October 1st, 2009

Instruction Manual

Automatic Calf Feeder
Vario Powder
as of program version 5.12

TAP5-VH1-55_50_30_32_28 / TAP5-CH1-25

Squelch values and identification ranges

The identification range of the antenna is approx. 15 to 25 cm.

The antenna type is crucial to the identification range. With the micro-identification Nedap you can adjust the identification range via the Squelch value.

The following table contains the Squelch values and identification ranges for the different identification systems.These Squelch values are empirical and factory-set.

System	**Squelch** (default values)	**Identification range**
Collar (X-Responder-system)	-	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, thank you for placing your trust in us and purchasing this automatic feeder.

> Read this operating manual thoroughly and attentively before putting this automatic feeder into service. This is an important precondition for safe and trouble-free operation.

> Keep this instruction manual always 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.

Note: Please consider the documentation of the peripheral devices, if required.

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, 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 animals' house (e. g. pipe ends), because collars with transmitters may get caught in them.

> Make sure that a pipe disconnector is installed on site. Pipe disconnectors are safety valves that prevent pollution of drinking water by backflow of non drinking water (such as e.g. rinsing water or milk).

> Protect the machine and the cables from sunlight.

> The machines are equipped with a power plug which is common in most of the countries within and outside of Europe. For those countries where another power plug is used, the standard power plug must be expertly replaced by a power plug which is prescribed by the regulations of the corresponding country.

1.2 Application

1.2.1 Intended use of the automatic feeder

> The automatic feeder must be used exclusively for liquid calf feeding.

> Exclusively commercially available milk powders and additives must be used.

> The water used to prepare the milk powder feed must be food-grade.

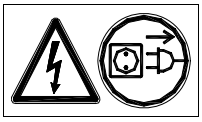
> Make sure that the microbiological composition of the milk being fed to the calves is immaculate. Otherwise, severe scours may be the consequence thus affecting animals' health.

1.2.2 Adverse use of the automatic feeder

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

- non commercially available milk powder.

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!

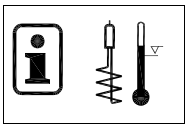
Automatic start-up!

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.

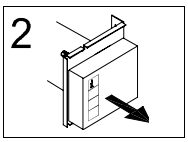
1.4 Information signs on the automatic feeder

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

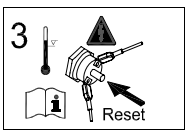
Reset the safety temperature limiter.



Guidelines for resetting the safety temperature limiter.

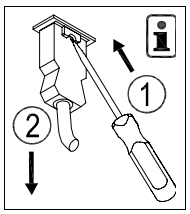


Remove the metal covering.



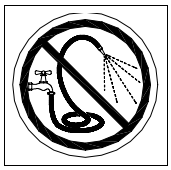
Push the red Reset button. Follow the instructions in this manual.

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.

Warning: It is imperative to observe these instructions to prevent damages to the machine and the animals.

Caution: It is imperative to observe these instructions to prevent damages to the mechanical or/and other components of the automatic feeder.

Note and **example**: This icon references important information and additional explanations on how to operate the automatic feeder.

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

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

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

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

P The text passages marked with this icon are only valid if at least one feeding station of the automatic feeder is operated in the parallel feeding mode.

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

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

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

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
B-ant.	B-antenna
C-station	concentrate station
circ. pump	circulation pump
cl. mixer	mixer cleaning
deterg. pump	detergent pump
dos.	dosage
drain. time	draining time
empty v. teat	empty via teat
F-station	feeding station
feed. speed	feeding speed
gr A (B)	group A (B)
gradient	gradient control
HE	heat exchanger
IV	interval
IFS-C	Intelligent Feeding Station for concentrate
IFS-F	Intelligent Feeding Station for feed
MP	milk powder
MAP	manual training pump
max.	maximum
min. temp.	minimum temperature
mixer drain	mixer draining valve
n.	not
No.	number
P	period or prescription
powd. motor	powder motor
rel.	relative
servo	servo control
SNTR	designation of IFS-compact unit
temp.	temperature
train. pump	training pump
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 Powder

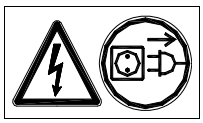
1 Milk powder hopper with top section	9 Rear of the chassis: control unit with boards
2 Rating plate (not illustrated)	10 Hand-held terminal
3 Water outlet	11 Connection screw for equipotential bonding
4 Milk powder outlet	12 Control switch
5 Bar electrode	13 not available
6 Temperature sensor	14 Right side of the chassis: water valve , electronic boiler, safety temperature limiter
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 not available

1.9.2 Vario Powder

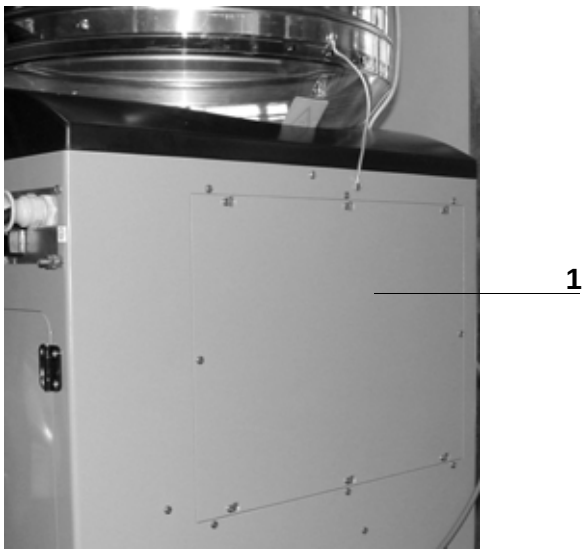
1	Milk powder hopper with top section	10	Hand-held terminal
2	Rating plate (not illustrated)	11	Main switch
3		12	Connection screw for equipotential bonding
4	Milk powder outlet	13	not available
5	Bar electrode	14	Supply electrode
6	Temperature sensor	15	Spot electrode for 250 ml portions
7	Mixer (mixer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

1.9.3 CPU and relay power board

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



Danger! Hazardous voltage! Electric shock hazard!
Solely service personnel is allowed to open and service the CPU and the relay power board.



1	Rear of the chassis for CPU and relay power board

(→ **Wiring diagram**)

1.9.3.1 Relay power board

On the relay power board are located among others:

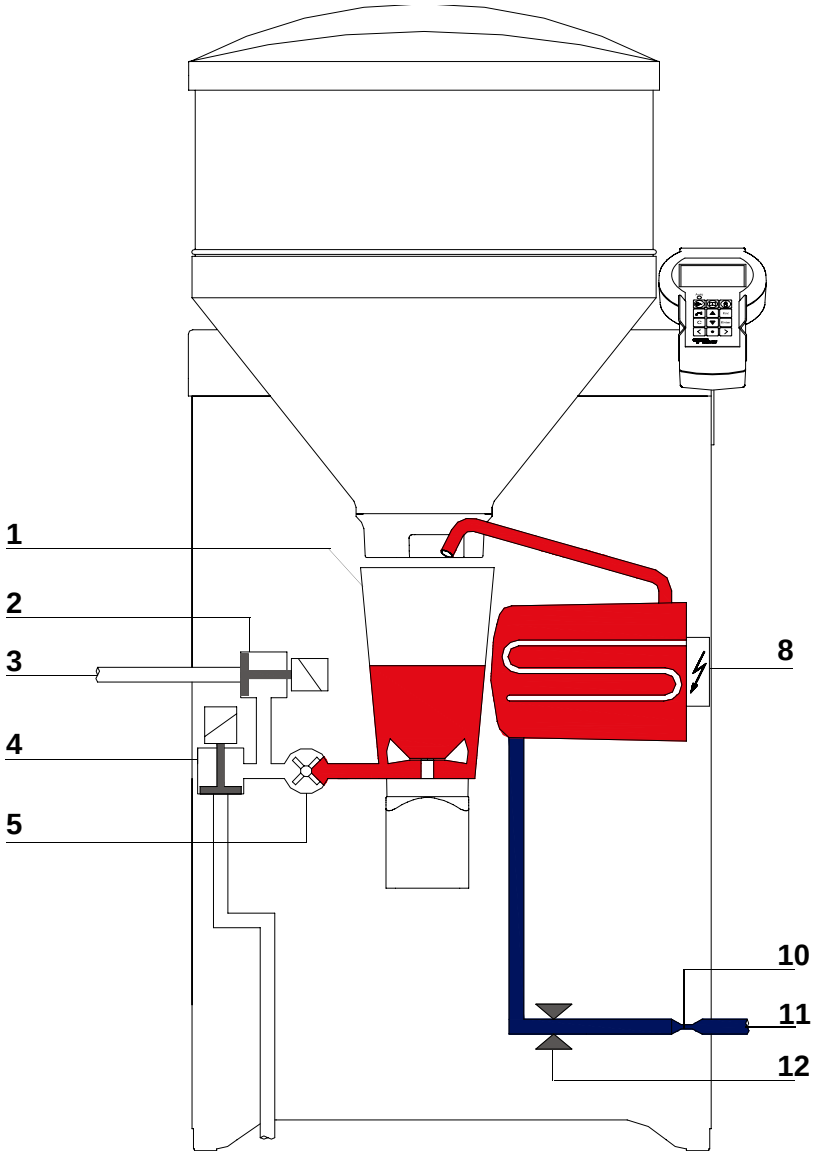
- the transformer for the low voltage supply of the processor control,
- the relays and connecting terminals for external components as well as the microfuses,
- the interface for the PC,

- 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**)

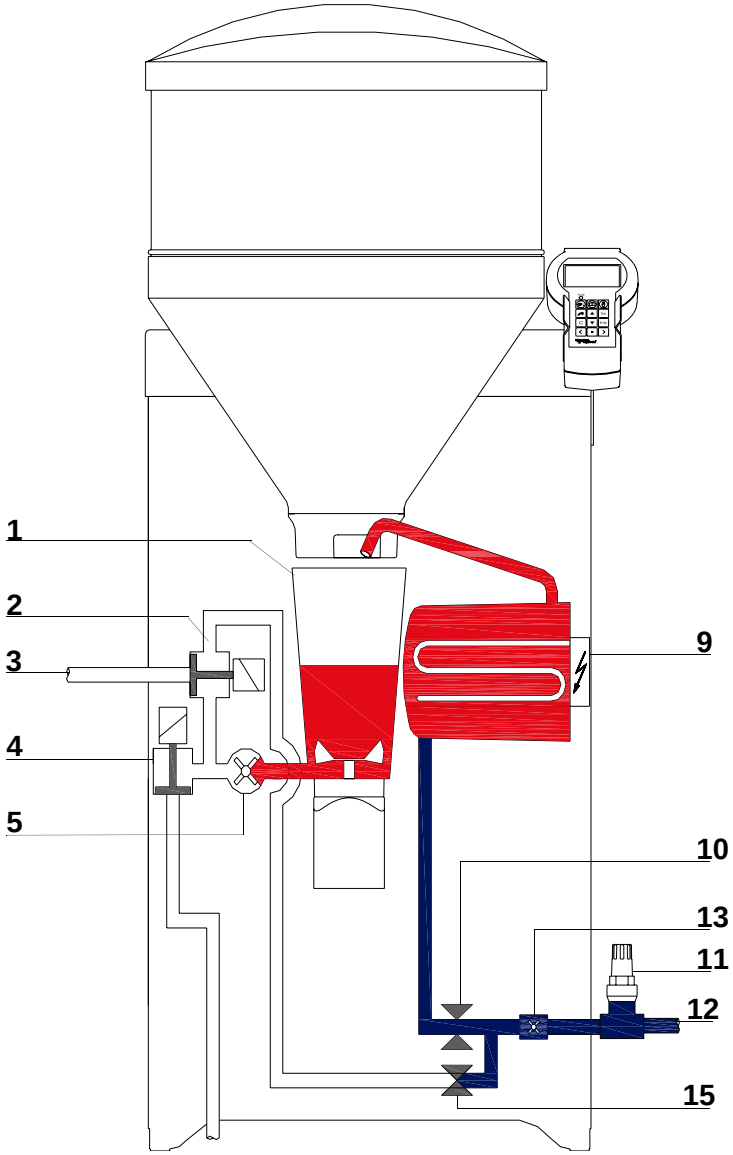
1.9.4 Boiler for water heating

1.9.4.1 Compact Powder



1 Mixer to mix up the feed components	8 Electronic boiler
2 Box valve	9 not available
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 not available	13 not available
7 not available	14 not available

1.9.4.2 Vario Powder



1 Mixer to mix up the feed components	9 Electronic boiler
2 Box valve	10 Water valve boiler
3 Hose connection between box valve and teat	11 Pressure reducer
4 Mixer draining valve	12 Hose connection to the water pipe
5 Training pump	13 Water meter
6 not available	14 not available
7 not available	15 Water valve boiler
8 Circulation valve	

1.10 Technical data of the automatic feeder

Electrical connection

TAP5-VH1-50-F2 (400 V)

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

TAP5-VH1-55-F2 (240 V) (USA/Canada)

240 V / L1, L2 / Grd / 60 Hz / 30 A

TAP5-VH1-32-F2

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

TAP5-VH1-30-F2 (Japan)

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

TAP5-VH1-28-F2 (USA/Canada)

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

TAP5-CH1-25 (400 V)

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

TAP5-CH1-25 (230 V)

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

TAP5-CH1-25 (240 V) (USA/Canada)

240 V / L / N / PE / 60 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

(V) ~70 kg

(C) ~64 kg

Water supply

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

(V) between 1 and 6 bar,

(C) between 2.5 und 6 bar.

Boiler

Boiler capacity: approx. 7 L

Milk powder hopper

Capacity with top section: approx. 35 kg

Number of feeding stations and animals

	Compact	**Vario**
1 feeding station	max. 30 calves	max. 30 calves
2 feeding stations	max. 50 calves	max. 60 calves
4 feeding stations	-	max. 80 / P120 calves

1.11 Special danger areas

Special danger areas are:

- the milk powder outlet

Warning!

Automatic start-up!

Keep hands clear from the crushing danger areas as long as parts can move. For cleaning only use the tools contained in the scope of delivery. Never use your fingers!

2 Operation

2.1 Keyboard

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

Control

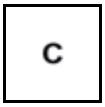
Main menu

Manual functions

Training pump

Arrow Up/Arrow Down

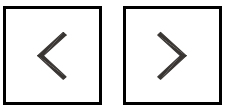
Escape



Delete

Enter

Asterisk

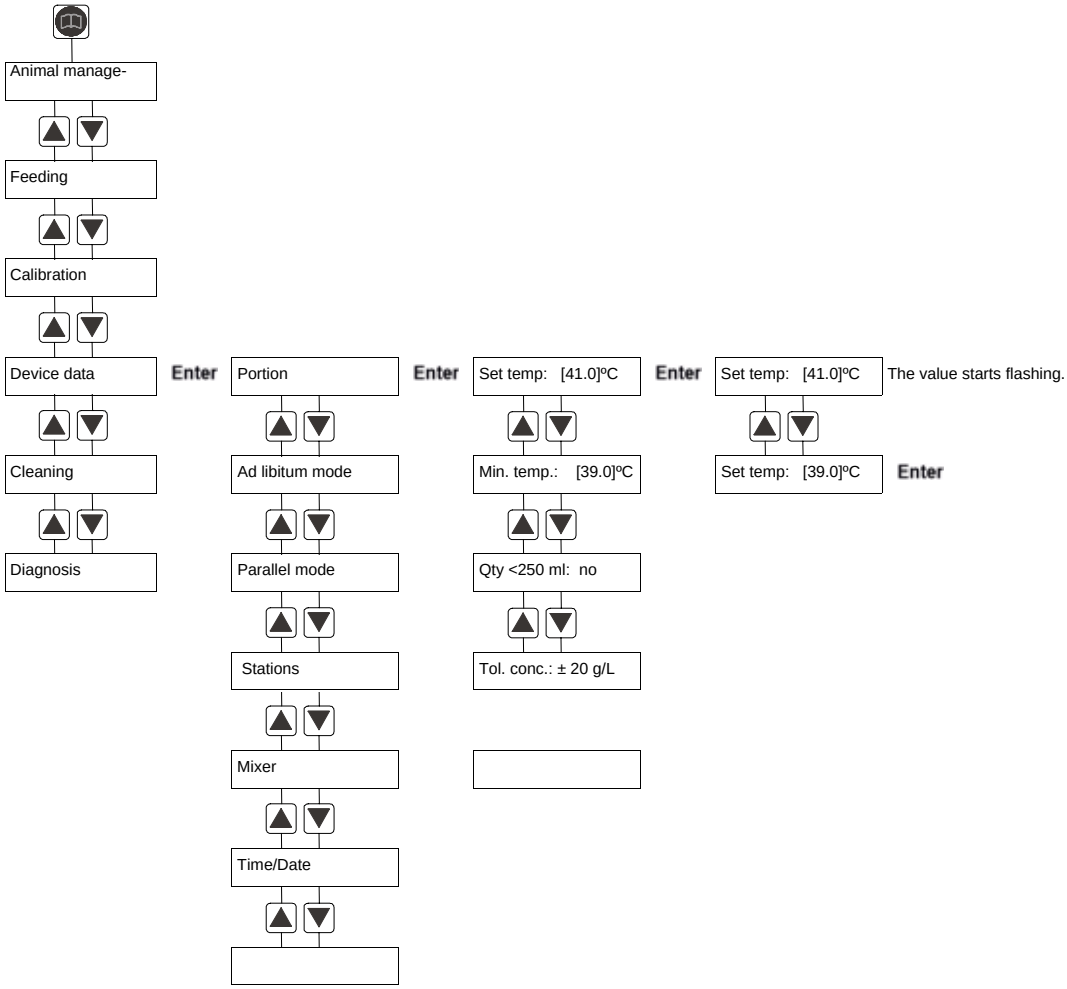


Arrow Left/Arrow Right

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  > **Device data** > **Portion** > **Set temp(erature)**.

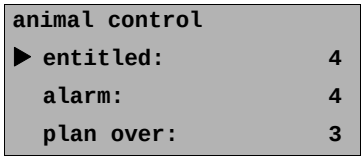


Note: Some menus resp. menu items are not displayed because e.g. the automatic feeder is not equipped with a specific (optional) component or specific functions were not activated in the setup.

Example: **Cleaning/day** is displayed in > **Cleaning** > **Mixer** only if the automatic feeder is equipped with a mixer draining valve which has been previously activated in the setup.

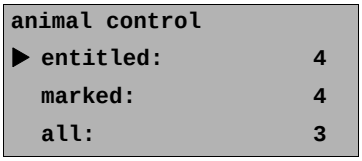
2.2.1 Animal control

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

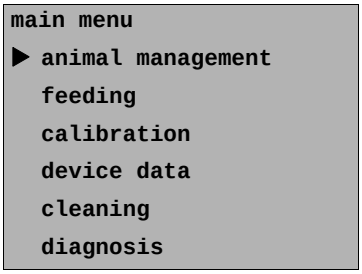


- entitled
- alarm
- plan over
- additive (only displayed if an additive dispenser is connected)
- marked
- new
- double
- unknown
- all
- total consumption

2.2.2 Main menu



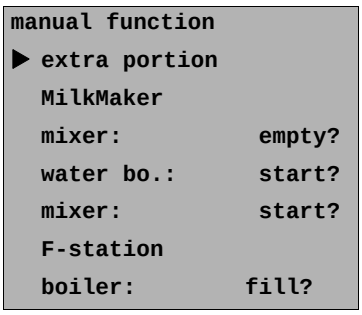
If you press this key, the following menu will be displayed:



- animal management
- feeding
- calibration
- device data
- cleaning
- diagnosis

2.2.3 Manual functions

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



- to dispense extra portions via the MilkMaker-function,
- to empty the mixer via the mixer draining valve, if available, or by means of the training pump via the teat,
- to fill the boiler with water,
- to actuate the mixer,
- to open the box valve(s) resp. to stimulate the hose pumps,
- to automatically fill the boiler of the heat exchanger with water.

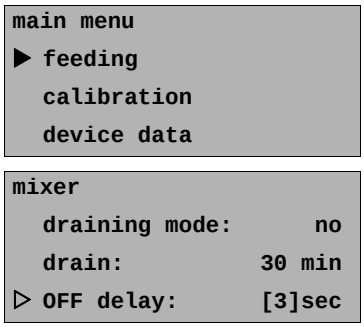
2.2.4 Training pump

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.



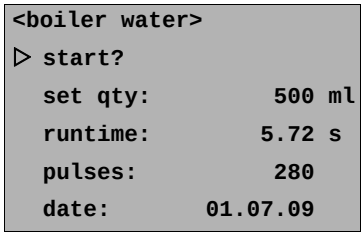
2.2.6 Enter

Enter Press this key to

- open the menus,
- select figures / parameters within the square brackets,
- select 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. Equivalent menus are those within the angle brackets.

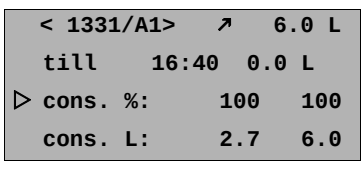


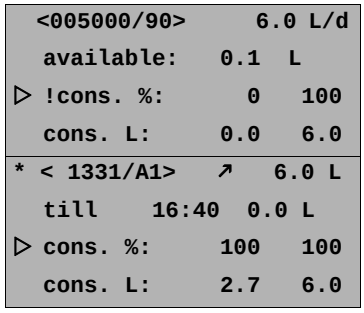
2.2.8 Asterisk

* 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.

To delete marking press [*] next to the corresponding animal.

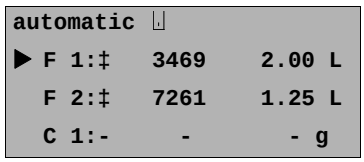
All marked animals can be viewed under [i] > **marked animals**.

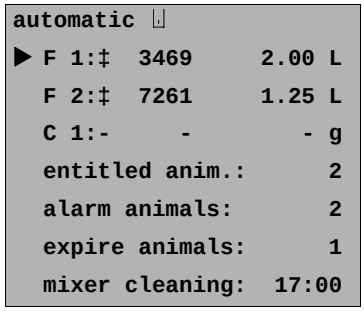
Second function = Shift

Within the overview menu of the automatic mode press [*] to move from the

4-row

to the 8-row display and viceversa.





In the 4-row mode the displayed characters are bigger.

2.2.9 C (=delete)

[C] Press this key to

1. delete failures and warnings,
2. take warnings from the overview menu of the automatic mode to the fore.

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 in the offline-mode, press [Esc] until **automatic mode start?** is displayed. Then, press [Enter]. The

diode below **Auto** starts glowing, thus signalling the automatic mode.

Second function

Press Esc to access **the one higher level of the menu tree.** Likewise you can reaccess the overview menu of the automatic mode when the warnings are displayed.

Third function

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

2.3 Operating modi

The automatic feeder knows two operating modi: the **automatic mode** and the **offline-mode**. In the automatic mode, the animals are fed. The offline-mode is used to carry out actions which cannot take place in the continuous operation, such as e.g. the calibration of feed components or the functional test of motors or sensors.

2.3.1 Automatic mode

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

In the automatic mode you can move at any time to the menus of the keys ⓘ and 🕮 to check or change the settings/data. Meanwhile the **automatic mode is not broken off.**

If you press 🔒 or move to a menu that requires termination of the automatic mode (e.g. calibration), the message on the right is displayed. Press Enter to **quit the automatic mode**.

```
automatic mode
terminate?
```

To **go back to the automatic mode**, press Esc until the message on the right is displayed. Press Enter to confirm the input.

```
automatic mode
start?
```

2.3.2 Offline-mode

Auto ○ The **diode below Auto does not glow** when the automatic feeder is in the offline-mode. This occurs e.g. if you have selected the calibration menu or pressed . Every now and then the message on the right is displayed.

```
offline
▷ time:          15:11:59
  date:          30.07.05
```

Note: If the automatic feeder is offline, feeding will be broken off. If you want to go back to the automatic mode, press Esc until **automatic mode start?** is displayed. Then, press Enter. The diode glowing below **Auto** signals the automatic mode.

2.4 Displays in the automatic mode

2.4.1 Display icons

Positioning marks

There are two different positioning marks:

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

▷ If at the beginning of a line a **hollow mark** is displayed, settings can be changed or actions be started.

Angle brackets

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

Example taken from the calibration menu. Beside **boiler water** there are further menus, such as e.g. **MP**, **detergent** and **additive 1**.

```
<boiler water>
▷ start?
  set qty:        500 ml
  runtime:        5.72 s
  pulses:          280
  date:       01.07.09
```

To move among the offered menus, press < or >. The currently selected menu is displayed in the first line within the angle brackets.

Square brackets

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

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

```
mixer
  draining mode:      no
  drain:           30 min
▷ OFF delay:       [3]sec
```

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

```
mixer
  draining mode:      no
  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. Repress ▲ or ▼ to restart the counting mechanism.

Bar electrode free/covered

This symbol is displayed when the mixer jar is filled (= the tip of the bar electrode is in the liquid).

This symbol is displayed when the mixer jar is empty (= the bar electrode is free).

```
automatic
▶ F 1:‡   3469    2.00 L
  entitled anim.       2
  alarm animals:       0
```

Identification and feed consumption

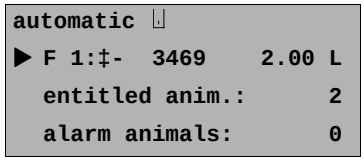
If this symbol is displayed next to the station number (here exemplified by => 1), an animal is being identified.

```
automatic
▶ F 1:‡   3469    2.00 L
  entitled anim.:      2
  alarm animals:       0
```

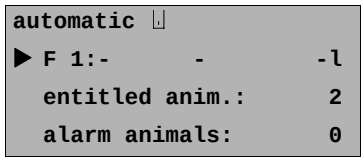
¸ If next to the antenna symbol ‡ a check mark ¸ is displayed, an entitled animal is staying in the feeding station where it can consume its feed portion.

