

Powder feed components (MP and additive): for MP scales accurate to gram, for additives precision scales, if possible.

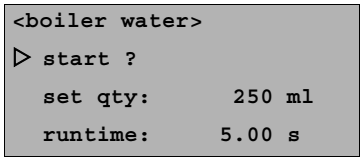
Basically the displayed message **actual quantity too small / actual quantity too large** indicates that the target quantity could not be dispensed. **Actual quantity too small** is displayed e.g. when the powder outlet is incrusted or water supply is deranged. **Actual quantity too large** is displayed e.g. when the volume regulator does not work properly.



6.1 Calibrating liquid components and detergent

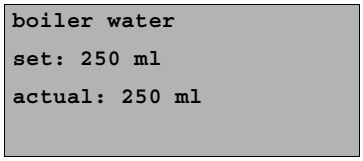
Boiler water is intended to exemplify how to calibrate a liquid component.

1. > **calibration** > **boiler water**



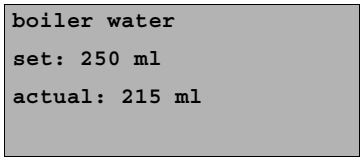
2. Hold an empty graduated cylinder under the water/milk outlet.

3. Press Enter to confirm **start?** The calibration process starts running. First the display shows the set value entered in Set-up. Shortly afterwards the blinking actual value is displayed.



4. Measure the collected quantity.

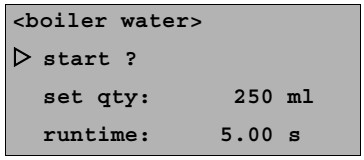
5. Enter the measured quantity in line **actual**. The display shows



   - the set quantity,

- how long the water valve remained open during calibration,
- the date of the last calibration.

6. Repeat calibration to check the result.
7. Now also calibrate the components **HE water, milk, ⊕additive** and **⊕detergent**. For the calibration of the other liquids, proceed as for **boiler water**.



6.2 Powder feed components

Calibrate the powder feed components according to the description in the last preceding chapter.

Note: use a precision scales with a weighing accuracy of 0.1 g to calibrate the additives. Otherwise, you have to repeat the calibration process several times in order to get a larger additive amount. Divide the measured quantity by the number of calibration processes and then key in the figure.
Repeat the calibration process in order to check the result.

7 Feeding

7.1 Functioning of the automatic feeder

7.1.1 Preparing the feed

During feed preparation the liquid components are dispensed first. As soon as the liquid in the mixer jar touches the bar electrode, milk powder will be dispensed from the powder hopper into the mixer jar. There, the portion is intensely mixed. The box valve opens. The feed is delivered via the hose pipes from the mixer to the box valve and then to the teat in the feeding station by animal's suckling movement.

If long hoses are inevitable, the ⊕servo control will facilitate feed intake to the (young) animals.

The warm water is extracted from the boiler. The warm milk is pumped through the stainless steel coil of the heat exchanger into the mixer jar.

The circulation pump keeps the warm boiler water moving at high speed thus effecting a rapid heat transfer to the liquid in the stainless steel coil. The circulation pump is active when an animal is consuming a feed portion or when the calibration or a cleaning process are being carried out. If no feed has benn consumed, the circulation pump will be actuated every 15 minutes for 60 seconds.

7.1.2 Dispensing the feed

7.1.2.1 Restricted mode

When the mixer jar is empty, the automatic feeder starts to prepare a feed portion as soon as an entitled animal enters the feeding station and is identified. The feed grounds the bar electrode. After the animal has drunk up the feed, the bar electrode is free again. In the case of feed entitlement the automatic feeder prepares one further feed portion.

If the animal has no feed entitlement anymore, the box valve closes after the bar electrode is free again and draining time has lapsed.

If the bar electrode is still covered, the box valve closes after hold time has lapsed.

If an animal breaks off feed intake, five minutes after feed preparation the remaining portion in the mixer jar is released thus being available for any other entitled animal.

The feed can also be drained via the mixer draining valve, if available (→ **Emptying the mixer via the mixer draining valve**).

Feeding program

After the animals have been registered in a group (A and B), they are fed according to plan.

The daily feed quantity is spread over several intervals according to the interval feeding program (→ **Basic principle of the interval feeding program**).

The feed quantity to which an animal is entitled is saved from one interval to another and can be consumed at any time as soon as the minimum saved quantity is achieved. As of 8 p.m. the complete remaining quantity is available and can be consumed till midnight calculation.

Minimum quantity

The minimum quantity is intended to prevent the animals from consuming too small feed quantities. When an animal achieves the corresponding minimum quantity, this quantity will be released.

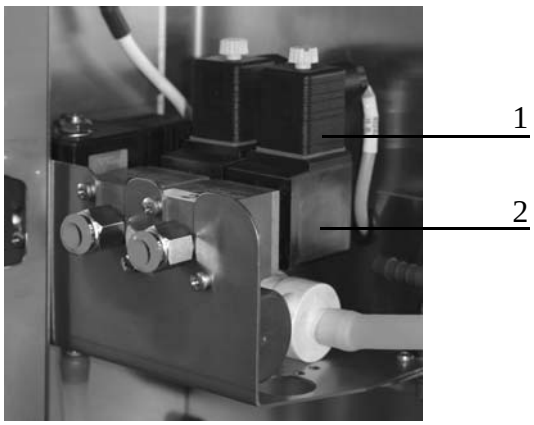
Maximum quantity

To avoid excessive feed intake due to too high minimum quantities, the quantities to be consumed are limited. If an animal consumes the maximum quantity, feed dispense will be broken off for two hours for this specific animal. The saved quantities are maintained.

7.1.2.2 Ad libitum-mode

In the ad libitum-mode the automatic feeder operates without animal identification. A portion is prepared whenever the bar electrode is free. With two feeding stations both box valves are open at the same time.

If the automatic feeder operates in the ad libitum-mode for a long time, the box valve will heat up considerably. Therefore, slip the suction hose directly on the nozzle of the mixer jar and remove the female connector (1) from the box valve (2). The same applies to an automatic feeder which is equipped with two box valves.



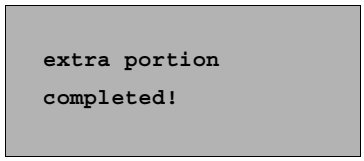
Deactivate all time-controlled cleaning menus, otherwise it may happen that the rinsing water is fed to the animals.

7.1.3 Dispensing an extra-portion

You can manually start the preparation of feed portions at any time. These feed portions are not subtracted from the day quantity to which the animals are entitled according to the feeding plan.

1.  > **Extra portion**
2. Press Enter to confirm **start ?** The extra-portion starts to be prepared.

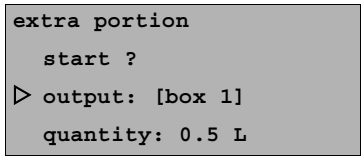
If the extra-portion has been fully consumed, the message opposite will be displayed.



The following settings can be changed:

- in **output**

  > Select one of the following options: **bucket**, **box 1** or ⊕**box 2**.
  > If the feed should be dispensed into a container, select **bucket**. If the automatic feeder is equipped with a mixer draining valve, the feed is automatically delivered into the container you placed below the mixer draining hose. If no mixer draining valve is available, you have to manually empty the mixer jar.



- in **quantity**

  > Enter the feed quantity.

- in **concentr.**

  > Enter the feed concentration.

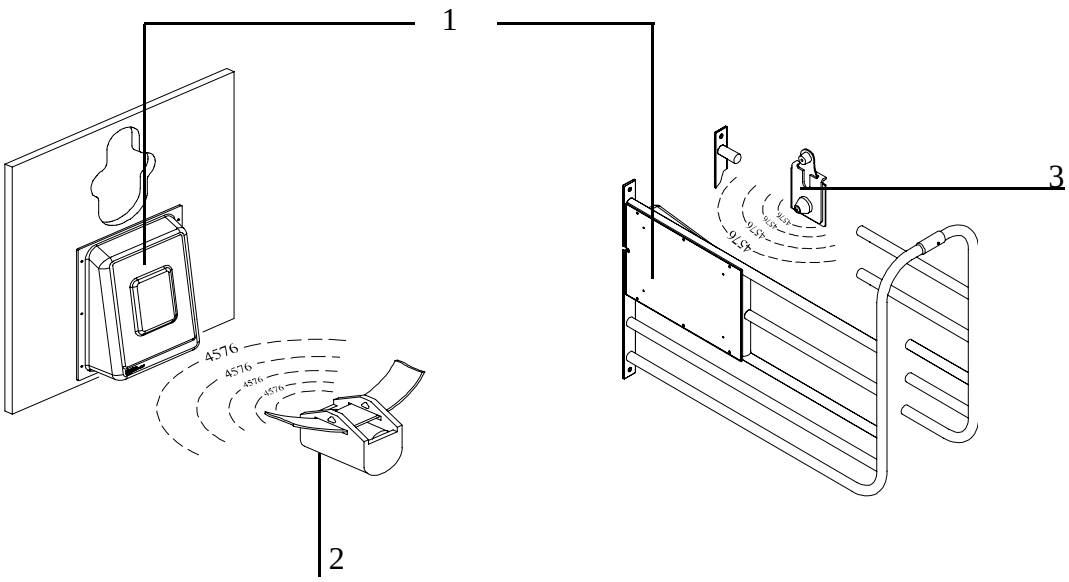
- in **milk ratio**

  > Enter the desired milk ratio.

- in ⊕**additive**

  > Enter the additive quantity.

7.2 SA Register



1	Antenna
2	Collar transmitter
3	Eartag transmitter

For identification purposes, each animal wears a collar with transmitter or an eartag with transmitter. The transmitter has a four-digit number imprinted on it. This **transmitter number** is transferred by the transmitter to the antenna in the feeding box.

As the transmitter number is not suited to rapidly locate individual animals, each animal carries an additional large **animal number** on its collar.

The animal numbers 1 to 50 can be assigned to the animals.

To facilitate that an animal is identified by the identification system thus being automatically fed:

1. The control of the automatic feeder must read in a transmitter number.

2. The transmitter number must be allocated to an animal number.

3. The animal number must be allocated to a group and then registered (→ **registering the animals**).

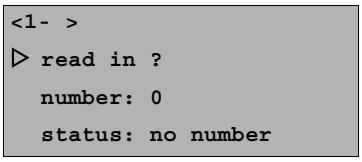
7.2.1 Reading in the transmitter numbers

7.2.1.1 Reading in the transmitter numbers automatically

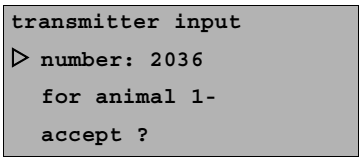
The transmitter numbers can be read in automatically thus facilitating start-up of the automatic feeder and preventing misentries.

1. > **feeding** > **register** > **transmitter input**
2. Select a vacant animal number.

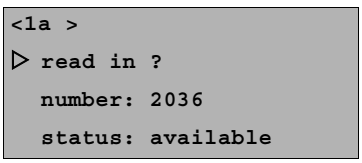
Note: the dash next to the animal number and **no number** in the status line indicate that the animal number is vacant.



3. Hold the transmitter within the identification range of the antenna.
4. Press Enter to confirm read in ?
5. As soon as the antenna identifies the corresponding transmitter, the displayed transmitter number starts flashing. **Example:** (transmitter) number 2036



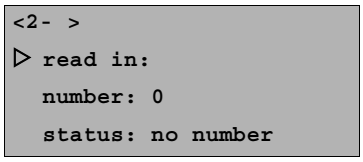
6. If you want to allocate the displayed transmitter number to the animal number, press Enter to confirm the flashing display.
7. The status line shows **available** and an **a** next to the animal number. This means that now this animal can be registered in one of the feeding groups (A or B) (→ **Registering the animals**).



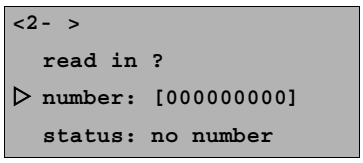
7.2.1.2 Entering the transmitter numbers manually

1. > **feeding** > **register** > **transmitter input**

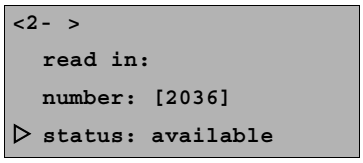
2. Select a vacant animal number.



3. Move to **number**. Enter the figurees of the transmitter number one after another. Example: transmitter number 2036



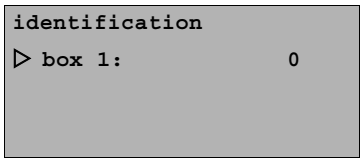
4. After you have confirmed the last figure, the status changes from **no number** to **available** and an „**a**“ is displayed next to the animal number.



7.2.2 Antenna test

The antenna test helps you to detect whether the transmitter numbers are being read in by the antenna.

1. > **diagnosis** > **identification**
2. Hold a transmitter next to the antenna. If the transmitter is identified, the transmitter number will be displayed.



Note: If the transmitter number is not identified:

> You should check in Setup whether you selected the right identification system.

> Check the setting of the Squelch value.

> Check the data lines between antenna and automatic feeder for damages.

Note: If the display often moves from the antenna symbol to the dash while an animal is staying in the feeding station, you should check the identification.

Potential causes may be:

- Overlaps of the identification range (→ **Antenna test**)
- Sources of interferences such as e.g. mobile telephones or neon lamps
- The identification is not mounted correctly in the feeding station.
- The data line from the antenna to the automatic feeder is damaged.

7.2.3 Registering the animals

You can register the animals via their animal number in the feeding groups A or B individually and manually or automatically. If you registered the animals in group A, they will be fed according to the feeding plan A. Similar procedure for group B.

Example: Group A for heifers (with less weight gain), Group B for bull calves (with higher weight gain).

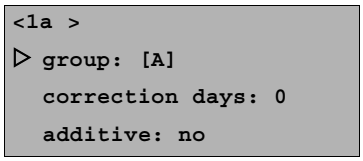
To which group you decide to allocate the animals only depends on feed type, concentration and quantity. The feeding box where the animals have been housed is irrelevant.

If you house two animal groups, the one being fed only with milk and the other with milk powder and water, make sure to allocate these animals to different feeding groups.

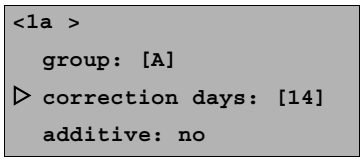
7.2.3.1 Registering the animals individually

1.  > **feeding** > **register** > **animal**

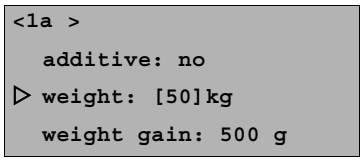
2. Select one of the available but not yet registered animal numbers.



