15. May 2018

Original Service Manual

Automatic calf feeder

Type VARIO smart 2.0 Combi and Fresh Milk

TAK5-VS2-50 / VDW5-VS2-50

Program version 2.00 and higher

Table of contents

1. Introduction

This operating manual enables you to operate this automatic feeder machine safely as intended.

- Have the end user provide you with the operating manual for the automatic feeder, the operating manuals of all additional equipment to be connected and the safety data sheets for cleaning agents.
- Carefully read all operating manuals and safety data sheets before starting up the automatic feeder for the first time or restarting it.
- Observe all of the warnings and safety instructions in these operating manuals and safety data sheets at all times.

1.1 Models

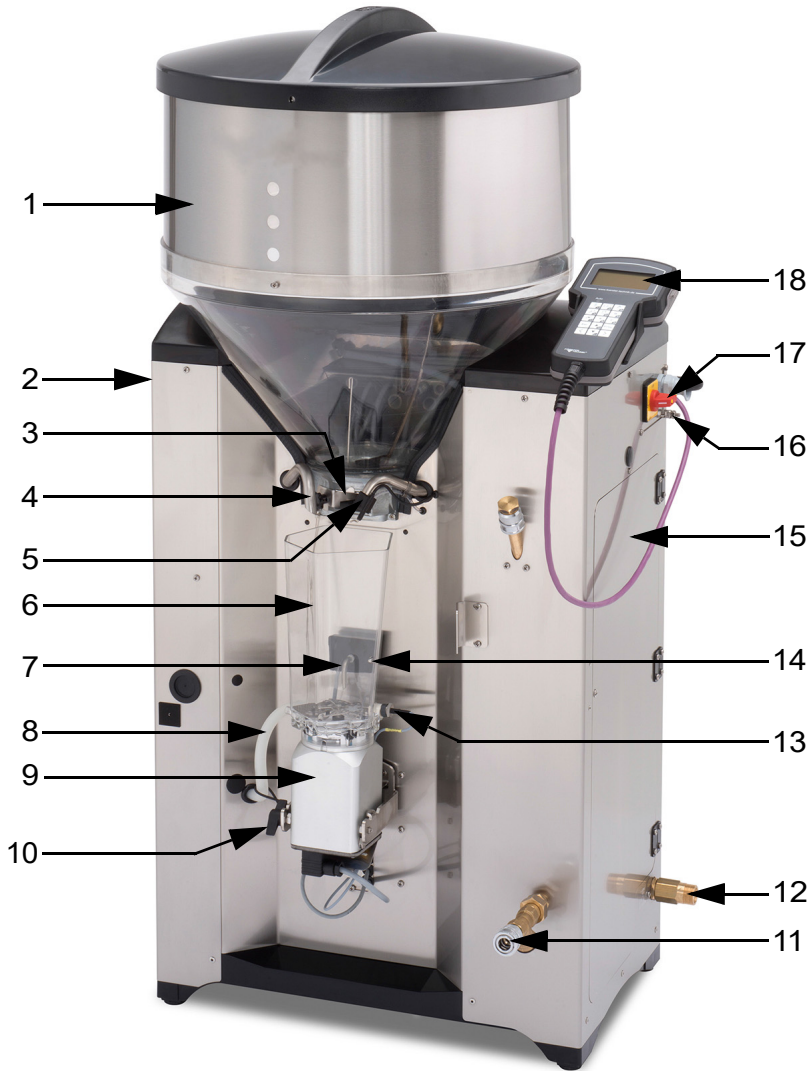
The following automatic feeder versions are available:

- **Powder** - for the use of milk substitute (MP).
- **Combi** - for the use of milk substitute and fresh milk.
- **Fresh milk** - for the use of fresh milk.

All automatic feeder versions can be equipped with a variety of pieces of peripheral equipment and options.

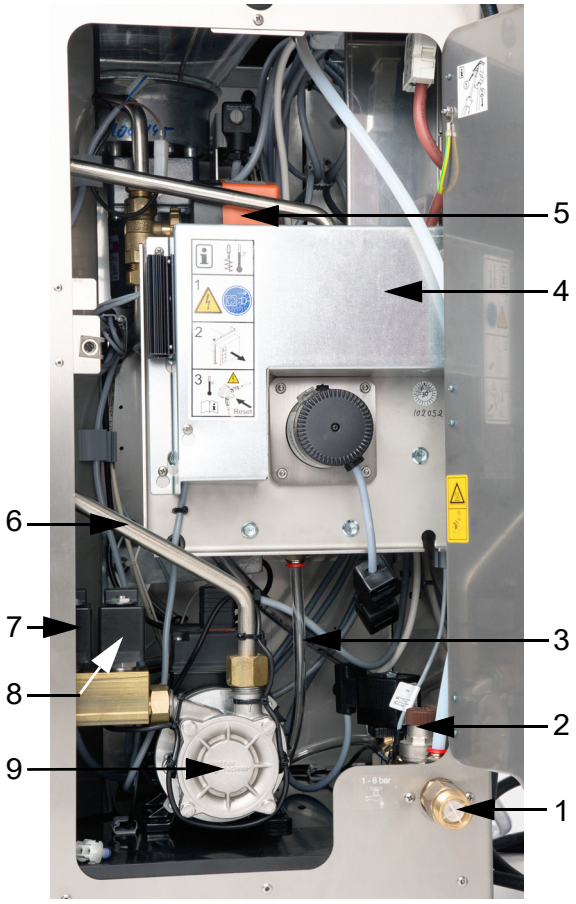
1.2 Overview of the automatic feeder

1.2.1 Front and right side view of automatic feeder



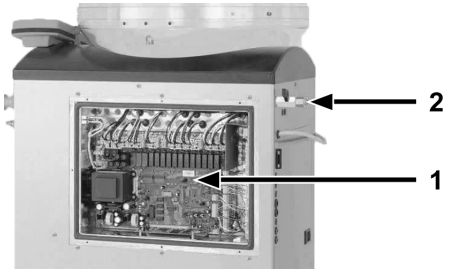
1 Milk powder container
2 Outlet valve (not shown here)
3 Milk powder discharge
4 Water supply
5 Milk feed
6 Mixer beaker
7 Rod electrode
8 Hose connection from mixer to the feeding pump
9 Mixer motor
10 Wing nut for transport restraint
11 Milk connection
12 Water connection
13 Temperature sensor
14 Point electrode for 500 ml portion
15 Right door
16 Ground connection screw
17 Main switch
18 Hand terminal

Rear right side door



1 Water supply
2 Pressure-reducing valve
3 Water supply line to boiler container
4 Boiler container with heat exchanger
5 Ball valve
6 Milk supply line
7 Milk valve
8 Circulation valve
9 Milk pump

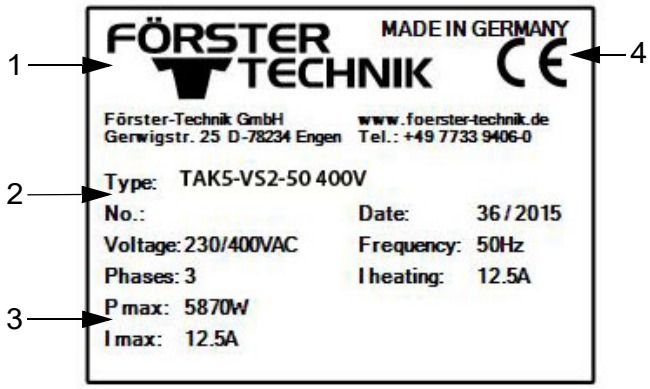
1.2.2 Rear view of automatic feeder



1 Processor and power circuit board
2 Outlet valve for hose cleaning

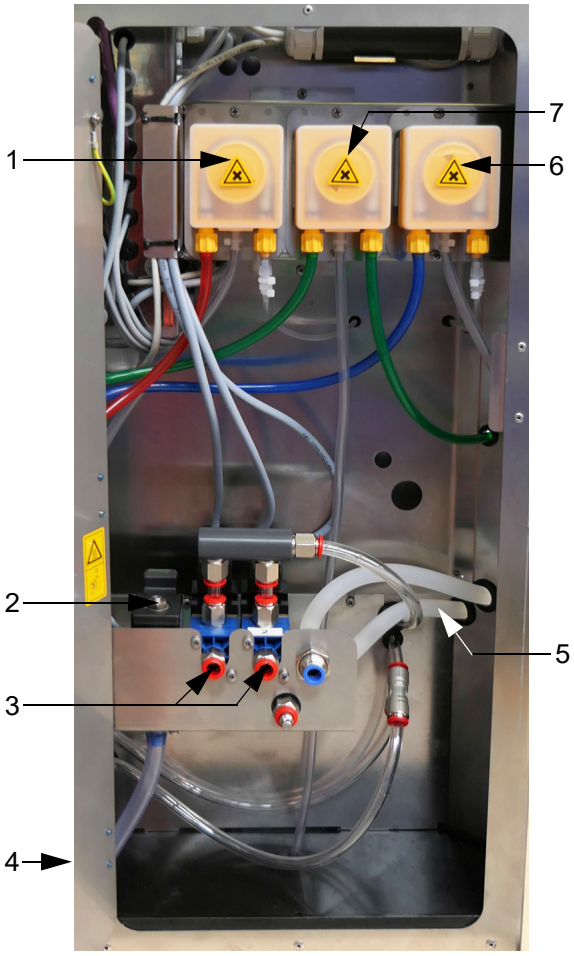
1.2.3 Left side view of the automatic feeder

The **Name plate** is located above the left side door on the outside of the automatic feeder. It contains information about the manufacturer, type and number of the automatic feeder, information about connecting the feeder to the power supply as well as its certification. An example of a name plate is shown below.



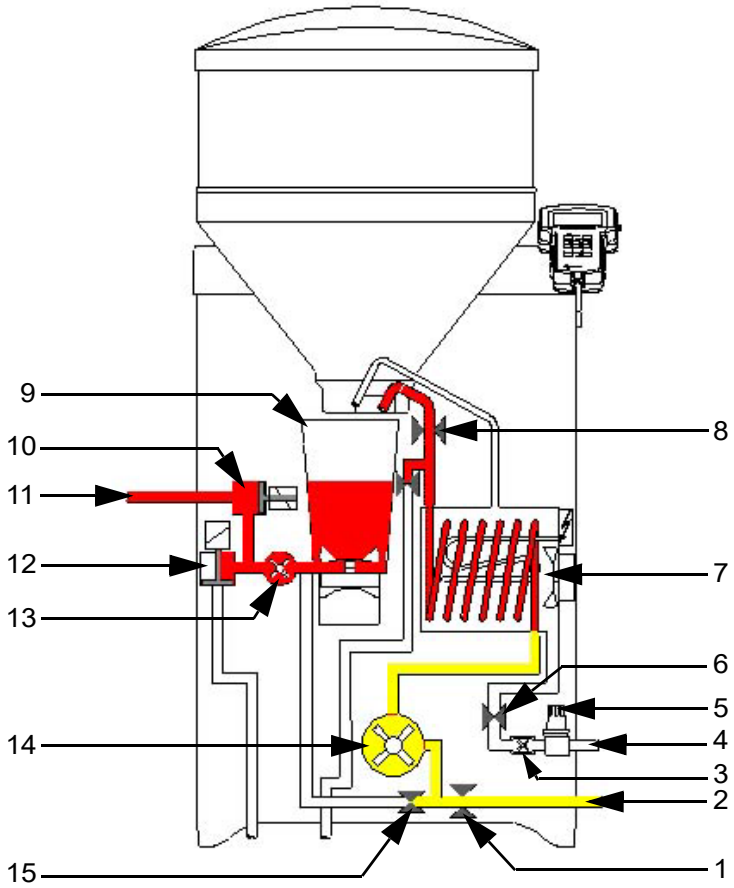
1 Name and address of the manufacturer
2 Type and number of the automatic feeder
3 Information on the connection to the power supply
4 Certification of the automatic feeder

Rear left side door



1 Cleaning agent dosing pump 2 (acid)
2 Mixer drain valve
3 Feeding box valves (optional)
4 Drain hoses (not shown here)
5 Hose connection from mixer to the feeding pump
6 Cleaning agent dosing pump 1 (alkaline)
7 Dosing device for liquid additives (optional)