```
automatic
▶ F 1:‡¸  3469    2.00 L
  entitled anim.:      2
  alarm animals:       0
```

- If next to the antenna symbol ‡ a dash is displayed, the animal is entitled to feed but the animal-specific settings referring to concentration or additive dispense do not correspond to the current milk portion in the mixer jar. Therefore, at the moment the animal cannot consume the feed.



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

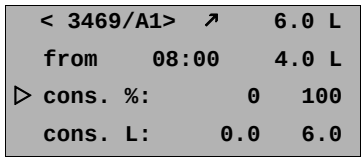


Plan tendency

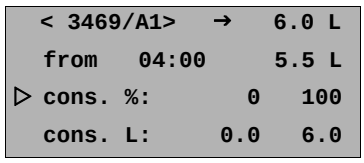
↗ The Arrow Right next to the animal number indicates animal's current feeding phase.

The arrow shows

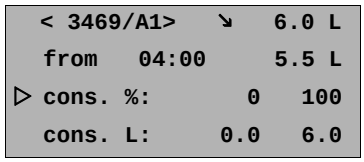
- top right: The feed quantity continuously increases (e.g. at the beginning of the feeding plan),



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

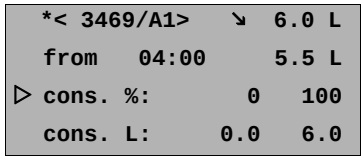


- bottom right: The feed quantity is continuously reduced (e.g. at the end of the feeding plan).



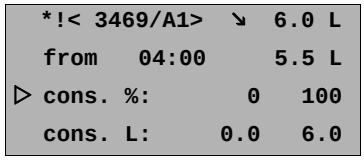
Marking

***** An asterisk next to the animal number indicates that the animal has been marked.



Alarms

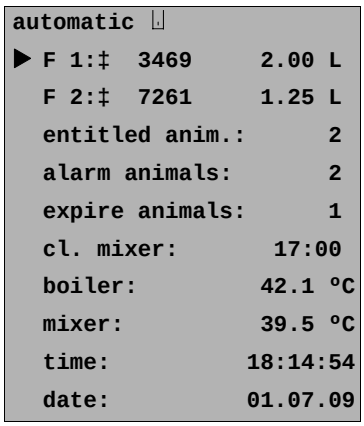
! An exclamation mark next to the animal number indicates that this animal triggered an alarm. This may happen e.g. because the drinking speed is too low or the animal has not consumed enough feed.



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

2.4.2 Displays in the operating mode of the automatic feeder

2.4.2.1 Restricted mode

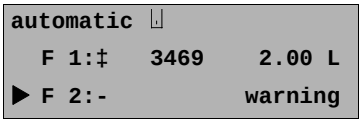


Each individual feeding station provided by the automatic feeder is displayed in a line starting with F1 (= feeding station 1), F2 (= feeding station 2) etc. If an animal is detected in the corresponding station (can be recognized by the antenna symbol ‡ next to the station number), the animal number as well as the feed quantity that the animal is currently allowed to consume are displayed. You can press [Enter] in any line to get further details on the animal which is currently staying in the feeding station.

Further information

Below the lines referring to the available feeding stations, further information is displayed:

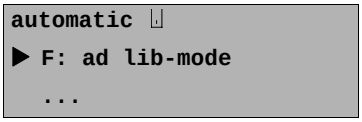
- the amount of animals, which are currently entitled to feed,
- the amount of animals for which an alarm was given,
- the amount of animals, which achieved the end of the feeding plan,
- the amount of registered animals,
- the time of the next mixer cleaning,
- the temperature of the water in the boiler,
- the temperature of the feed in the mixer,
- the current time,
- the current date.



If the connection to a station is disturbed, the text **warning** will be displayed instead of the animal number and the entitlement. To get further information, press Enter in the line with the corresponding warning.

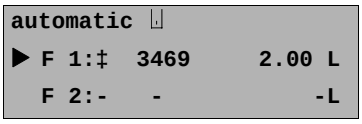
2.4.2.2 Ad libitum-mode

Activation of the operating mode **ad libitum** is explicitely shown in the display. Please find below the same information as for the restricted mode.

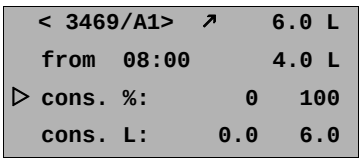


2.4.3 Displays referring to the individual animal

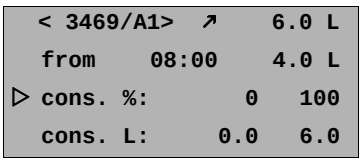
To get detailed information about the animal, which is currently staying in the feeding station, press Enter.



- The **top line** shows: the animal number, the feeding group, the feeding station, the plan tendency and the feed quantity, to which the animal is entitled today according to the plan.

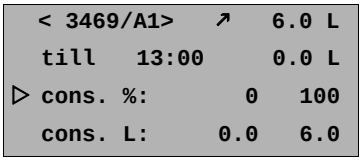


- The information displayed in **line 2** varies depending on the animal's feed entitlement. The following options are possible:
  - The animal is entitled to feed. The display shows: The time as of which the animal is entitled to feed and the feed quantity saved till check time.

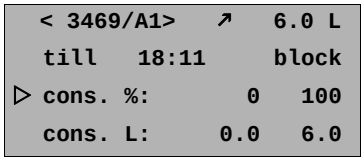


Example: The animal has saved 4.0 liters of feed since 8 a.m.

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

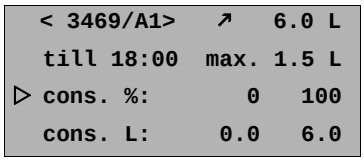


- The animal saved more feed than it is allowed to consume all at once: If this animal consumes up to the maximum feed quantity, it will then be blocked for two hours.



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

- The animal saved more feed than it is allowed to consume all at once: If the animal does not consume the maximum quantity, the display will show the time up to which the difference between the consumed and the maximum quantity will be available.



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

- In **line 3**: The consumed quantity as a percentage (%) of the save-up quantity for today (left column) and yesterday (right column).
- In **line 4**: The feed quantity consumed till check time (consumed quantity in liters [L]) for today and yesterday.
- In **line 5**: The feed quantity to which the animal is entitled today and which the animal consumed yesterday according to plan.
- In **line 6**: The feed concentration for today and yesterday.

3 Start-up

Note: Please consider the documentation of the peripheral devices, if required.

Note: When recommissioning the automatic feeder, proceed as described in the chapter „Start-up“.

3.1 Electrical connection provided by customers

> The electrical connection to be provided by the customer must be installed by a qualified electrician.

> Observe the local regulations and protective measures.

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

> The automatic feeder requires its own electrical connection.

> The nominal voltage and nominal frequency must be observed. The nominal voltage specified on the name plate of the device must correspond to that of the mains supply.

> Have overvoltage limiters installed in the main distributor if there is a risk of overvoltage.

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 fly protection 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 powder hopper extension

The protective grating of the powder hopper extension prevents injuries caused by rotating tools which are located inside the powder hopper. Injuries may occur e.g. when filling the milk powder into the powder hopper.

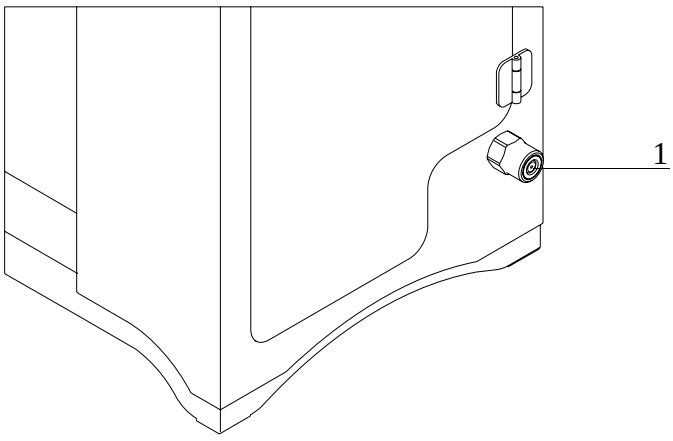
1	Opening on the powder hopper extension to screw in a self-cutting screw

Warning!
Automatic start-up!

1. Remove the bags containing the small pieces and the hoses as well as the instruction manual from the milk powder hopper.
2. Mount the protective grating for the milk powder hopper extension.
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 supply



1	Water supply

3.4.1 Water supply

> Make sure that the water pressure is constant:

Ⓥ The water pressure must be at least 1 bar but it can also drop below 1 bar for a short time.The maximum pressure must not exceed 6 bar. If the water pressure drops below 1 bar for a long period or even permanently, make sure to install e.g. a device for pressure increase in order to achieve a higher water pressure.

Ⓒ The water pressure must be at least 2.5 bar and must not exceed 6 bar. If 2.5 bar water pressure cannot be guaranteed, install the ⊕ water box.

Note: If you convert to the water box, the standard water valve of the automatic feeder is replaced by a low-pressure valve. Therefore, the water must unexceptionnally be supplied to the automatic feeder via the water box.

> Use a separate water stop-cock for the water supply of the automatic feeder.

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

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

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.

>

> Check the identification range of the antennas by means of the antenna test.

> 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.

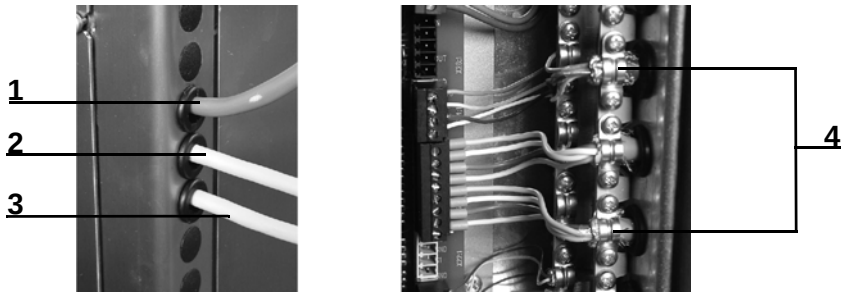
If an antenna identifies two animals simultaneously, animal identification will be disrupted for both animals.

> 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.

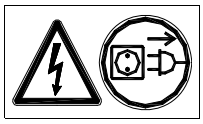
Caution: Lay out the antenna cables in such a way that they are not damaged by the animals.

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.

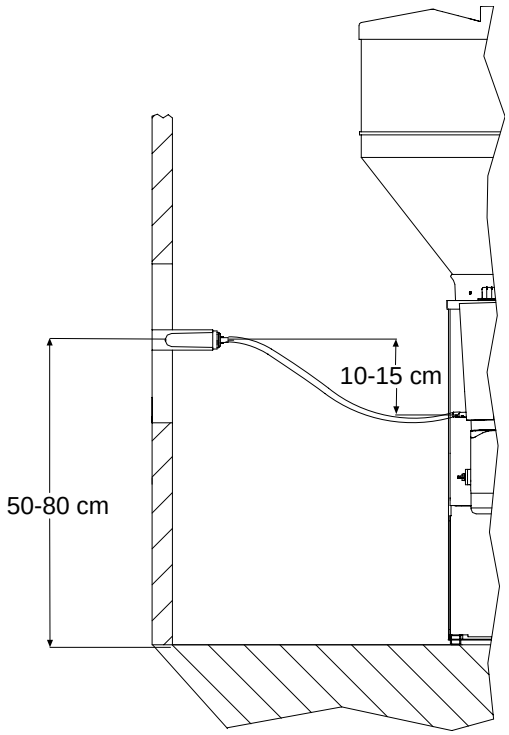
1. Remove the casing cover of the control unit.
2. Below the cable grommet which is intended for the cable of the hand-held terminal, are located two more cable grommets. Push the antenna cables through these grommets into the control unit.
3. Connect the cables of the identification resp. the antenna to the motherboard according to the wiring diagram.
4. Secure the cable harness to the cable clamps.

Caution: To ensure grounding, approx. 1 cm of the shield (if available) must be clamped, too. Make sure that the shield does not overlie the cable insulation but the cable sheath.

5. Close the control unit.

3.7 Mounting the teat

1. The teat must be mounted in the feeding station 10 to 15 cm above the suction hose connection of the mixer and, as a result of this, 50 to 80 cm above calf's platform.



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 in the hose, make sure that the hose between the teat and the box valve (restricted mode) resp. the mixer jar (adlib-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

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

Note: After you have switched the automatic feeder on, the program version of the hand-held terminal is briefly displayed before the automatic feeder starts carrying out a check routine. Do not press any key during these start routines.

2. The fault message on the right is displayed. Press Enter.

```
failure
▶ boiler not filled
```

3. Confirm **boiler** with Enter. The boiler of the heat exchanger is automatically filled with water.

```
boiler not filled
▷ boiler:          fill?
  mixer:          empty?
  water bo.:      start?
```

3.9 Portion

In this menu you can carry out the settings for the feed portion:

```
portion
▷ set temp.:    [41.0]°C
  min. temp.:    38.0 °C
  qty <250 ml:       no
  tol. conc.:    20 g/L
```

- The target temperature of the feed in the mixer jar,
- The minimum temperature of the water in the boiler,
- The distribution pause,
- (P) The portion dispense when entitlement less than 250 ml,
- (P) The tolerance value for the concentration.

3.9.1 Adjusting the target (set) and the minimum temperature

1. > **device data** > **portion** > **set temp.** resp. **min. temp.**

```
portion
▷ set temp.:   [41.0]°C
  min. temp.:   38.0 °C
  ...
```

2. In **set temp.** enter the desired target temperature of the feed in the mixer jar (= mixing temperature).
3. In **min. temp.** enter the desired minimum temperature of the water in the boiler.

	Set temperature	**Min. temperature**
Default value:	41 ºC	38 ºC
Allowed range:	10 ºC to 44 ºC	0 ºC to set temperature minus 0.5 ºC

Note: The values entered for the target and the minimum temperature are converted to the target and the 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 is achieved again.

Note: If you want to deactivate the minimum temperature parameter, in min. temp. enter **0 ºC**.

Recommendations for temperature settings

The automatic feeder and the heat exchanger are 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, a lower temperature of the feed in the mixer jar may be sufficient (e. g. 38 ºC).

Warning: Too low feed temperatures may cause digestive troubles. Too high feed 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.

3.9.2 Setting the parameters for the parallel mode

3.9.2.1 Portion dispense with entitlement less than 250 ml

For technical reasons the automatic feeder is not able to prepare portions less than 250 ml. If an animal has drunk up the mixer contents and the quantity to which it is still entitled is less than 250 ml, there are two possible scenarios:

- no portion is prepared for the animal (default setting: **no**)
- a 250 ml-portion is prepared for the animal. With it the animal achieves a 100 % consumption, but it obtains insignificantly more feed (in the case of station with valve) or a small quantitly (250 ml - remaining entitlement of the animal in ml) remains in the mixer jar (in the case of station with hose pump).

1. > **device data** > **portion** > **qty < 250 ml**
2. Select in **qty < 250 ml** either **yes** or **no** and confirm with Enter.

```
portion
  ...
▷ qty <250ml:      [no]
  ...
```

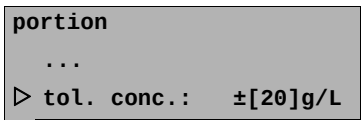
3.9.2.2 Tolerance values for concentration

If the SynchroFeed-function of the automatic feeder is used, the animals in the stations which are operated in parallel are simultaneously fed with the portion prepared in the mixer jar (see **8.1.2.2** Parallel mode (SynchroFeed), page **104**). If different concentration values are assigned to two animals fed in parallel, the tolerance value for concentration decides about whether both animals are allowed to drink simultaneously or not.

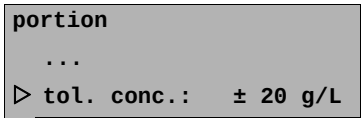
Tolerance for:	**Concentration**	
Default value:	± 20 g/L	
Range:	± 0 to 50 g/L	

Example: For an animal the feed concentration is 120 g/L. For another animal the feed concentration is 110 g/L. If the default setting for the tolerance value of the concentration (±20 g/L) is maintained, this animal is allowed to drink together with the already drinking animal: The difference between the concentration value of the prepared feed (120 g/L) and the concentration value for the animal according to its feeding plan (110 g/L) is less than the set tolerance value (±20 g/L).
Whereas, if the tolerance value had been 0 g/L, the animal – like for the priority mode – would have been fed only after the animal drinking first had consumed its complete portion.

1. > **device data** > **portion** > **tol. conc.**



2. In **tol. conc.** enter the desired value and confirm with Enter.



3.10 Vapour screen for powder outlet, mixer heating and equipment against frost

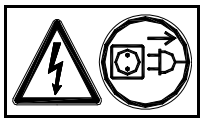
The heating element located at the milk powder outlet (vapor screen) prevents condensation.

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. the hose pipes, the training pump and the 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.

Solely 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.

3.11 Filling the milk powder hopper

Warning!
Automatic start-up!

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

Note: There is no warning when the powder hopper is empty! The automatic feeder will continue to feed without milk powder. This may effect that the animals are only fed with water, thus being not or insufficiently provided with feed. Only fill in milk powder that is suitable for calf feeding.

Caution: Make sure that no paper or other foreign material may access the powder hopper. The dosing mechanism may be damaged or the dosing accuracy may be impaired.

3.12 Calibrating the feed components and the detergent

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

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 [📖] and keep the key pressed when switching the automatic feeder on. After a short time the displays shows the message on the right:

```
setup
▷ language:      [English]
  time/date
  machine
```

2. If you want to change the settings, press [Enter].
3. Confirm the changes with [Enter].
4. To quit the setup, press [Esc] until the message on the right is displayed. Confirm with [Enter].

```
  setup
  terminate?
```

4.1 Overview of the menus in the setup

Language		English
Time / date		Time / date
Machine	Type	Powder
		Combi
		Milk
	Number	1-99 (= machine number, decimal)
	Address	2-FD (= CAN-address, hexadecimal)
	System	Interval
	Operating mode	SA / SM
	Animal number	C 50 / V 250
	Basic capacity	C 250 / V 500 ml
	Boiler valve	Basic / brass

Equipment	Mixer drain	Available yes / no?
	Training pump	Available yes / no?
	Additive dispenser 1	Available yes / no?
	Additive dispenser 2	Available yes / no?
	Detergent pump	Available yes / no?
	Detergent sensor	No / internal / external
	Circulation valve	valve / no
	Air valve	Available yes / no?
	Temperature sensor mixer	Available yes / no?
	Water meter	Available yes / no?
	Supply electrode	Available yes / no?
	Spot electrode	Available yes / no?
	MilkMaker	Available yes / no?
Heating	Activated	Yes / no
	Relay	Mechanical Electronical
Identification	Type	Nedap / Tiris
	Squelch	0 to 255
ID-chip	Activated	Yes / no
	Read in?	
Stations	Feed	<Internal 1>, <internal 2>
		<IFS-F 1 .. 8>
		<IFS-F quadruple 1, 2>
	Concentrate	<IFS-C 1 .. 8>
		Allocation: [C-station 1 .. 8]
		Address: 51-60
		Type: Standard
	Animal scales	Unit 1 / 2: [available stations]
Terminal	Address	1-FD (= CAN-address, hexadecimal)
Communication	PC	Serial / CAN
	Printer	No / serial / CAN

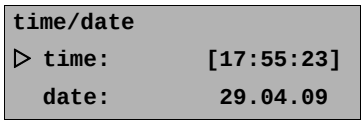
4.2 Language

Here you can choose one of the available languages for the user guidance of the automatic feeder.

```
setup
▷ language:      English
```

4.3 Time/date

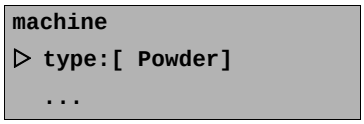
Check and rectify the time and date, if necessary.



4.4 Machine

Types

Three machine types are available:

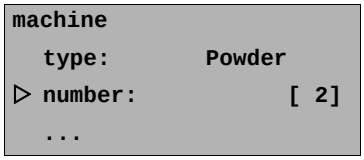


- Powder: This machine type is able to feed MP/water mixtures.
- Combi: This machine type is able to feed fresh milk as well as MP/water mixtures.
- Fresh milk: This machine type is able to feed solely fresh milk.

Note: If with Combi and Fresh milk feeders you intend to feed solely milk powder and water for a certain period of time, do **not** select the menu **Powder**, otherwise malfunctioning of the automatic feeder may occur. The liquid feed resp. the combination of liquid feeds to be fed must be selected solely in **> device data > milk values**.

Number

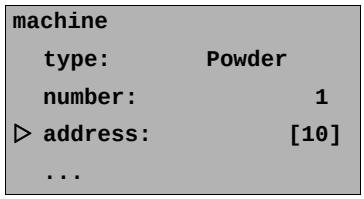
To make the programs UpdateManager and KalbManager access the software of the automatic feeder, the automatic feeder needs a number. The default number is 1.



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

Address

Each node of the CAN-bus system requires an address for clear identification purposes.



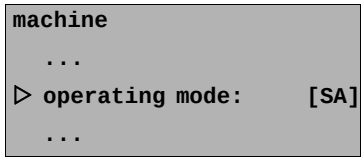
Note: Make sure that a number is assigned only once.

Note: If you select an address that has already been assigned, the message on the right will be displayed.

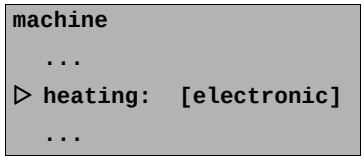
Address ranges for CAN-nodes	
1-10	=> Hand-held terminal
11-20	=> Automatic feeder
41-50	=> IFS-feed control single
51-60	=> IFS-concentrate feeder
61-70	=> IFS-feed control quadruple

Operating mode

Do not change the preset value SA (= Stand Alone).

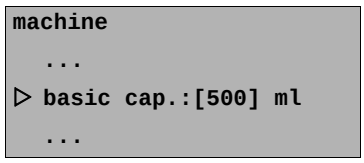


Here you select whether the automatic feeder is equipped with a heating and if so, the **heating relay** type. With V here you must select **electronic**, with C **mechanical**.



Basic capacity

With C 250 ml, with V 500 ml must be set. The set value determines:



- The target quantity for the calibration of water boiler

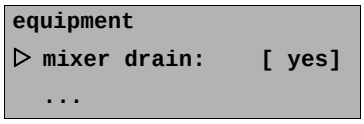
- The default portion size.

Water valve boiler

The factory-set values must remain unchanged.

4.5 Equipment

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

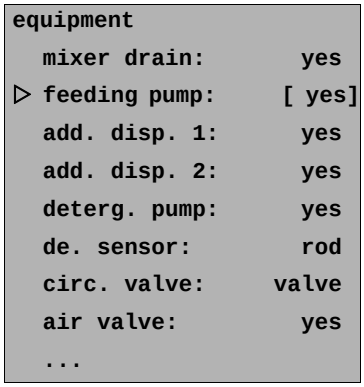


Mixer draining valve

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. With the training pump you can also empty the mixer jar via the teat.



Additive dispenser 1/2

Up to two additive dispensers can be connected to the automatic feeder.

Detergent pump

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

Detergent sensor

If the level of the liquid in the detergent container is detected by a floater which is located at the level rod, enter **rod**. Whereas, if the detergent sensor is integrated in the piping for the detergent, select **external**.

Circulation valve

Here you can select:

- VFValve: The **cleaning valve** is part of the standard equipment of all Farmer models. It facilitates all-automatic cold water cleaning of the box valves.

VAir valve

The air valve is part of the compressed-air cleaning system.

```
equipment
  ...
▷ air valve:       [ no]
  mixer sensor:     yes
  water meter:      yes
  supply el.:       yes
  spot el.:         yes
  MilkMaker:         no
```

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.

VWater meter

The factory-set value (**yes**) must remain unchanged.

Supply and spot electrode

VThe setting referring to the supply and the spot electrode must be **yes**.

CThe setting referring to the supply and the spot electrode must be **no**.

VMilkMaker

If the automatic feeder is equipped with an optional MilkMaker-dosing unit, larger milk quantities can be prepared and pumped into a container or a transport unit (e.g. a MilchMobil).

4.6 Identification

Type

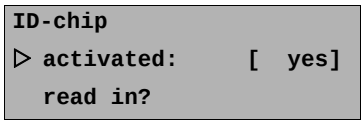
Here you can enter the identification system in accordance with the identification system of the sales partner.

```
identification
▷ type:  [Nedap]
  Squelch:          180
```

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.

4.7 ID-chip



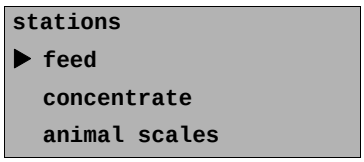
Before the automatic feeder Vario is delivered, all Setup settings are unchangeably stored on the ID-chip. Therefore, the primitive state of the setup can be restored at any time, e.g. if you accidentally changed a setting or had to replace the CPU board.

V In the line **activated** you must select **yes**.

C The automatic feeder Compact is not equipped with an ID-chip. Therefore, in the line **activted no** must be selected.

To transfer the **data from the ID-chip to the CPU board**, in **read in?** press Enter.

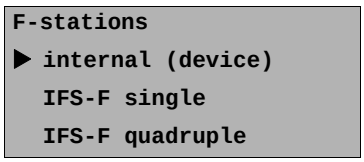
4.8 Stations



In the menu **stations** you can activate additional feeding or concentrate stations and determine the accessories which may be available for them. The Compact and Vario feeders are equipped as standard with one box valve for one feeding station.

4.8.1 Feed control

4.8.1.1 Internal stations controlled by the automatic feeder



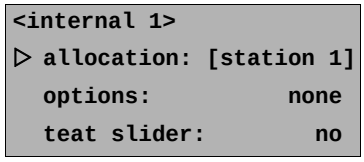
C The Compact is designed for connection of max. two feeding stations. The two internal controls required for that are part of the standard equipment of the automatic feeder.

V With the Vario both internal controls are also available and useable. In addion, further stations can be controlled as so-called IFS-stations (see **4.8.1.2** IFS-F(eeding stations), page **60**).

Select the internal control to be allocated.

Allocation

In **allocation** select the feeding station which is to be allocated to the internal control.



Options

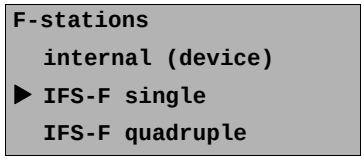
In **options** select whether a gradient or servo control is connected.

Teat slider

If the station is equipped with a teat slider, select **teat slider closed** resp. **open**. **Closed** means that the teat slider remains closed until an entitled animal enters the feeding station. If the animal has no feed entitlement anymore, the teat slider will close again. **Open** means that the teat slider remains open until a non-entitled animal enters the feeding station. After an entitled animal has entered the station and consumed its feed, the teat slider will close and open again when an entitled animal enters the station resp. opening time has lapsed.

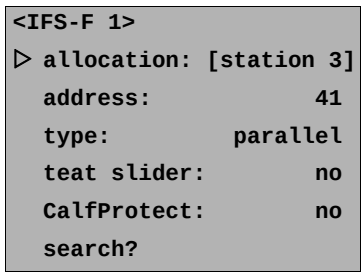
4.8.1.2 V+ IFS-F(eeding stations)

To the Vario up to eight feeding stations can be connected. However, for the third to eighth station, the automatic feeder has no own control anymore. Therefore, for the control of these (external) feeding stations you have to use so-called **Intelligent Feeding Stations** (IFS) as external peripheral devices. It is then up to these IFS-controls to identify the animals and dispense the feed at one or more external feeding stations. (If necessary, observe the documentation of the IFS-controls).



Allocation

In line **allocation** select the feeding station which is to be allocated to the IFS-feed control.



Address

The IFS (feeding station) is part of the CAN-bus-system. Therefore, it requires an address for clear identification purposes.

Note: Within a CAN-bus system an address can be allocates only once. The default addresses are the following:
IFS-F 1, address 41,
IFS-F 2, address 42,
...,
IFS-F 8, address 48.

Note: If you select an address that has already been allocated, the message on the right will be displayed.

```
address
already allocated!
```

Station type

Here you select whether an animal which is claiming its portion at this IFS-feeding station is allowed to be simultaneously fed with other animals (**parallel mode**) or whether this animal has to wait until the calves at the other stations have finished off feed consumption (**priority mode**).

Options and teat slider

see **4.8.1.1** Internal stations controlled by the automatic feeder, page **59**

CalfProtect

If the Intelligent Feeding Station is equipped with CalfProtect, select **yes**. The gate closes automatically as soon as an entitled animal enters the station.

Search?

To facilitate data transfer between the automatic feeder and the IFS-feeding station, the selected CAN-bus-address must be transferred to the IFS.

1. Activate the **search mode** at the IFS. To do so, briefly push the **S5 button** located on the moherboard of the IFS (see wiring diagram of the IFS in the annex of this instruction manual). The green LED (ST1) next to button flashes (ten times per second).
2. In **search?** press Enter.

```
  IFS-F single
  is being searched!
```

3. If the IFS is detected on the CAN-bus, the address will be transferred. The message on the right will be displayed. The green LED (ST1) of the IFS-motherboard does not flash anymore.

```
  IFS-F single
  found!
```

Note: If you have activated the **search mode** by mistake, repress the button S5. The search-mode will **be terminated**.

Note: The IFS-control described above is able to provide **just one single feeding station**. If you intend to use the IFS-control for several stations at the same time, the quadruple compact unit described below must be used.

4.8.1.3 IFS-compact unit for four feeding stations

Beside the IFS-controls for single feeding stations described in the previous chapter, also an IFS-compact unit able to provide four feeding stations at the same time thanks to four integrated hose pumps is available. This compact unit has been specifically designed for big farms.

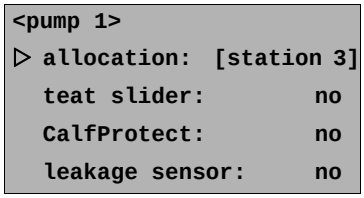
```
F-stations
  internal (device)
  IFS-F single
▶ IFS-F quadruple
```

Pump 1 to 4

All four pumps of the IFS-compact unit must be allocated and configured individually in a separate submenu. Move to the pump which you would like to configure (e.g. **pump 1**) and press Enter.

```
<IFS-F quadruple 1>
▶ pump 1:   [station 1]
  pump 2:   [station 2]
  pump 3:   [station 3]
  pump 4:   [station 4]
  address:          63
  search?
```

Pump allocation



- In the line **allocation** select the feeding station that has to be allocated to the corresponding pump of the IFS-compact unit.

Equipment of the stations

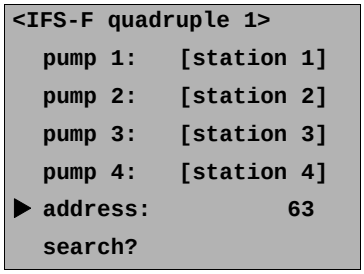
- **Teat slider:** see **4.8.1.1** Internal stations controlled by the automatic feeder, page **59**
- **CalfProtect:** If the Intelligent Feeding Station (IFS) is equipped with CalfProtect, select **yes**. The gate will automatically close as soon as an entitled animal enters the station.

Note: For each station of the IFS-compact unit either the teat slider or CalfProtect can be activated. Both devices cannot be simultaneously used for one station.

- **Leakage sensor:** Via the leakage sensor it is possible to detect leakage of the hose of the peristaltic pump. If your IFS-compact unit is equipped with a leakage sensor, here select **yes** and confirm with Enter.

Address

The IFS-compact unit is integrated into the CAN-bus-system. Therefore it requires an address for clear identification purposes.



Note: Within a CAN-bus system an address can be allocated only once. The default addresses are the following:
Quadruple IFS-compact unit 1 = address 61,
Quadruple IFS-compact unit 2 = address 62.

Note: If you select an address that has already been allocated, the message on the right will be displayed.

Note: The IFS-compact unit has one unique CAN-address but it provides 4 stations. The individual controls of the compact unit are designated as IFS4 1/1, IFS4 1/2, IFS4 1/3 and IFS4 1/4 (first compact unit) resp. IFS4 2/1, IFS4 2/2, IFS4 2/3 and IFS4 2/4 (second compact unit).

Search?

To facilitate data transfer between the automatic feeder and the IFS-compact unit, the selected CAN-bus address must be transferred to the IFS-compact unit.

1. Activate the **search mode** at the IFS-compact unit. To do so, briefly push the red, round **search button** on the motherboard of the IFS-compact unit. The green LED (H4) flashes (10 times per second).
2. In **search?** press Enter.

```
IFS-F quadruple
is being searched!
```

3. If the quadruple IFS-unit is detected on the CAN-bus, the address will be transferred. The message on the right is displayed. The green LED (H4) on the motherboard of the IFS-compact unit stops flashing.

```
IFS-F quadruple
found!
```

Note: If you have activated the **search mode** by mistake, repress the red button. The search mode will be **terminated**.

4.8.2 IFS-concentrate stations

Here you can configure the concentrate station(s). Up to four concentrate stations per automatic feeder can be connected.

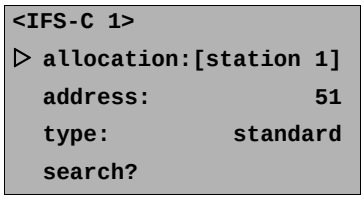
```
stations
  feed
▶ concentrate
  animal scales
```

Address

In the line **allocation** select the concentrate station which has to be allocated to the IFS-concentrate control.

Address

The IFS (concentrate feeder) is part of the CAN-bus system. Therefore it requires an address for clear identification purposes.



Note: Within a CAN-bus system an address can be allocates only once. The default addresses are the following:
IFS-C 1 (= concentrate station 1): address 51
IFS-C 2 (= concentrate station 2): address 52
...
IFS-C 8 (= concentrate station 8): address 58

Note: If you select an address that has already been allocated, the message on the right will be displayed.

Type

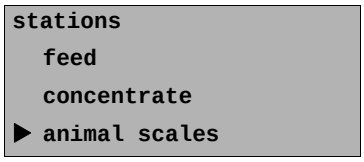
Here you can select the concentrate feeder type.

Search?

Please refer to the previous chapter **IFS-feed controls**.

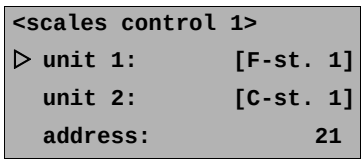
4.8.3 Scales

Here you can configure the scales which are connected to the automatic feeder. Up to twelve scales controls per feeder can be connected and each control is able to control two animal scales.



Unit 1 and unit 2

In the line **unit 1** select the feed or concentrate station to which the first weighing unit of the scales control has been connected. Same procedure for **unit 2**, if necessary.



Address

The scales control is part of the CAN-bus system. Therefore, each scales control requires an address for clear identification purposes. This address is defined on the board of the scales

control via the DIP-switch (→ **Instruction manual of the half-body scales**).

Note: Within a CAN-bus system an address can be allocates only once. The default addresses are the following:
Scales control 1 = address 22
Scales control 2 = address 22
...
Scales control 8 = address 28

Note: If you select an address that has already been allocated, the message on the right will be displayed.

```
  address
  already allocated!
```

4.9 Terminal

Address

The hand-held terminal is part of the CAN-bus system of the automatic feeder. Therefore it requires its own address. The default address is 1.

```
setup
  ...
▶ terminal
  communication
```

```
terminal
▷ address:          [1]
```

Note: Within a CAN-bus system an address can be allocates only once.

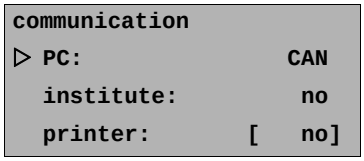
4.10 Communication

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 ⓿Förster-gateway). If you want to use the institute program, which is intended to record the data relating to animals' visits, in **institute** select **yes**.

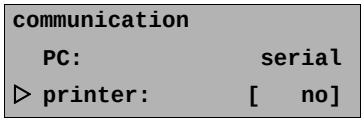
```
setup
  ...
▶ communication
```

Note: If you want to update the control program of the automatic feeder by means of the update set, basically here **serial** must be selected.



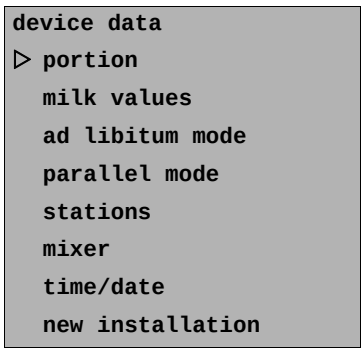
Printer

- Serial: Select this option if a commercially available printer is connected to the automatic feeder via a serial interface.
- CAN: Select this option if the print data have to be transferred via the CAN-bus.



5 Device data

Device data contains the following submenus.



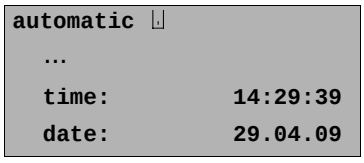
- **Portion** (see Start-up)
- **Ad libitum mode**
- **Parallel mode**
- **Stations**
- **Teat slider**
- **CalfProtect**
- **Mixer**
- **Time/date**
- **New installation**

5.1 Checking and adjusting time/date

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

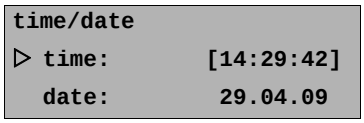
5.1.1 Checking time/date

Auto In the automatic mode the time and the date are displayed.



5.1.2 Adjusting time and date

1. > **device data** > **time/date**
2. In the menu **time** enter the hours first. Press Enter to move to the minutes and the seconds.
3. In the menu **date** proceed as with **time**.



Note: After you have changed the date, switch the automatic feeder off and then on to immediately carry out daily calculation.

5.2 New installation

When (re)commissioning the automatic feeder, the program (software) must be completely reset, i.e. redundant data and outdated inputs resp. misentries are removed from the memory.

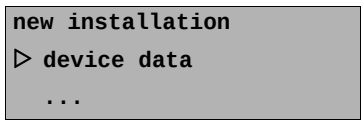
Animal data are defined as e.g. group membership, housing date, feeding days and total consumption.

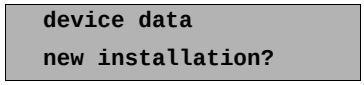
Device data are defined as e.g. feeding and concentration plans.

Note: When carrying out „new installation“ all the **animal data** as well as the **medicine** and **electrolyte prescriptions** are deleted, the **transmitter numbers** are set to zero and the **device data** are overwritten by default values.

5.2.1 New installation only of device data, plans, medicine prescriptions, animal data or transmitter numbers

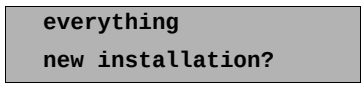
1. > **device data** > **new installation**
2. Press Enter in **device data**.
3. Confirm **device data, new installation?** with Enter.
4. With the menus **plans, medicine prescription, animal data** resp. **transmitter** proceed as with **device data**.





5.2.2 New installation of everything

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



Note: The settings in the setup of the automatic feeder are **not** changed when carrying out „new installation“.

5.3 Restricted mode/ad libitum mode

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

```
device data
  portion
▶ ad libitum mode
  ...
```

Restricted mode

In the restricted mode the automatic feeder operates with animal identification, i.e. the animals are fed animal-specifically and in a restricted way.