3. Select the **group** to which the animal should be allocated.
4. The function **correction days** provides you the opportunity to reduce the total duration of feeding for an animal (→ **Changing the total duration of feeding**).

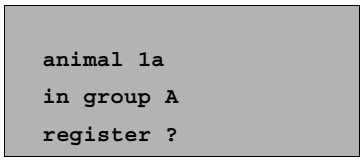


5. ⊕ Enter whether the animal should get some additive.
6. Enter animal's (estimated) **weight**. The weight gain is calculated automatically.



Note: weight and weight gain are only displayed in case an additive dispenser has been activated in Setup. The indication of animal's weight is important for weight-dependent additive dispense.

7. Press Enter to confirm **register ?** in order to register the animal.
8. Press Enter to confirm the message opposite.

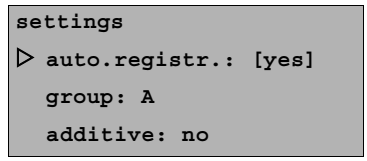


Note: on the registration day the animal exactly obtains, over the day, the feed quantity to which it is entitled on the first day according to the feeding plan. If you entered correction days, the animal will get the feed to which it is entitled on the corresponding day.

7.2.3.2 Registering the animals automatically

Automatic registration shortens the process of animal registration. Unlike the registration of individual animals, there is no need to enter animal's number and weight. If an available number is identified in the feeding station, it is automatically allocated to the previously selected group.

1. > **feeding** > **register** > **settings** > **auto. registr.**
2. Select the desired setting in **auto. registr.**
3. Select the group in which the animals should be automatically registered (here: group A).
4. Enter whether all automatically registered animals should be given additives.
5. Enter the representative animal weight. The weight gain is calculated automatically.



Note: each transmitter number that is now identified and available, is allocated to the selected group.

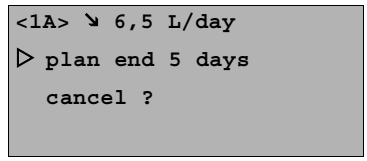
Automatic registration remains active until in line **activated** you enter **no** again.

Cancelled animals must be removed from the pen, otherwise they are automatically registered again.

7.3 Cancel

If the animals should not be fed according to plan anymore, make sure to cancel them. The same applies to those animals for which the feeding plan has lapsed.

1. > **feeding** > **cancel**
2. Select the desired animal number.
3. In **plan end** you can view how long this animal is still going to be fed according to plan.
4. Press Enter to confirm cancel if you want to cancel the animal.



A cancelled animal will not be fed anymore via the automatic feeder.

Note: if **auto. registr.** is active you should remove the cancelled animals from the pen, otherwise they will automatically be registered again (→ **registering the animals automatically**).

7.4 SA Change

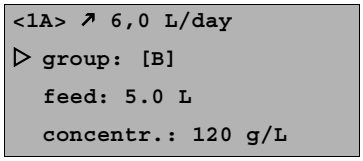
In **change** you can carry out animal-specific changes. The menu structure is as follows:

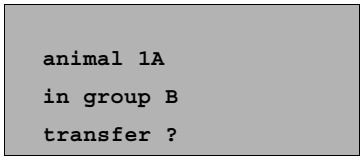
- **group**
- **feed**
- **concentration**
- **additive**
- **plan day**

7.4.1 Changing the group

Here you can allocate an already registered animal to another group.

1. > **feeding** > **change**
2. Select the deisred animal.
3. Select the desired feeding group in **group**.
4. Press Enter to confirm the message opposite.



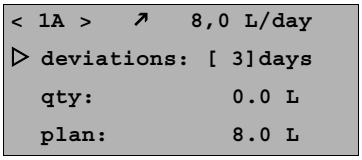


7.4.2 Changing the feed quantity and concentration

In **feed** or **concentration** enter

- how much the current, animal-specific feed quantity or concentration shall be increased or decreased,
- how long this change shall be valid.

1.  > **feeding** > **change** > **feed** or **concentration**
2. Select the desired animal.
3. Enter the validity period in **deviations**.
4. Enter the desired quantity in **qty**.
5. The following display lines allow you to check:
   - the current feed quantity to which the animal is entitled according to the plan (**plan**),
   - the feed quantity the animal is allowed to consume after correction (**feed**),



 **Note:** for **concentr.** proceed as for **feed**.

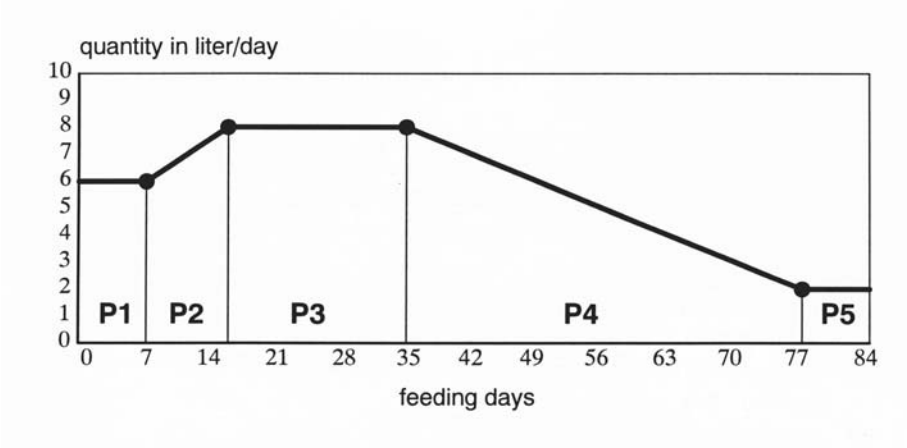
If the corrections are not valid anymore, the animal becomes an **expire animal** thus being automatically fed again according to the plan (→ **checking expire animals**).

7.4.3 ⊕Changing additive dispense

How to change additive quantities:→ **changing additive dispense**.

7.4.4 Shortening or extending the total duration of feeding

The total duration of feeding can be shortened or extended animal-specifically by „shifting“ the corresponding animal to the desired plan day.



1. > **feeding** > **change** > **plan day**
2. Select the desired animal.
3. In **feed. day** you can view the number of days that have passed since registration.

```
< 1A >   ↗   6,0 L/day
  feed. day:     1
▷ correct:      [0]  days
  plan day:      1
```

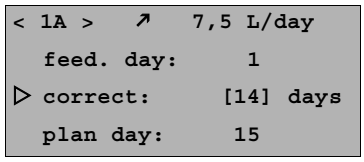
4. Enter the desired number of days in **correct**.

```
< 1A >   ↗   7,5 L/day
  feed. day:     1
▷ correct:      [14] days
  plan day:      15
```

Note: if you want to **extend** the total duration of feeding, enter a **negative figure**. If you want to **shorten** the total duration of feeding, enter a **positive figure**.

5. The following display lines allow you to check:
   - the plan day according to which the animal is fed after correction,
   - when the end of the plan is achieved,
   - the feed quantity and concentration fed to the animal today,
   - wthe current milk ratio.

Example: as at registration animal 1 is already a little older and more developed than the other animals in the group, the total duration of feeding will be shortened for this animal. The animal will be „shifted“ to day 14 of the feeding plan. In line 1you can subsequently view the feed quantity intended for plan day 14 (7.5 liters).



7.5 SA Plans

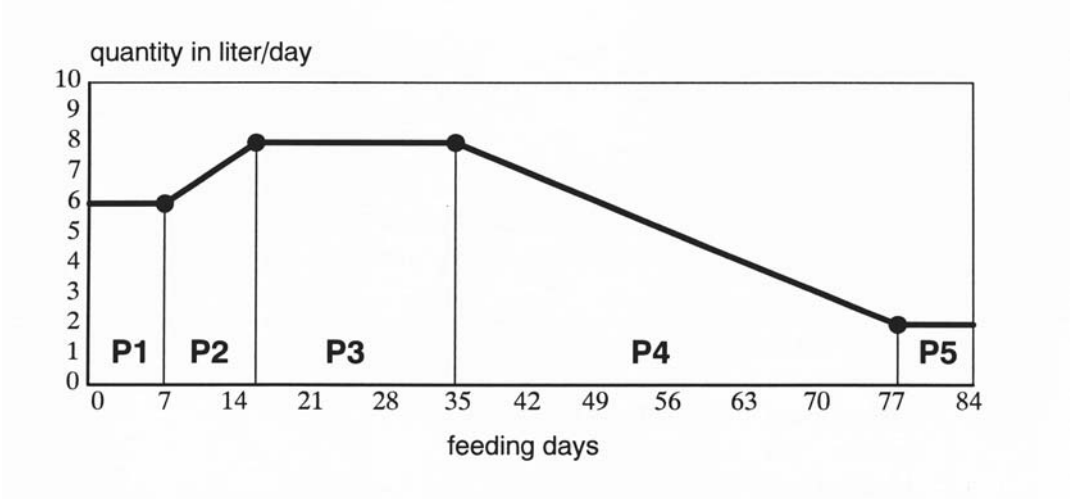
Feed preparation is controlled by the plans. The following plans are taken into account:

- feeding plan
- milk ratio plan
- concentration plan
- limitation plan

Two plans each are available: feeding plan A or B, concentration plan A or B, etc...

You can allocate an animal either to group A or B. Group A is fed according to the feeding plan A and group B to the feeding plan B. The animals that have been allocated to different (feeding) groups, can however be housed in the same pen.

Below you will find an example of a feeding plan.



Each feeding plan is subdivided into five periods (P1 - P5).

The registration day corresponds to the first day of the feeding plan.

If at start-up you have „reset“ the device data (→ **New installation**), the automatic feeder will operate with default values. The default values are empirical. They can be changed or adapted to the needs of each individual animal at any time.

You will find the standard feeding plans in the annex of this instruction manual.

7.5.1 Changing the feeding plans

1. > **feeding** > **plans** > **feed > quantity**
2. Select a group. The related standard feeding plan is displayed.

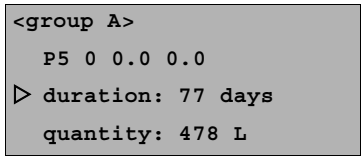
```
<group A>
   days from to L
▷ P1  [3 6.0 6.0]
  P2  14 6.0 8.0
```

3. Enter the duration (number of days) of the first feeding period in **P1**.
4. Press Enter to move to column **from** and enter the start value of the feed quantity for **P1** (period 1).

```
<group A>
   days from to L
▷ P1  [3 6.0 6.0]
  P2  14 6.0 8.0
```

5. Press Enter to move to column **to** and enter the final value of the feed quantity for **P1**.

6. For **P2 - 5** you only need to enter the duration of the feeding period and the final value of the feed quantity. As displayed on the screen, the final value of a feeding period always corresponds to the start value of the following period.
7. The lower menu lines show the total duration of the feeding plan and the feed quantity added up until the end of the corresponding plan.



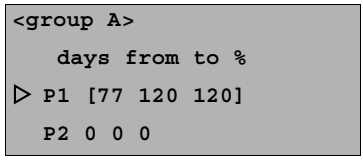
Default values feeding plan A and B
Group A: duration = 77 days; total quantity = 478 L
Group B: duration = 70 days; total quantity = 384 L

7.5.2 Modifying the concentration plans

To each feeding plan is allocated the corresponding concentration plan. Like the feeding plan, the concentration plan is divided into five periods. Nevertheless, the duration of the periods of the concentration plans is not bound to the duration of the periods of the feeding plans.

Example: If the concentration should be the same for all feeding periods, in **P1** of the concentration plan enter the exact number of days corresponding to the total number of days in the feeding plan.

1. > **feeding** > **plans** > **feed** > **concentration**
2. Select a group. The relevant default concentration plan is displayed.
3. If you want to change the values, proceed as for **feed**.



Default values concentration plan A and B
Group A: duration = 77 days; total quantity = 57 kg
Group B: duration = 70 days; total quantity = 46 kg

Note: if the concentration plan is shorter than the feeding plan, the end of the concentration plan will be displayed as an expire plan message. The concentration of the feed portion fed last will be maintained until the feeding plan has lapsed.

7.5.3 Modifying the milk ratio plans

Via the milk ratio plans you can determine the milk ratio, the feed quantity and the duration of milk feeding for an animal group. The milk ratio plans, too, are subdivided into five periods (**P1-P5**). You can feed either no milk (0 percent) or solely milk (100 percent) or a milk ratio between 30 and 70 percent.

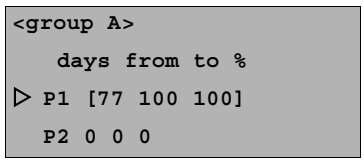
Note: those animals being fed either solely with milk or solely with milk powder and water must be allocated to different feeding groups.

Example: if the milk ratio must be the same for all feeding periods, in **P1** of the milk ratio plan enter the exact number of days corresponding to the total number of days in the feeding plan.

Note: the duration of the periods of the milk ratio plans is, however, not linked with the duration of the feeding plans. If the milk ratio plan is shorter than the feeding plan, an expire message will be displayed when the milk ratio plan has come to an end. The milk ratio of the portion fed last is maintained until expiration of the feeding plan (→ **entering the dry matter**).

Default values for milk ratio plan A and B
P(eriod) 1: milk ratio = 100 %,
The periods 2 to 5 are not activated as a standard.

1. > **feeding** > **plans** > **feed** > **milk ratio**



2. Select the desired group. The relevant default milk ratio plan is displayed.
3. If you want to change the values, proceed as for **feed** and **concentration**.

7.5.4 Changing the limitation of quantities

The limitation of quantities controls feed allocation per day via the entitlement intervals.

Minimum quantity

The feed quantities to which an animal is entitled are saved from one interval to another and can be consumed at any time as soon as the minimum quantity is achieved. As of 8 p.m. the total remaining quantity is available and can be consumed till midnight calculation.

This principle perfectly meets animals' needs. Because at the beginning of the feeding plan little animals can be provided with

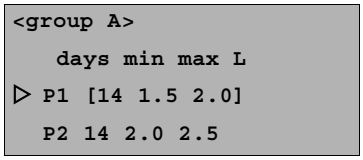
small portions, e.g. four times 1.5 liters/day. Later on, the feeding times should be reduced to only one per day by entering higher minimum save-up quantities. The long time intervals between the feeding times increase the consumption of concentrate and raw food considerably. At the same time the tendency to mutual suckling is decreased.

Maximum quantity

To avoid that the animals are provided with too much feed all at once, the released feed quantity is limited. This means that the animals only get the maximum quantity at most.