1.2.4 Heat exchanger with separate heating circuits for milk and water



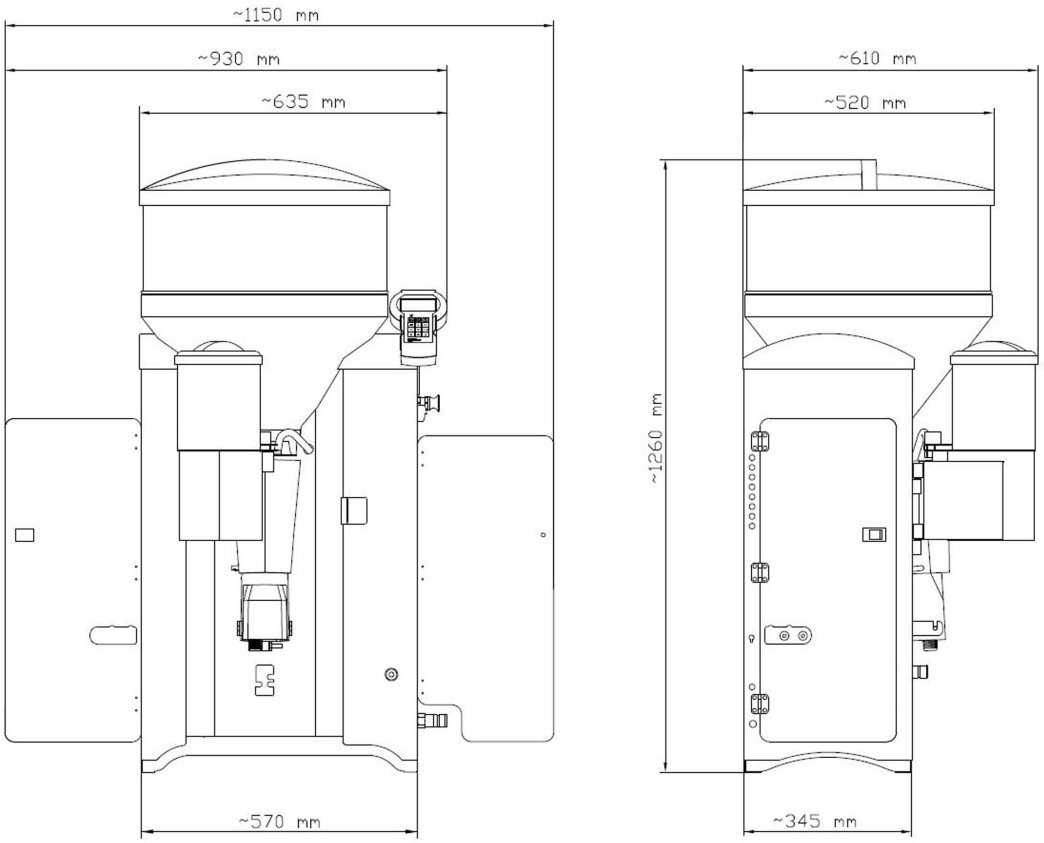
1 Milk valve
2 Hose connection for milk tank
3 Water meter
4 Hose connection for water pipe
5 Pressure-reducing valve
6 Boiler water valve
7 Heat exchanger with stainless steel coil
8 Ball valve
9 Mixer
10 Valve unit (optional)
11 Hose connection between valve unit and teat
12 Mixer drain valve
13 Feeding pump
14 Milk pump
15 Circulation valve

1.3 Technical data

1.3.1 Electrical connection

Note: The specifications for the electrical connection to your automatic feeder are on its name plate above the left side door on the outside (see 1.2.3 "Left side view of the automatic feeder" - 11).

1.3.2 Dimensions



Depth when the fly screen door is opened ~ 690mm

1.3.3 Weight

Approx. 80kg.

1.3.4 Water connection

Water is connected via a 3/4 inch hose and with a 3/4 inch screwed connection.

NOTICE!

The water must be of drinking water quality.

► Please bear in mind that high calcium, iron and manganese concentrations can cause premature wear of the components. In such cases it makes sense to install appropriate filtration systems.

The water pressure on site must be between 1 and 6 bar or between 100000 and 600000 Pascal.

1.3.5 Milk connection

Milk is connected via a 1/2 inch hose and with a 1/2 inch screwed connection.

1.3.6 Heat exchanger

The stainless steel coil holds 0.5 l of milk.

1.3.7 Boiler

The boiler holds approximately 7 ltr of water.

1.3.8 Milk powder container

The milk power container with attachment holds approximately 35 kg of milk substitute.

1.3.9 Number of feeding stations and animals

Feeding stations:	max. 4
Calves per feeding station	max. 30
Calves per device	max. 120

1.4 Disposal

All components, liquids and solids must be disposed of in compliance with the applicable official regulations for proper waste recycling and disposal in your country. Also comply with the corresponding safety data sheets.

1.5 Symbols

Optional: A white plus sign on a black background indicates that optional functions or equipment are being described.

1.6 Abbreviations

Abbreviation	Meaning
Call ltr. t. or Call t.	Call-off today in liters
Call ltr. y. or Call y.	Call-off yesterday in liters
abs.	absolute
Adli	Ad lib
save amt.	Amount saved up
feed.pump	Feeding pump
out. pause	Dispensing pause
sw.off del.	Switch-off delay
dr. time	Drink-out time
bo	Boiler
dos.	Dosage
El	Electrode
electrol.	Electrolyte
sw. on del.	Switch-on delay
F	40 FIT feeding
f	40 FIT periods
gradient	Gradient control
gr. A (B)	Group A (B)
IFS TR	Intelligent feeding station feed
IFS-4	Intelligent feeding station feed, quadruple unit
IFS KF	Intelligent feeding station concentrate
IV	Interval feeding program
Ball valve	Ball valve
C	Concentrate
Conc. concentr.	Concentration
dra.v. N.	Drain via teat
w. entitle.	With entitlement
w/add. or w/addiv.	With additive
MAP	Manual feeding pump
MP	Milk substitute
max	maximum
milk rat.	Milk share
Min. temp.	Minimum temperature
mix. full	Mixer full
mixer cl.	Cleaning the mixer

mixer dr.valve	Mixer drain valve
n.	not
No.	Number
Clean teat	Clean teat
w/o entitlement	Without entitlement
w/o add. or w/o add.	Without additive
P 1-5	Periods 1-5
R	rationed feeding principle
rel.	relative
Drnk spd.	Drinking speed
ho.	Hose
clo.?	close
servo	Servo control
det. pump	Flushing agent pump
Temp.	Temperature
TR	Feeding box
fd.sensor	Feeding sensor
Bo. water	Boiler water
HE	Heat exchanger
Incr./Red.	Increase/reduction
add. disp.	Additive dispenser

2. Important safety instructions

This chapter outlines:

- The hazards caused by your automatic feeder and how to avoid them.
- The safety labels attached to the automatic feeder and what they mean.
- How to safely install the automatic feeder.

The automatic feeder is state of the art and is produced in compliance with recognized safety regulations. However, hazards and adverse effects may arise when using it. Both warning signs directly on the automatic feeder and warning notices in this manual provide warning of these hazards.

2.1 Intended use

The automatic feeder may only be used to prepare, heat, and dispense liquid feeds, for example milk, for calves.

2.2 Required qualifications

Only trained service technicians are authorized to install the automatic feeder, put it into service and perform maintenance and repairs on it.

Service technicians are specialists with appropriate qualifications. They are able to assess the work assigned to them and detect potential risks on the basis of their technical training as well as their knowledge of the relevant standards. They have knowledge of relevant accident prevention regulations, generally accepted safety regulations and country-specific standards and provisions.

2.3 Residual risks

Hazards to health caused by the automatic feeder:

⚠ WARNING!

Danger from electric current

The automatic feeder is powered by electricity.

► You must observe the general precautions for handling electrical equipment.

- Read the operating manual before operating the automatic feeder.
- Keep children away from the automatic feeder.
- Do not touch any moving parts of the automatic feeder, for example the mixer blades.
- Only use genuine spare parts from the manufacturer.
- Switch the automatic feeder off and disconnect the power plug before carrying out any maintenance or cleaning work on the automatic feeder.
- If the end user intends to operate the automatic feeder outside of closed spaces, inform the user that he/she must protect the automatic feeder from rain and moisture, for example with a roof.

- Do not install the automatic feeder outdoors, in the open.
- If there is a connection to a drinking water system, then the system must be protected from back siphoning.
- The following specific hazards are associated with the automatic feeder's electrical system:
  - **Electrical discharge**. If there is an electrical or voltage discharge, electric current flows through parts of the automatic feeder that are normally insulated. Touching the unit can cause a fatal electric shock. The automatic feeder must be checked regularly for electrical safety in compliance with national regulations (repeated inspection). Make sure that a 30 mA residual current device (RCD) is installed.
  - **Short circuit, indirect contact**. If there is a short circuit, current at many times the level of the operating current can flow. Touching the unit can cause a fatal electric shock. Make sure you install a fuse (provided by the customer) corresponding to the rating on the name plate and a 30 mA residual current device (RCD) in compliance with local regulations.
- The solenoid valves and the pipes to the valves can reach temperatures of up to 70°C. Touching it can cause burns. Do not touch the solenoid valves and pipes during operation.
- Liquid at temperatures of up to 70°C can spray out of the pipes to the valves. This can cause scalding. Do not touch the pipes during operation. Carry out the recommended maintenance on the hoses.
- The mixer and powder supply may start up unexpectedly if a calf which is entitled to feed approaches the unit. This can crush or chop off fingers or hands. Never reach into the area of the mixer or powder supply while the automatic feeder is in operation. Use only the scraper supplied to clean the powder discharge opening.
- **Poisoning**. Additives that are fed to the calves may contain substances that are hazardous to human health. Avoid direct contact and always wear protective gloves and goggles when handling these substances.
- **Chemical burns**. The cleaning agent used to clean the automatic feeder contains caustic substances. They can cause severe injuries to your hands or eyes. Avoid direct contact and always wear chemical-proof protective gloves and goggles when handling the cleaning agent.
- **Excessive physical strain**. The automatic feeder weighs 80kg. Never attempt to carry it by yourself as this can cause excessive physical strain.

Material damage caused by the automatic feeder

The automatic feeder can cause the following types of material damage:

- **Infection**. Improper cleaning or incorrect operation can result in calves becoming infected by pathogens from the automatic feeder. This can lead to medical costs or cause the death of the calves.
- **Corrosion**. Improper cleaning or maintenance can result in the automatic feeder ceasing to function correctly.
- **Loss of stability**. The automatic feeder must be set up on a level surface. Otherwise, the automatic feeder can tip over and suffer damage.

2.4 How am I warned of hazards?

Hazards are indicated directly on the automatic feeder by safety labels (warning signs, instruction and prohibition notices), and in the operating manual by specially marked hazard descriptions.

The warnings for hazards that can cause death or injury to people are emphasized more than those for material damage, for example through the colors, hazard words or symbols used.

Safety labels are an important element of the overall automatic feeder safety concept. They provide warnings about hazards and explain how to avoid them.

Make sure that all the specified safety labels are fitted to your automatic feeder and that they are in a legible condition. If the safety labels are difficult to read, replace them immediately. New safety labels are available from Förster-Technik GmbH.

2.4.1 What are the components of a hazard description?

A hazard description always consists of the following elements:

- Hazard word (danger, warning, caution, attention)
- Type of hazard (what can happen?)
- Location of hazard (where can it happen?)
- Actions necessary for preventing the hazard (what should I do?).

2.4.2 Potentially fatal hazards or health hazards

Depending on their severity and the probability of them occurring, hazards that can cause death or injury to people are indicated by a hazard symbol ⚠ (warning triangle with exclamation mark) and the following hazard words:

⚠ DANGER!

The word DANGER indicates an imminent hazard that will lead to death or serious injury.

Warning signs in the operating manual: **DANGER** (white text on red background).

⚠ WARNING!

The word WARNING indicates a potentially hazardous situation that could lead to death or serious injury.

Warning signs in the operating manual: **WARNING** (black text on orange background).

⚠ CAUTION!

The word CAUTION indicates a potentially hazardous situation that could lead to minor injury.

Warning signs in the operating manual: **CAUTION** (black text on yellow background).

2.4.3 Material damage

NOTICE!

The word NOTICE indicates possible material damage. The automatic feeder or an object in its vicinity may be damaged, for example a calf.

Prohibition notice on the automatic feeder: a pictogram crossed out in red in a white circle with a red border indicates something you are not allowed to do.

Operating manual: white text on blue background

2.4.4 Safety signs

Different safety notices are attached at the hazardous points on the automatic feeder. Warning signs, prohibition and instruction notices.

What are warning signs?

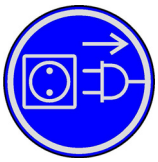
Warning signs consist of:

- A pictogram in a yellow triangle illustrating the potential hazard.

What are prohibitory signs?

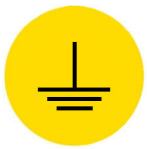
Prohibitory signs have a pictogram of the prohibited action in a red circle with a line through it. See the adjacent example. They graphically depict the prohibited action. In this example, the hose with a line through it means that you may not use high-pressure cleaners.

What are instruction notices?



Instruction notices show a pictogram of what you are being instructed to do in a blue circle. They illustrate what you have to do. In the example, the pictogram means that you must always disconnect the plug first.

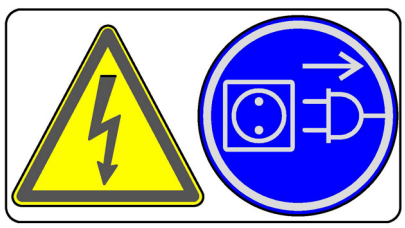
Other signs



Grounding symbol. This symbol is placed in the locations where you must perform potential equalization.