```
ad libitum mode
▷ activated:     [  no]
```

Ad libitum mode

In the ad libitum 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 mixer is empty). The box valves are constantly open.

1.  > **device data** > **ad libitum mode**

```
ad libitum mode
▷ activated:     [  yes]
  conc.:        135 g/l
  milk ratio:   100 %
  add. 1:         0 g/l
  add. 2:         0 g/l
```

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

Note: If the automatic feeder operates in the ad libitum mode for a long period of time, the box valves will heat up considerably as they are always open. Therefore, slip the suction hoses directly onto the nozzles of the mixer jar and remove the female power connectors from the box valves.

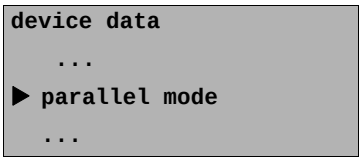
In the ad libitum mode the animals are not identified. Therefore, the function **automatic read in** of the transmitter numbers is **not** active.

If the ad libitum-mode is active, in the following lines you can select the **feed concentration** and **additive dispense**.

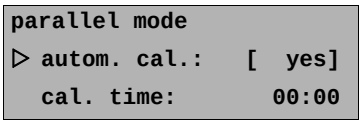
Note: these settings are taken into account for the preparation of all feed portions.

5.4 Parallel mode

If the automatic feeder is operating in the parallel mode, one or more stations are supplied by peristaltic pumps. To ensure a high dosing accuracy, these pumps are automatically calibrated once a day.



1. > **device data** > **parallel mode**



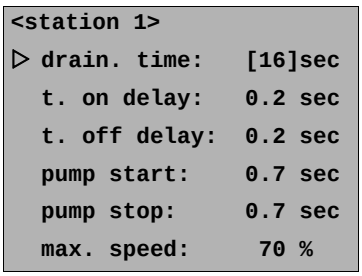
2. In **autom. cal.** select whether such an automatic calibration has to take place.
3. In **cal. time** select the time of automatic calibration. The default time is midnight.

Note: If the calibration value determined via the automatic calibration deviates considerably from the value determined until now, the warning **autom. cal.** will be displayed (see **12.2.14** Automatic calibration, page **174**).

5.5 Station parameters

5.5.1 Feeding station

In **feed** you can define the following parameters for each station:



- **Draining time**
- Turn-on delay
- **Turn-off delay**
- **Pump start**
- **Pump stop**
- **Maximum speed**

Note: Depending on the station type only some of these parameters can be applied resp. changed. The details are contained in the following table.

	Draining time	Turn-on delay	Turn-off delay	Pump start	Pump stop	Maximum speed
Default value:	16 sec	0.1 sec	0.4 sec	0.2 sec	0.4 sec	70 %
Range:	10 - 60 sec	0 - 2.0 sec	0 - 2.0 sec	0.2 - 9.9 sec	0.4 - 9.9 sec	20 - 100 %
Valve station (internal 1/2):	adjustable	–	–	–	–	–
IFS in the parallel mode:	–	adjustable	adjustable	adjustable	adjustable	according to max. speed plan
IFS with servo pump:	adjustable	adjustable	adjustable	adjustable	adjustable	adjustable
IFS with gradient control	adjustable	adjustable	adjustable	–	–	–

5.5.1.1 Draining time

The **draining time** begins when the bar electrode is not covered anymore 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 jar within the default draining time, you can extend draining time.

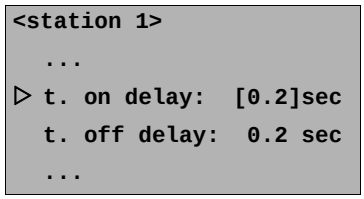
1. > **device data** > **F-station** > **drain. time**
2. In menu **drain. time** enter the desired time.

```
<station 1>
▷ drain. time:   [16]sec
  ...
```

5.5.1.2 Entering turn-on and turn-off delay

The values for turn-on or turn-off delay may only be changed after consultation with service personnel. 0.1 s-steps can be keyed in.

1. > **device data** > **F-station** > **t. on** resp. **t. off delay**
2. In menu **t. on delay** enter the desired time.
3. In menu **t. off delay** proceed as with **t. on delay**.



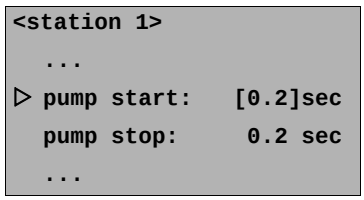
The pumps are switched on only after the turn-on delay has lapsed.

For those animals breaking off feed intake for a short time, the turn-off delay prevents the valves from switching on and off continuously or the peristaltic pumps from running up or shutting down.

5.5.1.3 Pump start and stop

The value for **pump start** determines the time within which a non-operative peristaltic pump runs up to its maximum speed. The value for **pump stop** determines the period of time needed by a peristaltic pump to shut down from its maximum speed to a non-operative state. Usually the values in the menus **pump start** and **stop** remain unchanged.

1. > **device data** > **F-station** > **pump start** resp. **pump stop**
2. In **pump start** enter the desired period of time.
3. In **pump stop** enter the desired value.

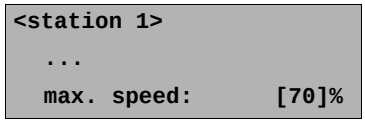


5.5.1.4 Maximum speed

The maximum speed of the pump must only be changed if the pump output is too high or too low.

1. > **device data** > **F-station** > **max. speed**

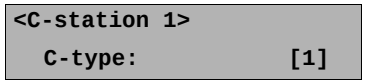
2. In **max. speed** enter the desired percentage. This value refers to the maximum number of revolutions, which can be achieved with this pump.



Note: The maximum speed of the peristaltic pumps in the parallel mode is determined via the maximum speed plan (see **8.3.4** Changing the plan for maximum speed, page **115**).

5.5.2 Concentrate stations

The automatic feeder provides the opportunity to dispense two different concentrate types according to two different plans.



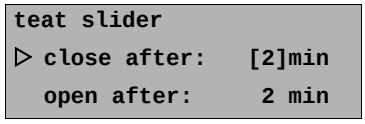
1. > **device data** > **pump parameter** > **feed**

2. Select the desired concentrate station.

3. In **C-type** select the desired concentrate type.

5.5.3 Teat slider

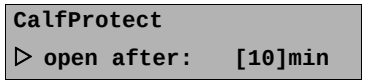
Here you can enter after which time the teat slider must be opened or closed.



Teat slider:	open	close
Default value:	2 min	2 min
Allowed range:	0 to 9 min	0 to 9 min

5.5.4 CalfProtect

If an entitled animal enters a feeding station which is equipped with CalfProtect, the grating gate closes as soon as the animal is staying within the identification. Here you can enter the time after which the gate is going to be opened.



Default value:	10 min
Allowed range:	0 (=deactivated) to 30 min

Note: You can change this value only if the station, which is equipped with CalfProtect, is controlled by an IFS-feed control or an IFS-compact unit.

5.6 Mixer

5.6.1 Mixer draining

For the sake of optimum feed hygiene, the milk residues in the mixer jar are usually drained off after a certain time.

```
mixer
▷ empty v. teat:   [yes]
  draining mode:      no
  drain:          120 min
  OFF delay:       3 sec
```

5.6.1.1 Mixer draining valve

The best and easiest solution is to pump out the residues from the mixer jar via the mixer draining valve, if available.

Note: If a mixer valve is available, is determined in the setup of the automatic feeder (see **4.5** Equipment, page **57**).

5.6.1.2 Emptying 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**. Alternatively you can also forego to pump out the residues.

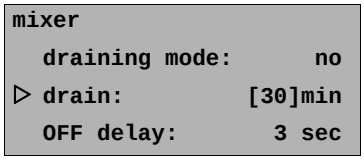
```
mixer
▷ empty v. teat:   [yes]
  ...
```

1. > **device data** > **mixer** > **empty v. teat**
2. In **empty v. teat** select whether the mixer should be emptied.

5.6.2 Mixer emptying

5.6.2.1 Mixer emptying according to time

The automatic feeder allows you to select the time (minutes) after which the remaining portion in the mixer jar should be drained off. The emptying process is possibly followed by a draining process (see the following chapter).



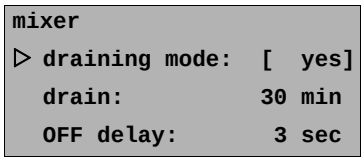
1. > **device data** > **mixer** > **drain**
2. In **drain** enter the desired period of time (minutes).

Default value:	30 min
Allowed range:	0 min (= deactivated emptying), 5 to 120 min

5.6.2.2 Draining mode

The **draining mode** helps to reduce the risk of suction hose freezing in winter. If the draining mode is active, after mixer emptying in order to pump off a remaining portion for all the available stations, the box valves will open for one minute to facilitate draining of the remaining liquid from the hoses. If the station is equipped with peristaltic pumps, these pumps start running for one minute.

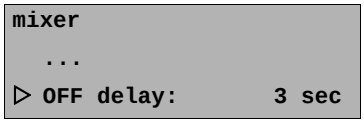
1. > **device data** > **mixer** > **draining mode**
2. Activate resp. deactivate the **draining mode** carrying the same name. The draining mode is deactivated as a standard.



5.6.3 OFF delay of the mixer

Via the menu **OFF delay** you can change the runtime of the mixer. Whether and how long the mixer should continue to run, depends on the solubility of the milk powder.

1. > **device data** > **mixer** > **OFF delay**
2. In **OFF delay** select the desired value.



Default value:	3 sec
Allowed range:	3 to 12 sec

6 Calibration

Note: Please consider the documentation of the peripheral devices, if required.

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

Note: For calibration, keep the following objects at hand: A graduated cylinder with ml-scale for the calibration of **liquid feed components** (boiler water, liquid additive and detergent); A scales accurate to gram for the calibration of **MP**; A precision scales for the calibration of powder additives (weighing accuracy: 0.1 g).

For calibration of the valve stations, the volume resp. the weight of all the foodstuff to be calibrated must be determined manually. Thereupon, each of the peristaltic pump stations - if available - at which the animals can be simultaneously fed, must be calibrated separately. The calibration process takes place semi or all-automatically.

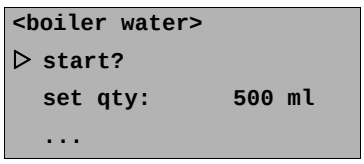
6.1 Manual calibration of the foodstuff

6.1.1 Liquid components (water, liquid additive, detergent)

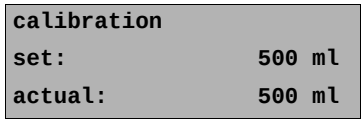
Boiler water is intended to exemplify how to calibrate a liquid component.

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

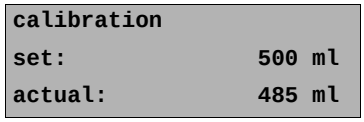
2. Hold an empty measuring vessel under the water outlet.



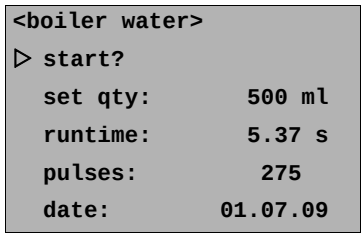
3. Confirm **start?** with Enter. The calibration process starts running. First the target value entered in Setup is displayed. Shortly afterwards, the display shows the flashing actual value.



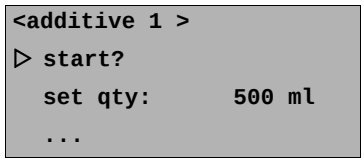
4. Measure the collected quantity.



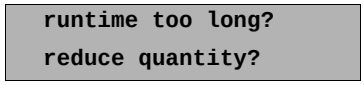
5. Enter the measured quantity in the line **actual** and confirm with Enter. You will return to the calibration menu where the following is displayed:
   - the set quantity,
   - how long the water valve remained open during calibration,
   - the pulses of the water meter (only with boiler water),
   - the date of the last calibration.



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



Note: After calibration of the additive, pay particular attention to the value displayed in the line **max. qty**. This value exactly corresponds to the quantity of this specific additive that you can administer at most (see **8.5.1.4** Duration of medication and additive quantity, page **128**). If you enter a larger quantity, the message on the right will be displayed. If you confirm with Enter, the **maximum quantity** will be automatically taken over.



6.1.2 Powder components (MP and powder additive)

Calibrate the powder feed components as described in the previous chapter.

Note: If no precision scales is available for the calibration of powder additives, 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.

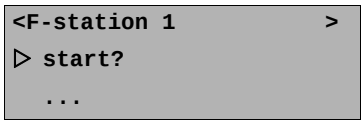
6.2 Semi and fully automatic calibration of the feeding stations with peristaltic pumps

6.2.1 Semi-automatic calibration

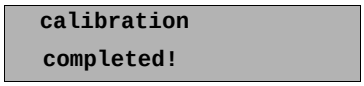
Note: The peristaltic pumps must be calibrated only if they are used for Ⓟparallel feeding.

The semi-automatic calibration process of a station with peristaltic pumps is exemplified by **F-station 1**:

1. > **calibration** > **F-station 1**



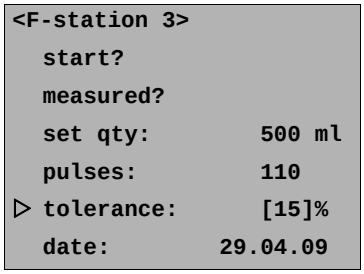
2. Confirm **start?** with Enter. The semi-automatic calibration process starts running and a series of automated processes takes place.
3. After completion of the calibration process, the message on the right will be displayed.



4. Now also calibrate the other stations which are equipped with the peristaltic pumps.

6.2.2 Fully automatic calibration

If required, the stations equipped with the peristaltic pumps can be all-automatically calibrated once a day (see **5.4** Parallel mode, page **72**). If the calibration value determined via the automatic calibration differs considerably from the value determined so far, the calibration value until now will persist and the warning



autom. cal. will be given. For each feeding station a tolerance value can be defined separately. This value determines the maximum percentage the value determined via the automatic calibration is allowed to differ from the calibration value until now in order to be still considered valid, thus being taken over as the new value.

1.  > **calibration** > **F-station 3**
2. In **tolerance** enter the desired percentage of the tolerance value.

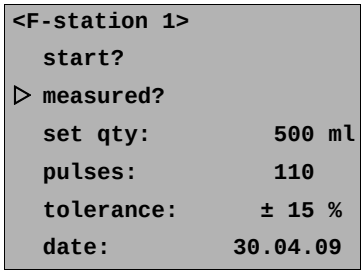
Default value:	15 %
Allowed range:	5 to 50 %

Note: If the value determined via the automatic calibration is undone, the warning **autom. cal.** will be given (see **12.2.15** Automatic calibration, page **187**).

6.2.3 Calibrating at the feeding station

1. Remove the suction hose from the teat at the feeding station to be calibrated and hold the hose opening into the graduated cylinder.
2. Press the calibration button at the IFS, which is allocated to the feeding station. The feed is now dispensed via the suction hose into the graduated cylinder. Keep the button pressed until feed dispense switches off automatically. The calibration button is located on the right of the control box.
3. Read the value of the dispensed feed quantity from the measuring lines of the calibration container.

> **calibration** > **F-station 1**



4. Go to the menu **measured?** and press Enter.
5. Use the arrow keys to enter the determined feed volume into the input box **actual**. Press Enter to confirm the input.
6. At the IFS-station repress the calibration button and check whether the set and the actual volume of the dispensed feed correspond.

Note: It is imperative that the suction hose out of which the feed flows into the graduated cylinder is completely filled, before you press the calibration button.

7 Transmitter and animal management

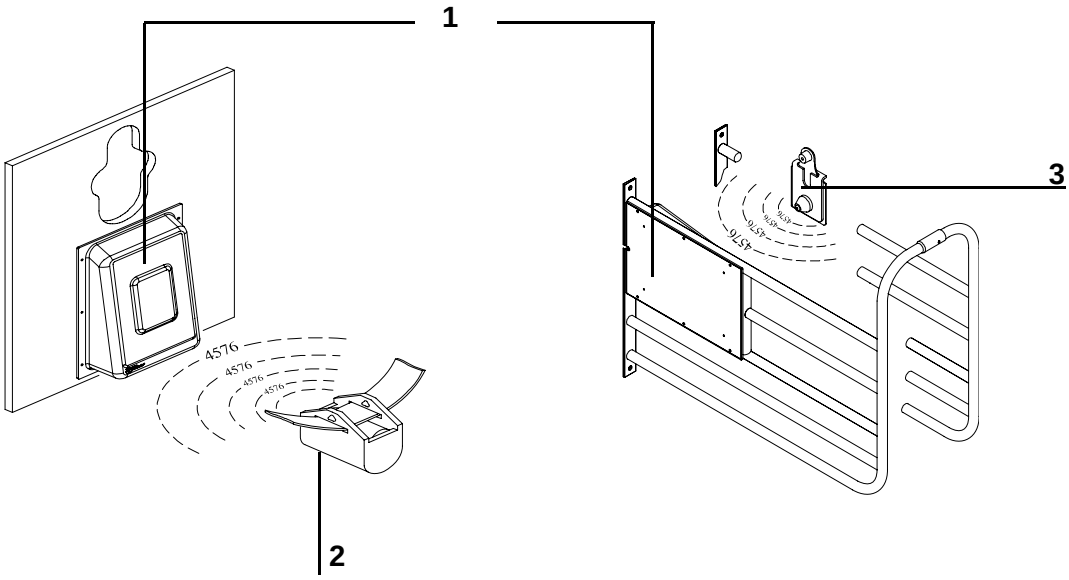
The menu **animal management** contains all the information about the management of the transmitter pool and of the registered animals.

```
main menu
▶ animal management
  ...
```

7.1 Transmitter management

7.1.1 Basics

7.1.1.1 Identification process at the station



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 multi-digit number which in the majority of cases is additionally imprinted on the transmitter casing. This **transmitter number** is transferred from the transmitter to the antenna which is part of the feeding station.

7.1.1.2 Correlation between transmitter and animal numbers

The multi-digit transmitter number is not suited to rapidly locate individual animals. Therefore, beside the transmitter number also an animal number is allocated to each animal. The animal wears this animal number on its collar or this animal number is applied on the eartag in a clearly legible way. To the animals up to C50 resp. V250 different animal numbers with maximum four digits can be allocated.

7.1.2 Entering the transmitter numbers

At start-up of the automatic feeder the available transmitters must be entered into the system for once. Thereby an animal number with maximum four digits is allocated to each transmitter number. These animal numbers are then available and can be used to register the animals (see **7.2** Registering the animals, page **91**).

Example: A farmer would like to feed 20 animals at one machine and has bought 20 collar transmitters. First, he numbers the collars consecutively with the animal numbers 1 to 20. Then, he enters these collar transmitters into the system by reading in their transmitter numbers (see **7.1.2.1** Reading in the transmitter numbers, page **86**) or by entering them manually (see **7.1.2.2** Entering the transmitter numbers manually, page **87**). During this processs, he only enters the animal number which is on the collar. These transmitter numbers are available now and can be used to register the animals into the system.

7.1.2.1 Reading in the transmitter numbers

If you intend to allocate the transmitter numbers for the first time, it is recommended to let the automatic feeder read them in. This

saves typing and prevents accidental mistyping. Proceed as follows:

1. > **animal management** > **transmitter** > **new**

```
transmitter
▶ new
  ...
```

2. Hold a transmitter into the identification of a feeding station. The number of the transmitter will be read in and displayed in the second line next to **no.** At the same time, in the third line **animal-no.** the animal number to be newly entered is suggested.

```
new
  no. ‡: [    17494400]
  animal no.:       21
  no.:      continuous
  next:             21
▷ accept?
```

Note: You can influence the suggested animal number by selecting an allocation plan for the animal number in the fourth line **no.** (see **7.1.3** Allocating the animal numbers, page **88**).

3. Check whether the suggested **animal-no.** is correct and in the line **accept?** press Enter.
4. To allocate the transmitter number which has been read in to the displayed animal number, confirm the security query displayed on the right with Enter.

```
  no. 17494400
  for animal 21
  newly create?
```

7.1.2.2 Entering the transmitter numbers manually

Alternatively to the read-in process of the transmitters, you can also manually key in the transmitter numbers, if necessary. Proceed as follows:

1. > **animal management** > **transmitter** > **new**

```
new
▷ no. ‡: [    17494400]
  animal no.:       21
  no.:      continuous
  next:             21
  accept?
```

2. Enter the transmitter number into the second line next to **no.**

Note: The number must be entered figure by figure and each figure be confirmed with Enter. After all figures have been keyed in, press Enter until the remaining figures of the input box are zero-filled. You can also press < or > to move to any figures.

3. In the third line check the suggested animal number next to **animal no.** and confirm with Enter.
4. In the line **accept?** press Enter.
5. To allocate the entered transmitter number to the displayed animal number, press Enter to confirm the security query displayed on the right.

```
no. 17494400
for animal 21
newly create?
```

7.1.3 Allocating the animal numbers

If at the first allocation the transmitter numbers are automatically read in, an animal number is automatically suggested. To allocate the numbers, you may choose among two options.

7.1.3.1 Continuous allocation of the animal numbers

A counter is available which counts up each time a transmitter number is read in. Thereby all transmitter numbers detected by the antenna are allocated to continuous animal numbers, e.g. 1 to 50. Proceed as follows:

1. > **animal management** > **transmitter** > **new**
2. In the fourth line **no.** select the option **continuous.**
3. If necessary, in the fifth line **next** you can define the animal number as of which the automatic read-in process of the transmitters should begin.

```
new
  no. ‡: [    17494400]
  animal no.:       21
▷ no.:      continuous
  next:             21
  accept?
```

Note: If collars are used, it is appropriate to begin with 1 and to read in the transmitters in succession.

7.1.3.2 Allocating the animal numbers on the basis of the transmitter numbers

Already at birth animals are more and more equipped with an electronic ear tag-transmitter that they wear all their life. For this transmitter type, the program of the automatic feeder allows fully automatic registration of the transmitters and the animals.

1. > **animal management** > **transmitter** > **new**
2. In the second line **no.** select the option **automatic.**
3. In the third line **range** define the range of figures of the transmitter number that shall be taken over as an animal number with max. four digits.

```
settings
▷ no.:     [automatic]
  range:           5-2
  delete no.:      yes
```

Example: **5-2** means that, starting to count from the right, the second to fifth figure of the transmitter number will be taken over as an animal number. **6-3** means that, starting to count from the right, the third to sixth figure of the transmitter number will be taken over as an animal number.

7.1.4 Editing the transmitter or animal numbers

If required, e.g. in case a transmitter has been lost, a transmitter number can be changed or deleted retroactively.

7.1.4.1 Changing the transmitter number

Changing the transmitter number manually

1. > **animal management** > **transmitter** > **change**
2. Select the transmitter number to be changed.
3. In **no.** change the transmitter number and confirm with Enter to implement the change.