Example: an animal has saved 4.0 liters of feed. The maximum quantity is 2.0 liters. When the animal visits the feeding station, max. 2 liters are dispensed. The animal is allowed to consume the remaining 2.0 liters only after a two-hour break.

1. > **feeding** > **plans** > **feed > limitation**
2. Select the desired group. The relevant default limitation plan is displayed.

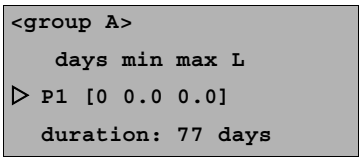


3. In **P1** enter the duration (number of days) of the first feeding period.
4. Press Enter to move to **min**. and enter the amount of liters for the minimum quantity.
5. Press Enter to move to **max**. and enter the amount of liters for the maximum quantity.

Note: the maximum quantity must be higher than the minimum quantity.

6. If you want to change the values for **P2** to **P5**, proceed as for **P1**.

7. In the last menu line you can view the total duration of the limitation plan.



Default values for minimum save-up quantity and maximum quantity of the groups A and B			
	Period	Minimum save-up quantity	Maximum quantity
Group A	1: 14 days	1.5 L	2.0 L
	2: 14 days	2.0 L	2.5 L
	3: 49 days	2.5 L	3.0 L
	4 + 5: not activated as a standard		
Group B	1: 14 days	1.5 L	2.0 L
	2: 14 days	2.0 L	2.5 L
	3: 42 days	2.5 L	3.0 L
	not activated as standard		

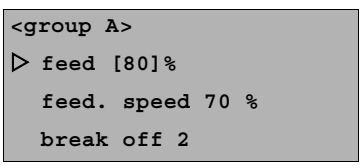
7.6 Alarm levels

By the alarm levels you can determine the time or value as of which an alarm is given. The alarm levels are determined per group.

You can enter alarm levels for:

- **feed**
- **feeding speed**
- **break without additive**
- **break with additive**

1. > **feeding** > **alarm levels**
2. Select the desired group to which the alarm levels should apply.
3. Enter the desired percentage in **feed**.



Default value:	80 %
Potential input:	0 to 99 %

Example: the alarm level is set to 80 %. If the animal consumes less than 80 % of the feed to which it is entitled on the current day according to the feeding plan, an alarm is given.

4. Enter the desired value in **feed. speed**.

Default value:	70 %
Potential input:	0 to 99 %

Note: The average, animal-specific feeding speed of the current feeding day is compared every evening with the average of the previous three days.

Example: animal's average feeding speed of the previous three days is 1 liter per minute. The alarm level is set to 70 %. If the average, animal-specific feeding speed of the current feeding day drops to 0.6 liters per minute, the alarm level (70 % of 1 liter = 0.7 liters) is not achieved. An alarm is given.

5. Enter the desired value in **break**.

Note: if the automatic feeder is equipped with an ⊕additive dispenser, in **break w.o. add.** (= break without additive) and **break w. add.** (= break with additive) enter how often feed consumption with or without additive may be broken off before an alarm is given.

Default value:	break (w.o. add.): 3 break w. add.: 1
Potential input:	0 to 99

7.7 SA⊕Giving additive

The animals can be given powder or liquid additives according to the prescription plan.

Additive contains the following menus:

- **animal**
- **group**
- **medicine prescription**

Note: please observe the indications on the package insert and discuss the dosage with the veterinary, if necessary.

Warning: additives can be harmful to health. Therefore make sure that only authorized persons have access to them.

7.7.1 Creating a medicine prescription plan

You have to create a medicine prescription plan before starting to give additive to the animals.

7.7.1.1 Selecting the dosage

The additive is dosed either

- according to animal's weight (in g/100 kg), or
- according to the feed quantity (in g/L), or
- as day quantity per animal and day (g/day).

Dosing additive according to weight

Heavy animals are given more additive than light-weight animals. The weight entered at registration automatically increases each day by the weight gain and the weight gain progression.

Dosing additive according to the feed quantity

Those animals getting plenty of feed will get more additive than those animals getting less feed. The additive quantity will be equally distributed over the feed portions.

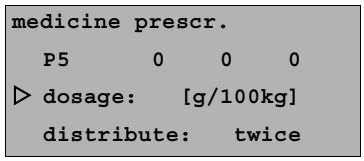
Example: animal 1 gets 8 liters, animal 2 gets 2 liters per day. If the medicine amount is 2 g/L, animal 1 will get 16 grams per day and animal 2 4 grams per day.

Dosing additive as day quantity

Example: if you want to give an animal a specific additive quantity per day, select **dosage g/day.**

1.  > **feeding** > **additive** > **medicine prescr.**

2. In **dosage** select the desired setting.



7.7.1.2 Distribution

For additive dosage according to weight or day quantity, you can select the following options:

- once (a day)
- twice (a day) or
- equal (=equal distribution to all portions).

The distribution types **once** and **twice** mean that the dispense is linked to the minimum-save up quantity.

Distribution type once

The total additive quantity is dosed into the first feed portion to which the animal is entitled.

Example: an animal is entitled to 3 liters of feed and the minimum save-up quantity is 2 liters. The entered additive amount is added in the morning to the first 2 liters of feed.

Distribution type twice

The first part of the additive quantity is dosed into the first feed portions in the morning, the second part to the first feed portions in the afternoon (in consideration of the minimum save-up quantity).

First day’s half: 0 - 12 o’clock,

Second day’s half: 12 to midnight.

Distribution type equal

The additive is added to each feed portion.

1. > **feeding** > **additive** > **medicine prescr.**
2. Select the desired setting in **distribute**.

```
medicine prescr.
  dosage:  g/100 kg
▷ distribute: [equal]
  duration: 3 days
```

7.7.1.3 Duration of medication and additive quantity

Like the feeding and the concentration plans, the prescription plans are subdivided into five periods (P1 to P5). This allows you e.g. to increase the additive amount over a long period of time and to decrease it at the end of the treatment.

1. > **feeding** > **additive** > **medicine prescr.**

```
medicine prescr.
   days from to g/
▷ P1 [0 0 0]
  P2 0 0 0
```

2. Enter the duration (number of days) of the first feeding period in **P1**.

```
medicine prescr.
   days from to g/
▷ P1 [3 0 0]
  P2 0 0 0
```

3. Press Enter to move to the column **from** and enter the desired value.
4. Press Enter to move to the column **to** and enter the desired value.
5. For **P2** to **P5**, proceed as for **P1**.

```
medicine prescr.
   days from to g/
▷ P1 [3 10 20]
  P2 0 0 0
```

Unlike the feeding plans, for the medicine plans the final value of the preceding period is not taken over as start value. You can enter each period individually.

6. In **duration** you can check the total duration of additive dispense.

Note: the additive quantity should not be less than 4 g/L. If the additive quantity is less than 4 g/L, add some glucose or milk powder to increase the additive quantity.

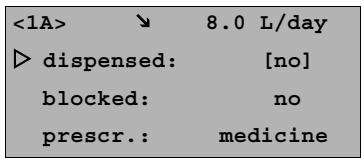
Note: the prescription plans are not linked to animal's housing date. The additive is dispensed only after the prescription plan has been activated in **give additive**. If the total duration of feeding lapses according to the feeding plan, the additive will nevertheless be given together with the feed.The feed quantity fed last will be retained unchanged until the prescription plan has lapsed.

7.7.2 Giving medicine

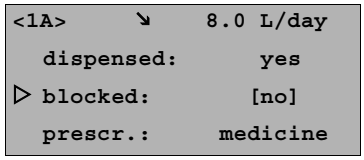
After having created the prescription plan, you can allocate it to individual animals or to a group and then activate it.

7.7.2.1 Giving medicine to individual animals

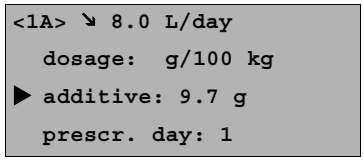
1. > **feeding** > **additive** > **animal**
2. Select the desired animal.



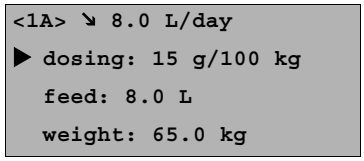
3. Select yes in **dispensed**.
4. **Blocked** (→ **blocking the remaining portion**).



5. Recheck the settings in **prescr.**, **dosage** and **additive**.
6. In additive you can change the settings for the selected animal:

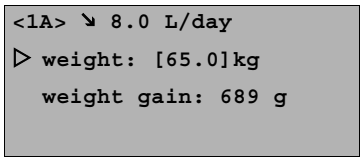


   > increase or reduce additive dosage for a certain period of time,
   > increase or reduce the feed quantity for a certain period of time,



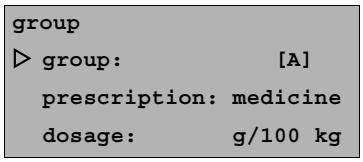
   > rectify animal’s weight,
   > view the rectified additive dosage (→ **changing additive dispense**)

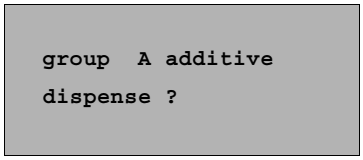
Note: if the additives should be dispensed according to animal's weight, it is imperative to enter the exact weight of the corresponding animal because heavy animals get more additive than light-weight ones.



7.7.2.2 Giving medicine to a group

1. > **feeding** > **additive** > **group**
2. Select the desired group in **group**.
3. Check the settings in **prescription** and **dosage**.
4. Press Enter to confirm **dispense ?** in order to activate medication.
5. Press Enter to confirm the message opposite.

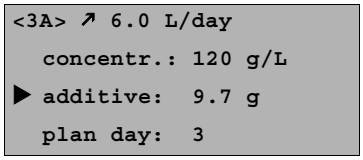


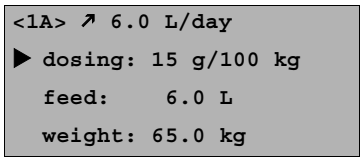


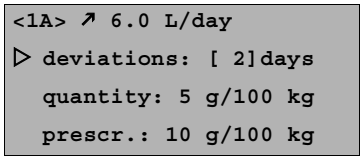
Note: those animals being already treated, are set back to the beginning of the prescription plan!

7.7.3 Changing additive dispense

1. > **feeding** > **change** > **additive**
2. Select the desired animal.
3. In **additive** you can view the current additive quantity for this animal. To change it, press Enter.
4. Move to **additive** and repress Enter.
   - 4.1 In **dosing** you can view the current additive dosage. To change the figure, press Enter.
     - 4.1.1 In **deviations** enter the desired validity period.
     - 4.1.2 In **quantity** enter the grams by which the currently dispensed additive quantity should be increased or reduced.







The following lines allow you to view:

4.1.3 dosage according to the prescription plan (**pre-scr.**),

4.1.4 dosage after correction (**dosing**).

4.2 In **feed** you can view the current feed quantity. To change it, press Enter (→ **changing the feed quantity and concentration**).

4.3 In **weight** you can view the current weight of the animal. To change it, press Enter.

4.3.1 Enter the desired value in **weight**.

4.4 In **additive** you can view the (updated) additive quantity.

Note: as soon as the deviation plan is invalid for the animal, this animal becomes an **expire animal** (→ **checking expire animals**), thus being automatically fed again according to the feeding plan.

7.7.4 Blocking the remaining portion

The function **block remaining portions** prevents certain calves from drinking feed residues that contain some additive.

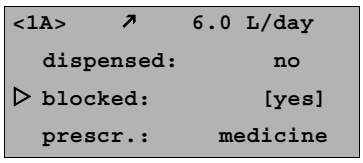
If a calf does not totally consume the feed portion containing additive (the bar electrode is covered), feed consumption will be broken off for those animals which should not be fed with additive.

This break-off will be cancelled for blocked animals,

- when the remaining portion has been drunk up by a calf which is allowed to get additive or to consume remaining portions,
- or the residual quantity has been automatically drained via the mixer draining valve, if available, or the teat (→ **emptying the**

mixer via the teat / emptying the mixer via the mixer draining valve).

1. > **feeding** > **additive**
2. Select the desired animal.
3. In **blocked** enter whether for this animal remaining portions with additive should be blocked.



Note: if you want to cancel break-off for an animal in order to feed additive, you must enter **no in blocked**. Only then you can enter **yes in dispensed**. The same applies if an animal should be blocked to which additive is given. Enter **no in dispensed** and only then **yes in blocked**.

Note: blocked animals are not given additive, even if additive dispense is activated for the entire feeding group (→ **giving medicine to a group**).

Note: the feed residues containing additive are drained off or fed to an animal which is allowed to get additive. If such an animal is followed by a blocked animal, the feed portion is prepared only after the mixer jar has been (all automatically) rinsed with clear water (only possible with the mixer draining valve!).

8 Cleaning

The automatic feeder has to be cleaned at regular intervals, particularly when fresh milk is fed. You may select the following cleaning menus:

- **Mixer**
- **Heat exchanger** (standard equipment)
- **Cleaning circuit** (=heat exchanger with hose or hoses)
- **Box valves**
- **Sponge** (=the heat exchanger is cleaned by means of a sponge)
- **Hose**
- **Settings**

Note: certain failures prevent the start of cleaning processes, e.g. when water or detergent have not been calibrated yet.

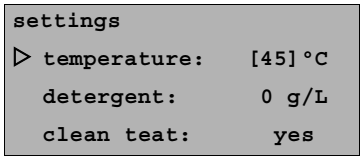
Type and frequency of the cleaning process depend on the composition and the germ-content of the milk to be fed.

Warning: detergent can be harmful to health. Therefore make sure that only authorized persons have access to it.

8.1 Settings

In this menu you can set:

- the temperature of the cleaning water
- the detergent quantity



- whether the teat should be cleaned

1.  > **cleaning** > **settings**
2. Enter the desired temperature of cleaning water in **temperature**.
3. Enter the desired detergent quantity in **detergent**.

Default value:	0 g/L
Potential input:	0 to 25 g

Note: the temperature of cleaning water as well as the detergent quantity apply to all cleaning cycles! Nevertheless, you can change them at any time.

4. Select the desired setting in **clean teat**. If the teat should be cleaned, too, select **yes in clean teat**. In that case, the rinsing water is not drained via the mixer draining valve but via the teat.

8.2 Mixer

The mixer can be cleaned automatically (time-controlled) or manually, with or without detergent.

If the automatic feeder is equipped with the ⊕cleaning kit, the detergent is dosed all-automatically and the cleaning water is drained all-automatically via the mixer draining valve.