2.4.4.1 Warning signs on the machine

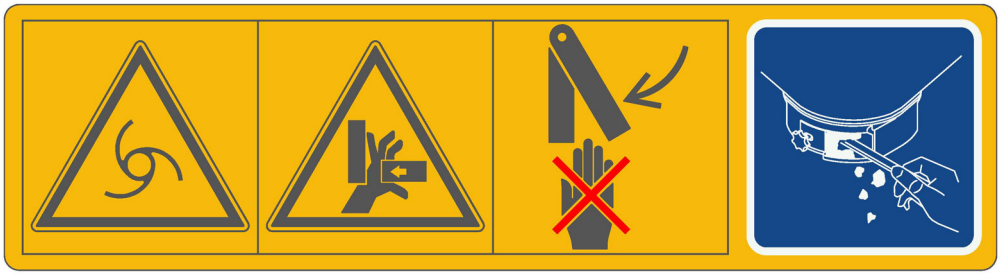
Danger of death by electric shock



Burning/scalding

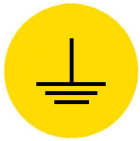
Health hazards caused by additives and cleaning agents

Automatic startup



No spraying

Grounding symbol



2.5 Safety devices

The automatic feeder may only be operated if the safety equipment is complete and intact. The automatic feeder has the following safety equipment:

- Safety signs (warning signs, instruction and prohibition signs).
- The heater's safety temperature limiter. This shuts down the heater in the event of overheating (temperature rises above 70°C). The heater may only be reactivated by a service engineer.
- Safety grid for the powder hopper attachment. The safety grid prevents people from being injured by the rotating tools in the hopper, for example when adding milk powder. It must always be installed when the unit is operating.
- The scraper next to milk powder discharge. The powder discharge opening may only be cleaned with the scraper. This prevents finger and hand injuries caused by the powder conveyor starting up automatically.

The safety devices at the machine are an important part of the safety concept and help prevent accidents.

- Do not remove or change the safety devices unless the corresponding safety instructions have been complied with.
- Put the machine into service only once all safety devices have been fitted and are in the guard position!

Safety temperature limiter

The automatic feeder's heater is equipped with a safety temperature limiter which will be triggered in the event of overheating (70°C) and which will then shut down the heater.

The safety temperature limiter is triggered if the water gets too hot or if the heater is running dry. It can be found behind the cover illustrated below.

1 Cover of the safety temperature limiter

Protective grid for powder hopper attachment

The protective grid for the powder hopper attachment prevents you from being injured by the rotating tools in the powder hopper, for example, when filling in milk powder.

1 Protective grid

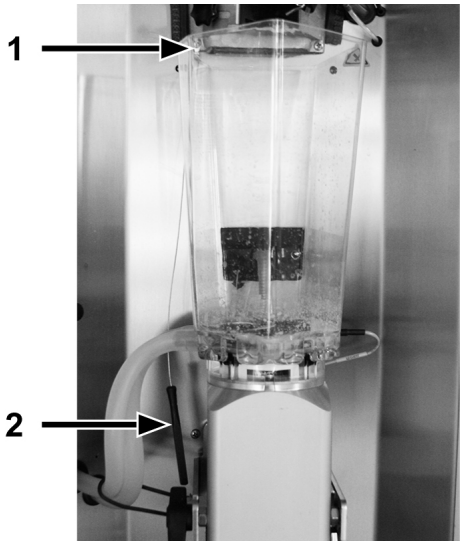
⚠ WARNING!

There is a risk of injury due to rotating tools.

The safety grid must always be installed when the unit is operating.

Scraper next to the milk powder outlet

The powder discharge opening may only be cleaned with the scraper. This prevents finger and hand injuries caused by the mixer starting up automatically.



1 Mount for scraper
2 Scraper

⚠ WARNING!

There is a risk of injury due to automatic start-up

Do not reach into the hazard area of the powder discharge opening. The powder dosing can start up automatically at any time, crushing or cutting off your fingers.

► Always switch off the automatic feeder using the main switch and disconnect the mains plug. Use only the scraper supplied to clean the powder discharge opening.

2.6 Structural alterations

The automatic feeder must not be subjected to any unauthorized alterations at any time.

Only genuine spare parts, wearing parts and accessories may be used, since any warranty claims will otherwise be void.

3. Commissioning

Have the end user provide you with the operating manual of the automatic feeder, the separate operating manuals of additional equipment to be connected as well as the safety data sheets for the cleaning agents.

The appendix contains a checklist with all points you have to observe during commissioning or recommissioning (see 10.1 "Checklist for commissioning and recommissioning" - 125).

3.1 Setting up the feeder

⚠ CAUTION!

Beware of the health hazards caused by lifting heavy loads.

The automatic feeder weighs approx. 85 kg.

► Never carry the automatic feeder by yourself.

- When setting up the automatic feeder, observe the occupational safety precautions.
- Always set up the automatic feeder on an even surface.

  Note: Using its adjustable feet, if necessary, you can level the automatic feeder.
- Set up the automatic feeder in a frost-free location. If this is not possible, inform the end user that he/she must protect the automatic feeder from frost using additional equipment such as the additional frost protection equipment or suction hose heating made by Förster-Technik.
- Set up the automatic feeder in a location where the temperature cannot exceed 40°C and the humidity cannot exceed 80%.
- If the end user intends to operate the automatic feeder outside of closed spaces, inform the user that he/she must protect the automatic feeder from rain and moisture, for example with a roof.
- Make sure that there is a drain where the automatic feeder is set up, for the cleaning water.
- Be sure to comply if necessary with the manufacturer's instructions and national regulations for the use, storage and place of installation of the cleaning agent being used.
- Inform the user that the automatic feeder and its cables must be protected from exposure to sunlight.
- In order to ensure correct operation of the calibration scales, remove the wing nut fitted for transport restraint on the left side of the mixer.
- Remove the calibration beaker (optional) from the mixer beaker.
- Cut the discharge hoses to length. Keep them as short as possible.

  A discharge hose has a length of 50 cm and may not be either extended or constricted.

NOTICE!

► Ensure that the discharge hoses are laid so as to be free of kinks or loops, as these can damage them.

- Inform the user that he must not extend the discharge hoses.

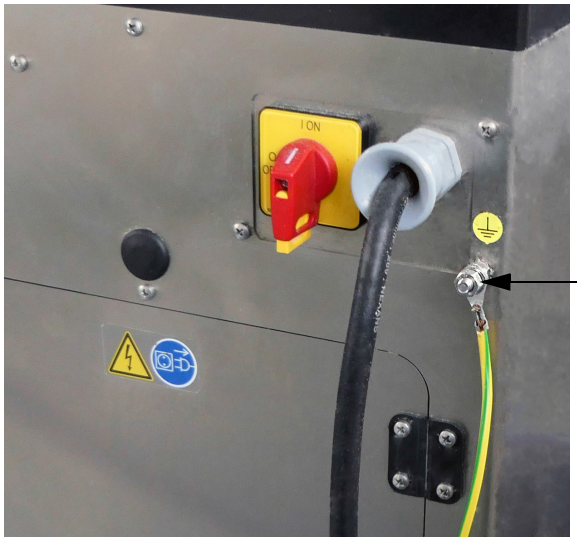
3.2 Electrical connection provided by the customer

The automatic feeder needs its own power supply.

- The power supply must meet the voltage and frequency specifications. The mains supply must correspond to the supply voltage stated on the left side of the automatic feeder.
- A residual current circuit breaker (30 mA) in the power supply provided by the customer is compulsory for the operation of the automatic feeder.
- Since it is not technically possible to protect the automatic feeder separately against lightning, you must inform the end user that he/she must provide the appropriate lightning protection (e.g. lightning protection system for the entire building).
- Comply with the local regulations and safety precautions.

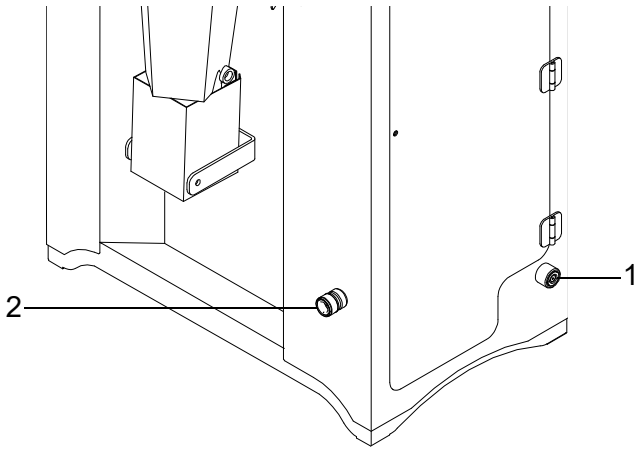
Potential equalization

To protect the animals and prevent electrical faults, all metallic objects, such as water pipes, feeding station, stand partition and automatic feeder must be grounded. These locations are indicated by the grounding label (see 2.4.4 "Safety signs" - 21). The connecting screw to ground the automatic feeder is on the right-hand side of the machine housing, directly next to the electrical connection cable. Connect this screw to the local ground via a short, flexible copper cable (minimum cross-section of 4mm²).



1 Potential equalization

3.3 Water and milk connection



1 Water connection
2 Milk connection

- When connecting the automatic feeder, observe the national regulations about protection of drinking water.
- Inform the end user that the supplied water must be of drinking water quality.

NOTICE!

Please bear in mind that high calcium, iron and manganese concentrations can cause premature wear of the components. In such cases it makes sense to install appropriate filtration systems.

- Use a separate water shutoff valve to supply water to the automatic feeder.
- Make sure that the water pipe has a sufficiently large cross section. Determine the number of points where water is simultaneously being extracted and adjust the cross section of the water pipe accordingly.
- Inform the end user that it is best to place the milk tank next to the automatic feeder.
- The hose from the milk tank to the automatic feeder may not be longer than 3m. Make sure that the hose connection is as short as possible. If a long hose connection is unavoidable, use a hose with a large cross-section.
- Connect the milk hose to the base of the milk tank. Do not hang it into the milk tank from above. In this way, you will prevent air bubbles from impairing the dispensing of the milk.
- If the milk line consists of several sections, may sure the connectors don't leak. The same applies to the connectors on the milk tank and automatic feeder.
- For reasons of hygiene, avoid differences in cross-section.
- Only use connectors which can be cleaned reliably.
- If the automatic feeder is to work entirely in water mode, close off the milk connection at the automatic feeder with the dummy plug supplied.

NOTICE!

Air in the lines can interrupt feeding operation.

The automatic feeder might interrupt the feeder operation or undesirably switch over to MP mode if there are very long lines with a small cross-section and thin-walled lines which may contract. An interruption in feeding operation means that your calves will not receive any feed. This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

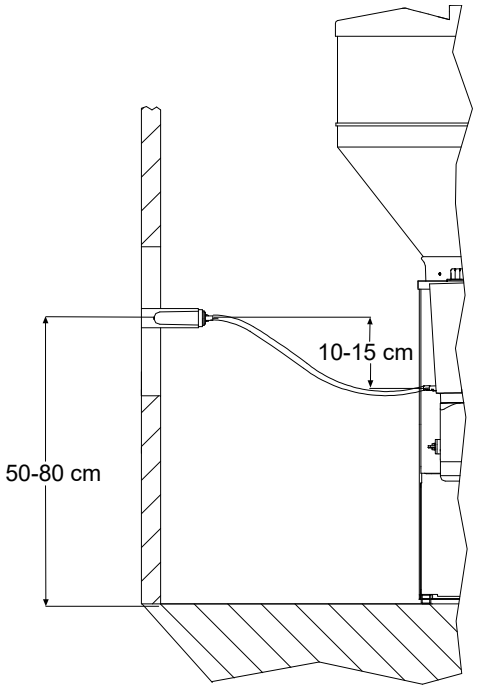
► Inform the end user that he/she must provide the calves with feed using an alternative method if feed operation is interrupted.

- Make sure the water pressure is constant. The water pressure must be at least 1 bar. The maximum pressure must not exceed 6 bar. If the water pressure drops below 1 bar, you will have to install a pressure increasing device.
- Lay the discharge hoses to flow into the gully.

3.4 Installing feeding stations

3.4.1 Installing feeding station

1. Install the teat at its intended location on the front plate, 10 to 15 cm above the suction hose connection of the mixer and resulting in a height 50 to 80 cm above the calf's floor level.
2. Connect the return hoses to the teat and to the automatic feeder.



NOTICE!

The suction hose must not be longer than 2 meters

Otherwise, the calves will have problems sucking in the feed. This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

NOTICE!

There is a risk of infection due to feed building up in the hose.

The hose between the teat and the mixer beaker valve (rationed mode) or mixer beaker (ad lib mode) must not sag and must be installed at a gradient to the automatic feeder (see the illustration).

NOTICE!

If no ActivityBoxes acre connected and hence no return hoses for the automatic suction hose cleaning are connected to the automatic feeder, it is essential that the partition fittings are closed off with dummy plugs.

3.4.2 Installing stand partitions

Install the stand partitions, where fitted, in accordance with the manufacturer's instructions.

3.5 Attaching the pushbutton/remote control for manual feed start

The pushbutton/feeding button (optional) activates the feed pump. The feed pump helps habituate animals to automatic feed consumption and stimulate weak calves to consume feed.

⚠ **WARNING!**

Risk of injury and death!

During assembly, make sure that all supplied electrical components are assembled outside the animal area, otherwise they could be damaged. Neglect of this can lead to significant material damage as well as serious injuries to animals and humans or even death.

1. Install the pushbutton or the remote control near the feeding box.

3.6 Connecting the antennas

3.6.1 Installing the antennas

NOTICE!

There is a risk of the antenna cables being damaged.

► Install the antenna cables in such a way that they cannot be damaged by the animals. Observe the separate operating manual for the antennas.

Install the antennas as follows:

1. Keep the distance between the antenna and transmitter as small as possible, no more than 15 - 25 cm. The range of the antenna is, depending on the version, 15 - 25 cm.

1.1. If necessary, block the area next to the feeding box. This is the only way to prevent a situation in which feed for a calf outside of the feeding box is prepared but the calf does not receive it.