```
  <   982/A>
▷ no. ‡: [    17494400]
  animal no.:       982
  state:     registered
  read in?
```

Reading in the new transmitter numbers for the change

1. > **animal management** > **transmitter** > **change**
2. Select the transmitter number to be changed.
3. In **read in?** press Enter. The menu on the right is displayed. The transmitter number in the first line is blinking.
4. Hold the transmitter to be read in into the identification. The number is automatically taken over to the first line.

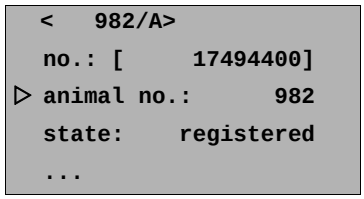
```
  no. 17494400
  for animal no. 982
  accept?
```

5. Check whether the desired transmitter number has been taken over and press Enter in **accept?** to implement the change.

7.1.4.2 Changing the animal number

By analogy with the transmitter number, in the above menu you can also change the animal number.

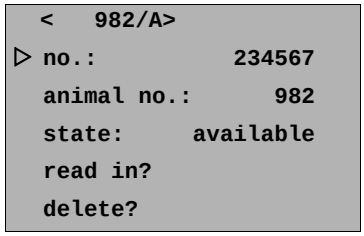
1. > **animal management** > **transmitter** > **change**



2. Select the animal number to be changed.
3. In **animal no.** change the animal number which is currently allocated to the transmitter and confirm with Enter. Now the change is implemented.

7.1.4.3 Deleting the transmitter numbers

1. > **animal management** > **transmitter** > **change**



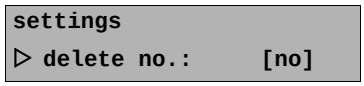
2. Select the transmitter number to be deleted and confirm **delete** with Enter.

Note: You can only change the transmitter numbers of non-registered animals (=state: available).

7.1.5 Deleting the transmitter numbers of animals being canceled

As a rule, the collars (or eartags) and the corresponding transmitters remain on the farm and are reused after the animal has been canceled and has left the barn. Therefore, the transmitter number of a canceled animal is not deleted as a standard. If, however, the transmitter of an animal shall **not** be reused but rather remain on the animal (electronic ear tag), carry out the following setting:

1. > **animal management** > **cancel** > **settings**
2. In the line **delete no.** select the option yes. By doing so, when the animal is canceled the transmitter number is automatically deleted together with the animal number. This is to prevent

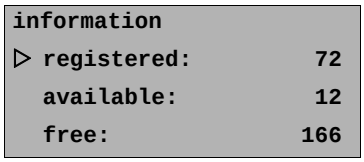


that those transmitter numbers which have not been used are accumulated, thus effecting that no memory space is available anymore.

Note: If no electronic tags are used, the default setting **no** should remain unchanged.

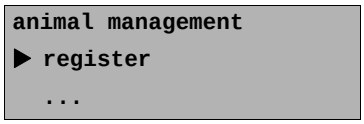
7.1.6 Recalling the transmitter statistics

1. > **animal management** > **transmitter** > **information**



2. An overview of the transmitters entered into the system is displayed. The displayed list contains the following:
   - the amount of registered transmitters resp. animals,
   - the amount of available transmitters,
   - how many further transmitters can be entered.

7.2 Registering the animals



The animals are fed by the automatic feeder only if they are registered there. You can register each individual animal manually or automatically. In the latter case, the animal is registered as soon as it acceeds the feeding station for the first time. Thereby, the manual registration of the animals becomes unnecessary.

At registration the animal is allocated to one of the four groups A, B, C or D, thus being fed according to the feed and concentration of the corresponding group. Group allocation has also an effect on e.g. additive dispense or the alarm levels.

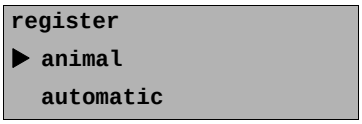
Example: group A for heifers (with less weight gain), group B for bull calves (with higher weight gain), group C for veal calves, group D for other calves.

To which group the animals should be allocated solely depends on the feed quantity and the feed concentration intended for the

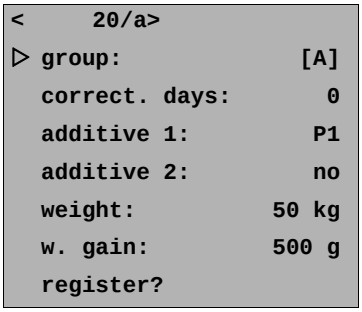
calves. At which station the animals are fed resp. in which pen the animals have been housed is thereby irrelevant.

7.2.1 Registering the animals manually

1. > **animal management** > **register** > **animal**

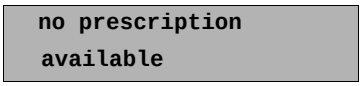


2. Select one of the available, non-registered animal numbers.
3. Select the **group** to which the animal shall be allocated.
4. If the total duration of feeding for the animal has to be shortened, enter the desired amount of correction days into **correct. days** (see **8.2.6** Shortening or extending the total duration of feeding, page **112**).

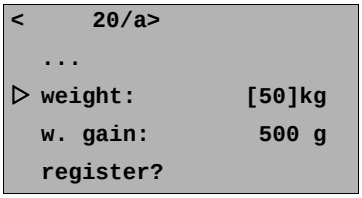


5. Select an additive prescription.

Note: Before additive dispense can be started, the prescriptions for additive 1 or/and additive 2 must have been created (see **8.5.1** Creating a medicine prescription plan, page **126**), otherwise the message on the right will be displayed.



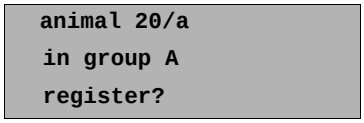
6. Enter the representative animal weight. The weight gain is automatically calculated.



Note: The weight and the weight gain are only displayed if an additive dispenser has been activated in the Set-up or if at least a feeding or concentrate station is equipped with an animal scales.The indication of weight is important if you decide to dose the additives in accordance with animal's weight.

Note: If no animal scales is available, an average weight gain based on experience will be calculated.

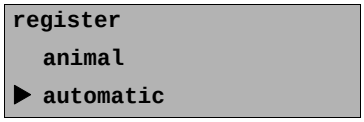
7. Confirm **register?** with Enter to register the animal.
8. Press Enter to confirm the query on the right.



Note: On the day of registration the animal will receive, distributed over the day, exactly the amount of feed to which it is entitled on the first day. If you have entered correction days, the animal will receive the amount of feed to which it is entitled on the corresponding day.

7.2.2 Registering the animal automatically

If a non-registered animal enters the feeding station for the first time, it can automatically be registered. Three different automatic registration modes can be selected. The following three subchapters contain a more detailed description of these modes. Below you will find a synoptical table.



Automatic registration mode	**Transmitter number in the identification**	
	available	**unknown**
deactivated	warning **unknown transmitters**	warning **unknown transmitters**
available transmitters	the animal will be registered	warning **unknown transmitters**
all transmitters	the animal will be registered	the transmitter will be entered, a new animal number will be allocated, the animal will be registered

7.2.2.1 Deactivating the automatic registration

The automatic registration is deactivated as a standard. You can restore this state at any time:

1. > **animal management** > **register** > **automatic**

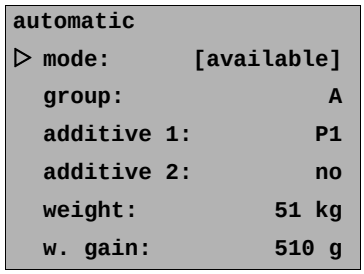
2. In **mode** select **no** and confirm with Enter. The automatic registration is now deactivated.

Note: If the registration function is deactived, the warning **unknown transmitter** (see **12.2.13** Unknown transmitters, page **186**) will be given in case a non-registered animal enters the station.

7.2.2.2 Registering only available transmitters automatically

The automatic registration shortens the registration process of the animals. You can determine that only those animals whose animal numbers (more precisely: the allocated transmitter numbers) are already known by the system, are registered. If such an available transmitter number is detected by the identification, the corresponding animal will be automatically registered. The animals resp. transmitter numbers which haven't been entered into the system yet are still the cause for the warning **unknown transmitter**.

1. > **animal management** > **register** > **automatic**

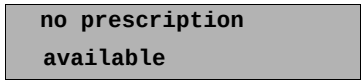


2. In **mode** select **available.**

3. Select the group into which you would like to register the animals automatically (here exemplified by group A).

4. Select one or more additive prescriptions.

Note: Before additive dispense can be started, the prescriptions for additive 1 or/and additive 2 must have been created (see **8.5.1** Creating a medicine prescription plan, page **126**), otherwise the message on the right will be displayed.



5. Enter the representative animal weight of all the animals to be registered. The weight gain is automatically calculated.

Note: The weight and weight gain are displayed only if an additive dispenser has been activated in Setup or if at least a feeding or concentrate station is equipped with an animal scales. The indication of weight is important if you decide to dose the additives depending on animal's weight.

Note: Remove the animals, that should be weaned, from the pen before you cancel them, otherwise they are automatically registered again when accessing the feeding station, thus being set to the beginning of the feeding plan.

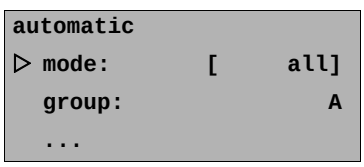
7.2.2.3 Entering the transmitter numbers and registering the animals automatically

To shorten the automatic registration process further, you can determine that also those animals whose animal numbers (more precisely: the allocated transmitter numbers) are not known by the system, are registered. By doing so, the read-in process or the manual input of the transmitter numbers becomes unnecessary. If an unknown transmitter number is identified by the antenna, it is automatically entered into the system together with a new animal number and at the same time registered.

Note: When initially entering the transmitter or animal numbers, the animal number is either a continuous number or it is part of the transmitter number (see **7.1.3** Allocating the animal numbers, page **88**). Check whether this kind of number allocation actually meets your expectations.

1. > **animal management** > **register** > **automatic**

2. In **mode:** select **all**.

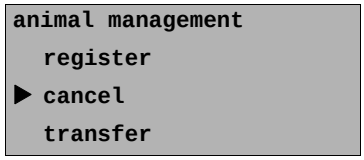


3. The previous chapter contains a description of the remaining settings.

Note: Animals **without a collar** are not allowed to stay in the pen as they might displace other animals, thus robbing an undefined amount of feed.

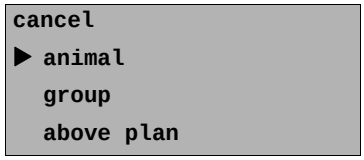
7.3 Canceling the animals or animal groups

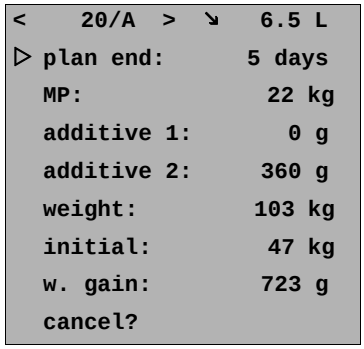
If individual animals or an animal group shall not be fed according to the plan anymore, they have to be canceled and removed from the pen. The same applies to those animals whose feeding plan has lapsed.



7.3.1 Canceling an individual animal

1. > **animal management** > **cancel** > **animal**
2. Select the desired animal number.
3. In **plan end** you can view how long the animal will be fed according to the plan.
4. The following lines display the amount of each indiviual feed component the animal has consumed from registration to cancelation.
5. Confirm **cancel** with Enter to cancel the animal.



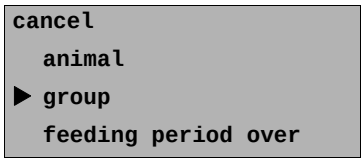


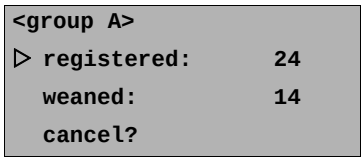
Warning: After an animal has been canceled, it is not fed via the automatic feeder anymore.

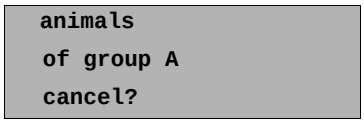
Note: If for the **automatic registration mode** you have selected **all** or **available**, you should remove the canceled animals from the pen, otherwise they will be automatically registered again (see **7.2.2.3** Entering the transmitter numbers and registering the animals automatically, page **95** resp. see **7.2.2.2** Registering only available transmitters automatically, page **94**)

7.3.2 Canceling the group

1. > **animal management** > **cancel** > **group**
2. Select the desired group.
3. In **registered** you can view the number of animals fed according to the corresponding plan.
4. In **weaned** you can view how many animals have already terminated the feeding plan and are not fed anymore.
5. Confirm **cancel** with Enter if all the animals of the group shall be canceled, no matter if the animals are registered or weaned.
6. Confirm the corresponding security query with Enter.

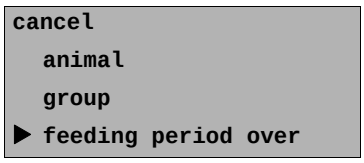






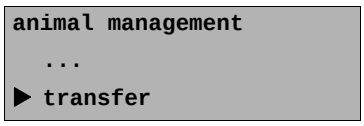
7.3.3 Canceling weaned animals

1. > **animal management** > **cancel** > **feeding period over**
2. Confirm **cancel?** with Enter if weaned animals shall be canceled.
3. Confirm the corresponding security query also with Enter.



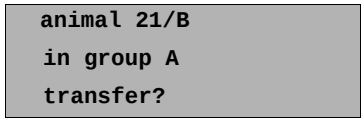
7.4 Transferring the animals

An already registered animal can be transferred to another group at any time:



1. > **animal management** > **transfer**

2. Select the desired animal.
3. In **group** select the desired feeding group.



4. Confirm the query on the right with Enter.

Note: At transfer time the feeding day remains the same, i.e. the animal is **not** set back to the beginning of the feeding plan (= to plan day 1).

8 Feeding

Note: Please consider the documentation of the peripheral devices, if required.

8.1 Functioning of the automatic feeder

8.1.1 Feed preparation

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 warm water needed to prepare the portion is extracted from the boiler.

8.1.2 Feed dispense

The feed can be dispensed at the stations either in the **parallel** or the **priority mode**. Whereas in the **parallel mode** several animals can be simultaneously fed at different stations, in the **priority mode** only one animal at a time can be fed.

Note: The parallel feed dispense is only possible at those stations where the feed is dosed via the peristaltic pump. In addition to the existing peristaltic pump stations, one more valve station can be included in the parallel feed dispense respectively.

8.1.2.1 Priority mode

The feed prepared in the mixer jar is conveyed to the teat, where it is taken in by the animal, via the suction hoses and the open box valve by the suckling movements of the animal.

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

8.1.2.2 Parallel mode (SynchroFeed)

In the parallel mode, the feed is prepared in the mixer jar for several animals and simultaneously dispensed to the stations with parallel feed supply. One of these stations can also be a valve station, all other stations must be provided with feed by peristaltic pumps. At all of these peristaltic pump stations the quantity is booked on the basis of the number of revolutions of the corresponding peristaltic pumps. The peristaltic pumps are controlled respectively by an Intelligent Feeding Station (IFS), which is integrated into the CAN-bus.

8.1.3 Feeding regime

8.1.3.1 Restricted mode

If 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. If the animal is still entitled to feed, the automatic feeder prepares one further 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 remains covered, the box valve closes after hold time has lapsed.

If an animal breaks off feed intake, five minutes after feed preparation the remaining quantity in the mixer jar will be released thus being available for any other entitled animal. The consumed quantity is booked for the animal. Alternatively, the feed can also be drained immediately via the mixer draining valve, if available.

Feeding program

After the animals have been registered in a group (A, B, C or D), they are fed according to the feeding plan of the corresponding group.

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

Minimum quantity

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

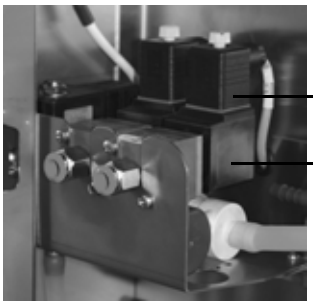
Maximum quantity

In order to avoid excessive feed intake due to too high minimum quantities, the quantities to be consumed are limited. If an animal has consumed the maximum quantity, feed dispense will be broken off for two hours for this specific animal. The accumulated quantities are still effective.

8.1.3.2 Ad libitum-mode

In the adlib-mode the automatic feeder operates without animal identification. A portion is prepared whenever the bar electrode is free. With several feeding stations the corresponding box valves open at the same time.

Caution: 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 power connector from the box valve. The same applies to an automatic feeder which is equipped with two or more box valves.



1	Female power connector
2	Box valve

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

8.1.3.3 Priority

Here you can give specific animals feeding priority:

> Animals for which an **alarm** is given.

> Animals to which an **additive** is administered.

> Animals to which priority should be given **up to** a specific feeding day. Enter the corresponding value.

> A (feeding) **station** and all the animals fed via it.

```
priority
▷ alarm:              [no]
  additive:            no
  till feed. day:       0
  station:           none
```

8.1.4 Dispensing additional feed portions

By means of **extra portions** the animals can be fed with further feed in addition to their daily feed entitlement. Via the **MilkMaker** functionality you can make larger feed quantities available once to a specific time, e.g. to single-housed calves.

```
manual function
▶ extra portion
  MilkMaker
  ...
```

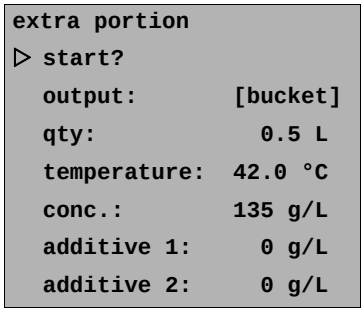
8.1.4.1 Dispensing extra portions

You can manually start the preparation of feed portions at any time. These feed portions are not deducted from the day quan-

```
manual function
▶ extra portion
  MilkMaker
  ...
```

tity to which the animals are entitled according to the feeding plan.

1.  > **extra portion**
2. Confirm **start?** with Enter. The extra portion will be prepared.



The following parameters are taken into consideration during the preparation and the dispense of the extra portion:

- **Output**

  Here you can select where the portion has to be dispensed. Select **bucket** if the portion has to be dispensed via the discharge or select one of the registered **feeding stations**. If slight feed quantities must be dosed into a container, select a feeding station. Remove the hose from the outlet of the corresponding valve and let the feed flow into the corresponding container.

Note: To dose larger milk quantities into a container, use the MilkMaker functionality (see **8.1.4.2** MilkMaker-functionality, page **104**).

- **Temperature**

  Here you can enter the temperature with which the extra portion is perepared.

- **Quantity**

  Here you can enter the feed quantity to be dispensed.

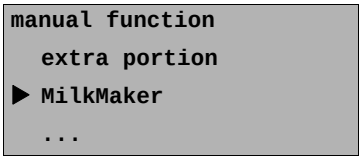
- **Concentration**

  Here you can enter the feed concentration of the extra portion to be prepared.

- **Additive**

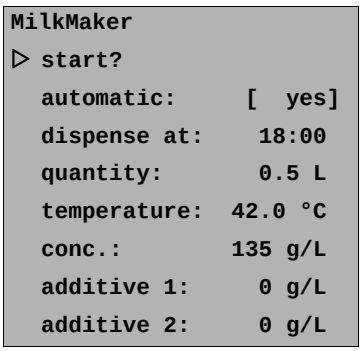
  Here you can enter the concentration for additive 1 and additive 2, if you would like to add some additives to the extra portion.

8.1.4.2 MilkMaker-functionality



Note: To use the MilkMaker-functionality a dosing unit in terms of a peristaltic pump is required. The sub-menu **MilkMaker** is only displayed, if the dosing unit has been selected in the setup of the automatic feeder (see **4.5** Equipment, page **57**).

The MilkMaker-functionality is intended to prepare once immediately or at a defined time a large feed quantity and to pump it to a dosing unit (e.g. a MilchMobil).

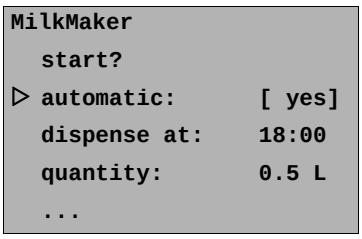


Dispensing the milk portion immediately

1. > **MilkMaker**
2. Confirm **start?** with Enter. The milk quantity is immediately prepared and dispensed.

Time-controlled dispense of the milk portion

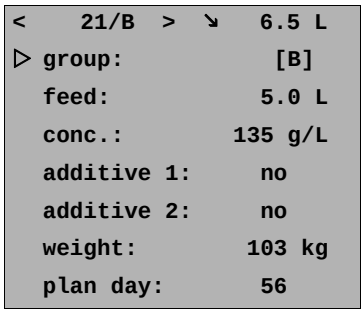
1. > **MilkMaker**



2. In **automatic** select **yes**.
3. In **dispense at** select the time at which the milk portion should be dispensed.
4. After the selected time has been achieved, the milk portion will be prepared according to the defined parameters and dispensed via the connected peristaltic pump.

8.2 Changing the data of individual animals

In the menu **animal** you can carry out animal-specific settings. Here you can view and, if necessary, change the following values:

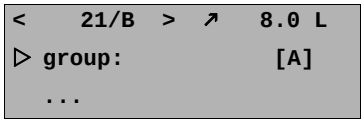


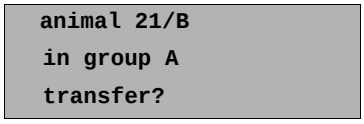
- **the group** of the animal
- **the feed quantity** of the individual animal
- **the concentration** of the dispensed feed
- potentially dispensed **additives**
- the **animal weight**
- the **plan day** of the animal.

8.2.1 Changing the group

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

1. > **feeding** > **animal**
2. Select the desired animal.
3. In **group** select the desired feeding group.
4. Confirm the query on the right with Enter.





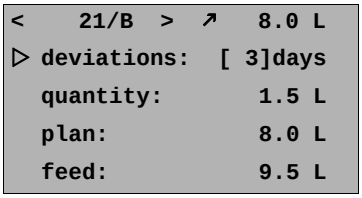
8.2.2 Deviations of the feed quantity or feed concentration

In **feed** resp. **conc.** you can enter

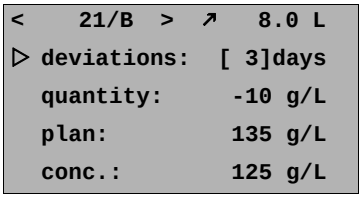
- the increase or reduction of the current, animal-specific feed quantity resp. concentration,
- how long this change shall be valid.

1. > **feeding** > **animal** > **feed** resp. **conc.**
2. Select the desired animal.

3. Enter the validity period into **deviations**.
4. Enter the desired quantity into **quantity**.
5. In the following display lines you can check:
   - the daily feed quantity to which the animal is entitled according to the plan (**plan**),
   - the feed quantity which can be consumed after the correction has been carried out (**feed**),



Note: In **conc.** proceed as with **feed**.



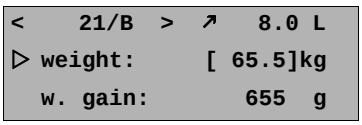
If the corrections are not valid anymore, the animal becomes an **expiry animal**, thus being automatically fed according to the feeding plan again.

8.2.3 ⊕Changing additive dispense

To know more about how to change the additive quantities, see **8.5.3.4** Changing additive dispense, page **127**.

8.2.4 ⓥ⊕Changing the weight

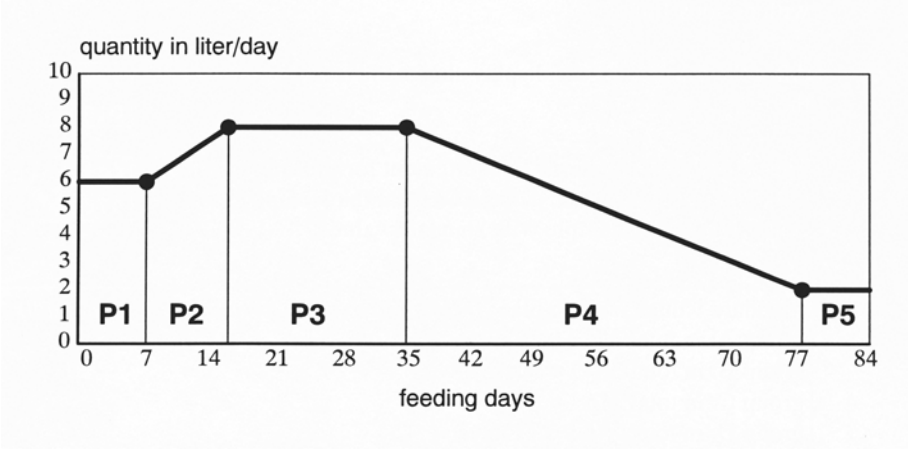
Here you can change the weight. The weight gain is calculated automatically.



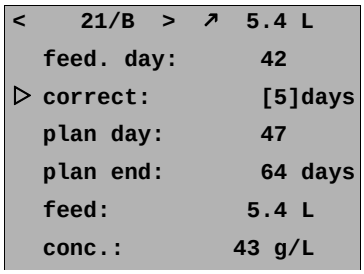
Note: This menu is only displayed if the automatic feeder is equipped with an additive dispenser or at least one feeding or concentrate station is equipped with an ⓥ⊕animal scales.

8.2.5 Shortening or extending the total duration of feeding

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



1. > **feeding** > **animal** > **plan day**
2. Select the desired animal.
3. **Feed. day** shows the number of days that have passed since registration.
4. In **correct** select the desired amount of days.



Note: To **shorten** the total duration of feeding, enter a **positive number**. To **extend** it, enter a **negative number**. The maximum extension corresponds to the number of feeding days.

5. In the following display lines you can check:
   - the **plan day** according to which the animal is fed after correction,
   - when the **plan end** is achieved,
   - the **feed quantity** and **feed concentration** fed to the animal on the current day,

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

```
<    21/B  >  ↗  7.5 L
  feed. day:     1
▷ correct:     [14] days
  plan day:     15
  ...
```

8.3 Plans

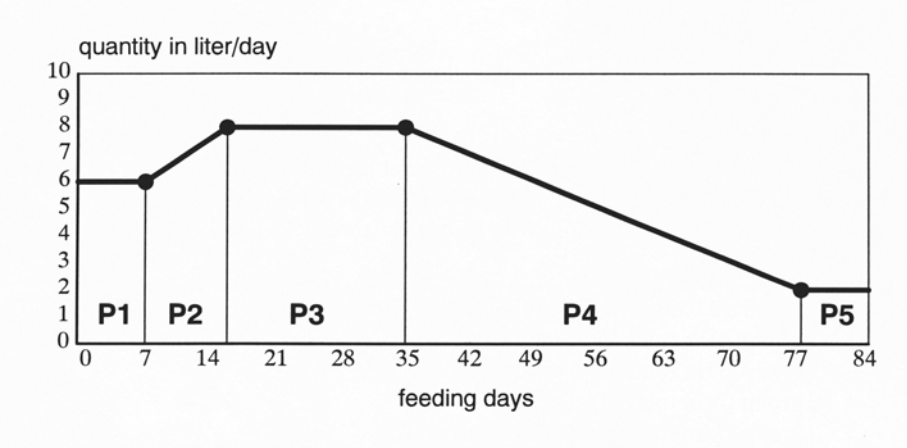
At feed preparation the following plans are taken into account:

- feeding plan
- concentration plan
- limitation plan

Four plans each are available: feeding plan A, B, C or D, concentration plan A, B, C or D, etc.

You can allocate an animal either to group A, B, C or D. Group A is fed according to the feeding plan A and group B according to the feeding plan B, etc. Those animals having been allocated to different feeding groups can nevertheless be housed in the same pen or be fed at the same station.

Below you will find an example of a feeding plan



As a standard, each feeding plan is subdivided into four periods (P 1 - P 4). However, a fifth period can be added to the feeding plan, if required.

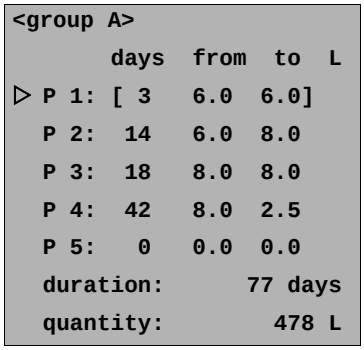
The registration day corresponds to the first day of the feeding plan.

If at start-up you have „reset“ (new installation) the device data of the automatic feeder, the machine will operate with default values. The default values are based on experience and can be changed or adapted to the needs of each individual animal at any time.

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

8.3.1 Changing the feeding plans

1.  > **feeding** > **plans** > **feed > quantity**
2. Select a group. The related default feeding plan is displayed.
3. In **P 1** enter the duration (number of days) of the first feeding period.
4. Press Enter to move to column **from** and enter the start value of the feed quantity for **P 1** (period 1).
5. Press Enter ito move to column **to** and enter the end value of the feed quantity for **P 1**.



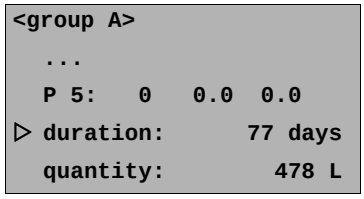
Note: You can increase or decrease the feed quantity by 0.1 liter-steps. The feed is then alloted to one or more portions of different size depending on feed entitlement.

Example: Feed entitlement 1.6 liters, no further animal is drinking: The feed quantity is divided into four partial portions. The first portion is 0.4 liters, the second 0.5 liters and the last two 0.35 liters each.

Note: Only the feed quantity that has been actually consumed will be booked.

Note: As a standard four feeding periods are shown. Max. 5 periods can be activated. Whenever you have activated the last period for now, the next period will be displayed.

6. For **P 2 to P 5** you must just enter the duration of the feeding period and the final value of the feed quantity. As displayed on the screens, the final value of a feeding period always corresponds to the initial value of the next period.
7. The lower menu lines show the total duration of the feeding plan and the total feed quantity accumulated till the end of the corresponding plan.



Default plan values for	**Duration of periods** (in days)	**Feed quantity** (liters according to feeding plan)	**MP-quantity** (kg DM according to concentration plan)
Group A	77	478	64
Group B	70	384	51
Group C	64	316	42
Group D	71	353	47

8.3.2 Changing the concentration plans

For each feeding plan a corresponding concentration plan is available. Like the feeding plan also the concentration plan is subdivided into four periods as a standard. However, the duration of the periods of the concentration plans is not linked with the duration of the periods of the feeding plans.

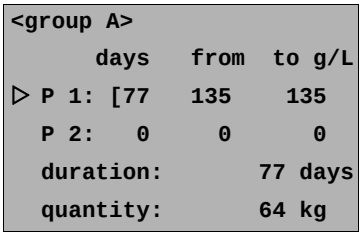
Example: If the concentration must be the same for all feeding periods, in **P 1** of the concentration plan enter the exact number of days that correspond to the total number of days in the feeding plan.

Note: Many manufacturers of milk powder give a recommendation about the milk powder concentration per liter of feed (water including milk powder) on the packaging. In the program of the automatic feeder, however, the concentration is set per liter of water. Therefore, please refer to the following table which shows you the values to be selected in the concentration plans in order to achieve the desired concentration per liter of prepared feed.

Desired concentration (in g/L of feed)	**Setting in the concentration plan (in g/L of water**)	**Dry matter (in %/L of feed**)
100	111	10.0
105	117	10.5
110	124	11.0
115	130	11.5
120	136	12.0
125	143	12.5
130	149	13.0
140	163	14.0
150	176	15.0
160	190	16.0
170	205	17.0
180	220	18.0
190	235	19.0
200	250	20.0

Example: If the concentration per liter of feed should be 120 grams, you must select 136 g/L in the concentration plan.

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



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.

Note: One period is displayed as a standard. However, you can activate up to five periods. Whenever you have activated the last period for now, the next period will be displayed.

8.3.3 Changing the plan for 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. In that case, the minimum quantity is not effective anymore. The maximum quantity defined in the plan still limits the consumed quantity per visit.

The feed quantities are continuously saved. By the minimum quantity you determine the feed amount to be saved until a feed portion is dispensed. Thereby you determine the number of meals indirectly.

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.

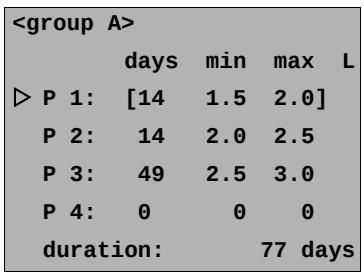
Note: You can increase or decrease the feed quantity by 0.1 liter-steps. The feed is then alloted to one or more portions of different size depending on feed entitlement.

Maximum quantity

To prevent that the animals consume too much feed all at once, the released feed quantity is limited. That means that the animals only get no more than the feed quantity which corresponds to the maximum quantity.

Example: An animal saved 4.0 liters of feed. The maximum quantity is 2.0 liters. If the animal visits the feeding station, max. two liters are dispensed. The remaining 2.0 liters can be consumed by the animal only after a two-hour break.

1. > **feeding** > **plans** > **feed > limitation**
2. Select the desired group. The related default plan for limitation of quantities will be displayed.
3. In **P 1** enter the duration (number of days) of the first feeding period.
4. Press Enter to move to the column **min.** and enter the number of liters for the minimum saved quantity.



5. Press Enter to move to the column **max.** and enter the number of liters for the maximum quantity.

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

6. If you want to change the values for **P 2** to **P 5**, proceed as with **P 1**.

7. The last menu line displays the total duration of the plan for limited quantities.

Default values of the minimum saved quantity and the maximum quantity for the groups A, B, C and D

	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 and 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
	4 and 5: not activated as a standard		
Group C	1: 14 days	1.5 L	2.0 L
	2: 14 days	2.0 L	2.5 L
	3: 36 days	2.5 L	3.0 L
	4 and 5: not activated as a standard		
Group D	1: 7 days	1.0 L	1.5 L
	2: 14 days	1.5 L	2.0 L
	3: 14 days	2.0 L	2.5 L
	4: 36 days	2.5 L	3.0 L
	5: not activated as a standard		

Note: The set values relating to limited quantities should not be reduced at the end of the feeding period.

8.3.4 Changing the plan for maximum speed

This plan rules the percentage of the maximum speed used to turn the peristaltic pumps of the stations which are operated in the parallel mode. By default, at the beginning of the feeding period, the pumps run at 70 % of the maximum speed. This value increases continuously and at the end of the feeding period it achieves 90 %. If necessary, the maximum speed plan can be subdivided into up to 5 periods. The value relating to the maximum speed can be 30 to 100 %.

Default values of the maximum speed plan for the groups A, B, C and D
P(eriod) 1: Start value: 70 %, End value: 90 %
P(eriods) 2 to 5 are not activated as a standard.

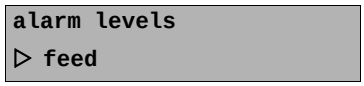
1. > **feeding** > **plans** > **feed > max. speed**
2. Select the desired group. The related default plan of the maximum speed is displayed.
3. In **P 1** enter the duration (number of days) of the first feeding period.
4. Press Enter to move to the column **from** and enter the initial value for the maximum speed.
5. Press Enter to move to **to** and enter the final value for the maximum speed.
6. To change the values for **P 2** to **P 5**, proceed as with **P 1**.

```
<group A>
         days  from   to %
▷ P 1:  [70    50    80]
  P 2:    0     0     0
  duration:       70 days
```

7. The last menu line shows the total duration of the maximum speed plan.

8.4 Alarm levels

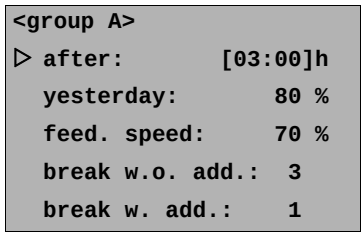
The alarm levels allow you to determine the time or the value as of which an alarm is given. The alarm levels are determined per group.



You can enter alarm levels for:

- **Feed consumption**
- **Feeding speed**
- **Break without additive**
- **Break with additive**

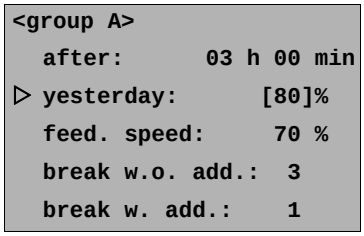
1. > **feeding** > **alarm level > feed**
2. Select the desired group to which the alarm levels should apply.
3. In **after** enter how much time (in hours) may pass at most until an alarm is given after the feed has been released. (This setting refers to the current day).



Example: The value relating to the alarm level **after** is set to 3 a.m. At 8.10 a.m. a portion will be released to the animal. If three hours later, i.e. 11.10 a.m. the animal has not claimed its feed amount, an alarm will be given for this animal.

Default value:	3 h(ours)
Range:	0 to 9 a.m.

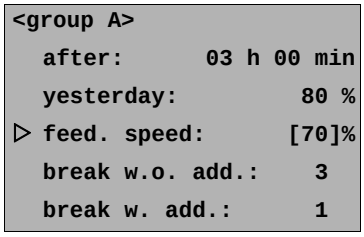
4. In **yesterday** enter the feed quantity that should have been consumed at least.



Default value:	80 %
Range:	0 % to 99 %

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

5. In **feed. speed** enter the desired value.

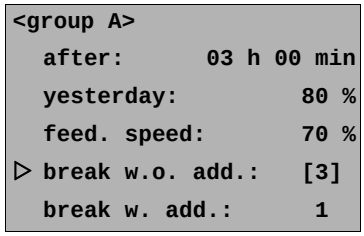


Default value:	70 %
Range:	0 % to 99 %

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

Example: Animal's average feeding speed of the previous three days is 1 (one) 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.

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

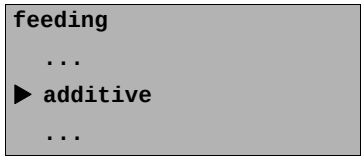


Note: If the automatic feeder is equipped with an ⊕additive dispenser, in **break w.o. add.** (= break without additive) and **break w. add.** (= break with additive) you must enter how often feeding with or without additive may be broken off before an alarm is given.

Default value:	Break without additive: 3 Break with additive: 1
Range:	0 to 99

8.5 ⊕Additive dispense

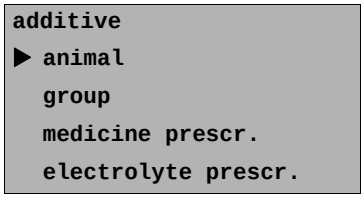
To dispense medicine and electrolyte up to two additive dispensers can be connected to the automatic feeder: A dispenser for powder or liquid additives and one further solely for liquid additives.



You can determine the dosage of medicine/electrolyte and the duration of administration in the prescription plans. Up to four prescription plans for medicine and one prescription plan for electrolyte can be created. Medical preparations are dosed into the milk or milk powder/water mix, whereas electrolytes are normally dosed into the water.

Note: The electrolytes can also be given according to the medicine prescription plan. In that case, the electrolytes are dosed into the milk or milk powder/water mix like the medical preparations.

Additive contains the following menus:



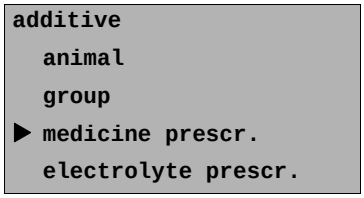
- **Animal**
- **Group**
- **Medicine prescription**
- **Electrolyte prescription**

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.

8.5.1 Creating a medicine prescription plan

To give additive to the animals you have to create a prescription plan and allocate it to a dispenser. Up to four different medicine prescription plans can be created.



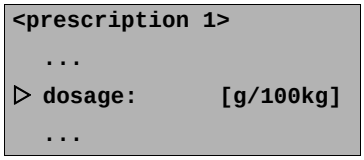
8.5.1.1 Selecting the dosage

The dosage is made either

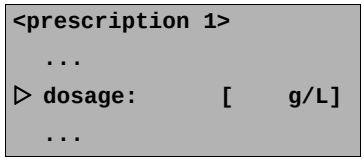
- according to animal's weight (in g/100 kg),
- according to the feed quantity (in g/L),
- as day quantity per animal and day (g/day).

Dosing the additive according to weight

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



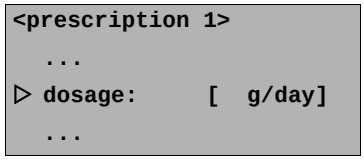
Dosing the additive according to the feed quantity



Those animals getting plenty of feed will get more additive than those animals getting less feed. The additive quantity is equally apportioned among the feed portions.

Example: Animal 1 receives 8 liters, animal 2 2 liters per day. With a medicine quantity of 2 g/L, 16 grams per day are given to animal 1 and 4 grams per day to animal 2.

Dosing the additive as day quantity



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

1. > **feeding** > **additive** > **medicine prescr.**
2. In **dosage** select the desired setting.

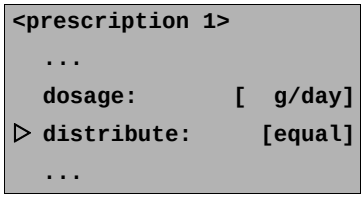
8.5.1.2 Distribution

If the additives are dosed according to weight (**g/100 kg**) or as a day quantity (**g/day**), you can distribute them throughout the day as follows:

- once (daily)
- twice (daily) or
- equal (= even distribution among all the portions).

Note: If you have selected **once** and **twice,** the additive will be apportioned among the „mid“ portions. Basically, the first (unaltered feed taste) and last portion (prevention of medicine left-overs in the mixer jar) are free from additive. Exception: With two portions, the additive is dosed into the first portion.

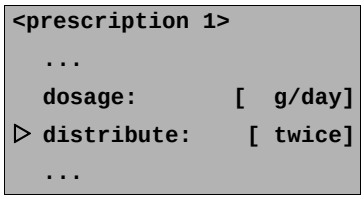
Distribution type „once“



The additive quantity is dosed into the „mid“ portions of the first feed claim of the day.

Example: An animal weighing 100 kg is entitled to 3 liters of feed, the minimum quantity is 2 liters and 9 g/100 kg additive should be given. At the first feed claim of the day no additive is dosed into the first and fifth portion whereas 3 grams are dosed each into the second, third and fourth portion.

Distribution type „twice“

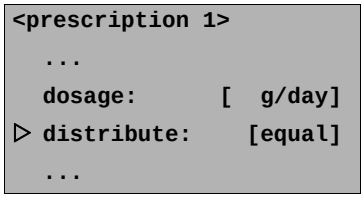


Half of the additive quantity is apportioned among the portions of the first feed claim in the morning and the rest among the portions of the first feed claim in the afternoon.

First day’s half: midnight to noon, second day’s half: noon to midnight

Example: An animal weighing 100 kg can claim 2 liters each at the first visit to the feeding station in the morning and in the afternoon. The additive dosage is 9 g/100 kg. At the first feed claim in the morning no additive is dosed into the first and fifth portion whereas 1.5 grams each are dosed into the second, third and fourth portion. The same applies to the first feed claim in the afternoon.

Distribution type „equal“

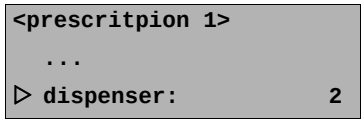


The additive is apportioned among all the feed portions.

1. > **feeding** > **additive** > **medicine prescr.**
2. In **distribute** select the desired setting.

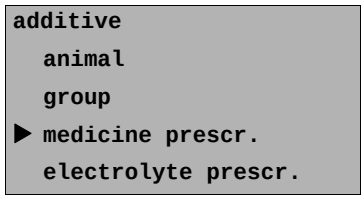
8.5.1.3 Dispenser

Select the dispenser that should dose the additive according to the prescription plan.

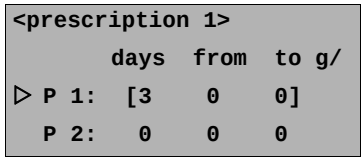


8.5.1.4 Duration of medication and additive quantity

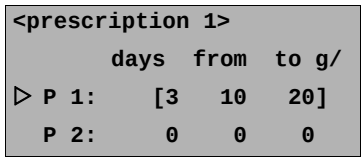
Like the feeding and concentration plans, the prescription plans can be subdivided into five periods (P 1 - P 5). This allows you e.g. to continuously increase the additive quantity over a long period of time and to reduce it again at the end of treatment.



1.  > **feeding** > **additive** > **medicine prescr.**
2. Enter the duration (number of days) of the first feeding period in **P 1**.



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. With **P 2** to **P 5** proceed as with **P 1**.



Unlike the feeding plans, for the medicine plans the final value of the preceding period is not taken over as start value. Each period can be entered individually.

6. In **duration** you can check the total duration of additive dispense.
7. If you want to create further prescription plans, proceed as explained before.

Note: The message on the right may be displayed if you have selected high **medicine dosages** and subsequently changed the type of dosage (**dosage**) from e.g. g/100 kg to g/L.
If you press Enter, the values entered into the prescription plan will be automatically corrected for the maximum values. If you want to enter the values by yourself, press Esc to terminate the process.