If the automatic feeder is not equipped with the ⊕cleaning kit, after pre-cleaning you can pour some detergent into the mixer jar, if required.

With Ⓒ you can all-automatically drain the cleaning water by means of the training pump via the teat (→**Emptying the mixer**

via the teat). In that case, make sure that during the cleaning process no animal is suckling at the teat.

Alternatively you can also tip over the mixer. In that case, you must deactivate beforehand the function **mixer emptying via the teat**.

With V you can drain the cleaning water via the mixer draining valve (→**Emptying the mixer via the mixer draining valve**).

8.2.1 Starting mixer cleaning automatically/time-controlled

1. > **cleaning** > **mixer**
2. Enter the number of cleaning cycles in **cleaning/day**.
3. Enter the desired time in **cleaning 1, 2...**.

```
mixer cleaning
▷ start ?
  cleaning/day:       2
  cleaning 1:     04:00
```

As soon as the cleaning cycle is completed, the display shows the message opposite.

```
  mixer cleaning
  completed!
```

Note: if at cleaning time there is still some liquid in the mixer jar (the bar electrode is covered), automatic cleaning will be deferred by one hour at most. During that time the animal can drink up the liquid in the mixer jar. If the mixer jar is not emptied within one hour, the liquid in the mixer jar will be drained via the mixer draining valve, if available, or the teat (provided that **empty via teat** is active) and the cleaning cycle will start running.

These details also apply to **heat exchanger cleaning**.

8.2.2 Starting mixer cleaning manually

1. > **cleaning** > **mixer**
2. Press Enter to confirm **start ?**

```
mixer cleaning
▷ start ?
  cleaning/day:       2
  cleaning 1:     04:00
```

3. Change the detergent quantity, if required and press Enter to confirm the input.

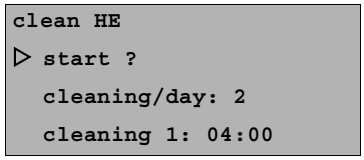
Note: observe the information in chapter **Starting mixer cleaning automatically/time-controlled**.

8.3 ⊕Heat exchanger cleaning (VP: serial equipment)

For hygienic reasons, the heat exchanger must be daily cleaned. During heat exchanger cleaning all components of the automatic feeder (except for the suction hoses) are cleaned with water and detergent. That prevents creation of milk deposits or other impurities.

Heat exchanger cleaning can be activated manually or automatically. If you activated automatic heat exchanger cleaning (the number of cleaning cycles/day is more than 0), automatic mixer cleaning becomes no longer necessary as the mixer will be cleaned, too.

1. > **cleaning** > **heat exchanger**

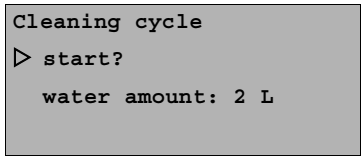


2. Press Enter to confirm **start ?**
3. Change the detergent quantity, if required and press Enter to confirm the input.

8.4 Circuit cleaning

The heat exchanger, the suction hoses and the milk hose can be simultaneously cleaned with detergent.

1. > **cleaning** > **circuit cleaning**



2. Enter the desired water quantity for pre-cleaning and rinsing in **quantity**.

Default value:	2 L
Potential values:	1 L to 10 L

Note: the longer the hoses the larger should be the water quantity for pre-cleaning and rinsing.

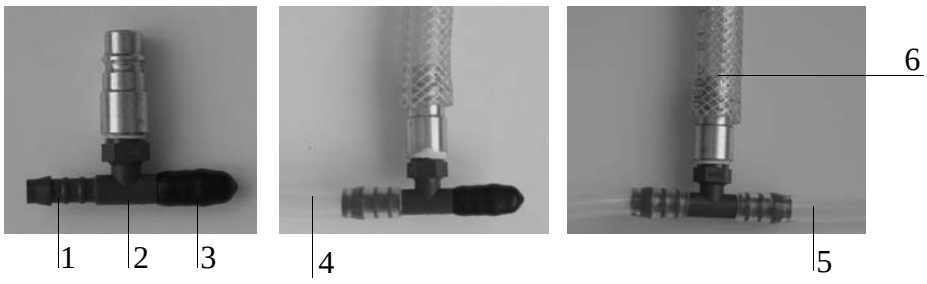
3. Press Enter to confirm **start ?**
4. Change the detergent quantity, if required and press Enter to confirm the input.

The automatic feeder starts pre-cleaning.

After a short time pre-cleaning is broken off. The message opposite is displayed:

```
Cleaning cycle
  pre-cleaning
  hose disconnected?
```

5. Make the suction hoses ready for the cleaning process:
   5.1 Remove the suction hoses (4) + (5) from the hose nozzles on the teats and the milk hose from the milk supply of the automatic feeder.



1 Hose nozzle	4 Suction hose (first station)
2 Cleaning adaptor	5 Suction hose (second station)
3 Rubber closing cap	6 Milk hose

   5.2 Slip the suction hoses on the plastic hose nozzles of the cleaning adaptor.

   5.3 Place the cleaning adaptor next to the discharge.

6. Press Enter to continue pre-cleaning.

When pre-cleaning is completed, the display shows the message opposite.

```
Cleaning cycle
  pre-cleaning
  hose connected?
```

7. Connect the cleaning adaptor to the milk supply.
8. Press Enter to start main cleaning. The display shows the time left till the end of main cleaning.
9. When main cleaning is completed, the message opposite is displayed. Remove the cleaning adaptor and place it next to the discharge.

```
Cleaning cycle
  rinsing
  hose disconnected?
```

10. Press Enter to start rinsing.
11. After circuit cleaning has been completed, the automatic feeder commutes to the automatic mode. Remove the hoses from the cleaning adaptor. Reconnect the milk hose to the automatic feeder and slip the suction hoses on the hose nozzles of the teats.
12. Now you can reactivate the automatic mode.

8.5 (Box) valve cleaning

This menu is only displayed if in **Setup** > **cleaning valve** you have activated **yes.**

The box valves can be cleaned all-automatically even without the kit for fully automatic heat exchanger cleaning. In that case, the box valves are only cleaned with cold water and without detergent.

1. > **cleaning** > **valves**

```
valve cleaning
▷ start ?
  start after:    30 min
  duration:        3 sec
```

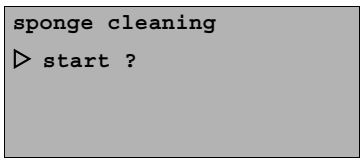
2. In **start after** enter the time that should elapse after the last portion has been dispensed before activating cleaning.
3. In **duration** enter how long the valves should be cleaned.

Default value:	start after: 30 min duration: 3 sec
Potential input:	start after: 0 (=deactivated), 5 to 120 min duration: 1 to 10 sec

8.6 Sponge cleaning

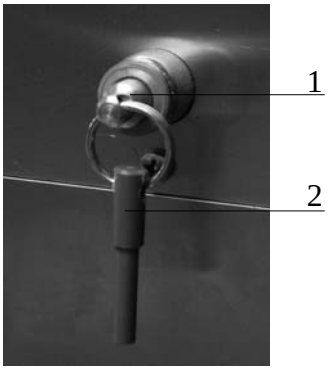
If the automatic feeder is not equipped with the fully automatic heat exchanger cleaning or in the case the latter is deactivated, the stainless steel coil of the heat exchanger must be cleaned with the cleaning sponge at regular intervals to remove deposits and milk residues. The sponge is used as a mechanical cleaning aid.

1.  > **cleaning** > **sponge**

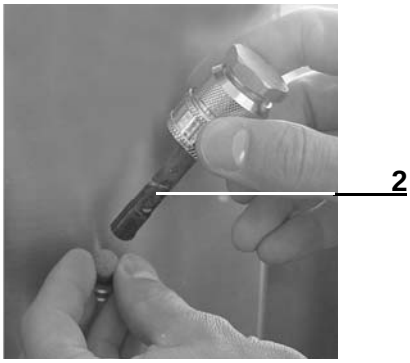


2. Open the quick coupling for sponge cleaning.

With C:



With V:



3. Press the cleaning sponge into the opening by means of the tappet (2).
4. With C: close the quick coupling by means of the metal plug (1). With V: close the quick coupling by means of the tappet (2).
5. Press Enter to confirm **start ?** in order to start the cleaning process. The control message opposite is displayed.
6. Press Enter to confirm **sponge inserted ?**

```
sponge cleaning
main cleaning
sponge inserted ?
```

The sponge is pressed by the water through the stainless steel coil.

7. As soon as **sponge cleaning** is completed, remove the cleaning sponge from the mixer jar.

```
sponge cleaning
main cleaning
sponge removed ?
```

8. Press Enter to confirm **sponge removed**.
9. Tip over the mixer jar or pump out the cleaning water via the mixer draining valve, if available ( ).

Note: if there is some air in the hose, the water will not drain off. You can activate the feeding pump in support of this process. To do so, press .

10. Rinse with clear water ( ).

Note: if the cleaning sponge pushes forward dirt or deposits, you should repeat the cleaning process immediately afterwards and later on at regular intervals.

8.7 Hose cleaning

The suction hose can be cleaned each time an animal visits the feeding station.

As soon as an animal has drunk up the last portion to which it is entitled, 0.25 L of water are dispensed into the mixer jar (after draining time has lapsed). As the animal usually stays a little bit longer in the feeding station suckling at the teat, in this way the suction hose can be easily rinsed.

1. > **cleaning** > hose

```
<group 1>
▷ activated:        [yes]
  as of plan day:    14
```

2. Select the desired group.
3. Select the desired setting in **activated**.
4. Enter the desired value in **as of plan day**.

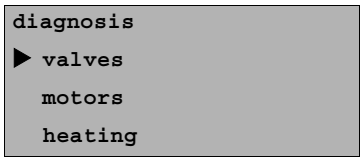
Note: make sure that suction hose cleaning is activated only after the animals were being fed for 14 days on the automatic feeder because young animals are not likely to drink the water.

9 Diagnosis

The menu **diagnosis** facilitates troubleshooting when a technical problem arises. In addition, it allows you to check the settings in Setup.

9.1 Checking the valves/motors

Here you can check whether the following actuators as well as their control are working properly.



Valves

- **Water valve HE** (HE = heat exchanger)
- **Water valve bo.** (bo. = boiler)
- **Cleaning valve**
- **Milk valve**
- **Mixer draining valve**, if available
- **Circulation valve HE**
- **Box valve 1/2**

and

Motors

- **Milk pump**
- **Mixer motor**
- **Powder motor**
- **Additive dispenser**
- **Detergent pump**
- **Training pump**
- **Circulation pump**

1. > **diagnosis** > **valves** or **motors**

2. As long as in **valves** > **water valve HE** you keep Enter pressed, the valve remains open.
3. Press Enter in **circulation pump.** To check the functioning of the circulation pump, press Enter in **start ?** To carry out a more detailed function check, press Enter in **check ?**

Note: this test takes automatically place also at day changeover.

9.2 Checking the heating

In this menu you can check whether the boiler heating is working properly.

1. > **diagnosis** > **heating**
2. As long as in **on ?** you keep Enter pressed, the boiler should heat up and the temperature increase.

9.3 Checking the sensors

In this menu you can check the following sensors:

- Supply electrode (covered/free)
- Spot electrode (covered/free)
- Bar electrode (covered/free)
- Detergent (ok/empty),
- Button for the manual training pump (active/inactive)
- Feed sensor of the gradient or servo control (active/inactive)
- Mixer and boiler sensors (temperature of the liquids in the boiler and the mixer)

1. > **diagnosis** > **sensors**

Note: changes in status or temperature are immediately displayed. Consequently, fault occurence is narrowed down.

9.4 Checking the identification

SA SM (only with bus interface): Here you can check whether the identification of the feeding station is working properly. Select the corresponding feeding station.

1. > **diagnosis** > **identification** > **station 1**...
2. Hold a transmitter next to the antenna. The transmitter number will be displayed.

9.5 SM Checking the interface

In this menu you can check whether:

- the feed computer transmits a signal for consumption of a feed portion: **cons. active/inactive**
- the feed computer transmits a signal for consumption of a feed portion with additive: **additive active/inactive**
- the feed computer transmits a signal for selection of a feeding box: **box 1/2**
- the automatic feeder transmits the signal that the mixer is empty to the feed computer. Press Enter **to confirm ready signal set** ?

9.6 Control

In **control** you can view the number of power failures, data backups and cleaning faults.

- In **power failures** you can view how often the automatic feeder has been without current.

- In **backup** you can view the number of internal backup copies generated after memory error.
- In **cleaning fault** you can view the number of faults occurred during automatic mixer cleaning and automatic heat exchanger cleaning.

1. > **diagnosis** > **control**
2. Select the failure that occurred.
3. In **since** you can view when the entries were deleted last.
4. Press Enter to confirm delete ? in order to delete the failures.

9.7 Version

In **version** you can check different version numbers.

- Device
- Terminal
- SMInterface
- Identification 1 / 2
- ID-Chip

1. > **diagnosis** > **version**
2. Select the desired device.

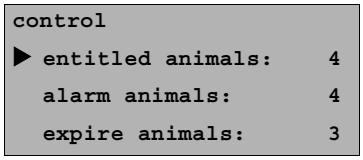
9.8 Setup

Here you can check - but not change - the settings carried out in Setup.

1. > **diagnosis** > **Setup**
2. To change the settings → **overview of the menus in Setup**

10 Animal control

After pressing the **control-key** , the following menu will be displayed:



- **Entitled animals**
- **Alarm animals**
- **Expire animals**
- **Animals with additive**
- **Marked animals**
- **Unknown transmitters**
- **All animals**
- **Consumption**.

For each menu the number of animals is displayed.

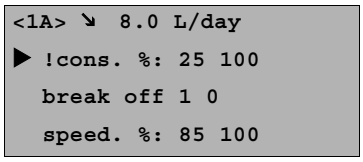
10.1 Checking marked and all animals

In **marked animals** you can check the feeding behavior of specific, marked animals.

All animals gives you an overall view on the feeding behavior of all animals.

Hereinafter the procedure is exemplified by **All animals**.

1. > **all animals**



The first line shows the animal number, the plan tendency and the feed quantity intended for the current day according to the feeding plan.

2. Select the desired animal.

The following lines allow you to check:

- the consumption in % today and yesterday

- the break-off today and yesterday
- the drinking speed today and yesterday
- the number of visits to the feeding stations today and yesterday
- the feeding day

10.1.1 Checking the consumption

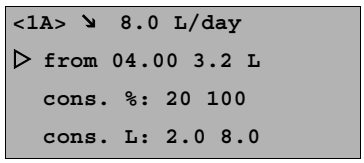
1.  > **all animals** > **cons. %**
2. Select the desired animal.