NOTICE!

There is a risk of malnutrition if calves do not receive any feed.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even the death of your calves.

2. Check the range of the aerials using the aerial test (see 5. "Setup" - 65).

   Note: If 2 calves are identified simultaneously by one aerial, animal identification will be interrupted for both calves.

   2.1. The distance between 2 antennas should be approx. 100 cm to avoid any range overlapping.

   2.2. In case duplicates or misidentification occurs, shield the antennas using grounded metal plates.

Note: In order to use winter feed plans, a MultiReader detector with a temperature sensor must be installed at feeding box 1. From January 1, 2013 every MultiReader detector is equipped with this sensor by default. You can check whether your MultiReader detector is equipped with a temperature sensor under **Feeding > Plans > Winter feeding plans** (see the chapter "Feeding > Winter feeding plans" in the automatic feeder's operating instructions).

3.6.2 Squelch values and identification ranges

The approximate range of the antennas is 15-25 cm.

The version of the antenna is crucial for the identification range. With Nedap micro-identification, you can set the range via the squelch value.

The squelch values and the identification ranges for the various identification systems are listed in the following table. These squelch values are based on experience and are set at the factory.

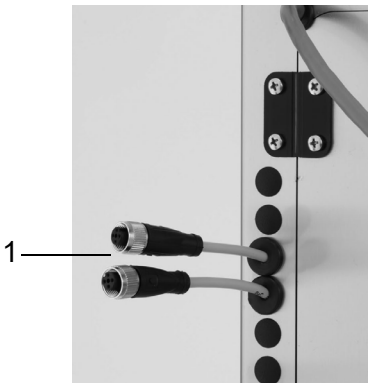
If the actual values differ, the settings can be changed in the setup (see 5. "Setup" - 65).

System	**Squelch** (default values)	**Identification range**
Collar (X-responder)	0	15 - 20 cm
Collar (PM-responder)	180	15 - 20 cm
Earmark (also in the collar) (Nedap system)	0	15 - 20 cm
Earmark (also in the collar) (Tiris system)	inactive	15 - 20 cm

3.6.3 Connecting antenna cables

Connect the antenna cable as follows:

1. If necessary, switch the automatic feeder off at the main switch.
2. Connect the antenna cables to the connections provided.

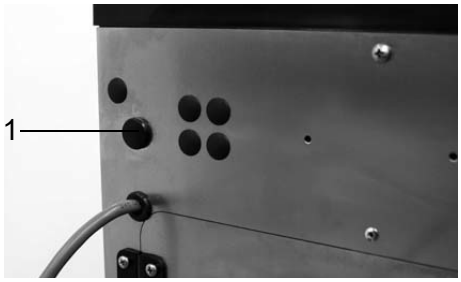


1 Antenna connections

3.6.4 Connecting the Ethernet cable

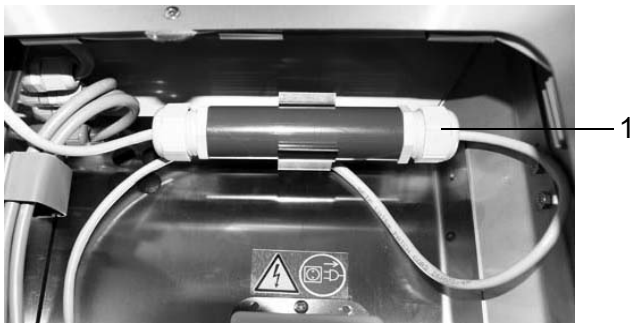
Connect the Ethernet cable as follows:

1. Remove the dummy plug on the feeder housing.



1 Dummy plug

2. Open the left side door of the automatic feeder.
3. Remove the cylinder with the Ethernet connection from the bracket on the feeder housing.

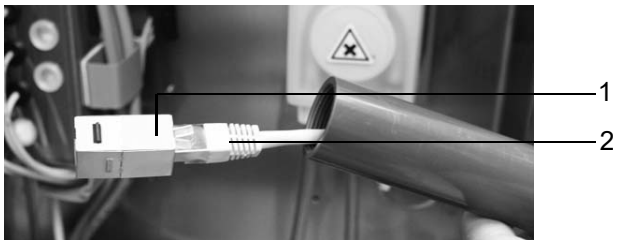


1 Cylinder with Ethernet connection

4. Remove the plugs from the seal and open the screw connection of the cylinder.

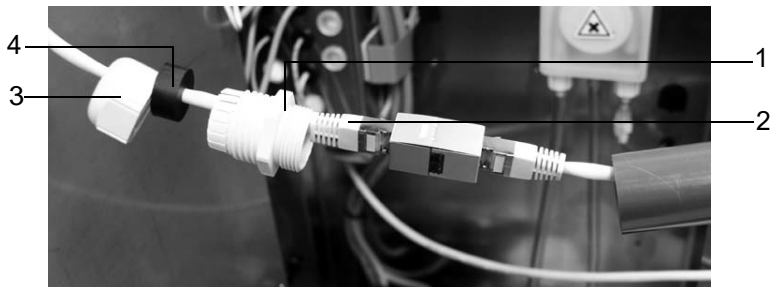
1 Seal in cylinder

5. Remove the cable sleeve from the cylinder and attach it at the location of the dummy plug in the feeder housing.
6. Guide the end of the unattached Ethernet cable through the cable sleeve.
7. Screw on the other end of the cylinder and pull out the socket and the Ethernet cable of the automatic feeder.



1 Socket
2 Ethernet cable of automatic feeder

8. Place the unattached seal and the screw connection around the unattached Ethernet cable and connect the end to the socket.



1 Screw connection
2 Ethernet cable
3 Screw connection
4 Seal

9. Insert the cable connector into the cylinder and tighten the cylinder and seals.
10. Push the cylinder into the bracket into the housing of the automatic feeder.

3.7 Installing the safety grid for the powder hopper attachment

Install the safety grid as follows:

1. Switch the automatic feeder off.
2. Remove the bag with the small parts and hoses as well as the operating manual from the powder hopper.
3. Insert the safety grid for the powder hopper attachment.
4. Screw in the three self-tapping screws into the holes provided.

3.8 Switching on the vapor barrier for powder discharge

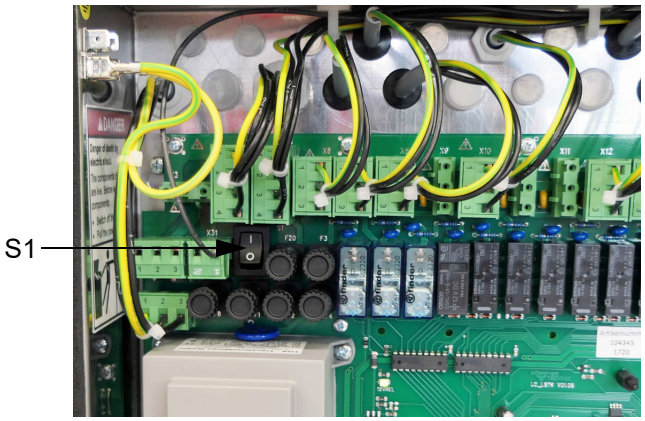
⚠ DANGER!

Danger of death by electric shock.

The electrical components of the automatic feeder are live. Switching the unit off using the main switch does not disconnect the voltage to the unit.

► Always switch the automatic feeder off using the main switch and disconnect the power plug before you remove the cover of the control box.

If the automatic feeder is equipped with a vapor barrier for the powder discharge, you must check that the respective switch on the processor board is switched on. If not, you must switch it on. In summer, you can set the switch for the vapor barrier to 0.



S1 = switch for vapor barrier for powder discharge

3.9 Filling the powder container

1. When filling the powder container, observe the occupational safety precautions.

⚠ CAUTION!

Beware of the health hazards caused by lifting heavy loads.

► When filling the powder container make sure you do not strain yourself. If necessary, use appropriate lifting aids.

2. Fill the powder container with milk powder (MP) and the milk tank with milk. When the milk tank is empty, the automatic feeder switches to MP mode.

NOTICE!

If the milk tank and the powder container are both empty there is a risk of malnutrition since the calves will receive only water.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

► Inform the end user that he must fill up an empty powder container or an empty milk tank immediately, or provide his calves with feed using an alternative method.

3.10 Installing external cleaning agent supply pipework

The automatic feeder is equipped with an external cleaning agent supply pipe.

Be sure to comply with the manufacturer's instructions and national regulations for the handling, use, storage and place of installation of the cleaning agent being used.

⚠ WARNING!

Beware of chemical burns from the cleaning agents used.

The cleaning agent can cause chemical burns to your eyes or hands.

► Always wear goggles and protective gloves when using cleaning agents. Follow all the safety instructions listed in the safety data sheet for the cleaning agent and wear the specified safety equipment.

NOTICE!

The cleaning agent container must be positioned so that it cannot be tipped over and so that calves, unauthorized persons and children have no access to it.

The cleaning agent container can be freely selected. To install it, proceed as follows:

1. In the cover of your cleaning agent container, drill a hole (ø20 mm) for the cleaning agent lance.
2. Feed the cleaning agent lance from below into the cover of your cleaning agent container. Slide the upper screw connector from above over the lance and screw it on.

Note: Slackening the two screw connectors allows the height of the sensor to be adjusted.

3. Unscrew the elbow coupling from the suction lance and remove the upper screw connector.
4. Attach the **transparent hose** which leads from the left hand through coupling to the rear of the automatic feeder to the sealing cap of the elbow coupling.

5. Connect the sealing cap to the elbow coupling and secure this once again to the cleaning agent lance.

6. Connect the cable of the cleaning agent lance to the cable tail (5th or 6th socket counting from the top) on the left hand side of the automatic feeder.
7. Insert the cleaning agent lance through the cover of the cleaning agent container and secure it.

Note: Small breather holes in the cover prevent the creation of a partial vacuum which would distort the cleaning agent container. In this respect comply with the manufacturer's specifications and the national regulations.

8. Position the cleaning agent container in the place provided for it.

   Make sure that the suction tube is inserted cleanly and properly in the cleaning agent container.

⚠ DANGER!

Danger of death if the cleaning agents are switched over!

This can result in the release of chlorine gas which is highly explosive and can cause severe chemical burns.

► Make absolutely sure that the suction hoses to the cleaning agent pumps are inserted in the correct containers. Additionally observe the specifications in the respective installation instructions.

3.11 Switching on the automatic feeder

Insert the mains plug and switch the automatic feeder on again using the Main switch .

Use the hand terminal to control the automatic feeder.

Note: After the hand terminal has been switched on, the version of the hand terminal's program first briefly appears in the display, before the automatic feeder carries out a test routine. Do not press any buttons on the control panel during these initial routines.

3.12 Setting the date/time

When the start routine is complete, the message **Perform basic settings** appears.

1. Set the **current date** and confirm it with Enter.
2. Set the **current time** and confirm it with Enter.

3.13 Filling the heat exchanger

1. In the display, you will see the fault message **HE not filled**.
2. Press [3] and confirm **HE: fill?** with Enter.

The heat exchanger boiler will now be filled with water.

3.14 New installation

During the initial startup and restart process for the automatic feeder, the program (software) must be completely reconfigured (reset). This will remove superfluous data as well as outdated or incorrect settings from the memory.

Note: Choosing **Reinstallation** deletes the **Animal data** (group membership, barn transfer date, feeding days, consumption sums), the **transmitter numbers** are set to zero and the **device data** and the **feeding plans** are overwritten with default values.

Reconfigure all menus as follows:

1. Navigate via [2] **> Device data** to the **Reinstallation** sub-menu.
2. Confirm **Everything** by choosing Enter.
3. Confirm **Reinstall everything?** by choosing Enter.
4. Confirm the security prompt **Do you really want to restore the data to factory settings?** by choosing Enter.
5. Confirm **Reinstallation completed!** by choosing Enter.

   All data has been reset to factory settings.

Note: The settings in the feeder setup are not changed by **Reinstallation**.

3.15 Setup settings

Check the settings in the Setup menu for correctness and if necessary activate the additional equipment (see 5. "Setup" - 65).

3.16 Adjusting the calibration scales

If the automatic feeder is equipped with calibration scales (optional), adjust these in the Setup menu (see 5.8 "Calibration scales" - 73).

3.17 Setting offline mode

You define a period in the **Autostart** menu option on the offline screen. The default setting is 20 minutes.

You set the autostart as follows:

1. By pressing Esc, switch into the Offline Mode display.

2. The following appears in the display:
   - Start automatic?
   - Time
   - Date
   - Autostart
3. In the **Autostart** menu, press Enter.
4. Choose the maximum duration of offline mode during an extended period of inactivity of the automatic feeder.

   Note: The **automatic feeder** will revert automatically to automatic mode.

3.18 Setting portion

NOTICE!

Feed temperatures that are too low can cause digestion problems in calves and feed temperatures that are too high can cause gastritis in the abomasum.

The temperature of the feed in the mixer beaker must correspond to the mixing temperature specified by the MP manufacturer.

► Keep to the feed temperatures recommended in this operating manual.

In the Device Data menu (see 4.6 "Device data" - 49), perform the following settings for the feed portion:

- Set the set temperature of the feed in the mixer beaker (see 4.6.3.1 "Setting the set temperature and minimum temperature" - 52 and following pages)
- Set the minimum temperature of the water in the boiler (see 4.6.3.1 "Setting the set temperature and minimum temperature" - 52 and following pages)
- Set a pause between the dispensing of two portions (see 4.6.3.2 "Dispensing pause" - 53).
- Set the parameters for the procedure for discharging the mixer and for the overrun (see 4.6.3.5 "Mixer draining" - 54).