```
runtime too long!
reduce quantity?
```

Note: The prescription plans are not linked to animal's housing date. The additive is dispensed only after you have activated the prescription plans **P 1, P2, P3 or P4** under **additive 1 resp. 2**. If the total duration of feeding has lapsed according to the feeding plan, the feed will be given further with additive. In that case, the feed quantity fed last will be maintained until the end of the prescription plan.

Note: The additive quantity should not fall short of 1 g / portion. If the additive quantity is less than 1 g / portion, add some glucose or milk powder to the additive in order to increase the quantity.

8.5.2 Creating the electrolyte prescription plan

You can create one electrolyte prescription plan.

1. > **feeding** > **additive** > **electrolyte prescr.**

```
additive
  ...
  medicine prescr.
▶ electrolyte prescr.
```

2. Enter the electrolyte **quantity** (concentration).
3. Enter the **duration** of the electrolyte dispense.
4. Enter the amount of **electrolyte** feed per animal and meal.

```
electrolyte prescr.
▷ qty:       [  30]g/L
  duration:     2 days
  EL:            1.5 L
  feed:          2.0 L
  wait. time:    02:00
  dispenser:         2
```

5. Enter the amount of **feed** the animal is allowed to consume per meal. The maximum feed quantity an animal is allowed to consume is limited by the feeding plan.

Note: The animals receive electrolyte and feed by turns. If you enter 0 L in feed, the animal will receive solely electrolyte feed.

6. In **wait. time** you can enter how long the animal has to wait until it is allowed to claim feed after electrolyte or viceversa. The waiting time is also valid if the animal receives solely electrolyte (feed = 0.0 L).
7. Select the **dispenser**.

8.5.3 Programming additive dispense

After you have created the prescription plan, you can allocate it to individual animals or a group and then activate it. You can also allocate several prescription plans to a dispenser, thus allowing flexible additive dosage according to plan.

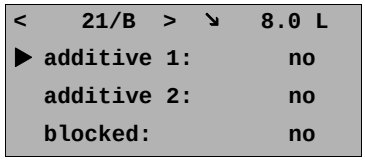
Note: If two dispensers are connected, two different medicines or an electrolyte and a medicine can be given to an animal or a group at the same time.

Hereinafter it is assumed that the automatic feeder is equipped with two additive dispensers and that you can choose between four medicine prescription plans and the electrolyte prescription plan.

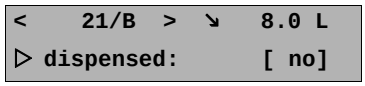
8.5.3.1 Giving medicine to individual animals

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

3. Select whether **additive 1, additive 2 or both** should be dispensed. Press Enter in the corresponding line. How to proceed further is exemplified by **additive 1**.

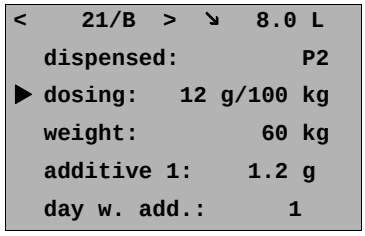


   3.1 In **dispensed** select the prescripton plan.



   3.2 Further lines are shown. To enter deviations, press Enter in **dosing**. The following lines will show the dosage according to the prescription plan and the corrected dosage.

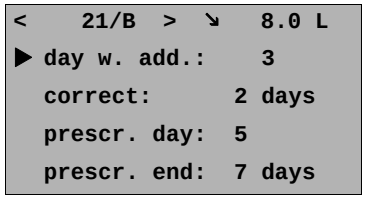
   3.3 To correct the weight, press Enter in **weight**. The weight gain is automatically adapted to the new weight.



Note: If the additives are to be dispensed according to animal's weight, it is imperative to key in the exact weight of the corresponding animal since heavy animals are given more additive than light-weight ones.

   3.4 **Add. 1** shows the additive quantity.

   3.5 To extend or shorten the duration of additive dispense, press Enter in **day w. add.** The following lines will show the corrected **prescription day** and **prescription end**.



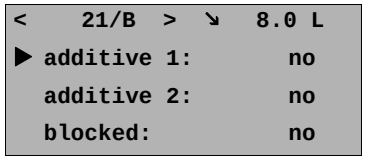
4. **Blocked** (see **8.5.4** Handling remaining portions, page **129**).

8.5.3.2 Giving electrolyte to individual animals

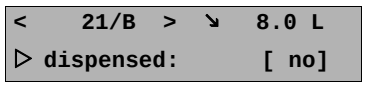
1. > **feeding** > **additive** > **animal**

2. Select the desired animal.

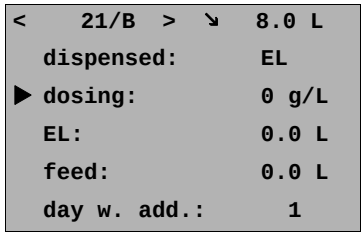
3. Select whether **additive 1 or additive 2** is the **electrolyte.** Press Enter in the corresponding line. How to proceed is exemplified by **additive 1**.



   3.1 In **dispensed** select **EL**.



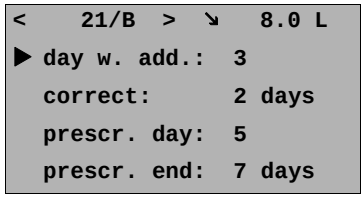
3.2 Further lines are displayed. To enter deviations, press Enter in **dosing.** The following lines show the dosage according to the prescription plan and the corrected dosage.



3.3 In **EL** the electrolyte/feed quantity is displayed. To change it, press Enter.

3.4 In **feed** you can change the milk/feed quantity an animal is allowed to consume per meal.

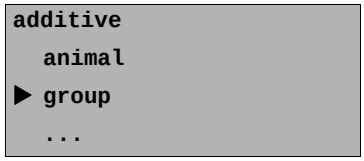
3.5 If in **day w. add.** you press Enter, you can extend or shorten the duration of additive dispense. The following lines show the corrected **prescription day** and **prescription end**.



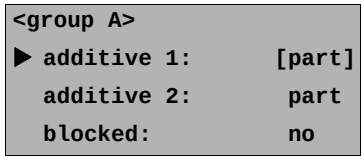
8.5.3.3 Giving additive to a group

1.  > **feeding** > **additive** > **group**

2. In **group** select the desired group.



3. The line **additive 1** resp. **additive 2** is variabel. If additive 1 or additive 2 are already given to one or more animals of the group, **part** will be displayed. If all animals of the group are given the same additive, the short form of the corresponding prescription (**P1**, **P2**, **P3** or **P4**) or **EL** will be displayed.

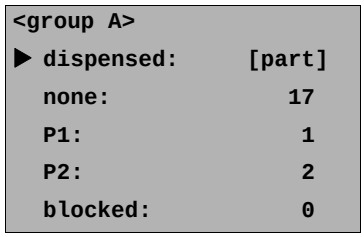


3.1 If you press Enter, a list will show you how many animals of the group are given

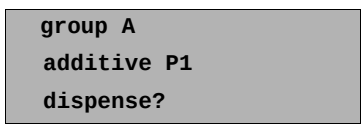
> neither medicine nor electrolyte,

> medicine according to the correspond-ing prescription plan,

> electrolyte.



3.2 If you want to give additive to the group, in the line **dispensed** press Enter and select the corresponding prescription. The message on the right is displayed. Press Enter if the animals of the group should receive additive according to the prescription plan (here: **P1**).



Note: Blocked animals (see **8.5.4** Handling remaining portions, page **129**) are not given additive. Those animals which are already given additive, are not „migrated“ to the prescription plan of the group. If all an-imals, even those which are already given additive, must receive additive according to the prescription plan of the additive group, you have to enter **no** in **additive 1** and **additive 2**. The message on the right is displayed. Press Enter to confirm the input. Now you can select the prescription plan that shall be valid for all the animals of the group.

```
group A
no additive
dispense?
```

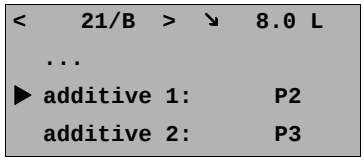
Example: Some of the animals of group A are receiving **additive 1** (an electrolyte) according to the prescription plan 1 (P1), some according to the prescription plan 2 (P2), some others are not receiving any additive, an animal is given electrolyte according to the electrolyte prescription plan (EL). All the animals of the group have to be „migrated“ to the prescription plan 4 (P4). If in line **additive 1** you select P4, those animals which up to now have not received any additive or electrolyte will receive additive 1 according to the prescription plan 4 (P4). If also those animals which up to now have received additive according to P1 or P2 or to the electrolyte prescription plan have to be „migrated“ to P4, first of all you must deactivate additive dispense for all the animals of the group. Select **no** in **additive 1** and proceed as described under **note**. The same also applies to **additive 2**.

8.5.3.4 Changing additive dispense

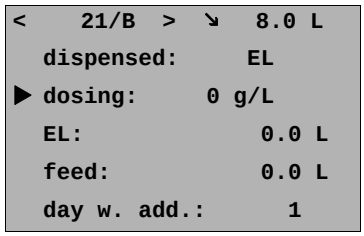
1. > **feeding** > **animal** > **additive 1 resp. 2**

```
feeding
▶ animal
  ...
```

2. Select the desired animal.



3. In the line **additive 1** resp. **2** the corresponding prescription plan is displayed. To change the settings, press Enter:



   3.1 In the line **dispensed** you can terminate additive dispense [**no**], select another prescription plan (**P1**, **P2**, **P3** or **P4**) or **EL**.

   3.2 If you want to change the additive quantity for the selected animal, in **dosing** press Enter. A four-line submenu will be displayed:

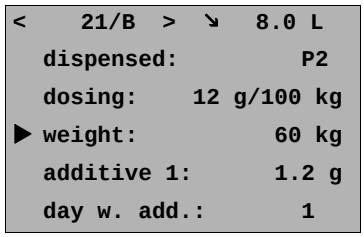
      3.2.1 In **deviations** enter the desired validity period.

      3.2.2 In **quantity** enter the amount by which the currently dispensed additive quantity should be increased or reduced.

      3.2.3 The amount of dosage according to the prescription plan (**prescription**),

      3.2.4 The amount of dosage after correction (**dosing**).

      IPress Esc once to access the one higher menu level:



   3.3 In **weight** (only if in **dispensed** you selected **P1**, **P2**, **P3** or **P4**) the current animal weight is displayed. To change it, press Enter. Another submenu will be displayed:

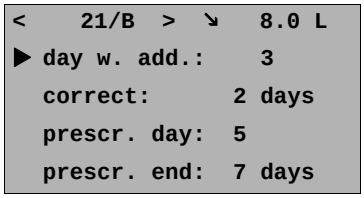
      3.3.1 In **weight** enter the desired value. The weight gain is calculated automatically.

   3.4 In **additive** 1/2 (only if in **dispensed** you selected **P1**, **P2**, **P3** or **P4**) the (updated) additive quantity is displayed.

   3.5 In **EL** 1/2 (only if in **dispensed** you selected **EL**) the electrolyte/feed quantity is displayed. To change it, press Enter.

   3.6 In **feed** (only if in **dispensed** you selected **EL**) you can change the milk/feed quantity the animal is allowed to consume per meal.

If in **day w. add.** you press Enter, you can extend (but only as of the second day of additive dispense!) or shorten the duration of additive dispense. In the following lines the corrected **prescription day** and **prescription end**.



Note: If the deviation plan is not valid anymore for the animal, this animal becomes an **expire animal** (end of the plan) thus being automatically provided with additive according to the prescription plan.

8.5.4 Handling remaining portions

The function **block remaining portions** prevents specific animals from drinking up feed residues, which contain additive (medicine!).

If an animal has not drunk up a feed portion, which contains additive (the bar electrode is covered), feed consumption will be blocked for those animals which should not receive additive.

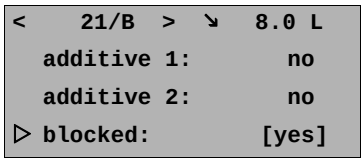
Blocked animals are allowed to be fed again,

- if the remaining portion has been drunk up by an animal which is allowed to receive additive or consume remaining portions,
- or if the remaining portion has been automatically pumped out via the mixer draining valve (if available).

8.5.4.1 Blocking the remaining portions for individual animals

1. > **feeding** > **additive** > **animal**

2. Select the desired animal.
3. In **blocked** select whether the remaining portions, which contain additive, shall be blocked for the animal.

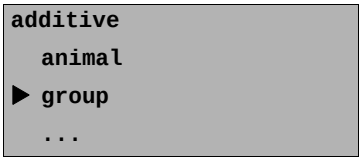


Note: To cancel blocking for an animal so that it is allowed to receive additive, you must select **no** in **blocked**. Only then you can adjust the desired prescription plan in **additive 1 or/and additive 2**. The same applies if you want to block an animal to which additive is being given. Select **no** in **additive 1** and **additive 2** and only then **yes** in **blocked**.

Note: Blocked animals are not given additive even if additive dispense is active for the complete feeding group (see **8.5.3.3** Giving additive to a group, page **126**).

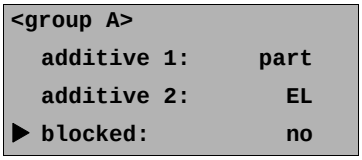
8.5.4.2 Blocking the remaining portions for animal groups

1. > **feeding** > **additive** > **group**

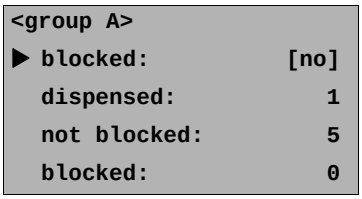


2. Select the desired group.

3. If in **blocked** you press Enter, you will access a submenu where you can block remaining portions with additive for the displayed animal group.



4. In **blocked** select **yes** and press Enter. All the animals of the corresponding group are not allowed to drink the remaining portions, unless additive is currently being administered to them.

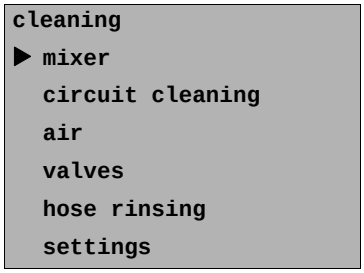


Note: Electrolyte can be dispensed even if medicine dispense is blocked for an individual animal or the complete group (see **8.5.3** Programming additive dispense, page **124**).

Note: The feed residues with additive are pumped out or fed to an animal which is allowed to get additive. If an animal which is entitled to additive is followed by a blocked animal, the feed portion will be prepared only after the mixer jar has been (all-automatically) rinsed with clear water.

9 Cleaning

The automatic feeder has to be cleaned at regular intervals, particularly when fresh milk is fed. The following cleaning menus can be selected:



- **Mixer**
- **Circuit cleaning**
- **Air** (pulsating compressed-air cleaning)
- **(Box) valves**
- **Hose**
- **Settings**

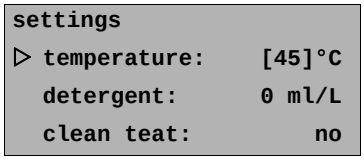
Note: certain failures prevent the start of cleaning processes, e.g. when water or detergent have not been calibrated yet.

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.

9.1 Settings

In this menu you can enter:



- the temperature of the cleaning water,
- the detergent quantity,
- whether the teat should be cleaned.

1. > **cleaning** > **settings**
2. In **temperature** enter the desired temperature of the cleaning water.

3. In **detergent** enter the desired detergent quantity.

	Temperature	**Detergent quantity**
Default value:	45 °C	0 ml/L
Range:	10 to 50 °C	0 ml/L to 25 ml/L

Note: The temperature of the cleaning water and the detergent quantity apply to all cleaning processes! Anyhow they can be changed at any time.

4. If the teat must be cleaned, too, select **yes** in the line **clean teat**. In that case, the rinsing water is not drained via the mixer draining valve, if available, but via the teat.

Note: The detergent is dispensed only if the mixer draining valve is available.

9.2 Mixer

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

Note: The mixer is automatically cleaned twice a day, at 7:00 a.m. and at 10 p.m. Max. four cleaning cycles can be carried out. The default values of the cleaning times can be changed at any time.

Note: If mixer cleaning does not take place at the entered time, the reason for it may be that heat exchanger cleaning is taking place simultaneously or has been carried out before. The same applies if between heat exchanger cleaning and mixer cleaning no feed has been claimed. In that case, too, mixer cleaning will not take place.

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.

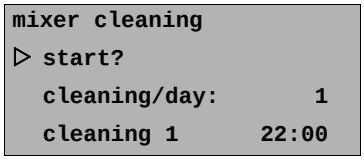
With you can all-automatically drain the cleaning water via the teat by means of the training pump. However, make sure that during the cleaning process no animal is sucking at the teat.

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

With you can drain the cleaning water via the mixer draining valve.

9.2.1 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...**

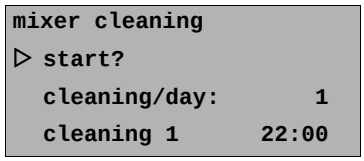


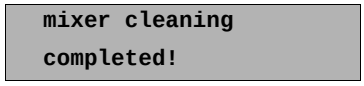
If the cleaning cycle is completed, the message on the right is displayed.

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 via the teat (provided that **empty via teat** is active) and the cleaning cycle will start running.

9.2.2 Starting mixer cleaning manually

1. > **cleaning** > **mixer**
2. Confirm **start?** with Enter.
3. Change the detergent quantity, if necessary, and confirm with Enter.



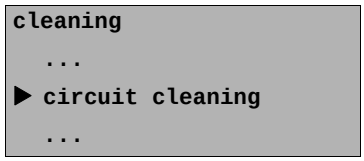


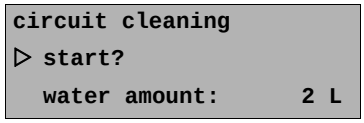
Note: Observe the notes in chapter **Starting mixer cleaning automatically/time-controlled**.

9.3 Circuit cleaning

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

1. > **cleaning** > **circuit cleaning**
2. In **water amount** enter the desired water quantity for pre-cleaning and rinsing.





Default value:	2 L
Range:	1 L to 10 L

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

3. Confirm **start?** with Enter.
4. Change the detergent quantity, if necessary, and confirm with Enter.

```
circuit cleaning
detergent:     0 ml/L
```

The automatic feeder starts pre-cleaning.

After a short time pre-cleaning is broken off. The message on the right is displayed:

```
hoses
disconnected?
```

5. Make the suction hoses ready for the cleaning process:
   5.1 Remove the suction hoses from the hose nozzles on the teats.
   5.2 Slip the suction hoses on the plastic hose nozzles of the cleaning adaptor.
   5.3 Place the hose ends next to the discharge.

Note: Do **not** connect the cleaning adaptor to the milk supply **yet**!

Press Enter to continue pre-cleaning.

When pre-cleaning has been completed, the message on the right will be displayed.

```
hoses
connected?
```

7. Hang the hoses into the mixer.
8. Press Enter to start main cleaning. The display shows the time left till the end of main cleaning.
9. When main cleaning has been completed, the message on the right will be displayed. Remove the hoses from the mixer and place them next to the discharge.

```
hoses
disconnected?
```

10. Press Enter to start rinsing.

11. When circuit cleaning has been completed, the message on the right will be displayed. Slip the suction hoses on the hose nozzles of the teat. Confirm the message with Enter.

```
  hoses
  connected?
```

12. Now you can reactivate the automatic mode of the automatic feeder.

9.4 Air (pulsating compressed air cleaning)

Compressed air cleaning allows you to clean the suction hoses up to the top of the teat without need of using detergent. To achieve efficient cleaning, the air pressure must be between 2 and 2.5 bar. The compressed air should be supplied by an oil-free compressor with a capacity of 100 liters per minute and which is equipped with a pressure reducer.

Caution: If the air pressure is more than 2.5 bar, the diaphragm of the milk solenoid valves may be damaged.

Compressed-air cleaning (hereinafter called air cleaning) can be started automatically or manually.

1. > **cleaning** > **air**

```
air cleaning
▷ start after: [ 30]min
  F-station
```

2. In **start after** enter the time that should elapse after the last portion has been dispensed before **air cleaning** starts running **automatically**.
3. If you want to **manually start** air cleaning, in **F-station** press Enter. Select the **feeding station**.

```
<station 1>
  start?
▷ mode:       [ medium ]
```

4. In **mode** select the intensity of air cleaning.
5. In **start** press Enter.