The first display line shows the animal number, the plan tendency and the feed quantity to which the animal is entitled on the current day.

The second display line is variable (→ **displays in the automatic mode**). There are four different display variants:

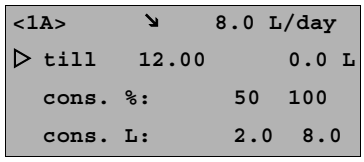
Variant 1

The animal is entitled to feed. The display shows: the time as of which the animal is entitled to feed and the feed quantity saved till check time.



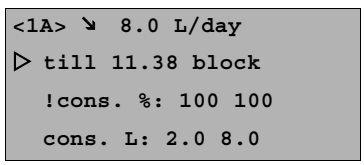
Variant 2

The animal is not entitled to feed (here till noon).

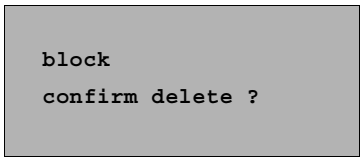


Variant 3

The animal has saved more feed than it is allowed to consume all at once. If this animal consumes up to the maximum feed quantity (→ **maximum quantity**), it is blocked for the following two hours. The display shows the time as of which the animal is allowed to be fed again.

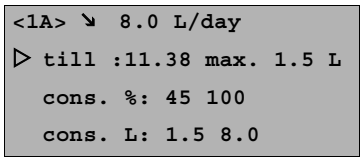


Note: to delete feed blocking, press C. Press Enter to confirm **block, confirm deletion?**



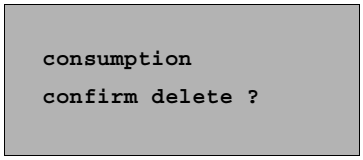
Variant 4

The animal has saved more feed than it is allowed to consume all at once: if this animal consumes less than the maximum quantity, the display shows the time up to which the difference between consumed and maximum quantity will be available.



3. In **cons. L** the display shows the absolute quantity consumed on the current (left column) and the previous (right column) day.

Note: if the consumed feed quantity of the current day should be set to 0, press C. Press Enter to confirm consumption, confirm delete ?



4. In **feed** the display shows the feed quantity to which the animals are or were entitled today (left column) and yesterday (right column).

Note: in **feed** you can change the feed quantity (→ **changing the feed quantity and concentration**)

5. In **conc. g/L**, the display shows the feed concentration of today (left column) and yesterday (right column).

Note: here, too, you can carry out corrections (→ **changing the feed quantity and concentration**)

6. In **milk %** you can view the milk ratio of the feed portion of today and yesterday.

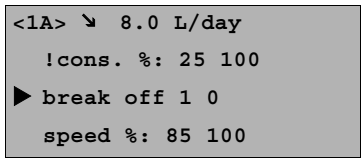
Note: milch % is only displayed when the automatic feeder operates in the **MP/milk mode**.

10.1.2 Checking break-off

1. > **all animals** > **break-off**
2. Select the desired animal.

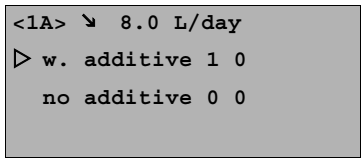
Without additive dispenser

3. In **break** the display shows how often the animals have broken off feed consumption today (left value) and yesterday (right value).



With additive dispenser

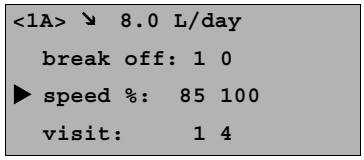
4. In **w. additive** you can view how often the consumption of feed with additive has been broken off. In **no additive** you can view how often the consumption of feed without additive has been broken off.



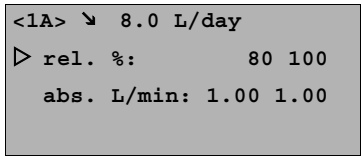
Note: ⊕w. additive and **no additive** are only displayed if the automatic feeder is equipped with an additive dispenser.

10.1.3 Checking the drinking speed

1. > **all animals** > **speed %**
2. Select the desired animal.

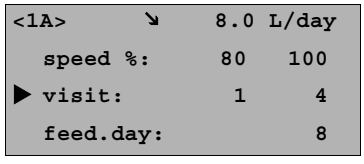


3. In **rel. %** the display shows the drinking speed in percent for today (left value) and for yesterday (right value).
4. In **abs. L/min** the display shows the absolute drinking speed for today and yesterday.



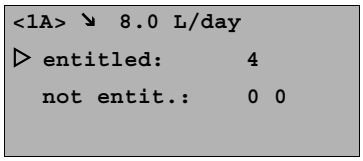
10.1.4 Checking the visit

1. > **all animals** > **visit**
2. Select the desired animal.



3. In **entitled** you can check how often the animal has visited the feeding station.

4. In **not entit.** you can check how often the animal has visited the feeding station without feed entitlement.

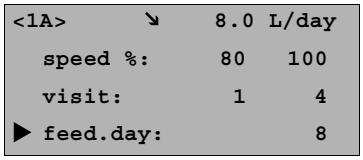


10.1.5 Checking the feeding day

1. > **all** > **feed. day**

2. Select the desired animal.

3. In **correct** you can enter the correction days.



The following display lines allow you to check:

- **Plan day**
- **Plan end**
- **Feed** (current day quantity)
- **Concentration**
- **Milk ratio** (is only displayed with MP/milk mode)

10.2 Checking entitled animals

Entitled animals are defined as those animals which are still entitled to feed. In **entitled animals** the following is displayed:

- the absolute and relative quantities consumed today and yesterday by each entitled animal,
- how often entitled animals have broken off feed consumption (with/without additive),
- how often entitled animals have visited the feeding station (with/without entitlement).

Note: proceed as for **all animals**.

10.3 Checking alarm animals

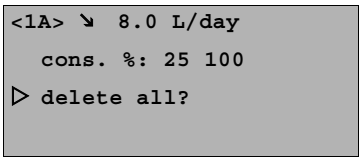
An animal becomes an alarm animal when the set threshold values for one or more of the following parameters for today and yesterday are above or below target (→ **alarm levels**).

- Feed consumption (in % of the day quantity)
- Drinking speed
- Number of break-offs

Note: proceed as for **all animals**.

Deleting the alarms

1. [i] > **alarm animals**
2. Select the desired animal.
3. Press [Enter] to confirm **delete all ?**



Note: the alarms of the current feeding day can be deleted only on the next day.

10.4 Checking expire animals

The day before a temporary action (e.g. deviations of the feed quantity) expires, an expire message for the corresponding action is displayed.

The following expire messages may appear:

End of the feeding plan

When the feeding plan expires, the animals are not fed anymore.

End of the concentration plan

If the concentration plan expires prior to the feeding plan, the feed concentration fed last will be maintained until the feeding plan expires.

⊕End of the additive plan

When the additive plan expires, the animals are not given additive anymore.

Deviation plans

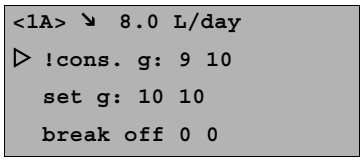
When the deviation plan for feed, concentration or ⊕additive expires, the animal is fed again according to the feeding, concentration or additive plan of the corresponding group.

Note: Press C to mask out the message. This message reappears on the next day and can be deleted by repressing C.
Proceed as for **all animals**.

10.5 ⊕Checking animals with additive

This control menu is only displayed if the automatic feeder is equipped with an additive dispenser and additive is given to at least one animal.

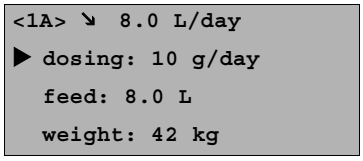
In menu **anim. with add.** the following is displayed:



cons. (additive quantity consumed today and yesterday)

set (additive quantity that should be consumed today and yesterday)

If you open the menu **set**, you can check and change the following:



- additive dosing
- feed quantity
- animal's weight
- additive quantity (cannot be changed)

break (here you can view how often feed consumption with/without additive has been broken off)

prescription day

prescription end

feeding day (in this menu you can extend or shorten the duration of feeding, if necessary)

In line **dispensed** you can terminate additive dispense by selecting **no**.

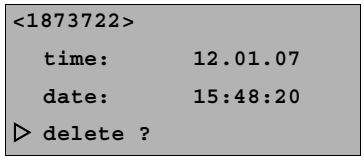
Note: proceed as for **all animals.**

10.6 Unknown transmitters

The warning **unknown transmitters** is displayed if

- the identification detects a transmitter that has not been allocated to any of the animal numbers.
- a transmitter number has been allocated to an animal number without having been registered before.

1. > **unknown transm.**
2. Here you can
   - > view how many and which transmitters are concerned
   - > check on which day and at which time the transmitter numbers were detected last by the identification.
   - > delete the transmitter numbers, if necessary.
3. Press Enter to confirm **delete ?**



10.7 Consumption

In this menu you can check the total consumption and the consumed quantities of each individual animal.

1.  > **total consumption**
2. If in **total** you press Enter, the calculated (**set**) and the actual (**actual**) consumed quantities of all animals of today, yesterday and the day-before-yesterday are displayed.
3. If in **animal** you press Enter, the consumed feed and additive amount of each individual animal will be displayed. The consumed quantities are summed up starting from registration till removal.

11 Fault messages and warnings

When a fault occurs, a device alarm is given. The green LED goes out and the automatic mode is broken off!

Warnings signal a problem but they do not break off the automatic mode.

Some warnings and fault messages disappear once the fault has been removed. Some of them must be deleted by pressing C.

11.1 Faults

11.1.1 Memory error

When switching the automatic feeder on, the stored program data are checked. In case of faulty data, the display shows the following fault message:

1. Confirm the message opposite by pressing Enter in order to reset the automatic feeder.
2. Afterwards you have to check the settings in **device data** and **plans** and carry out **calibration**.

11.1.2 Temperature

If the actual value of the boiler water falls below the minimum temperature, feeding is broken off until the temperature is equal to or higher than the minimum temperature.

The potential reason for this shortfall may be the following: feed consumption is accelerated in such a way that the time needed by the boiler to heat up the water is not sufficient.

If there is no explanation for the fault, service personnel should check the automatic feeder for calcification or other potential sources of defect.

The fault message opposite is displayed:

```
boiler
heats up xx.x °C
```

> Check the heating.

> Also check the temperature in the mixer for **min. temp.** (→ **adjusting the target and the minimum temperature**).

If the temperature of the boiler water is too high, the fault message opposite is displayed:

```
failure
temperature too high
```

> Drain the boiler water into the mixer until the displayed fault message disappears.

1.  > **water bo. start ?**
2. Keep Enter pressed.

If you provide the boiler with pre-heated water, you should check whether the temperature is too high.

If there is no explanation for the fault, service personnel should check the automatic feeder.

11.1.3 SM Communication

If the automatic feeder is connected to the bus system and the connection to the feed computer/ gateway is faulty, a communication fault may occur.

```
failure
communication
```

> Check the connecting line to the feed computer.

The fault message disappears automatically as soon as the fault has been removed.

When switching the automatic feeder on it may take some seconds until the connection to the feed computer is established.

11.1.4 SM Gateway

If the automatic feeder is connected to the bus system and the connection between the feed computer and the gateway is faulty, a communication fault may occur.

```
failure
gateway
```

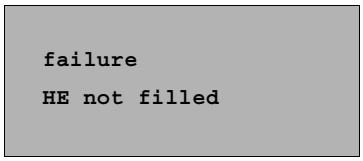
> Check the connecting line between the feed computer and the gateway.

The fault message disappears automatically as soon as the fault has been removed.

When switching the automatic feeder on it may take some seconds until the connection to the feed computer has been established.

11.1.5 HE not filled

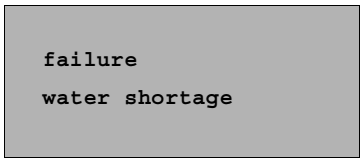
At start-up the control checks whether the heat exchanger is filled with water. If this check fails, feeding will be broken off.



1.  > **fill HE ?**
2. Check whether the water jet touches the supply electrode during heat exchanger filling.
3. Check the water supply.

11.1.6 Water shortage

If the bar electrode in the mixer jar is not earthed during water dispense, the automatic feeder will start a water check. If the water check fails, feed preparation and animal identification will be switched off.



> Press C to delete the fault message.

> Check whether the water level has reached the bar electrode.

> Check the water supply of the automatic feeder.

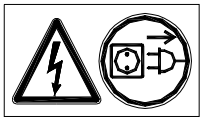
> **Only for service personnel:** check the sensitivity of the electrode:

The **electrode sensitivity** is:

- **too high**, when the electrode signals **covered** though it is actually free.

- **too low**, when the electrode signals **water shortage** though it is covered.

Increasing/decreasing electrode sensitivity



Danger! Hazardous voltage! Electric shock hazard! Pull the mains plug.
To increase the sensitivity of the electrode, turn the the potentiometer (see wiring diagram) located on the motherboard clockwise. To decrease the sensitivity of the electrode, turn the potentiometer counterclockwise.

11.1.7 Emptying the mixer

If the cleaning water cannot be drained from the mixer because the drain is e.g. clogged, the fault message opposite is displayed. Feeding will be cut off until you rectify the fault.

```
failure
emptying the mixer
```

> Press C to delete the fault message.

> Check all milk/MP-supplying components from the mixer to the mixer draining valve or from the mixer to the teat for clogging and remove the obstructions.

> Check the bar electrode.

Warning: Before restarting the automatic feeder it is imperative to remove the cleaning residues in order not to endanger animals' health.

Caution: it is imperative not to extend the hose that leads from the mixer draining valve to the drain!

11.1.8 Heating

If the heating does not work, the reasons for it may be the following:

```
failure
heating
```

Only for service personnel:

- The heating element is defective.

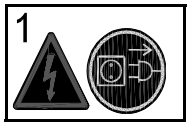
> Check the heating element for continuity.

- The temperature sensor is defective.
- There is no voltage on the heating.

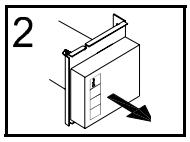
> Check the on-site fuses, if necessary.

- The safety temperature limiter is tripped. To reactivate it, proceed as follows:

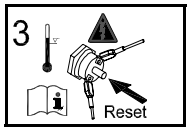
1. Press C to delete the fault message.



2. Pull the mains plug. For those devices with fix power connection, switch the main switch off and be sure the device is free of voltage before getting close to live parts.