3.19 Setting operating modes

You set the **Operating modes** for the automatic feeder in the Device data menu (see 4.6.1 "Setting operating modes" - 49.

The automatic feeder works in rationed mode as a default, but can also be switched to the ad lib mode.

3.19.1 MP mode or milk mode

In the Feed line you set the type of feed to be dispensed (see 4.6.1 "Setting operating modes" - 49):

- The automatic feeder dispenses MP feed only. **[MP only]**.
- The automatic feeder dispenses milk and MP feed. **[MP/milk]**.

If you want the combined automatic feeder to dispense MP feed only, always configure this via **Operating modes**.

NOTICE!

The automatic feeder will malfunction if you set the feeder type to Powder during setup.

For example, the circulation pump and the valves will no longer be actuated. This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

► Configure powder only via **Operating modes**.

3.20 Drain time station parameters

In the **Feed** menu, you can define the drink-out time for each feed station. The drain time starts when the rod electrode becomes free for the last portion and ends when the feeding box valve concerned closes (see 4.6.4 "Drain time station parameters" - 55).

If calves do not finish drinking the contents of the mixer beaker within the standard setting for drain time, the drain time can be extended.

3.21 Function keys

The hand terminal has two freely programmable function keys and . They define which functionality or which menu will be called up when the respective function key is pressed (see 4.6.5 "Function keys" - 55).

3.22 Animal list

By default the key is assigned the animal list (see 4.6.6 "Animal list" - 56).

Here is how you define which parameters are displayed in the two columns of the animal list:

1. Navigate via **> Device data** to the **Animal list** sub-menu.
2. In **Column 1** or **Column 2**, select by using and to choose the parameter. You can choose between **Feed consumption in liters** (today or yesterday), **Drinking speed in %, Animal visits** and **Break-offs**.

3.23 Checking components

In the **Diagnostics** menu, check all components that are subject to calibration. This check is necessary in order to perform calibration (see 9.5 "Diagnosis" - 118).

3.24 Calibrating feed components

You must calibrate the feed components first so that they are mixed in the right proportion (see 6. "Calibration" - 78).

3.25 Checking or setting cleaning settings

Check the settings for temperature of the cleaning water, cleaning agent amount and teat cleaning and, if necessary, set them. (see the **Cleaning > Settings** chapter in the operator's manual for the automatic feeder).

3.26 Cleaning

For hygienic reasons, you must completely remove any coolant and lubricant remnants from the system before commissioning. To do this, execute the cleaning cycle. (see the **Cleaning > Cleaning cycle** chapter in the operating manual for the automatic feeder).

⚠ WARNING!

Beware of chemical burns from cleaning agents.

The cleaning agent can cause chemical burns to your eyes or hands.

► Always wear goggles and chemical-proof protective gloves when using cleaning agents. Follow all the safety instructions listed in the safety data sheet for the cleaning agent and wear the specified safety equipment.

3.27 Reading in and creating transmitters

During the initial startup process for the automatic feeder, the transmitters have to be read and created once in the system. When you do this, each transmitter number is assigned one animal number of no more than six digits. These animal numbers are then available and can be used to register the animals (see 7. "Transmitter and animal management" - 82 and following pages)

3.28 Registering animals

Animals are only fed at the feeder if they are also registered there (see 7.2 "Registering animals" - 86 and following pages)

3.29 Entering correction days

During commissioning, the total feeding duration of an animal can be reduced by “shifting” the animal to the desired plan day. (see the **Operation > Feeding** chapter in the operating manual for the automatic feeder).

4. Programming and control

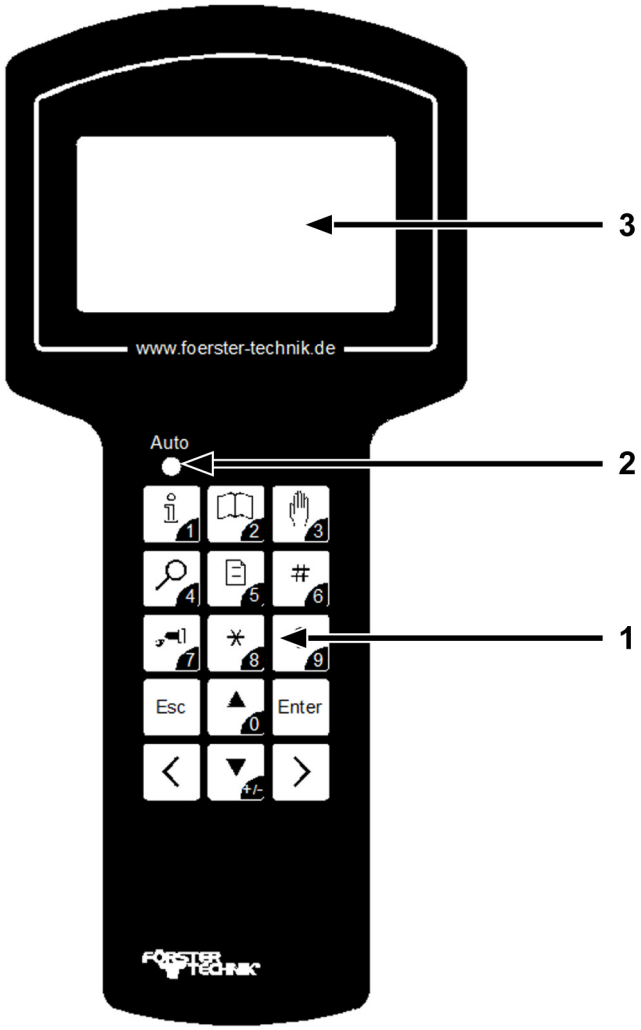
You control the automatic feeder using the hand terminal. The hand terminal is directly connected to the automatic feeder by a cable. You switch it on and off together with the automatic feeder. It remains in operation as long as the automatic feeder is switched on.

Note: After the hand terminal has been switched on, the version of the hand terminal's program first briefly appears in the display, before the automatic feeder carries out a test routine. Do not press any buttons on the control panel during these initial routines.

- You monitor and control the automatic feeder (the **feed pump**, for example) directly via the keys of the hand terminal.
- You monitor and change the settings of the automatic feeder and the values of calves via menus. The menus and sub-menus are arranged so that you can find the necessary settings quickly and easily. With a click of a button, you can access the most important menus, such as **Animal control**, **Main menu** and **Manual functions** as well as the **Animal list**.

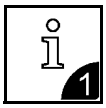
4.1 Hand terminal

The hand terminal is directly connected to the automatic feeder by a cable. The lighting of the display switches off when the unit is not used for a long period. This saves power.



1 Keypad
2 Auto LED
3 Display

4.1.1 The keypad



With this key you open the **Animal control** menu or enter the number 1.

With this key you open the **Main menu** or enter the number 2.

With this key you open the **Manual functions** menu or enter the number 3.

With this key you open the **Search functions** menu or enter the number 4.

With this key you open the **Animal list** or enter the number 5.

This key is a freely selectable **function key**. With this key, you can enter the number 6.

With this key you activate the **Feeding pump** or enter the number 7.

This key is assigned 2 functions:

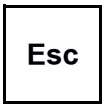
- You press this key to select a calf in sub-menus in which an animal number is displayed. An asterisk (*) is displayed in front of the animal number of a selected calf. You deselect the calf by pressing this key again.
- In the overview menu in automatic mode, you use this key to toggle between the four-line (large font) and the eight-line (small font) display.

With this key, you can enter the number 8.

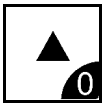
This key is assigned 2 functions depending on the menu you are currently using:

- You use this key to delete warnings and alarms.
- In the overview menu of automatic mode, you use this key to bring warnings to the foreground.

With this key, you can enter the number 9.



You use this key to go backward within the menu structure. You return to the starting menu by pressing this key multiple times.



You use this key to move the cursor upward and choose items from a list, for example [yes] or [no]. With this key, you can enter the number 0.

With this key you move the cursor downward and select items from a list. You use this key to change the sign of a number, for example from +1 to -1. This is how you enter negative numbers.

You use this key to confirm your selection and open a menu or an input field. An [input field] is indicated by square brackets.

You use this key to scroll between pages on the screen or list items to the left and jump to the start of a list.

You use this key to scroll between pages on the screen to the right and jump to the end of a list.

4.1.2 The Auto LED

The LED (light-emitting diode) of the hand terminal displays important information about the status of the automatic feeder:

- In automatic mode, the LED lights up green.
- In offline mode, the LED is not lit up.
- If a malfunction occurs, the LED flashes.

You can run the automatic feeder in offline mode or in automatic mode.

4.2 Offline mode

In offline mode, you perform actions that you cannot do while the unit is in operation, such as the recalibration of feed components. When the automatic feeder switches from automatic to offline mode, the Auto LED goes out.

You switch to offline mode when you open a menu that requires offline mode, such as the calibration menu.

1. In the corresponding menu, press Enter.
2. Confirm the message **Exit automatic mode?** by choosing Enter.

   The Auto LED on your hand terminal goes out.
3. Perform the desired action.

4.3 Automatic mode

You perform most routine tasks, such as feeding, in automatic mode. In automatic mode, the Auto LED lights up green.

You exit automatic mode by pressing Esc and confirming the message **Exit automatic mode?** by choosing Enter.

After a prolonged period of inactivity, the automatic feeder automatically returns to automatic mode. This time period is defined during commissioning. A default value of 20 minutes is preset.

You switch from offline mode to automatic mode as follows:

1. Press Esc until the message **Start automatic mode?** appears in your display.

   You are now in automatic mode again. The Auto LED lights up green.
2. Press Enter.

   You are now in automatic mode again. The Auto LED lights up green.

4.4 Menu structure

The automatic feeder is controlled using menus, sub-menus and lists. You control the automatic feeder by switching to lists via menus and sub-menus. In these lists, you can view and change values. The menu structure makes it easier to find a list quickly.

Experience shows that the lists the end user will need most often are for instance Animal control [1], Main menu [2] and Manual functions [3] which he can access directly at the touch of a key.

Experience shows that the **Animal list** is the list that end users require most often. The animal list can be directly accessed by pressing the key [5]. You can change this default setting during commissioning to meet the needs of the end user. The user will then access the animal list via the **Animal control** menu.

During initial startup of the automatic feeder, you can assign the [#6] key in accordance with the needs of the end user (see 4.6.5 "Function keys" - 55).

If you do not see all the menus or sub-menus presented here, this is either because the automatic feeder is not equipped with the component in question, or the component was not activated during setup.

Note: If you know that the automatic feeder has a component that is not being displayed, check the setup (see 5. "Setup" - 65).

4.4.1 Symbols

Different symbols are displayed in front of and in several menus, sub-menus and lists.

4.4.1.1 Arrows

In automatic mode, arrow heads are shown in front of menus:

- ▶ A solid arrow head indicates that the menu contains sub-menus.
- ▷ An empty arrow head means that you can change settings here or start actions.

4.4.1.2 Angle brackets

< > Angle brackets around a menu or list mean that you can choose between menu options or list items. For example, you can select the appropriate calf from a list of animal numbers using the calf's animal number. If you see angle brackets at the top of the display, it means you can scroll left and right.

4.4.1.3 Square brackets

[ ] Values or terms are shown in square brackets. If you press [Enter] the value / list item begins to flash in the input field. You can now use the number keys to enter values or use [▲0] [▼+/-] to select values from a list, such as [yes] or [no].

Note: If you enter a value in an input field and the value is too high or too low, this value will automatically be set to the highest (too high) or lowest (too low) possible value after you press [Enter].

4.4.1.4 Rod electrode free/covered

The following symbols appear at the top right of your display when animals are being fed in feed mode.

 This symbol indicates that the mixer beaker is full. The tip of the rod electrode is in the liquid.

 This symbol indicates that the mixer beaker is empty. The rod electrode is clear of the liquid.

4.4.1.5 Animal identification and feed consumption

The antenna symbol after a station number, such as TR1 for feeding box 1, indicates that a calf is identified at this station.

✓ A check mark after the antenna symbol means that calf identified at this station may consume feed here.

A lock symbol after the antenna symbol means that calf identified at this station may not consume feed here. For example, this could be because the concentration of feed in the mixer beaker does not match the feed settings for the identified calf.

- A hyphen after the station number indicates that no calf is identified at this station.

4.4.1.6 Plan tendency

The arrow to the right next to the animal number indicates the feeding phase the selected calf is now in.

↗ The feed quantity increases continuously, for example at the beginning of the feeding plan.

→ The feed quantity remains constant, for example in the middle of the feeding plan.

↘ The feed quantity is continuously reduced, for example at the end of the feeding plan.

f The calf is in the 40FIT period.

4.4.1.7 Marking

***** Marked calves are indicated by an asterisk to the left of the animal number.

4.4.1.8 Alarms

! An exclamation mark to the left of the animal number indicates that a calf has triggered an alarm.

4.4.1.9 Winter feeding plan

This symbol at the top middle of the display shows you that the winter feeding plan is active.

4.4.1.10 CalfCloud

C This symbol is displayed in the first line of automatic mode if a connection to the CalfCloud exists.

4.4.1.11 Sleep mode

The Förster-Technik logo shows you that no key has been pressed on the hand terminal for an extended period of time. The hand terminal is in sleep mode.