```
air cleaning
  start after: [ 30]min
▶ F-station
```

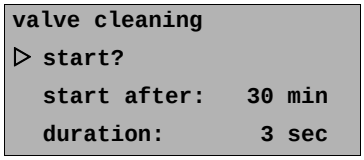
	Start after	Intensity
Default value:	30 min	medium
Range:	0 to 120 min	low, medium, high

9.5 (Box) valve cleaning

This menu is only displayed if in **setup** > **circ. valve** you selected **valve**.

The box valves can be all-automatically cleaned. No detergent will be added.

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



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

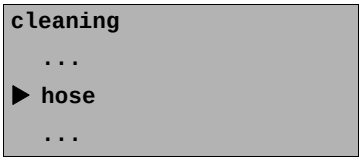
	Start after	Duration
Default value:	30 min	3 sec
Range:	0 min, 5 to 120 min	1 to 10 sec

9.6 Rinsing the hose

The suction hose can be rinsed each time a calf visits the feeding station.

As soon as an animal has drunk up the last portion to which it is entitled, the automatic feeder dispenses 0.25 liters of warm water into the mixer jar (after draining time has lapsed). As an 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.

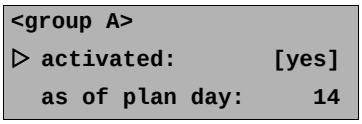
1.  > **cleaning** > **hose rinsing**



2. Select the desired group.

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

4. In **as of plan day** enter the desired value.

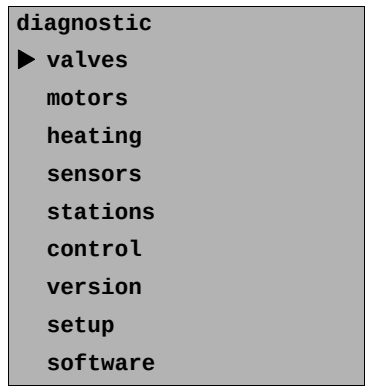


Note: By default suction hose rinsing is activated only after the calves have already been fed for 14 days on the automatic feeder because young calves are not likely to drink the water. This value can be adapted to each individual animal group.

Ⓟ If two or more stations are operated in the parallel mode, hose rinsing will not take place.

10 Diagnostic

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



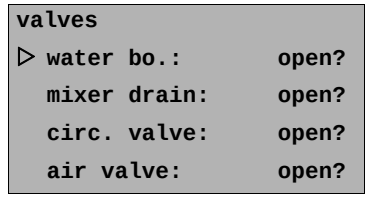
Note: Please consider the documentation of the peripheral devices, if required.

10.1 Checking the valves/motors

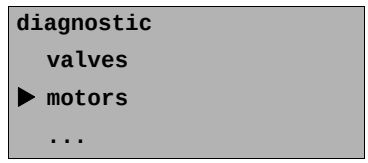
THere you can check whether the following actuators as well as their control are working properly.

Valves

- **Water valve boiler**
- **Mixer draining valve**, if available
- **Circulation valve** (VP valve cleaning)

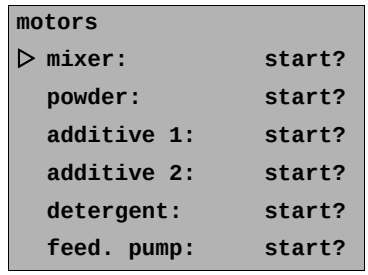


and



Motors

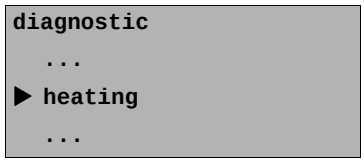
- **Mixer**
- **Powder**
- **Additive 1**
- **Additive 2**
- **Detergent**
- **Feeding pump**



1. > **diagnostic** > **valves resp. motors**
2. As long as in e.g. **valves** > **water valve boiler** you keep Enter pressed, the valve remains open.

10.2 Checking the heating

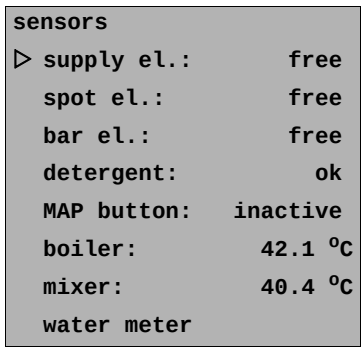
In this menu you can check whether the boiler heating is working properly.



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

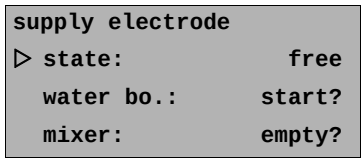
10.3 Checking the sensors

In this menu you can check the following sensors:

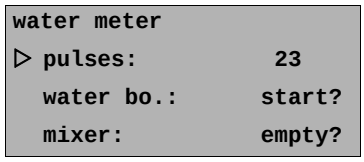


- VSupply, Vspot and bar electrode,
- Button for the manual training pump (active/inactive),
- VPDetergent (ok/empty),
- Mixer and boiler sensors (temperature of the liquids in the boiler and the mixer jar),

1. > **diagnostic** > **sensors** > **supply el.**
2. In the second line the state of the queried electrode is displayed. Press **start?** in water bo.. Use the lines below to dose a liquid feed component into the mixer jar and to check whether the corresponding electrode shows reaction. To subsequently empty the mixer jar, in **mixer: empty?** press Enter.



- VWater meter: Here you can check whether the water meter is working properly. To do so, open the water valve. In **pulses** the pulses of the water meter are displayed. To subsequently empty the mixer jar, in **mixer: empty?** press Enter.

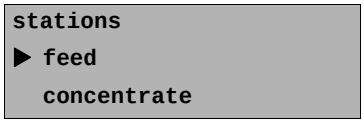


Note: Changes in state or temperature are immediately displayed. Consequently, fault occurence is narrowed down.

10.4 Checking the stations

This menu is structured as follows:

- Feeding stations (F-stations)
- Concentrate stations (C-stations)



In addition, you can check the animal scales (SC) – if available – mounted in the corresponding station.

10.4.1 Feeding stations

Here you can

> check, whether the identification of the feeding station is working properly,

> start the servo pump,

> open the teat slider,

> close the gate of CalfProtect,

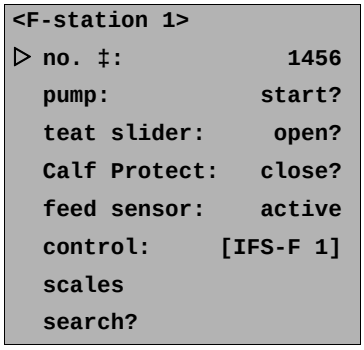
> open the box valve,

> check whether the feed sensor of the gradient or the servo control is active/inactive,

> view the control unit allocated to the feeding station,

> check the animal scales allocated to the feeding station.

> If the feeding station is an Intelligent Feeding Station (IFS) or an IFS-compact unit, the CAN-bus-address can be transferred to this control of the feeding station(s) resp. the concentrate station (see **4.8.1.2** IFS-F(eeding stations), page **61** or see **4.8.1.3** IFS-compact unit for four feeding stations, page **63** resp. see **4.8.2** IFS-concentrate stations, page **65**). To do so, in **search?** press Enter.



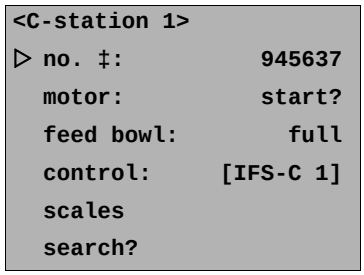
1. > **diagnostic** > **stations > feed** > **F-station 1**...
2. To check the identification (antenna test), hold a transmitter within the range of the antenna. The line **no. ‡** displays the transmitter number.

Note: If the transmitter number is not identified, proceed as follows:

1. Check in the setup whether the correct identification system has been selected.
2. Check the data lines between the antenna and the automatic feeder for damages.
3. Check in the setup the allocation of the station where the identification causes problems.

10.4.2 Concentrate stations

Here you can



> check whether the identification of the concentrate station is working properly,

> start the motor of the concentrate station,

> view whether the feed bowl is currently full or empty,

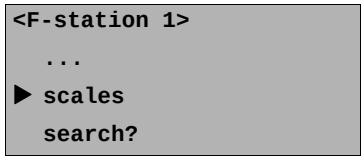
> view the control unit allocated to the concentrate station,

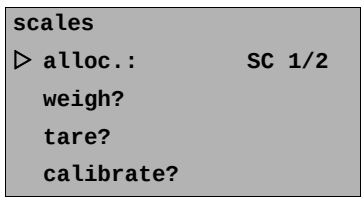
> check the animal scales allocated to the concentrate station,

> retransfer the CAN-bus-address to the concentrate station.

10.4.3 V Animal scales

If an animal scales is allocated to the feeding or the concentrate station, in **diagnostic** the menu **scales** will be displayed for this station. Press Enter in this line to access a submenu. Here you can





> view the scales control allocated to the scales,

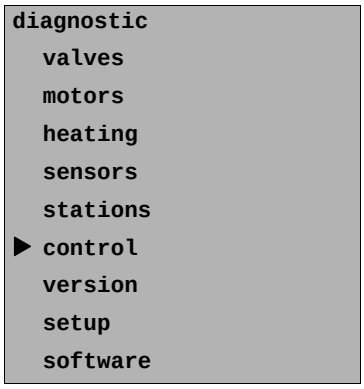
> carry out a test weighing,

> tare the scales,

> calibrate the scales.

10.5 Control

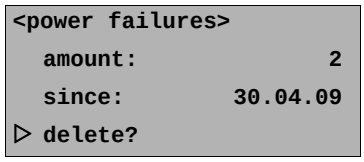
In **control** (see **12** Failures and warnings, page **171**) you can view how often:



- the automatic feeder was without current (**power failures**),
- the control of the automatic feeder fell back on internal back-up after memory error occurred (**Reset**),
- the connection to the **terminal** was faulty,
- a **database** error occurred,
- the connection to an IFS-feeding station, an IFS-compact unit, an IFS-concentrate station, an animal scales or a scales control was faulty,
- the identification of the IFS-feeding station, the IFS-compact unit or the IFS-concentrate station was faulty,
- the minimum temperature in the boiler was not achieved (**heat up**),
- the water or milk check was negative (**water shortage**),
- the mixer could not be emptied via the mixer draining valve (**mixer emptying**),
- the functioning of the **heating** was faulty,
- the **water meter** provided faulty values,
- faults occurred during automatic mixer cleaning (**cleaning**),
- the **temperature sensors** in the **boiler** and the **mixer** did not provide plausible values,
- the **temperature** of the boiler water was **too high**, e.g. if the automatic feeder is provided with warm water,
- the **supply electrode** was grounded before preparation of a feed portion,

- the automatic feeder could not commute to the automatic mode because e.g. the liquid and the powder feed components, the additive and the detergent were not calibrated (**calibration**).
- compatibility problems between the program version of the automatic feeder and the IFS arose (**ID**),
- the same CAN-bus-addresses were allocated to the machines (**double address**),
- a connection fault with the **ID-chip** occurred,
- **unknown transmitters** were detected by the identification,
- a message was given that an animal number has already been allocated (**double animal no.**),
- the **detergent** sensor signalled „empty“,
- the motor shaft did not turn (**mot. sens. C-st. 1**),
- the sensor for empty signal did not signal „covered“ although the unit for feed dispense had turned (**empty C-station 1**),

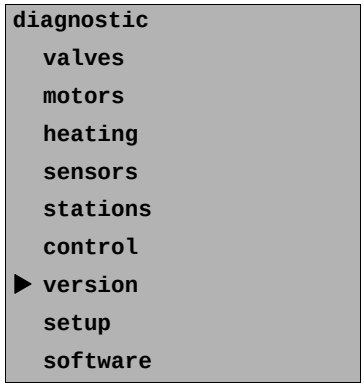
1. > **diagnostic** > **control**
2. Select the failure that occurred.
3. In **since** you can view when the inputs were deleted last.
4. Confirm **delete?** with Enter to delete the faults.



10.6 Version

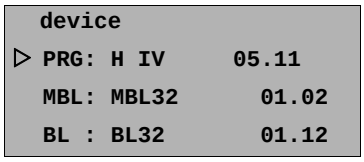
In **Version** you can check the version numbers of the following units:

- the automatic feeder,
- the procesor,
- the ID-chip,
- the terminal,



- the identifications of all the available feeding and concentrate stations
- as well as all the peripheral devices. In that case, the program version of the application as well as the version of the mini-bootloader and, if available, of the bootloader are displayed.

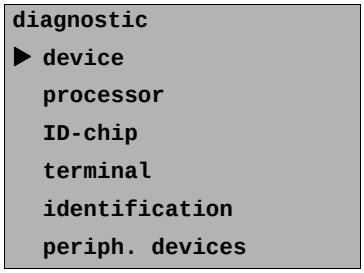
The versions of the following peripheral devices can be checked:



- control(s) of the IFS-feeding station(s)
- control(s) of the IFS-compact unit(s)
- control(s) of the IFS-concentrate station(s)
- control(s) of the scales.

To display the version, proceed as follows:

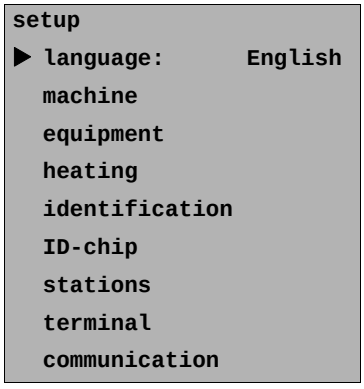
1. > **diagnostic** > **version**
2. Move to the desired submenu and read the version number.



10.7 Setup

Here you can check the settings you selected in the setup. Here the settings cannot be changed.

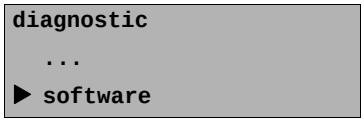
1. > **diagnostic** > **setup**
2. If you want to change the settings, see **4.1** Overview of the menus in the setup, page **53**.



10.8 Software

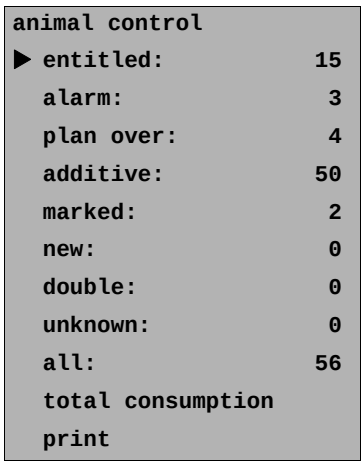
This menu is intended exclusively for the development department of the manufacturer. For you, dear customer, it is of no significance.

1. > **diagnostic** > **software**



11 Animal control

If you press  , the following menus will be displayed:



- **Entitled**
- **Alarm**
- **Plan over**
- **Additive**
- **Marked**
- **New**
- **Double**
- **Unknown**
- **All**
- **Total consumption**
- **Print**

For each menu the number of animals is displayed. In **print** you can manually start printing of the alarm animal and the feed list.

Note: Please consider the documentation of the peripheral devices, if required.

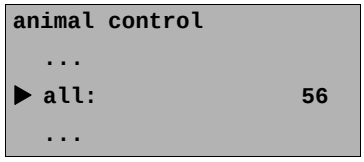
11.1 Checking the complete animal group or specific animals

All gives you a general overview of the feeding behavior of all animals.

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

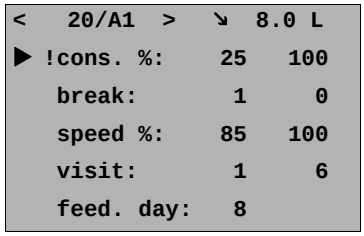
The displays of **all** are hereinafter exemplified.

> **all**



The first line shows the animal number, the plan tendency and the feed quantity determined in the feeding plan for the current day.

2. Select the desired animal.

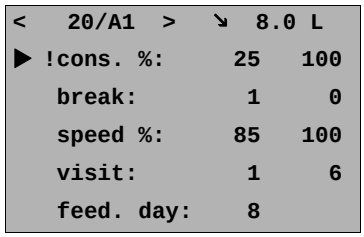


In the following lines you can check the values of:

- **Feed consumption** in % of today (value in the left column) and yesterday (value in the right column)
- **Break-off** today and yesterday
- **Feeding speed** today and yesterday
- Number of **visits to the feeding station** today and yesterday
- **Feeding day**

11.1.1 Checking feed consumption

1. > **all** > **cons. %**



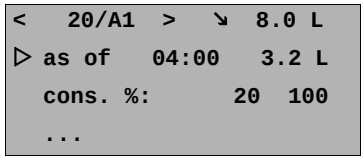
2. Select the desired animal.

The first display line shows the animal number, the plan tendency and the feed entitlement of the current day.

The second display line is variable. Four display variants are available:

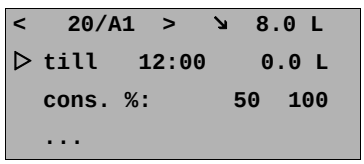
Variant 1

The animal is entitled to feed. The following is displayed: the time as of which the animal is entitled to feed and the feed quantity saved until check time.



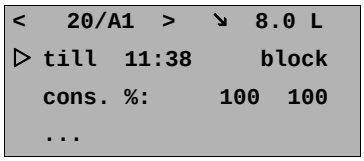
Variant 2

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



Variant 3

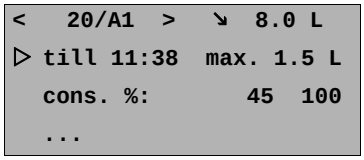
The animal has saved more feed than it is allowed to consume all at once. If this animal consumes up to the maximum feed quantity, it is subsequently blocked for two hours. The display shows the time as of which the animal is allowed to be fed again.



Note: To delete feed blocking, press C. Confirm **delete blocking?** with Enter.

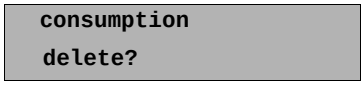
Variant 4

The animal has saved more feed than it is allowed to consume all at once: If the animal does not consume the maximum quantity, the display will show the time up to which the difference between consumed and maximum quantity is available.

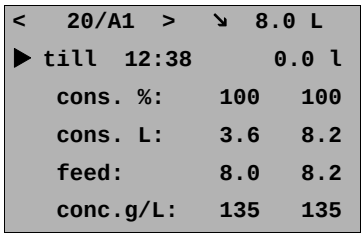


3. In **cons. % as well as cons. L** the display shows the absolute quantity consumed on the current (left column) and the previous day (right column).

Note: If the consumed feed quantity of the current day must be set to zero (0), press C. Confirm **delete consumption?** with Enter.



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



Note: In **feed** you can change the feed quantity by entering deviations.

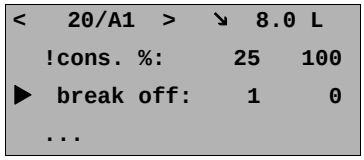
4. In **conc. g/L** the feed concentration of today (left column) and yesterday (right column) is displayed.

Note: Here, too, you can enter corrections.

11.1.2 Checking the feeding break-offs

1. > **all** > **break off**

2. Select the desired animal.

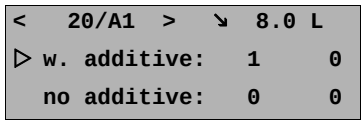


Without additive dispenser

3. In **break off** the display shows how often the animals broke 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.

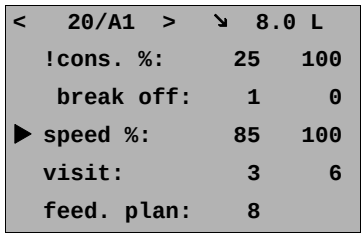
11.1.3 Checking the feeding speed

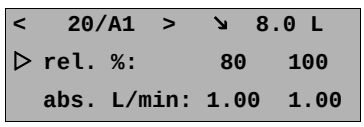
1. > **all** > **speed %**

2. Select the desired animal.

3. In **rel. %** the feeding speed for today (left value) and yesterday (right value) is displayed as a percentage.

4. In **abs. L/min** the absolute feeding speed for today and yesterday is shown.



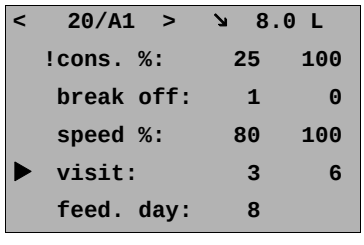


11.1.4 Checking the visiting behavior

1. > **all** > **visit**

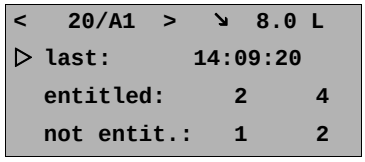
2. Select the desired animal.

3. In **last** you can view when the animal visited the feeding station last on the current day.



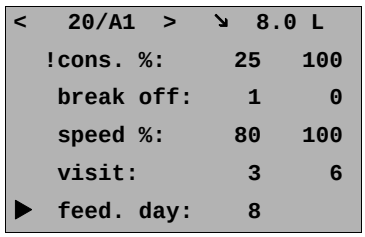
4. In **entitled** you can check how often the entitled animal visited the feeding station.

5. In **not entit.** you can check how often a non entitled animal visited the feeding station.



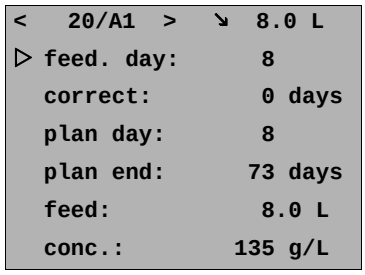
11.1.5 Checking the feeding day

-  > **all** > **feed. day**
- Select the desired animal.
- In **correct** you can enter the correction days.



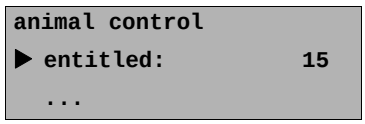
The following lines allow you to check:

- **Plan day**
- **Plan end** (feeding plan)
- **Feed** (current day quantity)
- **Concentration**

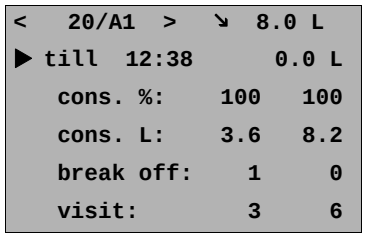


11.2 Checking the entitled animals

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



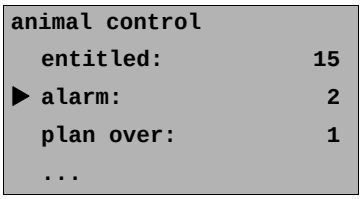
- the absolute and the relative quantities consumed by all the entitled animals,
- how often entitled animals broke off feed consumption (with/ without additive),
- how often entitled animals visited the feeding station (with/ without feed entitlement) and when they stayed in the feeding station last.



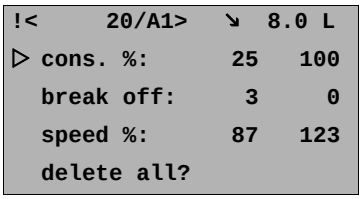
Note: Proceed as with **all**.

11.3 Checking the 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 (see **8.4** Alarm levels, page **122**).



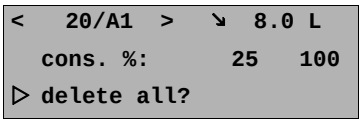
- Feed consumption (as a percentage of the day quantity)
- Number of break-offs
- Feeding speed



Note: Proceed as with **all**.

Deleting the animals with alarm messages

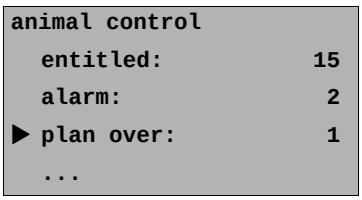
1. [i] > **alarm**
2. Select the desired animal.
3. Confirm **delete all?** with Enter.



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

11.4 Checking the animals with expiry messages

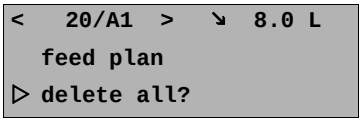
The day before a temporary action (such as e.g. deviations of the feed quantity) expires, an expiry message for the corresponding action will be displayed.



The following expiry messages may appear:

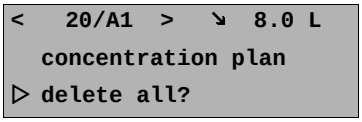
End of the feeding plan

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

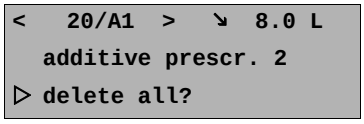


End of the concentration plan

If the concentration plan expires before the feeding plan, the feed concentration fed last will be maintained until the end of the feeding plan.

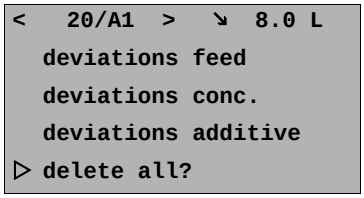


End of an additive or electrolyte prescription plan



If the additive or electrolyte prescription plan expires, the animals are not given additive anymore.

Deviation plans

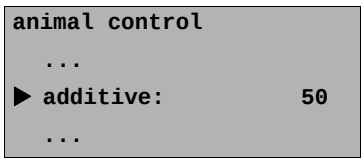


If the deviation plan for feed, concentration, electrolyte or additive expires, the animal will be fed again according to the feed, concentration, electrolyte or additive plan of the corresponding group.

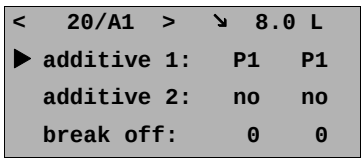
Note: Press C to hide the message. The message will reappear on the next day and can be deleted by repressing C.

Proceed as with **all**.

11.5 Checking the animals to which additive is administered



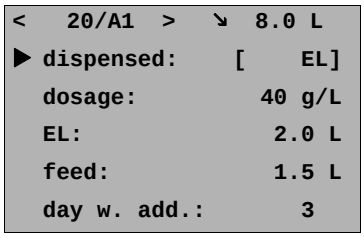
The control menu **additive** is only displayed if the automatic feeder is equipped with at least one additive dispenser and at least one animal is fed with additive.



> In **additive 1** resp. **additive 2** you can view according to which prescription plan the additive is or was administered to the animal.

  > If you open one of the two menus, you can terminate additive dispense (**dispensed no**) or enter another additive prescription plan.

  > Moreover, you can check or/and change the following values:



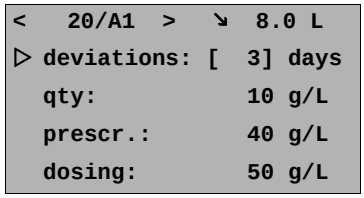
    > The relative (%) and absolute (L) feed **consumption** today and yesterday,

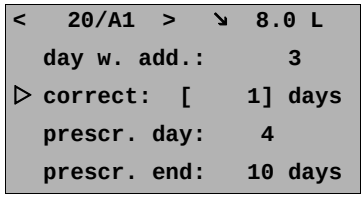
    > How much **additive** has been dispensed to the animal today and yesterday,

> Additive **dosing**: Press Enter if there is need to change dosing,

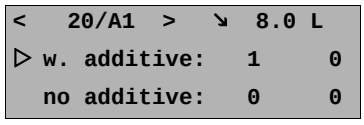
> **Weight**: press Enter if you want to change calf's weight,

> How long the animal has already received additive can be viewed in **day w. add.** To extend or shorten additive dosing, press Enter (**correct**). The prescription day corresponds to the corrected day with additive.





> In **break off** you can view how often feed consumption with / without additive has been broken off.



Note: Proceed as with **all**

11.6 Checking newly housed animals

This menu shows the newly registered animals. Here you can view different information resp. carry out animal-specific changes. You can

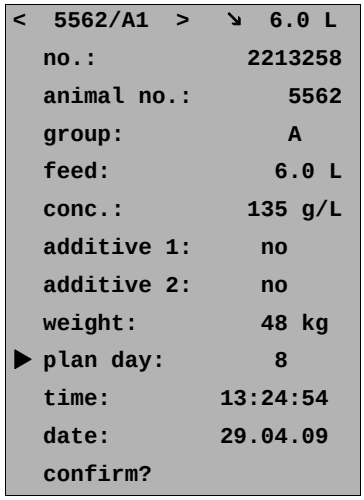
> adjust the **animal no.** and move the animal to another **group**.

> enter deviations in **feed** and **conc(entration)**.

> select and adjust a prescription in **additive**.

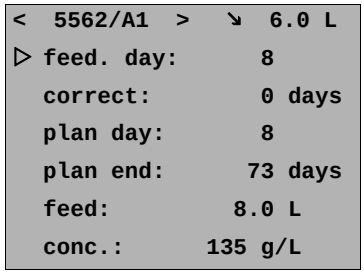
> change calf's weight in **weight**.

> press Enter in **plan day** to access a submenu. There you can view the following information resp. change the values:



> In **feed. day** the number of days passed by since registration is displayed.

> In **correct** enter the desired number of days.



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

In the following lines you can check:

> animal's **plan day** after correction,

> when the **plan end** eis achieved,

> the **feed** quantity and feed **concentration** fed to the animal today,

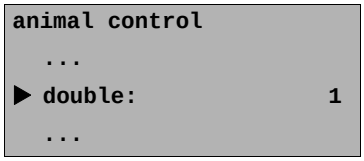
> **Date** and time of animal's registration.

> In **confirm** press Enter to delete the animal from the list of the newly registered animals.

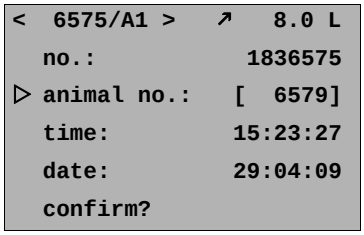
Note: The animals displayed in **new** are registered and can be fed. The confirmation is intended for deletion of the corresponding animal from the menu **new**. If you do not confirm, after two days the data will be automatically deleted from the menu **new**.

11.7 Checking double animal numbers

During the all-automatic registration process, in individual cases, double allocation of animal numbers may occur. In the menu **double** you can therefore adjust the corresponding animal numbers.



1. Select an animal number for the displayed animal which has not been allocated to an animal yet.

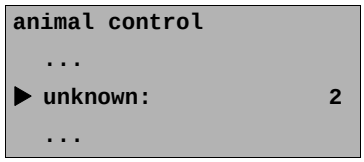


Example: The number 6575 has been allocated to the animal all automatically. After manual change, now the number is 6579.

2. In **confirm?** press Enter.

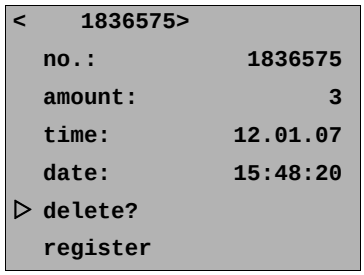
11.8 Checking the unknown transmitters

The warning **unknown** is displayed when



- the identification detects a transmitter which is not allocated to any of the animal numbers
- a transmitter number is allocated to an animal number but not registered yet

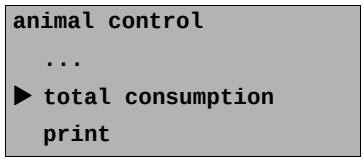
1. ⓘ > **unknown**
2. Here you can
   > view how many and which transmitter numbers are referred to
   > check on which day and at which time the transmitter numbers have been detected by the identification last
   > delete the transmitter numbers, if necessary.



3. To delete the warning, confirm **delete?** with Enter.
4. To register an animal with this transmitter number, press Enter in **register**. Then, register the animal in the displayed menu.

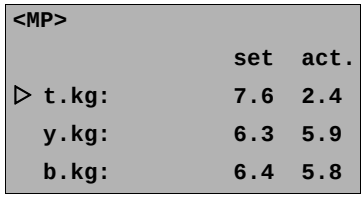
11.9 Checking the total consumption

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

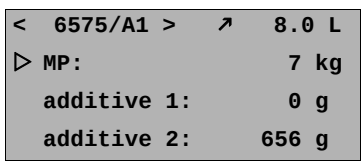


1. ⓘ > **total consumption**

   If in **total** you press Enter, the calculated (**set**) and actual (**act.**) quantities consumed by all animals today, yesterday and the day-before-yesterday are displayed.



2. If in **animal** you press Enter, the feed and additive amount consumed by each individual animal will be displayed. The consumed quantities are summed up starting from registration till removal.



12 Failures and warnings

When a **failure** occurs, the **automatic mode is broken off**. The display shows the corresponding failure message and the green LED on the hand-held terminal starts flashing.

Warnings signal a problem but they **do not break off the automatic mode**. Also with warnings the LED starts flashing.

Note: Those warnings which have been deleted or hidden with Esc will be automatically displayed again after one further warning has been displayed but anyway after ten minutes at the latest.

Various warnings and failures are automatically deleted as soon as the fault has been removed. Some of them are deleted only after you have pressed C or Enter in **delete failure?** resp. **delete warning?**.

Irrespective of the failures and warnings, messages are generated e.g. by hand-held terminal or the bootloader of the automatic feeder control and displayed on the screen. These messages are explained in section „**Other failures and messages**“.

Note: Please consider the documentation of the peripheral devices, if required.

12.1 Failures

12.1.1 CRC-error

If the memory datasets of the automatic feeder control have been destroyed, the message on the right will be displayed.

```
failure
  CRC-error
```

The reason for this failure may be strong electromagnetic discharges. The battery for data buffering of the CPU may also possibly be empty.

The following CRC-errors can be displayed:

- check animal
- check device data
- check plans
- check prescriptions

1. Press Enter until the message is not displayed anymore.
2. Check the corresponding datasets. If errors are obvious, the program must be reset.
3. **> device data** > **new installation**
4. In **everything** press Enter and confirm the message on the right with Enter.

```
all
new installation?
```

Note: At „new installation“ all user-specific data are deleted and replaced by default values.

5. If the failure reappears, the automatic feeder should be checked by service personnel.

12.1.2 Heating

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

The potential reason for it may be the following: the feed is consumed so rapidly that the time needed by the boiler to heat up the water is not sufficient.

If there is no explanation for the failure, service personnel should check the automatic feeder for lime deposits resp. other sources for defect.

The failure message on the right is displayed:

```
failure
  heating       xx.x °C
```

> Check the heating.

> Also check the temperature value in the mixer for **min. temp.**

12.1.3 Temperature too high

If the temperature of the boiler water is too high, the failure message on the right will be displayed.

```
failure
▶ temperature too high
```

1. Press Enter to check the temperature.

```
temperature too high
▷ boiler:      xx.x °C
  water bo.:    start?
  mixer:        empty?
```

2. In **water bo. start?** keep Enter pressed. Drain the boiler water into the mixer until the displayed failure message disappears.
3. To empty the mixer, in **mixer: empty?** press Enter.

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

If there is no explanation for the failure, let service personnel check the automatic feeder.

12.1.4 Boiler not filled

At start-up of the automatic feeder the control checks whether the boiler is filled with water. If this check fails, feeding will be broken off.

```
failure
▶ boiler not filled
```

1. Check the water supply.

```
boiler not filled
▷ boiler:        fill?
  mixer:          empty?
  water bo.:      start?
```

2. In **boiler fill?** press Enter.
3. Check whether the V supply electrode resp. the C bar electrode is touched by the water jet during boiler filling and the display shows „covered“.
4. Check, if necessary, whether the V supply resp. the C bar electrode are touched by the water jet when pressing Enter in **water bo. start?**.

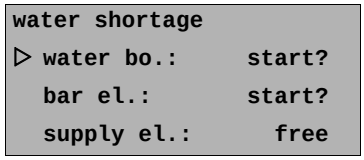
Note: Ⓒ Check whether the stop valves and the draining valve are tight. If some liquid in the mixer is drained via one of these valves, the bar electrode may not be grounded anymore.

12.1.5 Water shortage

If the Ⓒ bar resp. the Ⓥ supply electrode is not grounded in the mixer jar during water dispense and the Ⓥ water meter does not transmit any pulses, the device will start a water check. If water check fails, feed preparation and animal identification will be switched off.

> Press Enter in **water bo. start?**.

> Check whether the water jet touches the Ⓒ bar electrode resp. the Ⓥ supply electrode.



> Check the water supply to the automatic feeder.

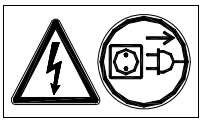
> Press Enter in **delete failure?**.

> **Exclusively for electricity specialists**: Check the sensitivity of the electrode:

The **sensitivity** of the electrode is:

- **too high**, if the electrode signals **covered** though it is actually free.
- **too low**, if the electrode signals **water shortage** though it is covered.

Increasing/reducing the electrode sensitivity



Danger! Hazardous voltage! Pull the mains plug.

To increase the sensitivity of the electrode, turn the potentiometer (see wiring diagram) located on the motherboard clockwise. To decrease the sensitivity of the electrode, turn the potentiometer counterclockwise.

12.1.6 Water meter

This failure message is displayed if during water dispense

```
failure
▶ water meter
```

- the supply electrode is grounded,
- but the water meter does not transmit any pulses.

The water meter should be checked and replaced, if necessary, by **service personnel**. Feeding can be carried on as an emergency operation.

1. In **water bo. start?** press Enter and check whether the pulses are displayed.

```
failure
▷ pulses:
  water bo.:       start?
```

2. In **mixer emptying?** press Enter.
3. Confirm **delete failure?** with Enter.
4. Confirm **emergency operation start?** with Enter.

```
  emergency operation
  start?
```

5. The warning **water meter** will be displayed. At the same time, the calibration values for boiler water become invalid. The failure message on the right will be displayed.

```
failure
▶ calibration
```

6. Calibrate **water bo(iler)** and **water HE**. After that, the failure message will disappear. The automatic feeder will start the emergency operation.

7. If the water meter works properly again or has been replaced, delete the warning **water meter.** The failure messages **calibr. water bo.** are displayed again
8. Calibrate both liquid feed components.
9. Move to the default automatic mode.

12.1.7 Mixer emptying

If the cleaning water cannot be drained off the mixer because the drain is e.g. clogged, the failure message on the right will be displayed. Feeding will be broken off until the failure has been removed.

```
failure
▶ mixer:          empty?
```

> Check all feed-supplying components leading from the mixer to the mixer draining valve or from the mixer to the teat for clogging and remove potential obstructions.

```
mixer emtying
▶ feed. pump:     start?
  mixer drain:     open?
  water bo.:       start?
```

> Check the feeding pump. In **feed. pump: start?** press Enter.

> Check the mixer draining valve (if available). In **mixer drain: open?** press Enter.

> Check the bar electrode.

> In **water bo.: start?** press Enter to fill the mixer with some water.

> In **mixer: drain?** press Enter.

> As soon as the failure has been removed, confirm **delete failure?** with Enter.

Warning: Before recommissioning the automatic feeder it is imperative to remove all detergent residues in order not to put animals' health at risk.

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

12.1.8 Heating

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

```
failure
▶ heating
```

> In **on?** press Enter. Check whether the displayed temperature increases.