3. Open the right door of the automatic feeder. Remove the metal covering.



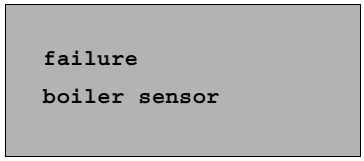
4. Push the red Reset-button to reset the safety temperature limiter.

5. Secure the metal covering and close the lateral door.

6. Only then, plug in the mains plug or turn the main switch to position ON.

11.1.9 Boiler sensor

If the temperature sensor in the boiler is defective, the fault message opposite is displayed.



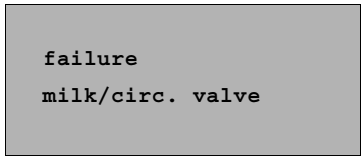
Only for service personnel:

> Measure the resistance of the sensor after having removed the plug on the motherboard (→ **sensor type for boiler and mixer**).

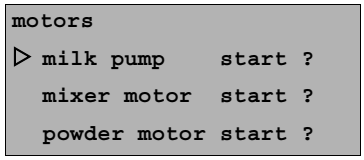
> If the measured value differs from the value in the table, you have to replace the sensor (see wiring diagram).

11.1.10 Milk/circulation valve

If the fault message milk/circ. valve is displayed, the milk or circulation valve may possibly be leaky.



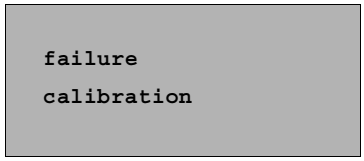
1. Carry out function and visual check of both valves (→ **diagnosis > valves**).
2. > **diagnosis** > **motors** > **milk pump**. Press Enter. If, after the pump has started, some liquid flows out of the milk/water outlet, one of the two valves may possibly be leaky.



3. If necessary, let the service personnel check and replace the valves.

11.1.11 Calibration

If you start up the automatic feeder without calibrating the powder and liquid feed components as well as the detergent, the fault message opposite will be displayed.

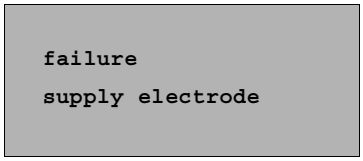


This fault message also appears e.g. if you commute from the MP-mode to the MP/milk mode and directly move to automatic mode without having calibrated the milk before.

> Calibrate the feed components and ⊕detergent (→ **calibration**).

11.1.12 Supply electrode

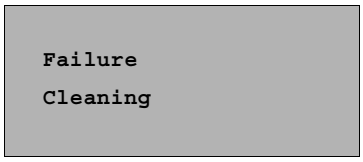
If the supply electrode is grounded before a feed portion is mixed or at the beginning of heat exchanger cleaning, the feeding mode is broken off and the message opposite is displayed.



> Check whether the supply electrode is grounded (→ **diagnosis > sensors > supply el.**).

11.1.13 Cleaning

If a box valve or the mixer draining valve are leaky, during the cleaning process some water drops away.



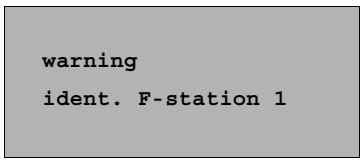
Check all box valves and the mixer draining valve for tightness. Clean the valves, if necessary. A foreign matter may prevent the valves from closing completely.

If even cleaning does not bring any results, the corresponding valve must be repaired or replaced.

11.2 Warnings

11.2.1 Identification

If the identification system does not work properly, the message opposite will be displayed:



> Check the identification.

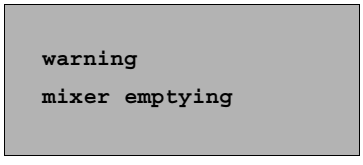
> Check the cable leading to the antenna for visible damages.

> Also check whether the (correct) antenna has been activated in Setup.

The warning is automatically deleted as soon as the fault has been removed.

11.2.2 Mixer emptying

If the mixer cannot be emptied because e.g. the discharge is clogged, the warning message opposite is displayed.



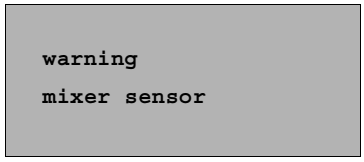
> Check all milk supplying components from the mixer to the mixer draining valve or from the mixer to the teat for clogging and remove it.

> Check the bar electrode.

The message disappears as soon as an entitled animal enters the feeding station. This animal can drink up the liquid in the mixer jar.

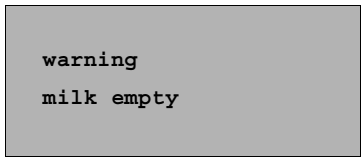
11.2.3 Mixer sensor

The warning **mixer sensor** is displayed when the temperature sensor in the mixer jar is defective or the temperature in the mixer jar falls below 0 °C.



11.2.4 Milk empty

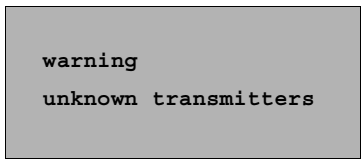
If in menu **milk values you have selected cont. MP no**, as soon as the milk tank is empty feeding will be broken off only for those animals which are fed with milk. The animals which are given milk powder will still be fed.



1. Replenish the milk tank and press Enter.
2. Press Enter to confirm **milk filled ?**

11.2.5 SA Unknown transmitters

The warning **unknown transmitters** is displayed when

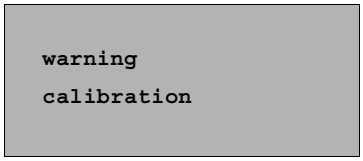


- a transmitter which has not been allocated to any of the animal numbers is detected by the identification,
- a transmitter number has been allocated to an animal number but not registered yet.

1. Delete the warning.
2. In menu **unknown transm.** you can view the transmitter number concerned (→ **animal control > unknown transmitters**).

11.2.6 Calibration

The warning **calibration** signals that the last calibration dates back 120 days.

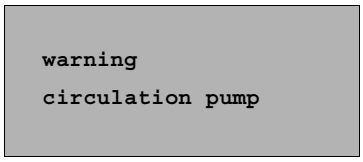


1. Delete the warning.
2. Calibrate the feed components as well as the detergent (→ **calibration**).

Note: if you delete the warning but do not subsequently calibrate, the message will be displayed again the next day.

11.2.7 Circulation pump

At midnight the control of the automatic feeder checks whether the circulation pump is working properly. If this is not the case, the message opposite is displayed.



1. Delete the warning.
2. Open the right lateral door of the automatic feeder.
3. Press Enter and check whether the circulation pump is audible. If this is not the case:
   3.1 Contact service personnel who should check the circulation pump and replace it, if necessary.

12 Care and maintenance plan / Routine tasks

12.1 The automatic feeder is in operational state

	Care/maintenance interval			
	daily	weekly	3-mo.	if required
Check the **animals.**	☐			
Check the milk powder hopperand replenish it, if necessary.	☐			
Clean the milk tank and the **connecting hose** To clean the connecting hose to the automatic feeder, start the cleaning cycle (→**cleaning cycle**)	☐			
Replenish the milk tank.	☐			
⊕**Check the detergent container**and **replenish** it, if required.	☐			
Clean the mixer jar. If the automatic feeder is not equipped with the ⊕ cleaning kit, manually start **mixer cleaning** and add some detergent. Use a brush to increase the cleaning effect.	☐			
Check the powder outlet of the milk powder hopper and of the ⊕additive dispenser. Remove incrustations as they impair dosing accuracy. Observe the safety instructions contained in this instruction manual! Never touch the crushing hazard area as long as parts can move there. Never use your fingers to clean the milk powder outlets but use the tool included in delivery!	☐			
Check whether **the teat** is faultless.	☐			
Check the suction hoses for deposits. It is imperative to regularly check the suction hoses for deposits. If you detect some deposits: First, select the function **suction hose cleaning** (→ **suction hose cleaning**). Second, activate **circuit cleaning** (→ **circuit cleaning**). Third, if after cleaning deposits are still visible in the suction hoses, you should manually clean them (⊕e.g. by means of the cleaning gun). Fourth, if even this does not yield the desired result, replace the hoses. The suction hoses can also be cleaned continuously (→ **suction hose cleaning**).		☐		☐

	Care/maintenance interval			
	daily	weekly	3-mo.	if required
Cleaning cycle (→ **cleaning cycle**)		☐		
Sponge cleaning (only for MP/milk mode) **Carry out sponge cleaning** every day if the automatic feeder is not equipped with the fully automatic HE-cleaning. If the automatic feeder is equipped with the fully automatic HE-cleaning, carry out **sponge cleaning** only if required. E.g. if you have not been using any detergent for one week or if you are using a new detergent and you are not sure of its cleaning efficiency (→ **heat exchanger cleaning with sponge**)	☐			☐
Carry out calibration Carry out calibration at regular intervals but at least quarterly. Recalibrate milk powder and ⊕additives at least each time you use a new batch or you change the product/manufacturer. Make sure that the powder outlets are free from deposits.			☐	

12.2 Shutdown of the automatic feeder

	ok?
Empty and clean the milk powder hopper.	☐
Close the cable inlets of the antennas by means of blind plugs. Moisture may penetrate into the control unit if the inlets are not closed.	☐
Carry out **circuit cleaning**.	☐
Drain the water from the boiler. Remove the water hose located between the water solenoid valve and the boiler. Open the bleeder screw located on the boiler casing so that the water may drain off.	☐
Drain the water from the solenoid valves and the volume regulator. (in case of frost risk!)	☐
Pull the mains plug.	☐
Keep the automatic feeder dry.	☐

13 Check list for after-sales service

Before starting up the automatic feeder, it is imperative to carefully read and follow the information, in particular the safety instructions contained in this instruction manual!

Start-up		
1.	Ground the automatic feeder.	
2.	Point out to the end user that the quality of water must correspond to that of drinking water. High lime or/and iron or/and manganese contents may lead to early wear.	
3.	Connect the water and milk supply.	
4.	Mount the feeding station and the race-way.	
5.	Connect the antennas.	
6.	Mount the suction hoses.	
7.	Replenish the milk powder hopper and the milk tank.	
8.	Plug in the mains plug.	
9.	Switch the automatic feeder on.	
10.	Fill the boiler with water.	
11.	Enter the portion size (250 ml / (V) 500 ml).	
12.	Adjust the heating (set and minimum temperature).	
13.	Set the distribution pause.	
14.	Check the switch position for the heating cable, the vapour screen and mixer jar heating (in summer: 0)	

Setup		
1.	Push the (C) control switch or turn the (V) main switch to switch the automatic feeder off and immediately afterwards on while keeping the Menu-key pressed.	
2.	Check the following settings:	
3.	Language	
4.	Date and time and adjust them, if necessary.	
5.	Machine	
6.	Equipment	
	6.1 (+) Mixer draining valve available yes/no ((V) standard equipment)	
	6.2 Training pump	
	6.3 (+) Additive dispenser Powder or Liquid available yes/no	
	6.4 (+) Detergent pump available yes/no	

	6.5 ⊕ Circulation valve available yes/no	
	6.6 VF Cleaning valve available no	
	6.7 Circulation pump available yes/no	
	6.8 Mixer sensor available yes/no	
	6.9 Supply and spot electrode available yes/no	
7.	SM Interface	
8.	Enter the Squelch value.	
9.	Heating activated yes/no	
10.	Sensor type	
11.	Identification	
12.	Register the feeding stations 1 + ⊕ 2.	
13.	Terminal-address	
14.	Communication	

SM Feed computer		
1.	Carry out settings on the feed computer.	

Device data		
1.	New installation	
2.	Select restricted or ad libitum-mode.	
3.	Feeding station	
	3.1 Draining time and hold time	
	3.2 ⊕ Enter turn-on and turn-off delay in the case of gradient or servo control.	
4.	Select mixer options (drain/OFF-delay)	
	4.1 C Empty via the teat	
	4.2 Drain after x minutes	
	4.3 OFF-delay	
5.	Set the milk values	
	5.1 Select MP/milk mode or MP-mode.	
	5.2 Continue with MP / machine stop	
	5.3 Enter the dry matter.	
	5.4 Activate milk expelling.	
	5.5 Commute to the single heating circuit.	

Calibration		
1.	HE water	

2.	Boiler water	
3.	Milk	
4.	MP	
5.	⊕Additive	
6.	⊕Detergent	

	SA Register	
1.	Antenna test	
2.	Read in the transmitter numbers.	
3.	Register the animals.	

	SA Plans	
1.	Feeding plans	
2.	Concentration plans	
3.	Milk plans	
4.	Limitation of quantities: check minimum saved quantity / maximum quantity and adjust it, if necessary.	