4.4.1.12 Navigation

You use the hand terminal's keys to navigate through menus, sub-menus and lists.

Choose ▲ 0 ▼ #/-:

- Move between the different sub-menus of a menu.
- Move between the items in a list, for example between [**yes**] and [**no**].

Choose [<] [>]:

- Scroll through a list, for example through the calibration menu. At the end of the list, the message "end of the list" will appear in the display.
- When you enter numbers, switch between whole numbers, for example from 1 to 2 to 3.
- Jump to the last menu item.

Choose [Enter]:

- Confirm an entry.
- Confirm a prompt or message shown on the display.
- Confirm a selection.
- Open menus and sub-menus.
- Open input fields, which are indicated by square brackets.
- Switch from the number before the decimal place to the number after the decimal place in input fields.

You can use [Esc]:

- Go back one menu, each time you press the key. You return to the starting menu by pressing this key multiple times.
- Exit the input field or return, without saving, to the number before the decimal place in an input field.
- Shift the screen display to the left or the right: Keep the [Esc] depressed, and in addition press the [<] or [>]. For some Asiatic languages this procedure may be necessary in order to display the full text on the screen.

4.5 Menus

4.5.1 Animal control

You can choose [i] to open the **Animal checking** menu. This menu contains all sub-menus that the end user requires for daily calf monitoring. The numbers next to the sub-menus indicate the number of calves recorded in the sub-menu concerned.

- **Animal list**. You will see a table that shows the calves, sorted by different parameters, such as visits to the feeding box.
- **Entitlement**. A list of calves is displayed, sorted by feed entitlement.
- **Alarm**. You will see a list of the calves that have triggered an alarm.
- **Plan over date**. You will see a list of the calves that have a "plan over" date.
- **40FIT**. You will see a list of the calves which are currently in the 40FIT period.
- **marked**. You will see a list of calves that have been marked.
- **new**. Here you can view animals that were newly registered in the last 2 days.
- **duplicate**. Here you assign a new animal number to calves that have been assigned a duplicate animal number.
- **unknown**. Here you check whether and when the automatic feeder recorded unknown animal numbers. Here you can correctly register calves that have been recorded in this way.

- **all**. You will see a list of all calves.
- **Total consumption**. Several lists are displayed with the consumption amounts of all calves, individual calves and individual groups.
- **Press** (optional). Here you can print out the alarm list and the feed list.

4.5.2 Main menu

You can choose  to open the main menu. This menu contains all sub-menus that the end user requires for daily operation of the automatic feeder.

- **Animal management** (see 7. "Transmitter and animal management" - 82)
- **Feeding** (see the operator's manual).
- **Calibrating** (see 6. "Calibration" - 78)
- **Device data** (see 3. "Commissioning" - 25)
- **Cleaning** (see the operator's manual).
- **Diagnostics** (see 9.5 "Diagnosis" - 118)

4.5.3 Manual functions

You can choose  to open manual functions. Here you can start certain functions of the automatic feeder manually. For example, you can manually empty the mixer or dispense extra portions (see 4.5.3 "Manual functions" - 48).

If you press  , the automatic feeder switches from automatic to manual mode. The LED extinguishes and the automatic feeder is in offline mode.

You can actively switch the automatic feeder back to automatic mode. Press Esc until the message **Start automatic mode?** appears in the display. Confirm this message with Enter. The automatic feeder will return to automatic mode. The Auto LED lights up green.

You can control the following functions manually:

- **Extra portion**. Here you can dispense extra portions with or without additives.
- **Mixer: empty?**. The mixer is drained via the mixer drain valve.
- **Milk: suck in?** Here milk is sucked from the milk tank.
- **Milk: expel**. Here water is used to expel milk from the heat exchanger.
- **Milk: start?**. Here you open the milk valve and start the milk pump.
- **Boiler water: start?**. Here you add water from the boiler to the mixer.
- **Powder: start?** Here you start dispensing powder.
- **Mixer: start?**. Here you start the mixer.
- **Feeding box** (optional). Here you open the feeding box valve(s). The valves remain open until you close them by choosing Enter.
- **HE: fill?**. Here you automatically fill the heat exchanger with water.
- **Hoses: open?**. Here you can open several valves simultaneously in order to completely drain all the lines of the automatic feeder of water. The lines remain open until you close them by choosing Enter.

4.6 Device data

4.6.1 Setting operating modes

In the **Operating modes** menu, you set the operating modes of the feeder.

4.6.1.1 Rationed mode / ad lib mode

The automatic feeder operates in rationed mode by default, but can also be switched to ad lib mode.

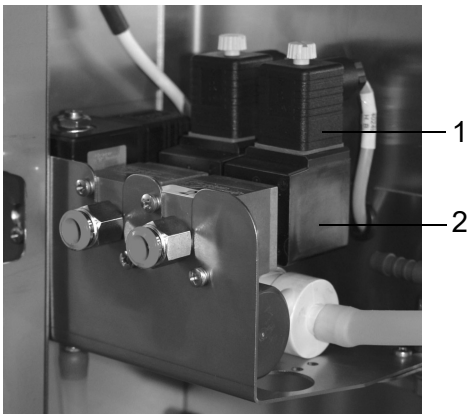
- In **rationed mode**, the feeder uses animal identification, i.e., the animals are individually fed rationed amounts. Rationed mode is the default setting.
- In **ad lib mode** the feeder does not use animal identification. The **automatic reading in** of transmitter numbers is therefore **not** possible in this operating mode. During feeder operation, a portion is always prepared as soon as the rod electrode in the mixer beaker is free (mixer empty). If a valve unit (optional) is fitted, the feeding box valves are continually open.

⚠ WARNING!

Beware of the risk of burns on feeding box valves (optional).

During prolonged ad lib mode, any feeding box valves that are fitted become hot. You, or the end user, can burn your fingers or hand when touching these valves.

► For this reason, push the suction hose directly onto the mixer beaker spout and disconnect the connector from the feeding box valve.



1 Device socket
2 Feeding box valve

NOTICE!

Cleaning agent that enters the feed can be hazardous to the health of calves.

► Therefore, always disable all time-controlled cleaning menus and calibrations during ad lib mode.

You set the operating mode as follows:

1. Navigate via  **> Device data > Operating modes** to the **Ad lib** sub-menu.

2. Select the option **yes** in the selection box to activate ad lib mode. Choose **no** to select rationed mode.
3. Configure the following lines or, as the case may be, the values for the **feed concentration**, the **milk ratio** and the **additive dosage**.

Note: These settings are used during the preparation of all feed portions.

4.6.1.2 MP mode or milk mode

In the **Operating modes** menu you set the type of feed to be dispensed:

- The automatic feeder dispenses MP feed only. **[MP only]**.
- The automatic feeder dispenses milk and MP feed. **[MP/milk]**.

If you want the combined automatic feeder to dispense MP feed only, always configure this via **Operating modes**.

NOTICE!

The automatic feeder will malfunction if you set the feeder type to Powder during setup. For example, the circulation pump and the valves will no longer be actuated. This can lead to malnutrition.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even the death of your calves.

► Configure MP only via **Operating modes**.

You set the feeding mode as follows:

1. Press  **> Device data > Operating modes**.
2. In the Feeds menu select the option **MP/Milk** or **MP**.

   If you choose **MP/milk**, further menus are displayed:
3. In the **Milk empty:** menu, select

   3.1. **Stop**. When the milk tank is empty, the automatic feeder automatically switches completely off.

NOTICE!

Tell the end user that an interruption or fault in feeder operation means that the calves will not receive any feed. This can lead to malnutrition.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves. The end user must immediately refill an empty milk tank or he/she must provide the calves with feed using an alternative method.

   3.2. **MP**. When the milk tank is empty, the automatic feeder switches to MP mode.

NOTICE!

Tell the end user that an interruption or fault in feeder operation means that the calves will not receive any feed. This can lead to malnutrition.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves. The end user must immediately refill an empty milk tank or he/she must provide the calves with feed using an alternative method.

4. In the **Dry matter** menu, you enter the desired value for the milk substitute. You can enter values between 5 g and 255 g. The default value is 150 g.

   The degree of milk dry matter is compared to the concentration plan every day. If the desired feed concentration is greater than the DS content of the milk (compensation), then MP will be added to the mixer beaker until the set concentration is reached. If the desired concentration is lower than the DS content of the milk (compensation), then the milk or milk/MP feed mixture will be thinned with water.

5. In the **Expulsion** menu, you specify how long a warm portion of milk should remain ready for consumption in the stainless steel coil of the heat exchanger before it is replaced with a water portion. You can enter values between 0 and 3 hours. The default value is 1 hour. The pause time starts after the last milk portion has been dispensed. If the value 0 is selected, then **Expulsion** is deactivated.

NOTICE!

Warm milk that remains too long in the stainless steel coil of the heat exchanger is a breeding ground for germs.

► Do not change the default value, if possible.

NOTICE!

Warm milk that remains too long in the stainless steel coil of the heat exchanger can thicken and block the heat exchanger.

This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even the death of your calves.

► Do not change the default value, if possible.

4.6.2 Checking and setting time/date

During commissioning, you have to check and, if necessary, correct the time and the date.

Set the time of day, date and date format as follows:

1. Navigate via  **> Device data** to the **Time/date** sub-menu.
2. In **Time**, you enter the current time of day.
3. In **Date**, you enter the current date.

Note: In order to force an immediate daily offset after changing the date, you have to switch the feeder off and then on again.

4.6.3 Setting portion

The automatic feeder and preparation of the feed are designed so that even a milk substitute with a higher fat melting point can be easily processed.

If animals are fed only whole milk or cold-soluble milk substitute, a lower temperature in the mixer beaker (e. g. 38 ºC) may be sufficient.

NOTICE!

Feed temperatures that are too low can cause digestion problems in calves and feed temperatures that are too high can cause gastritis in the abomasum.

The temperature of the feed in the mixer beaker must correspond to the mixing temperature specified by the MP manufacturer.

► Keep to the feed temperatures recommended in this operating manual.

In this menu, you make the following settings for the feed portion:

- They set the set temperature of the feed in the mixer beaker.
- They set the minimum temperature of the water in the boiler.
- They set a pause between the dispensing of two portions.
- In conjunction with the IFS feeding station (optional) they set a portion amount <250 ml and the tolerance values for the concentration.
- They set the parameters for the procedure for discharging the mixer and for the overrun.

4.6.3.1 Setting the set temperature and minimum temperature

Note: The first portion of feed, depending on the ambient temperature, is always mixed somewhat warmer.

This is how you set the set temperature and the minimum temperature:

1. Navigate via  **> Device data** to the **Portion** sub-menu.
2. Enter the desired set temperature in **Set temp.** of the feed in the mixer beaker (= mixing temperature).
3. In the **Min. Temp.**, enter the desired minimum temperature of the water in the boiler.

   Enter **Min. Temp. 0** in order to disable the minimum temperature parameter.
4. After entering the temperature, check that the portion is being prepared with the set temperature.

	Set temperature	Minimum temperature
Default value:	42ºC	39ºC
Permitted range of values:	10ºC to 44ºC	0ºC to set temperature minus 0.5ºC

Note: The values that you have entered for set and minimum temperature will be converted to the set and minimum temperature of the boiler water. If the temperature of the boiler water falls below the minimum temperature, the feed preparation will be interrupted until the minimum temperature has been reached again.

4.6.3.2 Dispensing pause

To lengthen the time to prepare the feed, a dispensing pause can be set. As the preparation of a portion starts, the feed station valves will close and stay closed until the dispensing pause is over.

We recommend entering a dispensing pause for:

- milk substitutes with poor solubility,
- very high concentrations (> 200 g/l),
- extreme calf drinking speeds (> 2 l/min).

You set the dispensing pause as follows:

1. Navigate via  **> Device data** to the **Portion** sub-menu.
2. In **Dispensing pause** enter the required value in seconds, from 1-16. The default value is 0.

4.6.3.3 Portion output for entitlement less than 250 ml

If the **SynchroFeed**-functionality (optional) of the automatic feeder is used, for technical reasons the feeder cannot output any portions less than 250 ml. In the event that an animal has drunk the contents of the mixer and still has a small remaining entitlement of less than 250 ml, then there are two options:

- no portion will be prepared for the animal (default setting: **no**)
- A portion of 250 ml will be prepared for the animal. In this way, the animal will get up to 100% of his feed, but will receive a bit more feed (for box with valve) or a small remaining portion (250 ml - remaining entitlement of the animal in ml) stays in the mixer beaker (for box with hose pump).

You can define the amount as follows:

1. Navigate via  **> Device data** to the **Portion** sub-menu.
2. In **Amount < 250 ml**, select either **yes** or **no** and confirm with Enter.

4.6.3.4 Tolerance value for concentration and milk

If the **SynchroFeed** functionality (optional) of the feeder is used, then the animals all drink at the same time in the boxes, which are supplied in parallel, from the portion mixed in the mixer beaker of the feeder.

If two animals are drinking in parallel and have been assigned different concentration or milk ratio values, then the tolerance value for concentration or milk ratio decides whether both animals can drink at the same time or not.

Tolerance for	Concentration	Milk share
Default value	± 20 g/ltr	± 20 %
Range of values	± 0 to 50 g/ltr	± 0 to 100 %

For example: A feed with a concentration of 120 g/ltr is prepared for one animal. For a second animal a concentration of 110 g/ltr was agreed. At the default setting of ±20 g/ltr for the concentration tolerance value, these two animals can share the feed: The difference between the concentration value of the mixed feed (120 g/ltr) and concentration value for the animal's feed plan (110 g/ltr) is less than the agreed tolerance value (±20 g/ltr).