```
heating
▷ on?
  boiler:          xx.x °C
  delete failure?
```

> If the temperature increases, in **delete failure?** press Enter.

Exclusively for service personnel:

- The heating element is defective.

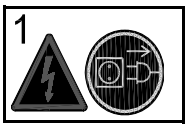
> Check the heating element for continuity.

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

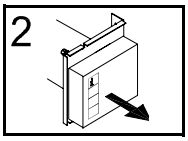
> Check the on-site fuses, if necessary.

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

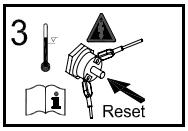
1. In **delete failure?** press Enter.



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 lateral door of the automatic feeder. Remove the metal covering.



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

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

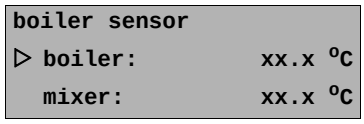
6. Only then, plug in the mains plug or turn the main switch to position ON.

12.1.9 Boiler temperature sensor

If the temperature sensor in the boiler is defective, the failure message on the right is displayed.

- If in **boiler** or/and **mixer** 0.0 °C is displayed, it can be assumed that the data line is interrupted. If 99.9 °C is displayed, it can be assumed that a short circuit occured.

Exclusively for service personnel:

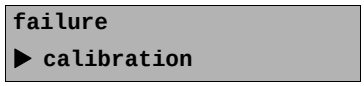


> Remove the plug from the motherboard and measure the resistance of the sensor.

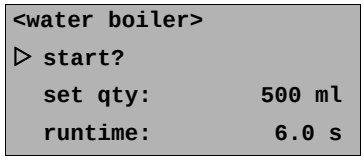
> If the measured value deviates from the value contained in the table, the sensor must be replaced (see wiring diagram of the machine).

12.1.10 Calibration

The automatic feeder cannot commute to the automatic mode, if the liquid and powder feed components, the ❹additive and the ❹detergent have not been calibrated. The adjacent failure is e.g. displayed if the boiler water has not been calibrated.



> Calibrate the feed components and the ❹detergent.



12.1.11 Supply electrode

```
failure
▶ supply electrode
```

1. Check whether the supply electrode is grounded (status = covered), when you press Enter in **water bo. start?**.
2. In **mixer: empty?** press Enter.
3. If the reason for failure has been removed, in **delete warning?** press Enter.

```
supply electrode
▷ state:            free
  water bo.:      start?
  mixer:          empty?
  delete failure?
```

12.1.12 ID-chip

The automatic feeder is equipped with an electronic rating plate (ID-chip) indicating the device number and further important information about how to operate the automatic feeder. If the ID-chip is defective, you must replace it within 30 days, otherwise feeding will be broken off until the defective ID-chip has been replaced.

```
failure
  ID-chip missing
```

12.1.13 Station/draining valve

If a station valve or the mixer draining valve is untight, during the cleaning process water will get lost.

```
failure
▶ station/drain valve
```

> Check all the **station valves** as well as the **mixer draining valve** for **tightness**. Clean the valves, if necessary. Foreign material may have been deposited, thus preventing the valves from closing completely.

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

> The bar electrode is possibly defective and must be replaced. In **water bo. start?** press Enter and check whether the electrode signals „covered“.

> If the reason for failure has been removed, in **delete failure?** press Enter.

```
station/drain valve
▷ bar el.:          free
  water bo.:      start?
  mixer:          start?
  mixer:          drain?
```

12.1.14 IFS-version

In the parallel mode (SynchroFeed) at least one of the feeding stations supplied with feed at the same time is operated by a peristaltic pump together with the relevant IFS-control unit.

```
failure
▶ incorrect version
```

The software version of the IFS-control units used for parallel operation must be 5.00 (or greater).

```
<IFS-F 1 >
▷ version 5.00 or
  greater required
```

Note: This failure cannot be deleted. The IFS-control(s) must be updated to be operated in the parallel mode.

12.1.15 Output error

The control of specific relays is permanently monitored by an electronic protective device. If these relays are actuated for more than 60 seconds, a fault may be the reason for it. The fault message **output error** will be displayed and feeding is automatically broken off.

```
failure
  output error
```

1. Switch the automatic feeder off and after some seconds on again.
2. If the message reappears, you should contact service personnel.

This message is also displayed when a short circuit occurs on a cable connecting the automatic feeder to an external component (e.g. the antenna or the hand-held terminal).

Exclusively for service personnel:

1. Check the cable connections.
2. Replace the cable(s).

12.2 Warnings

12.2.1 Identification

If the identification system does not work, the message on the right is displayed:

```
warning
▶ identification
```

> Check the identification.

```
<identification>
▷ no connection
```

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

> Check whether in Setup the (correct) antenna is activated.

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

12.2.2 Incorrect ID

All CAN-nodes have a unique and unchangeable ID. The ID is used to automatically check whether the correct node responds to the CAN-address. If this is not the case, the automatic feeder is indeed able to communicate with the CAN-node but the data will not be transferred correctly.

```
warning
▶ incorrect ID
```

> Check all CAN-addresses.

```
<periph. device>
▷ ID: #####
```

Exclusively for service personnel

> Update all CAN-nodes, if necessary, as for compatibility reasons the IDs may have been changed.

12.2.3 Double address

If two or more automatic feeders are networked within the bus system, it may happen that an address is assigned twice.

```
warning
▶ double address
```

1. In **double address** press Enter.
2. The display on the right shows you the CAN-node (IFS) and its default CAN-address, which is available twice in the bus system.

```
<IFS-F1>
▷ address            [41]
  delete warning?
```

3. Move to the setup and check the addresses of all CAN-nodes for double allocation.

4. To the node with the same CAN-address, allocate another still available CAN-address in the line **address**. You will find more detailed information about the different CAN-nodes in the following chapters:
   - IFS-feeding station: see **4.8.1.2** IFS-F(eeding stations), page **61**
   - IFS-compact unit: see **4.8.1.3** IFS-compact unit for four feeding stations, page **63**
   - IFS-C(oncentrate station): see **4.8.2** IFS-concentrate stations, page **65**
   - Scales control: see **4.8.3** Scales, page **66**
5. Delete the warning at all automatic feeders.

Note: If possible, use an address from the default range of numbers of this CAN-node.

12.2.4 IFS-F(eeding station)

One or possibly even both of the messages on the right are diplayed if the automatic feeder is not able to communicate with the control of the IFS-feeding station via the CAN-bus. A reason for it may be that the CAN-node is switched off or the address of the IFS-F does not correspond to the one in the automatic feeder.

```
warning
▶ IFS-F single
  IFS-F quadruple
```

1. Activate the **search mode** at the IFS. To do so, briefly push the red round **button** located on the motherboard of the IFS. On the control unit for one feeding station (IFS-F single) the button is marked on the board with S1 (see the wiring diagram enclosed to this instruction manual). The green LED (marking with IFS-F single: ST1, with IFS-F quadruple: H4) blinks (10 times per second).

```
<IFS-F 1>
▷ search?
```

2. In **search?** press Enter. The message on the right is displayed.

```
  IFS-F
  is being searched!
```

3. If the IFS is detected on the CAN-bus, the address will be transferred. The message on the right will be displayed. The green LED (ST1 or H4) of the IFS-motherboard does not blink anymore.

```
IFS-F
found!
```

Note: If you have activated the **search mode** by mistake, repress the button S5 or H4. The search mode will be **terminated**.

12.2.5 Motor F-station

This message is displayed if the motor of the IFS-feeding station does not deliver any counting pulses anymore. A potential reason for it may be the following:

```
warning
▶ motor F-station
```

1. The motor which starts the peristaltic pump does not run anymore. Press Enter in the submenu **pump: start?** to check it.

```
<station 7>
▷ pump:          start?
```

2. The cable between the motor and the board used to transfer the pulses has been possibly removed or it may be defective.

12.2.6 IFS-C(oncentrate station)

This message is displayed if the automatic feeder is not able to communicate with the control of the IFS-concentrate station via the CAN-bus. A reason for it may be that the CAN-node is switched off or the address of the IFS-C does not correspond to the one in the automatic feeder.

```
warning
▶ IFS-C
```

see **4.8.2** IFS-concentrate stations, page **65**

```
<IFS-C 1>
▷ search?
```

12.2.7 Motor C-station

This message is displayed if the motor of the IFS-concentrate station does not deliver any counting pulses anymore. A potential reason for it may be the following:

```
warning
▶ motor C-station
```

1. The motor, which starts the auger of the concentrate feeder does not run anymore. Press Enter in the submenu **motor: start?** to check it.

```
<station 7>
▷ motor:         start?
```

2. The cable between the motor and the board used to transfer the pulses has been possibly removed or it may be defective.

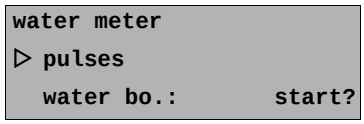
12.2.8 Scales (SC)

This message is displayed if the automatic feeder is not able to communicate with the scales control via the CAN-bus. A reason for it may be that the CAN-node is switched off or the address of the scales control does not correspond to the one entered in the setup of the automatic feeder.

see **4.8.3** Scales, page **66**

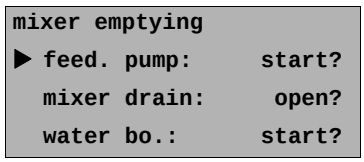
12.2.9 Water meter

see **12.1.6** Water meter, page **163**



12.2.10 Mixer emptying

If the mixer cannot be emptied because e.g. the discharge is clogged or the feeding pump is defective, the warning on the right will be displayed.



> Check all feed-supplying components leading from the mixer to the mixer draining valve resp. from the mixer to the teat for clogging and remove them.

> Check the feeding pump. In **feed. pump: start?** press Enter.

> heck the mixer draining valve (if available). In **mixer drain open?** press Enter.

> Check the bar electrode.

> In **water boiler: start?** press Enter to fill the mixer with some water.

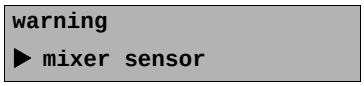
> In **mixer: drain?** press Enter.

> Once the failure has been removed, press Enter to confirm **delete failure?**.

This message disappears each time the bar electrode is free.

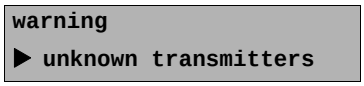
12.2.11 Mixer sensor

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



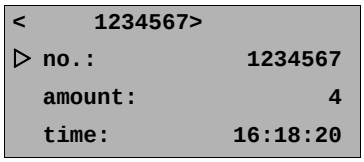
12.2.12 Unknown transmitters

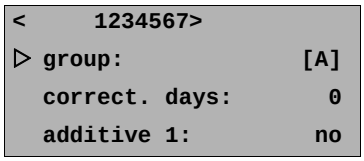
The warning **unknown transmitters** is displayed when



- the identification does not detect a transmitter which has not been allocated to an animal number,
- a transmitter number has been allocated to an animal number but not registered yet.

1. The display shows how often the displayed transmitter number has been identified.
2. Moreover, the display shows when the transmitter has been detected by the identification last.
3. In **delete?** press Enter, if the transmitter number has to be removed.
4. In **register** press Enter, if the transmitter number has to be allocated to an animal number. Another display will be shown (see **7.2.1** Registering the animals manually, page **97**).

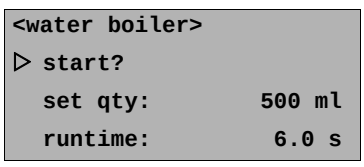




12.2.13 Calibration

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

1. Calibrate (depending on the displayed message) the liquid and powder feed components, the additive and the detergent.
2. Delete the warning.



Note: If you delete the warning but do not subsequently calibrate, the message will reappear on the following day.

12.2.14 Automatic calibration

The warning **autom. calibration** indicates that during the last automatic calibration the determined value has not been taken over as it considerably differed from the current calibration value.

```
warning
▶ autom. calibration
```

1. Manually calibrate (depending on the display text) the station to which the warning refers (here: station 2).
2. Delete the warning.

```
<station 2>
▷ outside tolerance
  delete warning?
```

Note: The limit of tolerance for takeover of the determined automatic calibration value can be changed in the calibration menu for the corresponding station.

12.2.15 ID-chip

If the electronic rating plate (ID-chip) is defective, you should replace it within 30 days, otherwise the feeding process will be broken off until the defective ID-chip has been replaced by a new one.

```
warning
  ID chip xx d. left
```

12.2.16 Detergent

If the float switch of the detergent container signals „empty“, the message on the right is displayed.

```
warning
▶ detergent empty
```

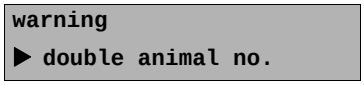
1. Replenish the detergent container.
2. This message is automatically deleted when the detergent container has been filled.

- Check the float switch for impurities and adhesions.

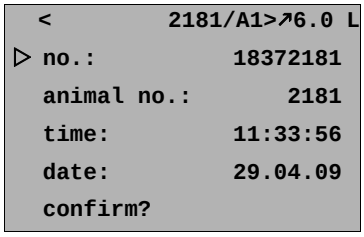
```
detergent empty
▷ pump:          start?
  detergent:      empty
```

12.2.17 Double animal number

If during the all-automatic registration process the same animal number has been assigned twice, the message on the right will be displayed.



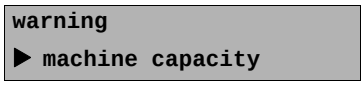
1. Change the animal number.
2. Press **confirm?** and to take over tha changes Enter.



Note: Only after the animal number has been changed, the confirmation becomes effective and the warning is deleted.

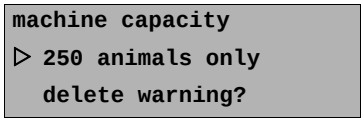
12.2.18 Machine capacity

If the storage space for the animal or transmitter numbers is exhausted, the message on the right is displayed.



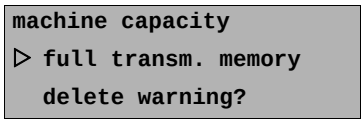
Animal numbers

1. Cancel one or more animals.
2. Delete the warning.



Transmitter numbers

1. Delete one or more transmitter numbers.
2. Delete the warning.



12.2.19 Database

The message on the right is displayed if the database is faulty. For the causes and the handling, see **12.1.1** CRC-error, page **159**.

12.3 Further failures and messages

Exclusively for service personnel

12.3.1 Hand-held terminal

12.3.1.1 CAN bus off

If the message on the right is displayed, a short-circuit has possibly occurred. But also other failures, such as e.g. electromagnetic discharges may have a negative effect on the CAN-cable.

```
terminal Vxx.xx
CAN bus off
```

> Check the CAN-bus for short-circuit resp. other failures and remove it/them.

12.3.1.2 CAN bus heavy

The reasons for the message on the right may be the following:

```
terminal Vxx.xx
CAN bus heavy
```

- Short-circuit

> Check the CAN-bus for short-circuit.

- The terminator has not been mounted.

> Check whether the terminators have been mounted correctly.

- The data line is interrupted.
- The CAN-cable is clamped incorrectly.
- There is no connection to the control of the automatic feeder.

> Check whether the data line is wired correctly and the control of the automatic feeder is working properly.

12.3.1.3 Waiting

The reason for the message on the right is: The hand-held terminal is not initialized because

```
terminal Vxx.xx
waiting
```

- the CAN-bus address of the terminal does not correspond to the one configured in the setup of the automatic feeder.
- the control of the automatic feeder is not active.

1. Start the search mode: Press < > when switching the automatic feeder on and keep the keys pressed.

2. If the message reappears, you must check whether the control of the automatic feeder is working properly.

12.3.1.4 Searching

The reaon for the message on the right is the following: The hand-held terminal is in the search-mode.

```
terminal Vxx.xx
searching
```

> Check the function of the automatic feeder. If the message does not disappear automatically within approx. ten seconds, you must check the control of the automatic feeder.

12.3.2 Bootloader

12.3.2.1 Waiting for update

The reasons for the message on the right are the following:

```
bootloader Vxx.xx
waiting for update
```

- The control program of the automatic feeder is not executable.

> Update the program by means of the UpdateManager.

- The bootloader has been activated at switch-on (by mistake).

> If at switch-on of the automatic feeder you activated the bootloader by mistake by keeping the keys ▲ ▼ pressed, you must restart the automatic feeder.

12.3.2.2 Flash programming

This message is displayed when the program is being updated.

```
bootloader Vxx.xx
flash programming
```

> Wait until the update has been completed.

12.3.2.3 Starting program

This message is displayed when the bootloader starts the control program of the automatic feeder.

```
bootloader Vxx.xx
starting program
```

> Wait until the program is started.

12.3.3 Message when starting the automatic feeder

This message is displayed when the control program of the automatic feeder is started.