	SA Change	
1.	Group	
2.	Feed	
3.	Concentration	
4.	⊕Additive	
5.	Plan day	

	Cleaning	
1.	Settings	
	1.1 Temperature of cleaning water	
	1.2 Detergent quantity	
	1.3 Clean teat yes/no	
2.	Mixer	
3.	⊕HE (VP serial equipment)	
4.	HE/suction hoses	
5.	V Box valves	
6.	Sponge	
7.	Suction hose	

14 Accessories

The following accessories are available for the automatic feeder:

- Stainless steel version
- Second feeding station
- Additive dispenser Powder
- Additive dispenser Liquid
- Servo control (when the feeding stations are distant from or higher than the automatic feeder)
- Gradient control (when the feeding stations are lower than the automatic feeder)
- Large fly protection door
- Electronic vapour screen for milk powder outlet
- Electronic vapour screen for additive dispenser Powder
- Mixer heating
- Equipment for protection against frost
- Sieve for milk supply
- (C) Cleaning kit for fully automatic heat exchanger cleaning (Combi and Fresh milk) consisting of:
  - Circulation valve
  - Mixer draining valve
  - Detergent dosing pump
- (VF) Cleaning kit for fully automatic heat exchanger cleaning (Combi and Fresh milk) consisting of:
  - Circulation valve
  - Detergent dosing pump

15 Annex

Menu overview of the Main menu-key 

SA Feeding	Register	Animal	Group Correction days Additive yes/no Weight in kg Weight gain in g Register ?
		Transmitter input	Read in ? Number Status
		Settings	Autom. registr. yes/no Group Additive yes/no Weight in kg Weight gain in g
	Cancel	Plan end in days Cancel ?	
	Change	Group	
		Feed	Deviations in days Quantity in L Plan in L Feed in L Concentration in g/L Milk ratio in %
		Concentration	Deviations in days Quantity in g/L Plan in g/L Concentration in g/L Feed in L Milk ratio in %
		Additive	Dispensed yes/no Blocked yes/no Prescription Dosage (g/100kg, g/L, g/day)
		Plan day	Feeding day Correction in days Plan day Plan end in day Feed in L Concentration g/L Milk ratio in %

Menu overview of the Main menu-key

SA Feeding	⊕ Additive	Animal	Dispensed yes/no Blocked yes/no Prescription Dosage in g/... Additive in g Prescription day Prescription end in days
		Group	Group Prescription Dosage g/... Dispense ?
		Medicine prescription	Period/Dosage/Distribu-tion/Duration
	Plans	Feed Concentration Milk ratio Limitation	<Gr. A>/<Gr. B> (Duration and quantity) Periods
	Alarm levels	Consumption in % Drinking speed in % Break without additive Break with additive	
Calibration	<HE water> <Boiler water> <Milk> <MP> ⊕ <Additive> ⊕ <Detergent>	Start ? Target quantity in ml or g Runtime in s Date of last calibration	
Device data	Portion	Size in ml Target temperature in ºC Minimum temperature in ºC Distribution pause in s SM Concentration in g/L SM Milk ratio in % SM Additive in g/L	
	Milk values	MP/milk mode	Continue with MP yes/no Dry matter in g/L Draining in h 1-circuit in %
		MP-mode	
	Ad libitum-mode	Activated no	
		Activated yes	Concentration in g/L Milk ratio in % ⊕ Additive in g
	Feeding station	<Station 1> ⊕ <Station 2>	Draining and hold time in s ⊕ Turn-on delay in s ⊕ Turn-off delay in s

Menu overview of the Main menu-key 

Device data	Mixer	C Empty via teat yes/no + Drain in min. OFF-delay in s	
	Automatic mode	Back after x min	
	Date/time	Time/date	
	New installation	Device data/SA Animal data/SA Everything	
Cleaning	Mixer	Start ?	
		Cleaning/day Cleaning time	
	+ Heat exchanger	Start ?	+ Detergent in g/L
		Cleaning/day; Cleaning time	
	Circuit cleaning	Start ?	+ Detergent in g/L
		Water quantity in L	
	Sponge	Start ?	
	C Box valves	Start ? / Start after.../ Duration	
	Hose	Activated yes/no SA As of plan day	
	Settings	Temperature in ºC / Detergent in g/L Clean teat yes/no	
Diagnosis	Valves	HE water open ? Boiler water open ? Milk open ? + Mixer draining valve open ? + Circulation valve open ? Station 1/+ 2 open ?	
	Motors	Milk pump start ? Mixer motor start ? Powder motor start ? + Additive dispenser start ? Detergent start ? Training pump start ? Circulation pump start ?	
	Heating	Switch on ? Temperature in ºC	
	Sensors	Bar electrode free/covered V Supply electrode free/covered V Spot electrode free/covered + Detergent Button MAP active/inactive + Feed sensor 1: active/inactive Boiler and mixer x.xx ºC	
	Identification	Station 1/2	
	Control	<Power failures> <Backup> <Cleaning fault>	Amount Since (date) Delete ?
	Version	Device/Terminal/SM Interface/Identification/ID-chip	

Menu overview of the Main menu-key 

Diagnosis	Setup	Language	English...
		Machine	Type/Number/Operating mode/HE capacity/V Animals/System
		SM Interface	Type/Address
		Equipment	+ Mixer draining valve yes/no
			Training pump yes/no
			+ Add. dispenser yes/no
			+ Detergent pump yes/no
			+ Circulation valve yes/no
			Circulation pump yes/no
			VF Water valve yes/no
			Mixer sensor yes/no
			Supply electrode yes/no
			Spot electrode yes/no
		Heating	Activated/Type
		Sensor type	Boiler/Mixer
		Terminal	Address
		Feeding station	Activated yes/no; Extras: none/Servo/Gradient
		Identification	Type
		Communication	

Menu overview of the key Manual functions 

Extra portion	Start ? Output: bucket, station 1/2 Quantity in L Concentration in g/L Milk ratio in % + Additive in g/L		
Empty mixer ?			
Station 1/+2 open ?			
Milk start ?			
Suck in milk ?			
HE water start ?			
Boiler water start ?			
Mixer start ?			
Fill HE ?			

Menu overview of the Control-key

Entitled animals	As of xx:xx h x.x L Consumption in % today/yesterday Consumption in L today/yesterday		
	Break today/yesterday	With additive Without additive	
	Visit today/yesterday	Entitled Not entitled	
Alarm animals	Delete all ?		
Expire animals	e.g. additive prescription Delete all ?		
Animals with additive	Consumption in g		
	Target in g	Dosage	Deviations in days Quantity in g Prescription in g Dosage in g
		Feed	Deviations in days Quantity in L Plan in L Feed in L
		Weight	Weight in kg Weight gain in g
		Additive in g	
	Break	With additive No additive	
	Prescription day		
	Prescription end in days		
	Feeding day	Feeding day Correction in days Plan day Plan end in days Feed in L Concentration in g/L Milk ratio in %	
	Dispensed yes/no		
Marked animals	see All animals (below)		
Unknown transmitters	Number Amount Time Date Delete		

SA Menu overview of the Control-key

All animals	Consumption in % today/yesterday	As of xx:xx h x.x L Consumption in % today/yesterday Consumption in L today/yesterday	
		Feed in L today/yesterday	Deviations in days Quantity in L Plan in L Feed in L
		Concentration in g/L today/yesterday	Deviations in days Quantity in g/L Plan in g/L Concentration in g/L
		Milk ratio in % today/yesterday	
	Break today/yesterday	With additive Without additive	
	Speed today/yesterday	Rel. in % today/yesterday Abs. in L/min. today/yesterday	
	Visit today/yesterday	Entitled Not entitled	
	Feeding day	Feeding day Correction in days Plan day Plan end in days Feed in L Concentration in g/L Milk ratio in %	
Total consumption	Total	MP/Milk/⊕ Additive	Target/actual Today/yesterday/The day before yesterday
	Animal	MP Milk ⊕ Additive	

EC declaration of conformity

according to the EU Machinery Directive 2006/42/EG, Annex II, 1.A

Manufacturer:
Förster Technik GmbH,
Gerwigstr. 25
78234 Engen

Person residing within the Community authorised to compile the relevant technical documentation:
Müller Barbara
Förster Technik GmbH,
Gerwigstr. 25
78234 Engen

Description and identification of the machinery:

Make:	Automatic feeder
Type:	TAK5-VH1-28-P2, TAK5-VH1-30-P2, TAK5-VH1-32-F2, TAK5-VH1-32-P2, TAK5-VH1-50-F2, TAK5-VH1-50-P2, TAK5-VH1-55-P2, TAP5-VH1-28-F2, TAP5-VH1-30-F2, TAP5-VH1-32-F2, TAP5-VH1-50-F2, TAP5-VH1-55-F2, VDW5-VH1-28-P2, VDW5-VH1-32-F2, VDW5-VH1-32-P2, VDW5-VH1-50-F2, VDW5-VH1-50-P2, TAK5-CE1-25, TAP5-CE1-25, TAK5-CH1-25, TAP5-CH1-25,VDW5-CE1-25, VDW5-CH1-25, TAK1-SA2-32-S, TAK1-SA2-50-S, TAK2-SA2-50-S, TAK2-SA2-75-S, TAK2-SA2-80-S, TAP1-SA2-32-S, TAP1-SA2-50-S, TAP2-SA2-32-S, TAP2-SA2-50-S, TAP2-SA2-75-S, VDW1-SA2-32-S, TAK1-KU2-27-L, TAK1-KU2-27-L1, TAK1-KU2-38-L, TAK1-KU2-50-M, TAK1-KR1-50-M, TAK5-KR3-55-P2, TAK6-KR3-87-P2, TAP1-ZM2-27-F, TAP1-ZM2-32-M, TAP1-ZM2-38-M, TAP1-ZM2-50-M, TAP2-ZM2-32-M, TAP2-ZM2-50-M, TAP2-ZM2-75-M, VDW1-WA2-38-M, TAP0-EZ1-28-M, TAP0-EZ1-32-M, TAP0-EZ1-38-M, TAP0-EZ1-50-M, TAP1-EZ1-32-M, TAP1-EZ1-38-M

It is expressly declared that the machinery fulfils all relevant provisions of the following EU Directives:

2006/42/EG:2006-05-17	EU Machinery Directive 2006/42/EG
2004/108/EG:2004-12-15	(Elektromagnetische Verträglichkeit) Richtlinie 2004/108/EG des Europäischen Parlaments und des Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG

Reference to the harmonised standards used, as referred to in Article 7(2):

EN ISO 12100-1:2003-11	Sicherheit von Maschinen - Grundbegriffe, allgemeine Gestaltungsleitsätze - Teil 1: Grundsätzliche Terminologie, Methodologie
EN ISO 12100-2:2003-11	Sicherheit von Maschinen - Grundbegriffe, allgemeine Gestaltungsleitsätze - Teil 2: Technische Leitsätze
EN ISO 14121-1:2007	Sicherheit von Maschinen - Risikobeurteilung - Teil 1: Leitsätze (ISO 14121-1:2007)
EN 60204-1:2006-06	Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen

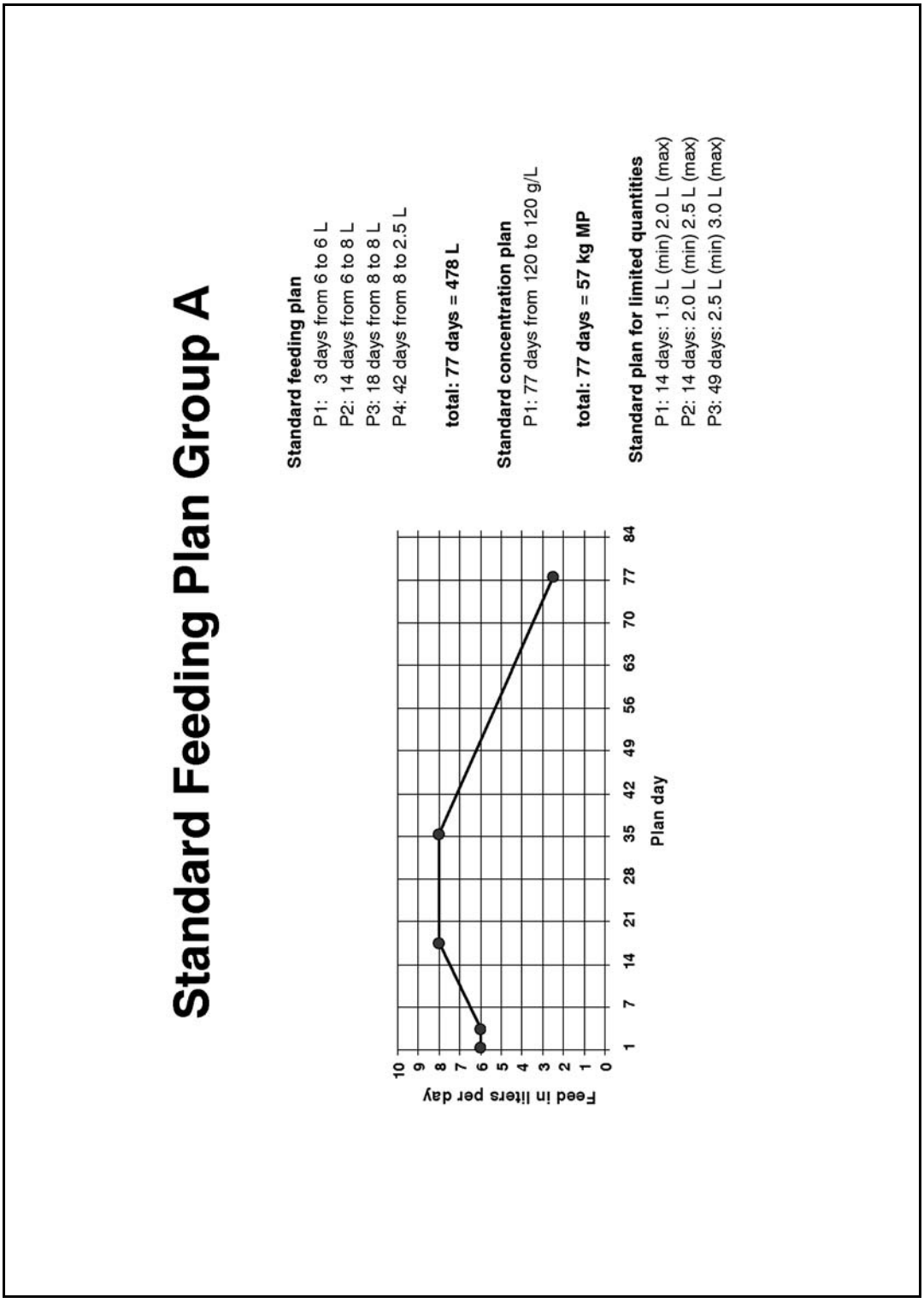
Engen, 2009.12.30

Place, date

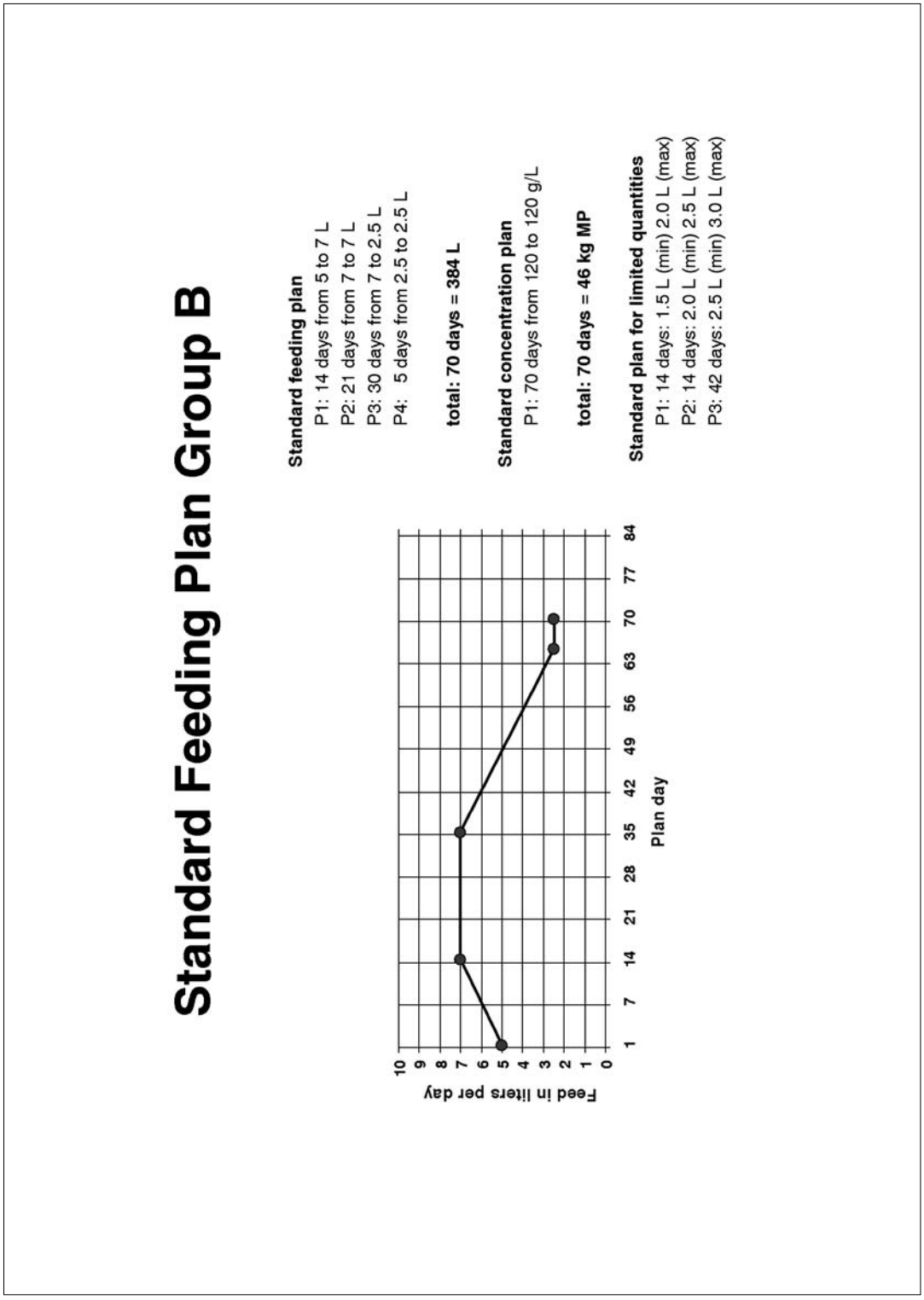
Signature
Markus Förster
Geschäftsführer

Signature
Thomas Förster
Geschäftsführer

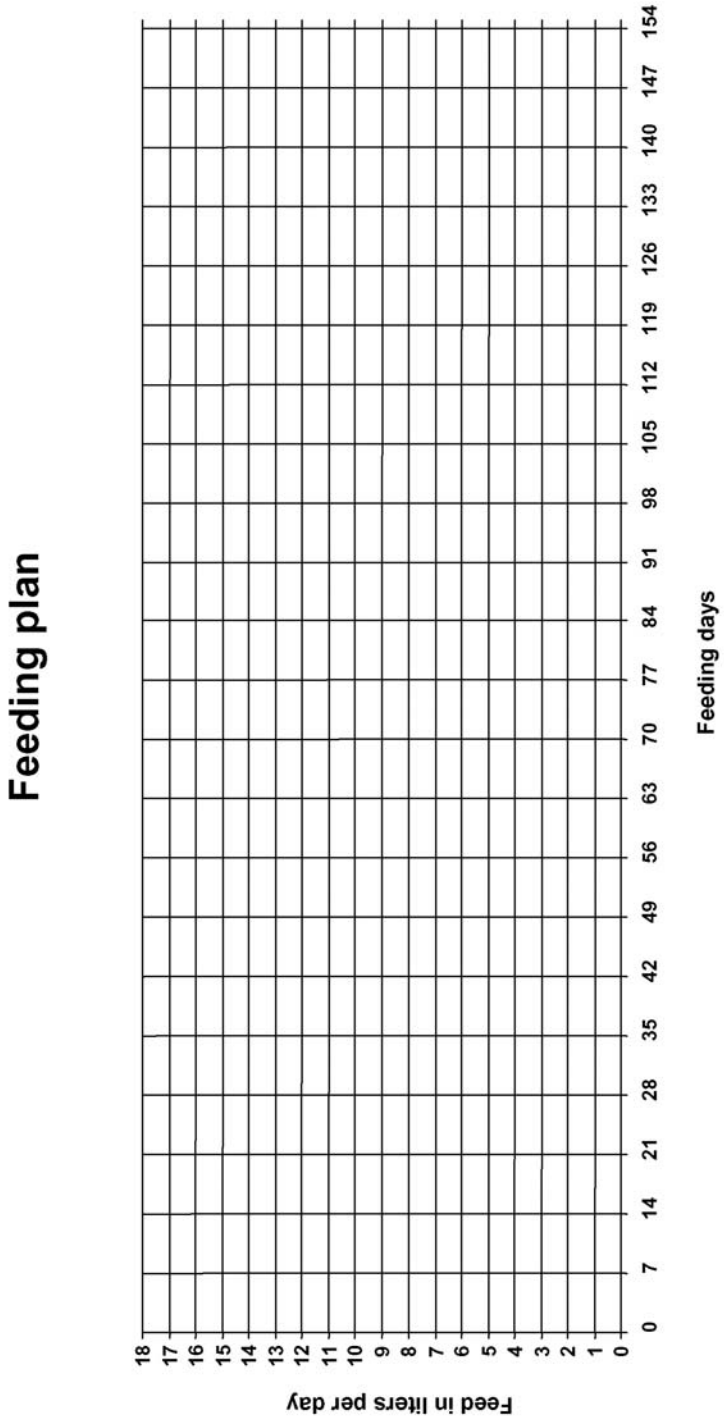
Standard feeding plan group A



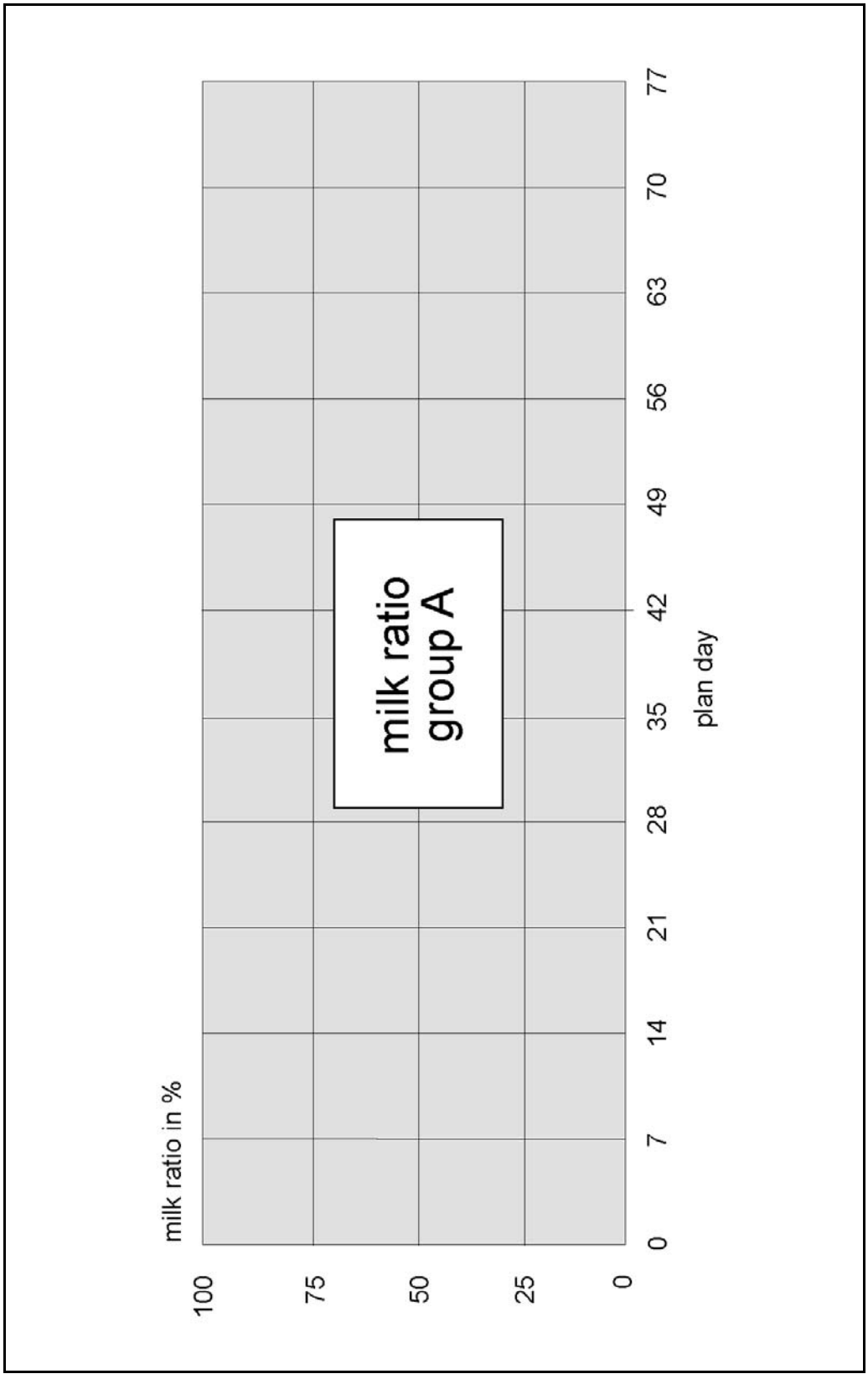
Standard feeding plan group B



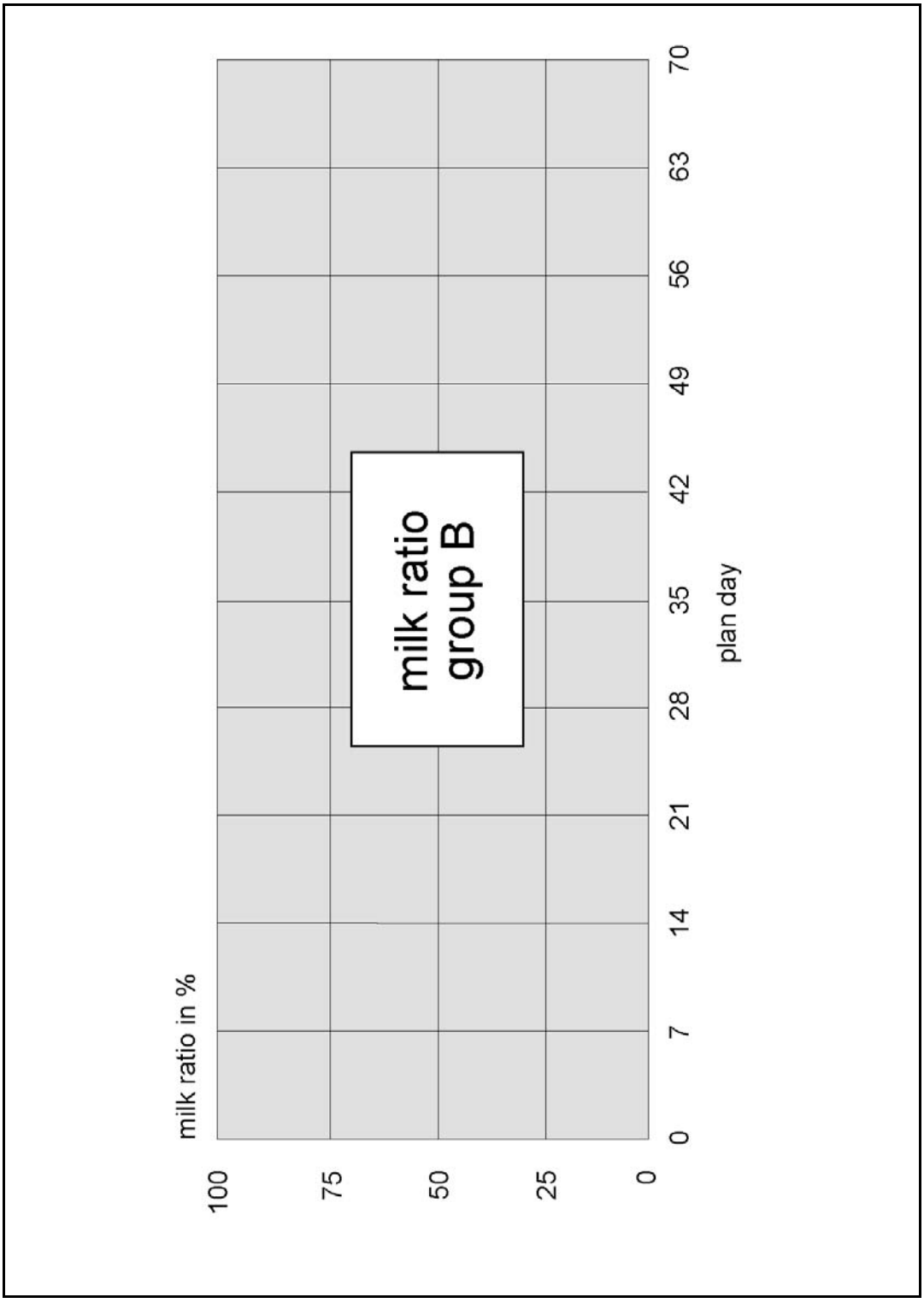
Template: individual feeding plan



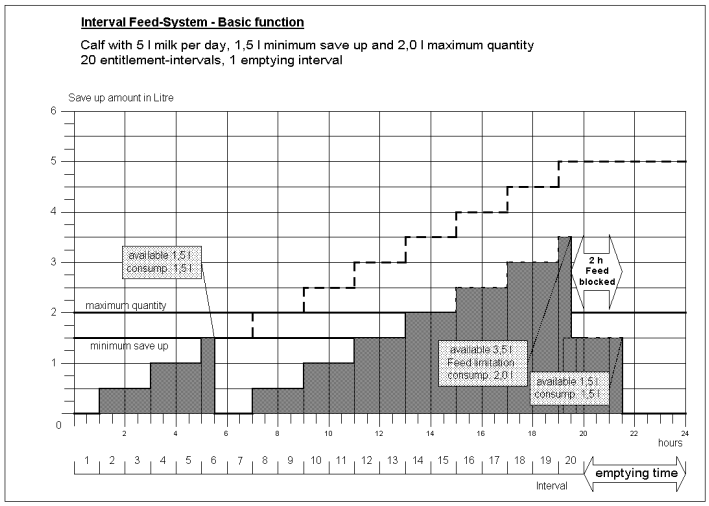
Standard milk ratio plan group A



Standard milk ratio plan group B



Basic principle of the interval feeding program



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