You can define the tolerance as follows:

1. Navigate via  **> Device data** to the **Portion** sub-menu.
2. In the **Tol. Conc.** menu, set the desired value and confirm with Enter.
3. In the **Tol. Milk** menu, set the desired value and confirm with Enter.

4.6.3.5 Mixer draining

Feed left over in the mixer must be pumped out. This is done either via the mixer drain valve or the teat. Alternatively, you can choose not to pump out residual amounts at all.

NOTICE!

Leftover feed in the mixer can lead to an increased risk of infection when outdoor temperatures are high (summer). When outdoor temperatures are low (winter), leftover feed in the mixer becomes so cold that calves will no longer drink it.

This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

Leftover feed in the mixer beaker provides a perfect breeding ground for germs. You specify the amount of time after which this leftover feed is discarded in order to ensure optimal feed hygiene. Mixer draining may also be followed by a drainage procedure (see the **Cleaning** chapter in the operator's manual for the automatic feeder).

Mixer draining via mixer drain valve

The best and simplest solution is to evacuate the contents of the mixer via the mixer drain valve. You specify whether a mixer drain valve is fitted during setup (see 5.5.1 "Mixer drain" - 70).

Note: The mixer drain valve is included as standard.

Proceed as follows to specify the amount of time after which a remaining portion in the mixer will be pumped out

1. Navigate via  **> Device data** to the **Portion** sub-menu.
2. In **Draining**, enter the desired period in minutes.

Default value:	15 min
Permitted range of values:	0 min (= draining deactivated), 5 to 120 min

Mixer draining via teat

Leftover feed can also be pumped out via the **teat** using the **feed pump**. Alternatively, you can choose not to pump out residual amounts at all.

Note: This function only appears if the mixer drain valve is deactivated during setup.

You set mixer drainage via the teat as follows:

1. Navigate via  **> Device data** to the **Portion** sub-menu.
2. In the **Draining via Teat** menu option, specify whether the mixer is to be drained.

4.6.3.6 Mixer run-on time

In the **Mixer run-on time** menu item you can change the run-on time of the mixer and activate or deactivate the mixing of milk portions. Whether and how long the mixer should have a run-on time depends on the solubility of the milk substitute.

1. Navigate via  **> Device data > Portion** to the **Mixer run-on time** sub-menu.
2. In **Mixer run-on time**, enter the desired value.
3. You can activate or deactivate the mixing of milk portions in **Mixing milk**.

Default value:	3 sec
Permitted range of values:	10 to 60 sec

4.6.4 Drain time station parameters

In the Feed menu, you can define the drink-out time for each feed station. The drink-out time starts when the rod electrode becomes free for the last portion and ends when the feeding box valve concerned closes or the SynchroFeed pump stops.

If calves do not finish drinking the contents the mixer beaker within the standard setting for drain time, the drain time can be extended.

You can extend the drain time as follows:

1. Navigate via  **> Device data > Stations** to the **Feeds** sub-menu.
2. In **Drink-out time**, enter the desired time.

Default value:	16 sec.
Permitted range of values:	10 to 60 sec

4.6.5 Function keys

The hand terminal has two freely programmable function keys  and  . You define which functionality or which menu will be called up when the respective function key is pressed.

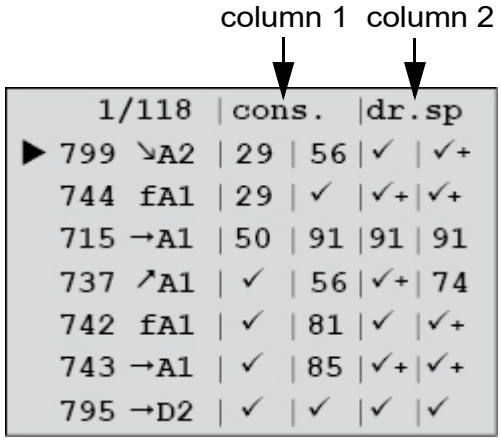
You define the function keys as follows:

1. Navigate via [2] **> Device data** to the **Function keys** sub-menu.
2. Use [0] or [+/-] to go to the desired function, for example **Start mixer**.
3. Confirm with [Enter]
4. Choose [0] or [+/-] to choose the symbol of the function key to which the assignment is to be made.
   4.1. The list symbol stands for the key [5].
   Note: This key is assigned the animal list by default.
   4.2. The hash symbol stands for the key [#6].
   4.3. The hyphen [**-**] in the selection box is used to remove an assignment.

4.6.6 Animal list

In the **Animal list** menu you can list the calves in a table sorted by parameters. The table is sorted in ascending order by the first column of the first parameter. This means that the calf with the greatest need for monitoring is at the very top of the table. The following parameters can be displayed:

- Feed consumption as a percentage
- Feed consumption in liters (today or yesterday)
- Drinking speed as a percentage
- Animal visits
- Break-offs



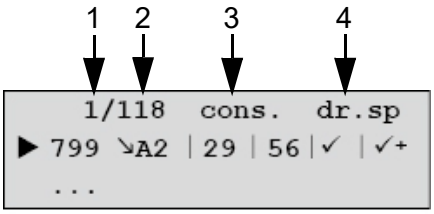
Note: You can also access the **animal list** directly via the key [5].

Here is how you define which parameters are displayed in the two columns of the animal list:

1. Navigate via [2] **> Device data** to the **Animal list** sub-menu.
2. In **Column 1** or **Column 2**, select by choosing [0] [+/-] which parameter is displayed in the respective column.

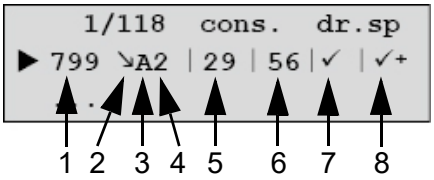
You call up an animal list as follows:

1. Navigate via [i] to the **Animal list** sub-menu.
2. In the top line, from left to right, you can check the following:



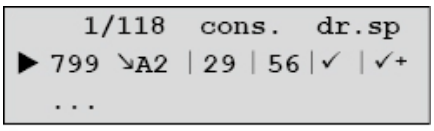
   - The number of the calf you have selected in the list, counting from the top (1).
   - How many calves are registered (2).
   - The two parameters you have chosen (3 & 4).

3. You can view the following in the subsequent lines, from left to right:



   - The animal number (1).
   - The plan tendency (2).
   - The group to which the calf concerned has been assigned (3).
   - The last feeding box visited (4).
   - Parameter 1. The current value (today) is in the column on the left (5). Yesterday's value is in the column on the right (6).

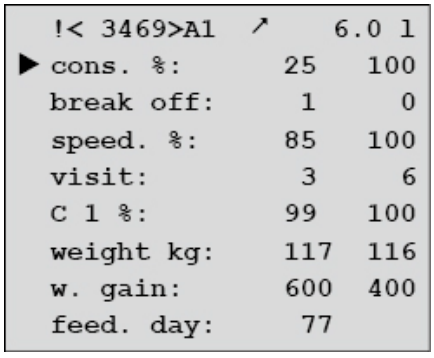
     Note: The parameter for feed consumption is simply today's value or yesterday's value in liters to two decimal places. The list can be sorted by the parameter feed consumption today in %.
   - Parameter 2. The current value (today) is in the column on the left (7). Yesterday's value is in the column on the right (8).



     Note: If there is a check mark instead of a number, then the value is 100%. A check mark followed by a plus indicates a value greater than 100% (only for drinking speed and visits).

     For example: The calf shown with the number 799 is in the weaning phase (reduced plan tendency), has been assigned to group A and has visited feeding box 2. At present, the calf has only called up 29% of its feed entitlement, yesterday it was only 56%. The current value for drinking speed is 100% (✓); yesterday it was more than 100% (✓ +).

4. Choosing [Enter] takes you to the detailed view for the animal currently highlighted. By choosing [<] [>] you can scroll to the other animals.



Note: In each line, pressing Enter calls up detailed information.

4.6.7 Backing up and restoring data

Every day at midnight, a backup of the **animal data** and **device data** is performed automatically so that in the event of data loss a current backup of the data is available.

NOTICE!

Data can be lost when the program version of the automatic feeder is updated. You must also save the data of the automatic feeder manually, for example to an SD card.

Otherwise, calves may suffer from malnutrition if incorrect feed portions are dispensed. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even the death of your calves.

Note: The automatic feeder performs an automatic data backup every hour. If you make changes and then switch the automatic feeder off, changes made within the last hour are lost. To save the current data, perform an internal data backup.

4.6.7.1 Internal data backup

Backing up data

You back up the data as follows:

1. Navigate via **> Device data > Data backup** to the **Internal (automatic feeder)** submenu.
2. Confirm **save?** by choosing Enter.

   A progress bar informs you about the current status of the data backup being carried out.

Restoring data

This is how to perform data restoration:

1. Navigate via **> Device data > Data backup** to the **Internal (automatic feeder)** submenu.
2. Confirm **Restore?** by choosing Enter.
3. Confirm the security prompt **Restore last backup?** by choosing Enter.

A progress bar informs you about the current status of the data restoration being carried out.

Checking the available data backup

Check the data backup as follows:

1. Navigate via  **> Device data > Data backup** to the **Internal (automatic feeder)** sub-menu.
2. In the **last backup** menu, you can view the time and date when the last backup was performed.

4.6.7.2 External data backup using an SD card

During each backup, a folder with the date of the backup is created on the SD card. If **data restoration** is required, a date stored on the SD card can be entered and selected using the number field. The date of the last backup is always shown on the display.

When the feeder is delivered, by default an SD card is fitted in the slot on the hand terminal. The SD card should remain in the hand terminal at all times.

SD card and hand terminal

Proceed as follows to perform a data backup using an SD card:

1. Open the rubber cover on the right side of your hand terminal.
2. Insert the SD card into its slot.
3. Navigate via  **> Device data > Data backup** to the **SD card** sub-menu.
4. Confirm **save?** by choosing Enter.

   A progress bar informs you about the current status of the data backup being carried out.

This is how to perform data restoration:

1. Navigate via  **> Device data > Data backup** to the **SD card** sub-menu.
2. Confirm **Restore?** by choosing Enter to perform a backup.

   2.1. If required, enter the date from which you would like to restore the data into the **Date** menu, and confirm this with Enter.
3. In the **Date** menu, you can see when the last data backup was performed.

4. Close the rubber cover.

4.6.7.3 Cloud

In this menu, you can back up data to the CalfCloud.

Perform a backup as follows:

1. Navigate via **> Device data > Data backup** to go to the **Cloud** sub-menu.
2. Confirm **save?** by choosing Enter.

   A progress bar informs you about the current status of the data backup being carried out.

This is how to perform data restoration:

1. Navigate via **> Device data > Data backup** to go to the **Cloud** sub-menu.
2. Confirm **Restore?** by choosing Enter to perform a backup.
   2.1. If required, enter the date from which you would like to restore the data into the **Date** menu, and confirm this with Enter.
3. In the **Date** menu, you can see when the last data backup was performed.

4.6.8 Cloud

This menu allows you to perform the relevant settings for the cloud.

1. Navigate via **> Device data** to go to the **Cloud** sub-menu.
2. In **Finish?** you break off the connection to the cloud and therefore stop data transfer.
3. In **start?**, press Enter. You then create the connection between the cloud and the automatic feeder.

   You will see the message **You hereby accept the data protection provisions listed on www.calf-cloud.com!**. Press Enter.
4. In **Status**, you can see the current status of the connection to the cloud. The possible statuses are **online**, offline or **reconnecting**.
5. In **Auth. token** you can see the authentication key for the automatic feeder.

   Note: This token allows you to add the automatic feeder to the cloud data.
6. In **last error** you can view the following error displays:
   6.1. **none**. There are no errors present.
   6.2. **no eth. cable**. No Ethernet cable is plugged in.
   6.3. **no Internet**. There is no Internet connection available.
   6.4. **connect.error**. There is a connection error to the server.
7. **File Transfer** is only for the manufacturer.

4.6.9 New installation

The program (software) must be completely reinstalled (reset) when commissioning or recommissioning the automatic feeder. This will remove superfluous data as well as outdated or incorrect settings from the memory.

Note: New installation will result in the deletion of the **animal data**. The **transmitter numbers** will be set to zero and the **Device data** will be overwritten with default values.

Animal data is, for example, group membership, barn transfer date, feeding days, consumption totals.

Device data includes portion settings, for example.

4.6.9.1 Only reinstall device data, plans, animal data or transmitter numbers

Proceed as follows to reinstall device data, plans, animal data or transmitter numbers:

1. Navigate via  **> Device data** to the **Reinstallation** sub-menu.
2. Confirm **Device data** by choosing Enter.
3. Confirm **Reinstall device data?** by choosing Enter.
4. Confirm the security prompt **Do you really want to restore the data to factory settings?** by choosing Enter.

   The message **Reinstallation completed!** will appear
5. Confirm **Reinstallation completed!** by choosing Enter.

   You are back in the **Reinstallation** menu.
6. Perform steps 2 to 5 in the same manner for **plans, animal data** or **transmitters**.

4.6.9.2 Reinstalling everything

You can also reconfigure all menus instead of individual menus.