```
High Vxx.xx
starting program
```

> Wait until the automatic feeder is ready for operation.

13 Care and maintenance plan / Routine tasks

13.1 Automatic feeder in operation

	Care/maintenance interval			
	daily	weekly	3-mo.	if required
Check the **animals.**	☐			
Check the milk powder hopper and replenish it, if necessary.	☐			
Clean the connecting hose. To clean the connecting hose to the automatic feeder, start the cleaning cycle.	☐			
Check the detergent container and **replenish** it, if required.	☐			
Clean the mixer jar. If the automatic feeder is not equipped with the detergent pump, manually start **mixer cleaning** and add some detergent. Use a brush to increase the cleaning efficiency.	☐			
Check the milk powder hopper and the additive dispenser outlet. 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 contained in the scope of delivery!	☐			
Check whether **the teat** is faultless.	☐			

	Care/maintenance interval			
	daily	weekly	3-mo.	if required
Check the suction hoses for deposits. The suction hoses must be regularly checked for deposits. If you detect some deposits: 1. Select „suction hose cleaning“. 2. Start the cleaning cycle. 3. If after the cleaning process deposits are still visible in the suction hoses, you should manually clean the suction hoses (e.g. by means of a ⊕cleaning pistol). 4. If even this does not yield the desired result, replace the hoses. The suction hoses can also be cleaned continuously.		☐		☐
Cleaning cycle		☐		
Carry out calibration Carry out calibration at regular intervals but at least quarterly. Recalibrate milk powder, ⊕concentrate 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. ⊕The same applies to the feed bowl and the dosing flap of the concentrate feeder.			☐	
⊕**Check the concentrate feeder** and replenish it, if necessary.	☐			
Ⓥ⊕**Check the animal scales**, the cables and the holding devices.		☐		

13.2 Shutdown of the automatic feeder and the peripheral devices

	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 and open the bleeder screw located at the boiler casing so that the water can drain off. When the boiler is completely empty, remount the water hose and tighten the bleeder screw.	☐
Drain the water from the solenoid valves and the volume regulator. (In case of frost risk!)	☐
Empty and clean the concentrate feeder. Remove the CAN-Bus-cable and the antenna cable.	☐
Demount the weighing platform and clean it. Remove the connecting cable of the scales control.	☐
Pull the mains plug.	☐
Store the devices in a frost-free location, if possible.	☐

14 Check list for after-sales service

Note: Before starting up the automatic feeder, you must carefully read, understand and follow the information contained in the instruction manual with a particular focus on the safety instructions!

Start-up	
1.	Ground the automatic feeder.
2.	Advise the end user that the water must have drinking water quality. High lime or/and iron or/and manganese contents may lead to early wear.
3.	Advise the end user that the hose leading from the mixer draining valve (if available) to the outlet shaft must not be extended.
4.	Advise the end user that the machine and the cables must be protected against sunlight.
5.	Connect the water supply.
6.	Mount the race-way and the feeding station.
7.	Connect the antennas.
8.	◆ Install the concentrate station (including the antennas) and fill the concentrate container.
9.	V ◆ Install the animal scales: Install the scales control(s), mount the weighing platforms in the stations.
10.	Install the suction hoses.
11.	Replenish the milk powder hopper.
12.	Plug in the mains plug.
13.	Switch the automatic feeder on.
14.	Fill the boiler with water.
15.	Adjust the target and the minimum temperature of the heating (in the menu device data - portion).
16.	Check the switch position of the heating cable, the vapor screen and the mixer jar heating (in summer: 0).

Setup		
1.	Push the C control switch resp. turn the V main switch to switch the automatic feeder off and immediately afterwards on while keeping 📖 pressed.	
2.	Check the following settings:	
	2.1	Language
	2.2	Date and time and adjust them, if necessary
	2.3	Machine
	2.4	Enter the Squelch value.
	2.5	Equipment
		2.5.1 ◆ Mixer draining valve available yes/no (V serial equipment)
		2.5.2 Feeding pump available yes/no
		2.5.3 ◆ Additive dispenser 1/2 Powder or Liquid available yes/no
		2.5.4 ◆ Detergent pump available yes/no
		2.5.5 ◆ Detergent sensor none/internal/external

	2.5.6	Air valve (pulsating compressed air cleaning) available yes/no
	2.5.7	Mixer sensor available yes/no
	2.5.8	Water meter available yes/no
	2.5.9	Spot and supply electrode available yes/no
	2.5.10	MilkMaker-dispensing unit available yes/no
3.	Heating activated yes/no - Relay mechanical/electronical	
4.	Select the identification system, if necessary.	
5.	ID-chip	
6.	Stations	
	6.1	Activate the internal feeding station(s) controlled by the automatic feeder.
	6.2	Configure the IFS-feeding station(s). Select the options, if available. Allocate the CAN-bus address to the IFS-feeding station(s): To do so, put the IFS (feeding station) in the search-mode and allocate the address via search?.
	6.3	Configure the IFS-compact unit(s) and assign the CAN-bus address: To do so, put the IFS-compact unit in the search mode and allocate the address via search?. Allocate each of the four pumps to a station and the equipment of the station.
	6.4	Configure the IFS-concentrate station 1(...). Select the type of concentrate and of concentrate feeder. Assign the CAN-bus address: To do so, put the IFS (C-station) in the search mode and allocate the address via **search**?.
	6.5	Configure the scales control 1/x. To do so, select the CAN-address via the DIP-switch on the scales control board and enter the selected address into setup. Activate the available weighing units (1/2).
7.	Terminal	
8.	Communication	
	8.1	PC serial/CAN, Institute yes/no
	8.2	Printer no/serial/CAN

Device data		
1.	New installation	
2.	Select the restricted or the ad libitum mode.	
3.	Feeding station	
	3.1	Draining and hold time
	3.2	Enter the turn-on and turn-off delay in case of gradient or servo control.
	3.3	Enter the minimum and maximum speed in case of servo control (with IFS-feeding station).
	3.4	Enter pump start and stop in case of servo control (with IFS-feeding station).
	3.5	Parallel mode: Switch the automatic calibration on or off, determine the time of automatic calibration.
4.	Teat slider (close / open after xx min)	
5.	CalfProtect (open after xx min)	
6.	Select the mixer options (drain/OFF delay)	
	6.1	Switch the draining mode on or off.
	6.2	Empty via teat
	6.3	Drain after x minutes (if the mixer draining valve is available)

	6.4 OFF delay

Calibration	
1.	Water boiler
2.	MP
3.	Additive 1/2
4.	Detergent
5.	Feeding stations 1..
6.	Concentrate stations 1..
7.	Animal scales

Register	
1.	Antenna test
2.	Select the transmitter number assignment: continuous, automatic.
3.	Read in transmitter numbers.
4.	Select the registration mode: no, automatic, available transmitter numbers.
5.	Register the animals.

Plans	
Feed	
1.	Feeding plans
2.	Concentration plans
3.	Limitation of quantities: check and, if necessary, adjust the minimum/maximum quantity.
4.	Check and, if necessary, adjust the maximum speed of the peristaltic pumps.
5.	Weaning
Concentrate	
1.	Concentrate plan
2.	Portion size
3.	Limitation of quantities: Check and, if necessary, adjust the minimum/maximum quantity.
4.	Accustoming quantity activated yes/no
	4.1 Check and, if necessary, adjust the quantity/threshold.

Change the data of individual animals	
1.	Group
2.	Feed
3.	Concentration
4.	Concentrate
5.	Additive 1 / additive 2
6.	Weight
7.	Plan day (correction days)

Cleaning	
1.	Settings
	1.1 Temperature of the cleaning water
	1.2 Detergent quantity
	1.3 Teat cleaning
2.	Mixer
3.	Cleaning circuit
4.	Air (pulsating compressed-air cleaning)
5.	(Station) valve cleaning
6.	Suction hose

15 Accessories

The following accessories are available for the automatic feeder:

- Stainless steel finish
- Second, Vthird and Vfourth feeding station
- Additive dispenser Powder
- Additive dispenser Liquid
- Servo control (when the feeding stations are distant from or higher than the automatic feeder as as for Pparallel feeding)
- Gradient control (when the feeding stations are lower than the automatic feeder)
- Large fly protection door
- Electronic vapor screen for the milk powder outlet
- Electronic vapor screen for the additive dispenser Powder
- Mixer heating
- Equipment for protection against frost
- Powder hopper top section with a capacity of 50 kg
- VPulsating compressed-air cleaning
- VDetergent dosing pump for Powder/water feeders
- CCleaning kit with mixer draining valve and detergent dosing pump
- Concentrate feeders
- Animal scales
- PC-program „NetTerminal PC“
- PC-program „KalbManagerWIN“
- Förster-gateway CAN Ethernet

- CalfProtect
- Teat slider
- Additional dispenser for second milk powder type

16 Annex

16.1 Menu overview

16.1.1 Main menu (key)

SA Animal management	Register	Animal	Group: A..D Correction days: 0 to 99 days Additive 1/2: yes/no Weight in kg: 30 to 250 kg Weight gain in g: xxx g Register?
		Automatic	Mode: [no|all|available] Group: A..D Additive 1/2: yes/no Weight in kg: 30 to 250 kg Weight gain in g: xxx g
	Cancel	Animal	Plan end: xx days Plan end concentrate 1/2: x days MP: x kg Additive 1/2: x g Concentrate 1/2: x kg Weight: x kg Initial weight: 30 bis 250 kg Weight gain: x g Cancel?
		Group	<Group A..D> Registered: x animals Weaned: x animals Cancel?
		Weaned animals	Registered: x animals Weaned: x animals Cancel?
		Settings	Delete transmitter number: yes/no
	Transfer	<Animal 1..250> Group: A..D	
	Transmitter	New	Transmitter number ‡: xxxxxxxxxxxx Animal number: 0-9999 Allocation animal number: [automatic|continuous] Range: [6-3|5-3|5-2|4-2|4-1|3-1] or next: xxxx Accept?
		Change	Transmitter number ‡: xxxxxxxxxxxx Animal number: 0-9999 Transmitter state: [available|registered] Read in? Delete?
		Information	Registered: x animals Available: x animals Free: x animals

Menu overview of the Main menu (key)

SA Feeding	Animal	Group: [A..D]	
		Feed	Deviations: 0 - 99 days Quantity: -25.5 to 25.5 L Plan: x.x L Feed: x.x L
		Concentration	Deviations: 0 - 99 days Quantity: -255 to 255 g/L Plan: x.x g/L Concentration: xxx g/L
		C 1/2	Deviations: 0 - 99 days Quantity: -9.9 to 9.9 kg Plan: x.x kg C 1/2: x.x kg
		Additive 1/2	Dispensed: [no|P1|P2|EL] Dosage: 0-99 [g/day|g/L|g/100 kg Weight: 30-250 kg Additive 1/Additive 2/Electrolyte: x grams Day with additive: x
		Weight	Initial weight: 30-250 kg Weight gain: x grams
		Plan day: x	Feeding day: xx Correction days: -99 to 99 days Plan days: xx Plan end: xx days Plan end C 1/2: xx days Feed: x.x L Concentration: xxx g/L Concentrate 1/2: x.x kg
	Additive	Animal	Additive 1/2: [no|P1|P2|EL] Blocked: yes/no
		Group	<Group A..D> Additive 1/2: [yes|no|part] Blocked: yes/no
		Medicine prescription	<Prescription 1-4> Periods 1-5: Duration, start and end value Duration: x days Dosage: 0-99 [g/day|g/L|g/100kg] Distribution: [once|twice|equal] Dispenser: [1|2|none]
		Electrolyte prescription	Quantity: 0-99 g/L Duration: 1-99 days Electrolyte: 0.5 - 9.5 L Feed: 0 - 9.5 L Waiting time: 30 min - 6 hours Dispenser: [1|2|none]

Menu overview of the Main menu (key)

Feeding	Plans	Feed	Quantity Concentration Limitation Maximum speed ⊕Weaning
		⊕Concentrate 1/2	Quantity Portion size Limitation Accustoming quantity
	Alarm levels	Feed	After: 0 to 9 hours Yesterday: 0 to 99 % Feeding speed: 0 to 99 % Break without additive: xx ⊕Break with additive: xx
		⊕Concentrate 1/2	As of: 8:00 a.m. till noon 0 to 99 % Yesterday: 0 to 99 % Plan: 0 to 99 % no alarm: 0 to 99 days
		⊕Scales	<Group A .. D> Weight gain: 0 to 1 % No weight: 0 to 5 days
	Priority	Alarm: yes/no Additive: yes/no Till feeding day: 0 to 99 Station: none, 1.. 8	
Calibration	<Water boiler> <MP> ⊕<Additive 1/2> ⊕<Detergent> ⊕<F-station 1..8> ⊕<C-station 1..8>	Start? Measured? Set quantity in ml or g Ⓥ Pulses (water boiler, Ⓟ IFS-C or parallel operation): xxx Runtime in s Ⓟ Tolerance: 5-50 % Date of last calibration	
	⊕<Scales 1/1..12/2>	Start? Calibration factor: xxxx Animal scales factor: 1.00 to 2.00 Date of last calibration	
Device data	Portion	Set temperature: 10.0 to 44.0 ºC Minimum temperature: 0 to 43.5 ºC Quantity <250 ml: yes/no Tolerance concentration: ± 0 bis 50 g/L	
	Ad libitum-mode	Activated: yes/no Concentration: 0 g/L, 5-255 g/L (only in the ad libitum-mode) ⊕Additive 1/2: 0 to 99 g/L (only in the ad libitum-mode)	

Menu overview of the Main menu (key)

Device data	Stations	Feed	<F-station 1.. 8> Draining time: 10 to 60 seconds Turn-on delay: 0.0 to 2.0 seconds Turn-off delay: 0.0 to 2.0 seconds
			Pump start: 0.2 to 9.9 seconds Pump stop: 0.2 to 9.9 seconds Maximum speed: 20 to 100 %
		Concentrate	<C-station 1.. 8> Feed type: [1|2]
		Teat slider	Close after: 0 to 9 minutes Open after: 0 to 9 minutes
		CalfProtect	Open after: 0 to 30 minutes
	Mixer	Draining mode: yes/no Drain: 0, 5 .. 120 minutes Empty via teat OFF delay: 3 .. 12 seconds	
	Time/date	Time: current time Date: current date	
	New installation	Device data Plans Medicine prescription Animal data Transmitter numbers Everything	
Cleaning	Mixer	Start?	Detergent: 0 to 25 ml
		Cleaning/day: 0 to 4 Cleaning time 1.. 4: midnight till11:59 p.m.	
	Circuit cleaning	Start?	Detergent: 0 to 25 ml
		Water quantity: 1 to 10 L	
	Compressed air	Start after: 0, 5 to120 min	
		F-station	<F-station 1.. 8> Start? Mode: [low|medium|high]
	Valves	Start? Start after: 0 to 120 min Duration: 1 to 10 s	
	Hose rinsing	<Group A..D> Activated: yes/no As of plan day: 1 to 99	
	Settings	Temperature: 10.0 to 50.0 ºC Detergent: 0 to 25 ml/L Teat cleaning: yes/no	

Menu overview of the Main menu (key)

Diagnostic	Valves	Water boiler: open? Mixer drain: open? Circulation valve: open? Air valve: open?	
	Motors	Mixer motor: start? Powder motor: start? Additive dispenser 1/2: start? Detergent pump: start? Feeding pump: start?	
	Heating	On? Boiler temperature: xx.x ºC	
	Sensors	Supply electrode: [free|covered] Spot electrode [free|covered] Bar electrode: [free|covered] Detergent: [ok|empty] Button feeding pump (MAP): [active|inactive] Boiler: xx.x ºC Mixer: xx.x ºC	State: [free|covered] Water boiler: start? Mixer: empty?
		Water meter	Pulses: xx Water boiler: start? Mixer: empty?
	Stations	Feeding stations	<F-station 1 .. 8> Transmitter number. ‡: xxxxxxxxxxxx Valve: open? Pump: start? Teat slider: open? CalfProtect: close? Feed sensor: [active|inactive] Steuerung: IFS-Tränke x oder IFS-Kom-Control unit x/x Search?
		Concentrate stations	<C-station x> Transmitter number ‡: xxxxxxxxxxxx Motor: start? Feed bowl: [empty|full] Control: IFS-C 1.. 8 Search?

Menu overview of the Main menu (key)

Diagnostic	Stations	Scales	<Scales 1/1 .. 12/2> Weigh? Tare? Calibrate?
	Control	Power failures Reset Terminal Database <IFS-F 1 .. 8> <IFS-F quadruple [1|2]> <IFS-C 1 .. 8> <Scales control 1 .. 12> <Scales 1/1 .. 12/2> <Identification F-station 1.. 8> <Identification C-station 1.. 8> Heat up	Amount: x Since: dd.mm.yyyy (date) Delete?
	Control	Water shortage Mixer emptying Heating Cleaning Water meter Boiler sensor Mixer sensor Temperature too high Electrode Calibration ID Double address ID-chip Unknown transmitters Doubel animal no. Detergent <Motor sensor C-station 1 .. 8> <C-station 1 .. 8 empty>	Amount: x Since: dd.mm.yyyy (date) Delete?
	Version	Device Processor ID-chip Terminal <Identification F-station 1 .. 8> <Identification C-station 1 .. 8> <IFS-F single 1 .. 8> <IFS-F quadruple [1|2]> <IFS-C 1 .. 8> <Scales control 1 .. 8>	ID: xxxxxx Version: xx.xx or Program version: xx.xx Version minibootloader: xx.xx Version bootloader: xx.xx

Menu overview of the Main menu (key)

Diagnostic	Setup	Language	Selected language
		Time/date	Time: hh:mm:ss (current time) Date: dd.mm.yy (current date)
		Machine	Type: [Powder|Milk|Combi] Number: 1 - 99 Address: 2 - FD System: Interval feeding Operating mode: [SA|SM] Animal number: [C50| V250] HE capacity: [C50|V250] ml Boiler valve: [CBasic| Vbrass] HE valve: [CBasic| Vbrass]
	Setup	Equipment	Mixer drain: yes/no
			Feeding pump: yes/no
			Additive dispenser 1/2: yes/no
			Detergent pump: yes/no
			Detergent sensor: [no|bar|external]
			Circulation valve: [HE|Vvalve|no]
			Air valve: yes/no
			Circulation pump: yes/no
			Mixer sensor: yes/no
			VWater meter: yes/no
			VSupply electrode: yes/no
			V Spot electrode: yes/no
			MilkMaker: yes/no
		Heating	Activated: yes/no Relay: [Cmechanical|Velectronical]
		Identification	Type: [Tiris|Nedap]
		ID-chip	Activated: yes/no Read in?
		Stations	Feed Concentrate Animal scales
		Terminal	CAN-address: 1 to FD (hexadecimal)
		Communication	PC: [serial|CAN] Institute: yes/no (only with CAN) Printer: [no|serial|CAN]
	Software	EXCLUSIVELY FOR FT-INTERNAL PURPOSES	

16.1.2 Menu overview of the manual functions (key)

Extra portion	Start? Output [bucket|station 1 .. 8] Quantity: 0.25 to 65.0 L Temperature: 41.0 to 45.0 ºC Concentration: 5 - 255 g/L Additive 1: 0 to 99 g/L Additive 2: 0 to 99 g/L
MilkMaker	Start? Automatic: yes/no Quantity: 0.25 to 65.0 L Temperature: 41.0 to 45.0 ºC Concentration: 5 - 255 g/L Additive 1: 0 to 99 g/L Additive 2: 0 to 99 g/L
Mixer: empty?	
Water boiler: start?	
Mixer: start?	
F-station	<Station 1 .. 8> Valve open? Pump start?
Boiler: fill?	

16.1.3 Menu overview of animal control (key)

Entitled: x animals	As of xx:xx h x.x L Consumption in %: today/yesterday Consumption in L: today/yesterday Electrolyte in L: today/yesterday (if selected)	
	Break off: today/yesterday	With additive: today/yesterday Without additive: today/yesterday
	Visits: today/yesterday	Last visit: hh:mm:ss (time) Entitled: today/yesterday Not entitled: today/yesterday
Alarm: x animals	Feed consumption: today/yesterday Feeding speed: today/yesterday Break off: today/yesterday Delete all?	
Plan over: x animals	Feeding or concentration plan Additive prescription 1/2 or electrolyte Deviations feed or concentration or additive Delete all?	
Additive: x animals	Additive 1: dispensed medicine resp. electrolyte prescription yesterday/today: Additive 2: dispensed medicine resp. electrolyte prescription yesterday/today	Dispensed: [no|P1|P2|P3|P4|EL] Consumption in %: today/yesterday (only medicine prescription) Consumption in g: today/yesterday (only medicine prescription) Additive 1/2 in g: today/yesterday (only medicine prescription) Dosage in g: xx g/L|g/100kg|g/day Weight in kg: xx kg (only weight-dependent medicine prescription) Electrolyte: x.x L (only electrolyte prescription) Feed: x.x L (only electrolyte prescription) Day with additive: xx
	Break off today/yesterday	With additive: today/yesterday
		Without additive: today/yesterday
Marked: x animals	See „all“ (below)	
New: x animals	<Animal number/station plan tendency plan quantity> Transmitter number ‡.: xxxxxxxxxxxx Animal number: xxxx Group: A..D	
	Feed: xx.x l	Deviations: 0 to 99 days Quantity: -25.5 to 25.5 L Plan: x.x L Feed: x.x L
	Concentration: xxx g/L	Deviations: 0 to 99 days Quantity: -255 to 255 g/L Plan: xxx g/L Concentration: xxx g/L
	C 1/2: x.x kg	Deviations: 0 to 99 days Quantity: -9.9 to 9.9 kg Plan in: x.x kg C 1/2: x.x kg

Menu overview of animal control (key)

<table>
<tr><td rowspan="8">New: x animals</td><td rowspan="5">Additive 1/2</td><td colspan="2">Dispensed: [no|medicine prescription P1..4|electrolyte prescription]</td></tr>
<tr><td>Dosage:
xx g/L or
xx g/100 kg or
xx g/day</td><td>Deviations: 0 to 99 days
Quantity: xx g/L|g/100 kg|g/day
Prescription: xx g/L|g/100 kg|g/day
Dosage: xx g/L|g/100 kg|g/day</td></tr>
<tr><td>Weight: xx kg</td><td>Weight: 30 to 250 kg
Weight gain: xxx g</td></tr>
<tr><td colspan="2">Additive 1/2: xx.x g</td></tr>
<tr><td>Day with additive: xx</td><td>Day with additive: xx
Correction days: 0 to 99 days
Prescription day: 1
Prescription end: xx days</td></tr>
<tr><td>Weight: xx kg</td><td colspan="2">Weight: 30 to 250 kg
Weight gain: xxx g</td></tr>
<tr><td>Plan day: xx</td><td colspan="2">Feeding day: xx
Correct: 0 to 99 days
Plan day: xx
Plan end: xx days
Plan end C 1/2 in: xx days
Feed: xx.x L
Concentration: xxx g/L
C 1/2: x.x kg</td></tr>
<tr><td colspan="3">Time: hh.mm.ss (time of registration)</td></tr>
<tr><td colspan="3">Date: dd.mm.yyyy (date of registration)</td></tr>
<tr><td colspan="3">Confirm?</td></tr>
<tr><td>Double: x animals</td><td colspan="3"><Animal number/group station plan tendency plan quantity>
Transmitter number ‡: xxxxxxxxxxxx
Animal number: xxxx
Time: hh:mm:ss (time of occurrence)
date: dd.mm.yyyy (date of occurrence)
Confirm?</td></tr>
<tr><td>Unknown:
x animals</td><td colspan="3"><xxxxxxxxxxxx .. xxxxxxxxxxxx > (list of all unknown transmitter numbers)
Transmitter number ‡: xxxxxxxxxxxx
Amount: x
Time: hh.mm.ss (time of occurrence)
date: dd.mm.yyyy (date of occurrence)
Delete?</td></tr>
</table>

Menu overview of animal control (key)

All : x animals	Consumption in %: today/yesterday	As of xx:xx h x.x L Consumption in %: today/yesterday Consumption in L: today/yesterday	
		⊕EL in L: today/yesterday	
		Feed in L: today/yesterday	Deviations: 0 to 99 days Quantity: -25.5 to 25.5 L Plan: xx.x L Feed: xx.x L
		Concentration in g/L: today/yesterday	Deviations: 0 to 99 days Quantity: -255 to 255 g/L Plan: xxx g/L Concentration: xxx g/L
		⊕Concentrate 1/2: today/ yesterday	Deviations: 0 to 99 days Quantity: -9.9 to 9.9 kg Plan in: x.x kg C 1/2: x.x kg
	Break-off: today/yesterday	⊕With additive: yesterday/today Without additive: yesterday/today	
	Feeding speed: today/yesterday	Relative in %: today/yesterday Absolute in L/min: today/yesterday	
	Visit: today/yesterday	Last: hh:mm:ss (time of last visit) Entitled: yesterday/today Not entitled: yesterday/today	
	⊕C 1/2 in %: today/yesterday	As of xx:xx h x.x kg Consumption in %: today/yesterday Consumption in kg: today/yesterday 3 days in kg: today/yesterday	
		Concentrate 1/2 in kg: today/yesterday	Deviations: 0 to 99 days Quantity: -9.9 to 9.9 kg Plan in: x.x kg Concentrate 1/2: x.x kg
		Feed in L: today/yesterday	Deviations: 0 to 99 days Quantity: -25.5 to 25.5 L Plan: xxx g/L Feed: xx.x L
	Feeding day: xx	Feeding day: xx Correct: 0 to 99 days Plan day: xx Plan end in: xx days ⊕Plan end C 1/2 in: xx days Feed: xx.x L Concentration: xxx g/L ⊕Concentrate 1/2: x.x kg	

Menu overview of animal control (key)

Total consumption	Total	Milk powder (MP) Additive 1/2 Concentrate 1/2	Today: Set/actual value [L|g|kg] Yesterday: Set/actual value [L|g|kg] The day-before-yesterday: Set/ actual value [L|g|kg]
	Animal	<Animal number/group station plan tendency plan quantity> Milk powder (MP): xx kg Additive 1/2: xxxx g Concentrate 1/2: xxx kg	
Print	Alarm list	Print alarm list?	
	Feed list	Print feed list?	

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

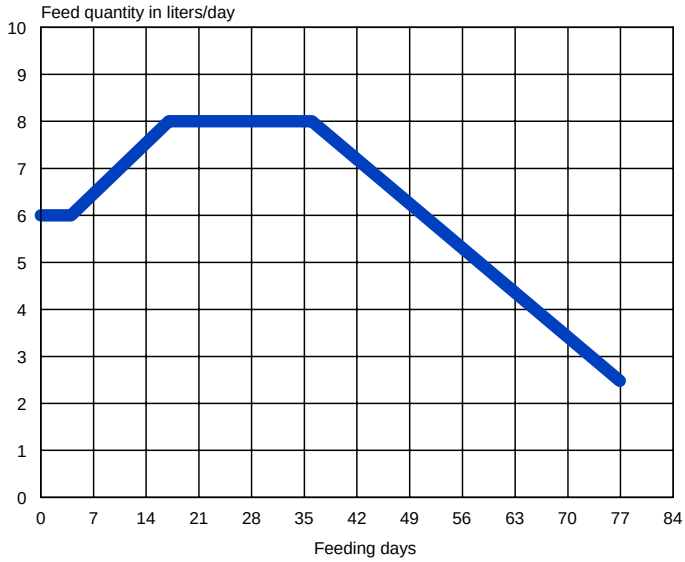
Signature
Markus Förster
Geschäftsführer

Signature
Thomas Förster
Geschäftsführer

16.3 Default feeding plans

16.3.1 Group A

Stand Alone
Standard Feeding plan Group A
Förster-Technik



Standard feeding plan:

P1: 3 days: from 6 to 6 L
P2: 14 days: from 6 to 8 L
P3: 18 days: from 8 to 8 L
P4: 42 days: from 8 to 2.5 L

Total: 77 days = 478 L

Standard concentration plan:

P1: 77 days: from 135 to 135 g/L

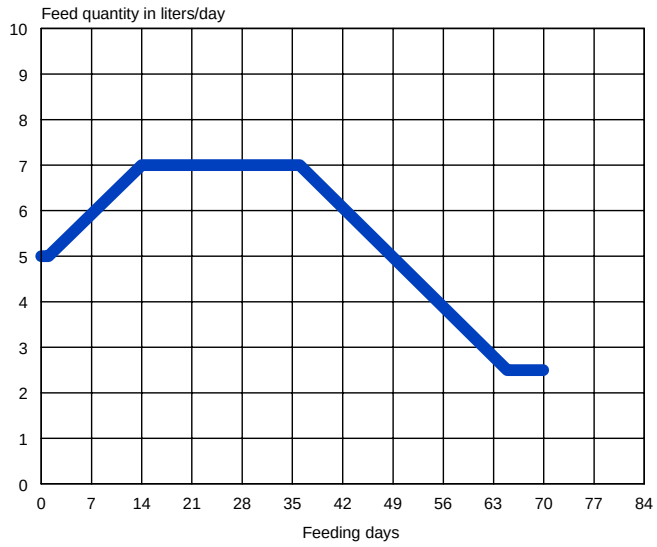
Total: 77 days = 64 kg MP

Standard limitation of quantities:

P1: 14 days:	1.5 L (min.)	2.0 L (max.)
P2: 14 days:	2.0 L	2.5 L
P3: 49 days:	2.5 L	3.0 L

16.3.2 Group B

Stand Alone
Standard Feeding Plan Group B
Förster-Technik



Standard feeding plan:

P1: 14 days: from 5 to 7 L
P2: 21 days: from 7 to 7 L
P3: 30 days: from 7 to 2.5 L
P4: 5 days: from 2.5 to 2.5 L

Total: 70 days = 384 L

Standard concentration plan:

P1: 70 days: from 135 to 135 g/L

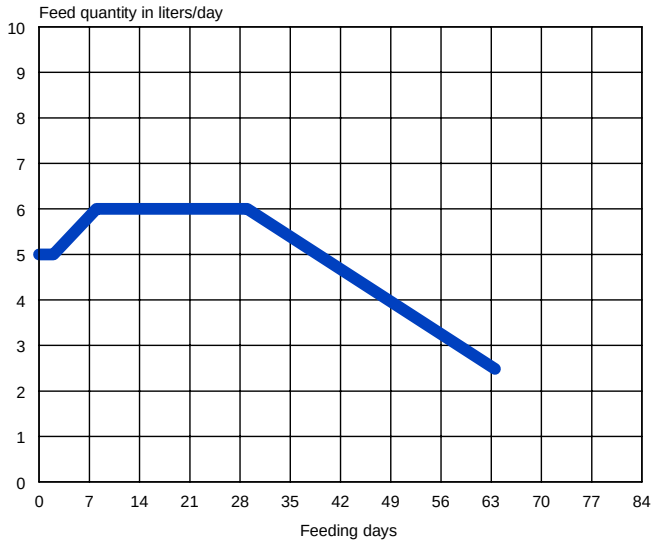
Total: 70 days = 51 kg MP

Standard limitation of quantities:

P1: 14 days:	1.5 L (min.)	2.0 L (max.)
P2: 14 days:	2.0 L	2.5 L
P3: 42 days:	2.5 L	3.0 L

16.3.3 Group C

Stand Alone
Standard Feeding Plan Group C
Förster-Technik



Standard feeding plan:

P1: 2 days: from 5 to 5 L
P2: 6 days: from 5 to 6 L
P3: 21 days: from 6 to 6 L
P4: 35 days: from 6 to 2.5 L

Total: 64 days = 316 L

Standard concentration plan:

P1: 64 days: from 135 to 135 g/L

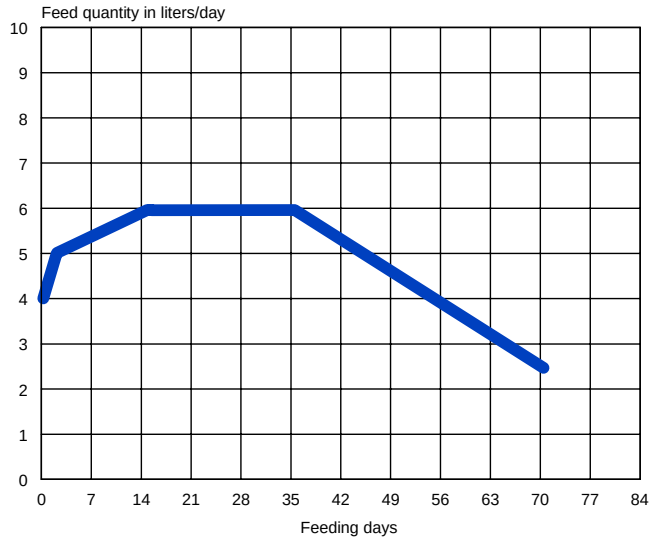
Total: 64 days = 42 kg MP

Standard limitation of quantities:

P1: 14 days:	1.5 L (min.)	2.0 L (max.)
P2: 14 days:	2.0 L	2.5 L
P3: 36 days:	2.5 L	3.0 L

16.3.4 Group D

Stand Alone
Standard Feeding Plan Group D (Early Weaning)
Förster-Technik



Standard feeding plan:

P1: 2 days: from 4 to 5 L
P2: 13 days: from 5 to 6 L
P3: 21 days: from 6 to 6 L
P4: 35 days: from 6 to 2.5 L

Total: 71 days = 353 L

Standard concentration plan:

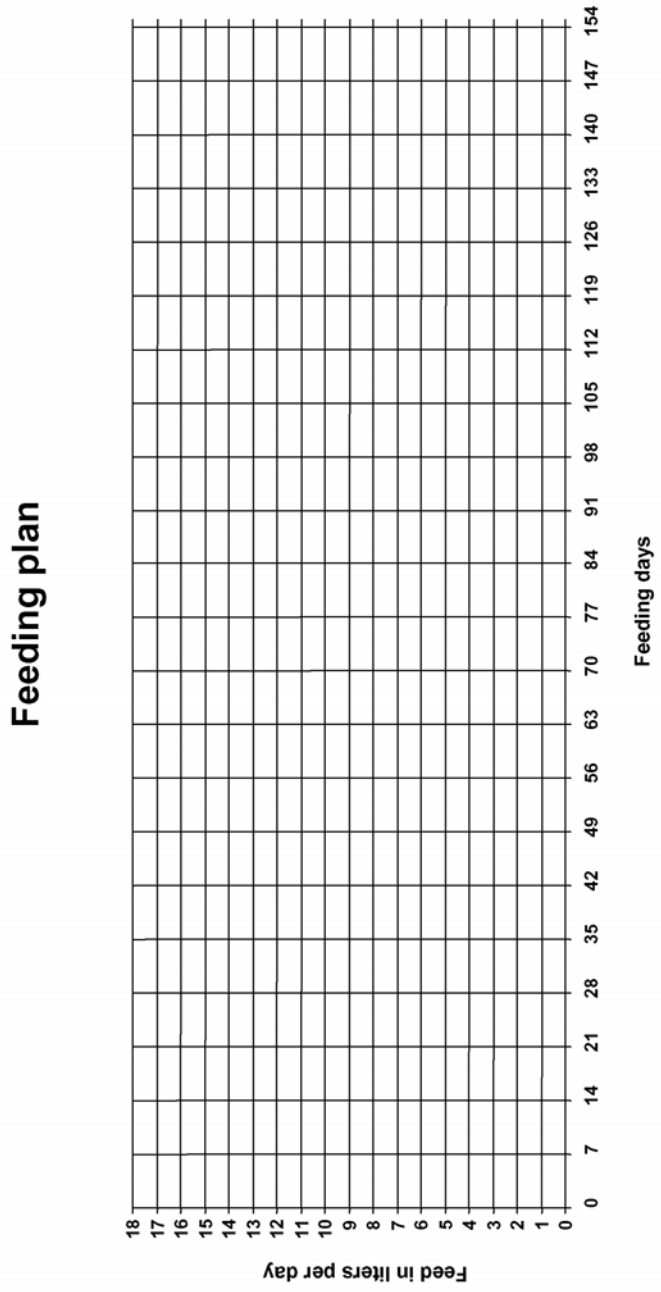
P1: 71 days: from 135 to 135 g/L

Total: 71 days = 47 kg MP

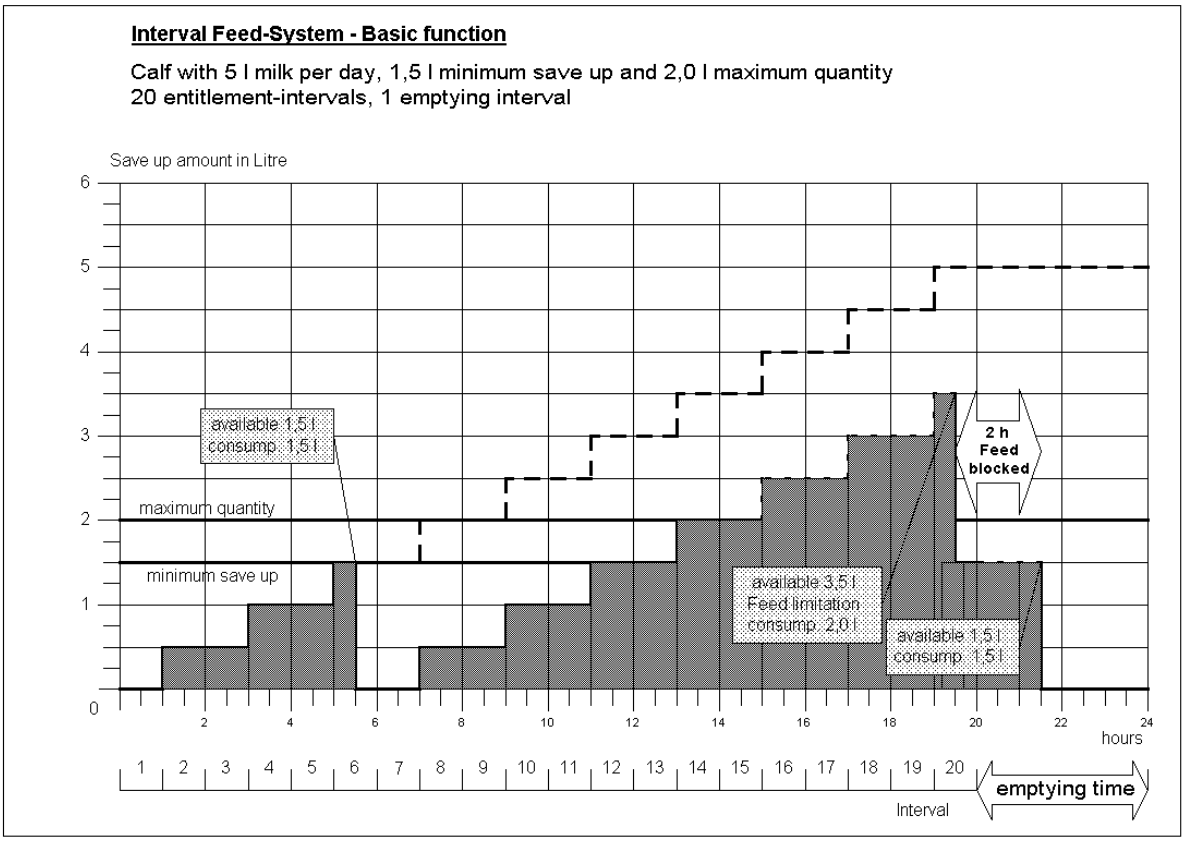
Standard limitation of quantities:

P1: 7 days:	1.0 L (min.)	1.5 L (max.)
P2: 14 days:	1.5 L	2.0 L
P3: 14 days:	2.0 L	2.5 L
P4. 36 days:	2.5 L	3.0 L

16.3.5 Template for individual feeding plan



16.4 Basic principle of interval feeding



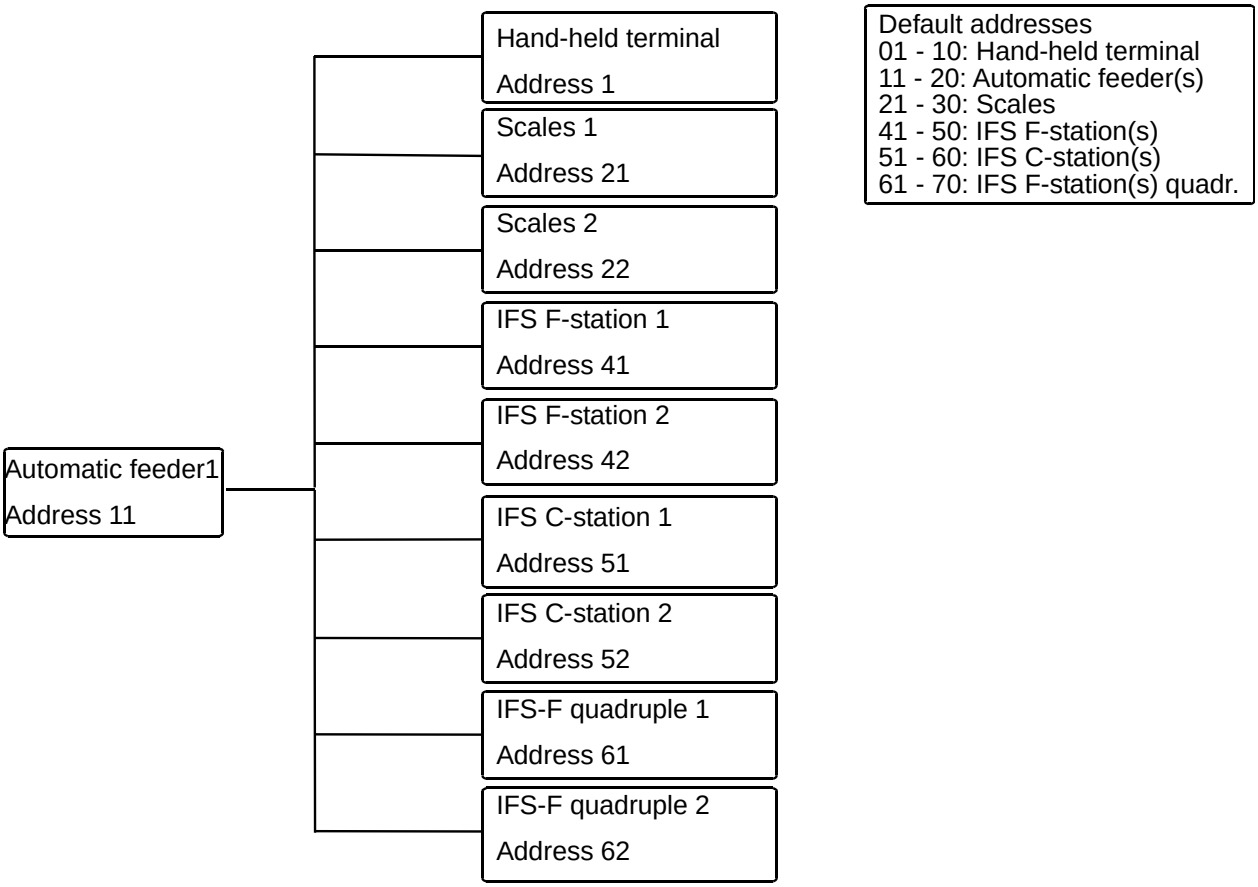
16.5 CAN-bus addresses

16.5.1 Default addresses

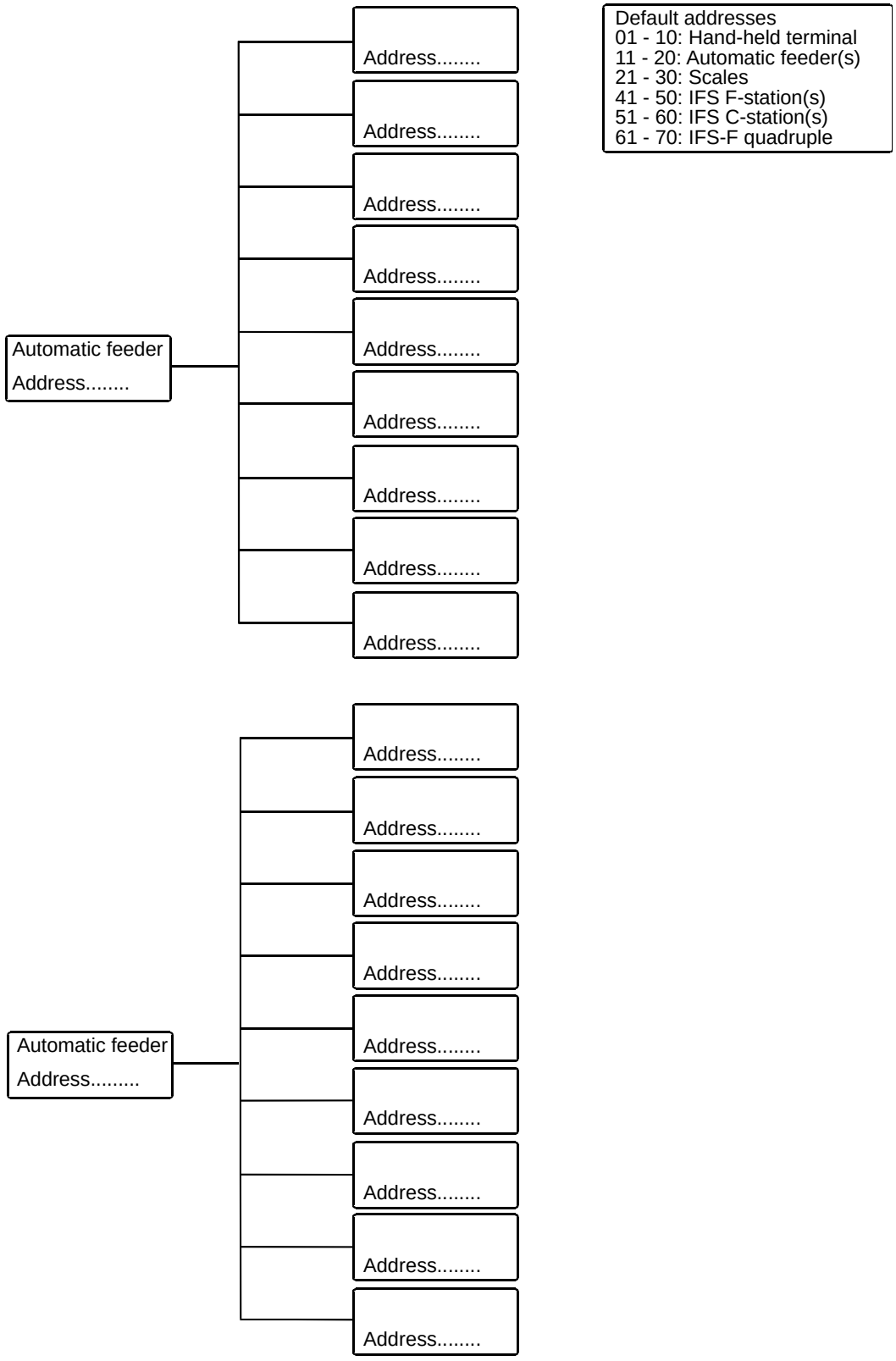
The graph below is intended to exemplify how to allocate addresses according to default values. On the following page you can allocate addresses according to your needs. Just copy the template, if required.

Note: Please note that a number can be allocated only once.

Note: It is recommended not to change the default addresses.



16.5.2 Template for individual allocation of addresses



A

B

C

D

E

F

G

I

M