Reconfigure all menus as follows:

1. Navigate via  **> Device data** to the **Reinstallation** sub-menu.
2. Confirm **Everything** by choosing Enter.
3. Confirm **Reinstall everything?** by choosing Enter.
4. Confirm the security prompt **Do you really want to restore the data to factory settings?** by choosing Enter.

   The message **Reinstallation completed!** will appear
5. Confirm **Reinstallation completed!** by choosing Enter.

   You are back in the **Reinstallation** menu.

Note: The settings in the feeder setup are not changed by **Reinstallation**.

4.6.9.3 In the event of a fault

If the data are corrupted and the automatic feeder no longer boots up or no longer boots up correctly, for instance when the feeder continually reboots, there is a facility to recreate the available data.

Reconfigure the automatic feeder as follows:

1. Press [▲ 0] + [▼ .-] and keep these keys pressed when you switch on the feeder.

   When the boot loader is reset, the database, following the display instructions is deleted. The data from the FRAM are then transferred back.

4.7 Software updates

To update the application program, depending on the equipment, you have a choice available between an SD card, FTP Manager or CalfCloud.

The options available for your equipment can be seen in the dealer area of Förster-Technik's web site **www.foerster-technik.de**.

4.7.1 Software update via SD card

The SD card update is performed using the SD card in the hand terminal, and includes updating of all CAN participants. If an update of the ActivityBox and the MultiReader detector is required this must be performed separately.

Proceed as follows to perform a data update using an SD card:

1. Insert an empty SD card into the slot in the hand terminal.
2. Navigate via [📖 2] **> Device data > Data backup** to the **SD card** sub-menu.
3. Confirm **save?** by choosing [Enter].

   A progress bar informs you about the current status of the data backup being carried out.
4. Remove the SD card.

   Note: The data backup that is performed serves as a backup in the event of problems.
5. Switch the automatic feeder off.
6. Press [📖 2] and keep this key pressed when you switch on the feeder.

   After a short time, the **Setup menu** will appear in the display.
7. Insert the SD card carrying the update data into the slot in the hand terminal.

   The device will start the update procedure automatically. Wait a few minutes, and press no further keys during this time.
8. Once you see the message **update successful** on the display, the automatic feeder has been updated. Press [Enter], to continue.
9. Once you see the message **SDCard can be removed**, **press Enter to proceed**, remove the SD card and once again press [Enter].

Proceed as follows to perform an update of the ActivityBox and the MultiReader detector:

1. Insert the SD card carrying the update data into the slot in the hand terminal.
2. Navigate via  **> Device Data > Software Update** to the **ActivityBox** or **MultiReader** sub-menu.
3. In **Start Software Update?**, press Enter, to start the update.

   Once the update has been completed, the current program version is shown in the display.
4. Remove the SD card.

4.7.2 Software update via cloud

You can perform a software update via the CalfCloud. For this a connection to the Internet must be available.

1. Before the update, perform an internal data backup (see 4.6.7.1 "Internal data backup" - 58).
2. Navigate via  **> Device data > Software Update** to go to the **Cloud** sub-menu.
3. In **Release (official)**, update the automatic feeder to the current software version.
   - 3.1. Confirm **Start?** by choosing Enter. The automatic feeder will automatically seek out the current version.
   - 3.2. If there is a version available for the **automatic feeder**, the message **Feeder update available...** will appear **Press <Enter> to download and install the new firmware!**. Confirm with Enter, to start the download.
   - 3.3. If there is a version available for the **peripheral devices**, the message **Peripherals update available...** will appear **Press <Enter> to download and install the new firmware!**. Confirm with Enter, to start the download.
   - 3.4. Once the download has been completed, the message **Download completed** will appear. **Press <Enter> to start installation**. Confirm with Enter, to start the update.
4. In **Beta (test version)**, update the automatic feeder to the current test version.
   - 4.1. In **beta code** enter the code which you have received from Förster-Technik.
   - 4.2. If there is a version available for the **automatic feeder**, the message **Feeder update available...** will appear **Press <Enter> to download and install the new firmware!**. Confirm with Enter, to start the download.
   - 4.3. If there is a version available for the **peripheral devices**, the message **Peripherals update available...** will appear **Press <Enter> to download and install the new firmware!**. Confirm with Enter, to start the download.
   - 4.4. Once the download has been completed, the message **Download completed** will appear. **Press <Enter> to start installation**. Confirm with Enter, to start the update.

4.7.3 Software update via internal (automatic)

The expert menu **Device data > Software Update > Internal (automatic)** is intended for use by the manufacturer. By this means a software update can be performed via a micro SD card in the control box of the automatic feeder and the FTP Manager.

4.8 Reinstallation

In the event of a fault in the course of reinstallation, delete all the data saved on the automatic feeder.

All the device data, plans and medicine formulations will be reset to factory settings and all animal data and transmitters deleted.

Perform a reinstallation as follows:

1. Switch the automatic feeder off.
2. Press 2 + 8 and keep the key depressed whilst you switch the automatic feeder on and wait until the message **Reinstallation** appears in the display.
3. Confirm with Enter, to continue. The automatic feeder will restart and all the data will be deleted.
4. Set the desired **language** and confirm it with Enter.
5. Set the current **date** and confirm it with Enter.
6. Set the current **time** and confirm it with Enter.

   The automatic feeder will switch to the **Setup menu**.
7. Read the **ID chip**.
8. Check the setup settings as follows:

   All the device data, plans and medicine formulations were reset to factory settings and all animal data and transmitters were deleted.
9. Perform a data restoration (see 4.6.7 "Backing up and restoring data" - 58) and set up the automatic feeder.

5. Setup

The program menus in the setup menu contain basic settings, e.g. for the equipment of the automatic feeder. Check to ensure that the settings are correct.

You open the setup menu as follows:

1. Press  and keep this key pressed when you switch on the feeder.

   After a short time, the Setup menu will appear in the display.

2. If you want to change settings, go to the relevant menu option and make the changes.
3. Confirm the changes with Enter.
4. To exit setup, repeatedly press Esc, until the message **End setup?** appears. Confirm with Enter.

Note: Also observe the operating manual for the automatic feeder.

5.1 Overview of the Setup menus

Language	German	
Time/date	Time / date	
Machine	Type	Milk or combi
	Number	1 - 99 (= machine number, decimal)
	Address	2-FC (= CAN address, hexadecimal)
	System	Interval (IV)
	Operating mode	SA
	HE size	500 ml
	Heating system	electronic
	Boiler valve	Brass
	HE valve	Brass
Equipment	Mixer drain	yes
	⊕Additive dispenser 1	yes / no
	⊕Additive dispenser 2	yes / no
	Flushing agent 1	yes
	⊕Flushing agent 2	yes / no
	SP 1 sensor	Rod
	⊕Powder sensor	yes / no
	Circulation valve	HE
	⊕Air valve	yes / no
	Ball valve	yes
	Mix. sensor T.	yes
	Water meter	yes
	Supply electrode	yes
	Point electrode	yes
Identification	Type	Multi / Tiris / Ned
	Squelch	0 - 255
ID chip	activated	yes
	read?	
Calibration scales	activated (yes / no) adjust? Cal. factor Date	
Stations	Feed	<internal 1>, <internal 2>
		<IFS feed 1 .. 8>
		<IFS feed 4-fold 1, 2>
		CalfRail

		CR water heating system
	Concentrate	<IFS concentrate feeder 1 .. 8> Allocation: [C-station 1 .. 8] Address: 51 - 60 Type: Standard
	Animal scales	Activate Adjust
Terminal	Address	1-FC (= CAN address, hexadecimal)
	Contrast	70%
	Sleep mode	0 - 999 min
Communication	⊕Printer	no / serial / CAN
	Network configuration	M: M-ECN: IP: 0-255 . 0-255 . 0-255 . 0-255 SN: 0-255 . 0-255 . 0-255 . 0-255 GW: 0-255 . 0-255 . 0-255 . 0-255 IP assignment: DHCP / static accept?
	Cloud	start?
	⊕Gateway	MAC: IP: 0-255 . 0-255 . 0-255 . 0-255 SN: 0-255 . 0-255 . 0-255 . 0-255 IP assignment: manual / autom. Factory settings?
	MultiReader	No Version update MultiReader? Temperature Read transponder -type / -country / -no Squelch Resets Restarts
	Restart	Restart?
SD card	Feeding plans	Feeding plans read in / active / changed
	Institute / Logger / File transfer	

Service	Initial installation: Date last: Date Type: RS1 / RS2 / RS3 next: Date Type: RS1 / RS2 / RS3 Service done?

5.2 Language

You select the language for the user interface of the feeder as follows:

1. In the setup menu, choose the **Language** option.
2. Select the desired language for the user interface.
3. Confirm your entry with Enter.

5.3 Time/date

Enter the time of day and the current date as follows:

1. In the setup menu, choose the **Time / date** option.
2. Enter the current **time** and the **current date**.
3. Confirm your entry with Enter.

5.4 Machine

5.4.1 Feeder type

There are three different types of automatic feeder:

- **Powder:** feeds MP water mixtures.
- **Combi:** feeds fresh milk as well as MP water mixtures.
- **Milk:** feeds fresh milk only.

Leave the factory default value as it is.

NOTICE!

Even if you want a combined feeder to dispense MP feed only, you must select Combi for the feeder type. If you choose Powder, the feeder will malfunction.

► You set what liquid animal feed or which combination of liquid animal feeds only by  **> Device data > Operating modes > Feed**.

5.4.2 Automatic feeder number

For the KalbManagerWIN program (optional additional equipment) to access the automatic feeder's software, the automatic feeder needs a number. Number 1 is set by default.

Note: When connecting more than one automatic feeder, be sure that each number is only assigned once.

You select the feeder number as follows:

1. In the setup menu, choose the **Machine** option.
2. In **Number**, you select a number.
3. Confirm your entry with Enter.

5.4.3 Automatic feeder address

For unique identification, every participant of the CAN bus system needs an address.

Address ranges for CAN participants	
1-10	=> hand terminal
11-20	=> automatic feeder
21-30	=> Forefoot weighing machine
41-50	=> IFS feed single
51-60	=> IFS-C
61-70	=> IFS feed 4-fold
71-79	=> CalfRail

You select the feeder address as follows:

1. In the setup menu, choose the **Machine** option.
2. In **Address**, you select an address.
3. Confirm your entry with Enter.

Note: If you select an address that has already been assigned, the message **Address already assigned!** will appear in the display.

5.4.4 Feeder operating modes

Please leave the factory set value **SA** (= StandAlone) unchanged.

5.4.5 HE size

The set value determines:

- The set quantity for calibrating **milk**.
- The amount of milk that is expelled from the stainless steel coil.

You define the size as follows:

1. In the setup menu, choose the **Machine** option.
2. In **HE size**, enter 500.
3. Confirm your entry with Enter.

5.4.6 Heating system

Here you specify whether the feeder has a heating system and, if so, what type of **heating relay** it has.

You set the heating type as follows:

1. In the setup menu, choose the **Machine** option.
2. In **Heating**, select **electronic**.
3. Confirm your entry with Enter.

5.4.7 Boiler valve

Please do not change the factory setting **brass**.

5.4.8 HE valve

Please do not change the factory setting **brass**.

5.5 Equipment

Here you specify whether the automatic feeder is equipped with certain components or options.

5.5.1 Mixer drain

The contents of the mixer are drained fully automatically via the mixer drain valve. The mixer drain valve is included as standard.

This is how to activate the mixer drain valve:

1. In the setup menu, open the **Equipment** menu item.
2. In **Mixer**, select **yes**.
3. Confirm your entry with Enter.

5.5.2 Additive dispenser

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

You activate the additive dispenser as follows:

1. In the setup menu, open the **Equipment** menu item.
2. In **Add. disp. 1** select **yes** if there is an additive dispenser, otherwise choose **no**.
3. Confirm your entry with Enter.
4. In **Add. disp. 2** select **yes** if there is a second additive dispenser, otherwise choose **no**.
5. Confirm your entry with Enter.

5.5.3 Flushing agent 1

The flushing agent pump is included as standard.

Flushing agent is fully automatically dispensed via the flushing agent pump during a cleaning cycle.

This is how to activate flushing agent 1:

1. In the setup menu, open the **Equipment** menu item.
2. In the **Flushing agent 1** menu, choose **yes** if there is a flushing agent pump for flushing agent 1 (alkaline) fitted, otherwise choose **no**.
3. Confirm your entry with Enter.

5.5.4 Flushing agent 2

You can connect a second flushing agent pump for cleaning with acid flushing agent.

This is how to activate flushing agent 2:

1. In the setup menu, open the **Equipment** menu item.
2. In the **Flushing agent 2** menu, choose **yes** if there is a flushing agent pump for flushing agent 2 (acid) fitted, otherwise choose **no**.
3. Confirm your entry with Enter.

5.5.5 Flushing agent sensor

If the level in the container for cleaning agent 1 is detected by a float switch mounted on a filling level rod, set **Rod**.

The flushing agent sensor is included as standard.

5.5.6 Powder sensor

The powder sensor, outputs a warning if the level of MP in the container is lower than the sensor. If the sensor reports container empty for 10 portions in succession, **Warning, top up MP** will appear.

You activate the powder sensor as follows:

1. In the setup menu, open the **Equipment** menu item.
2. In **Powder sensor**, choose **yes** if there is a powder sensor fitted, otherwise choose **no**.
3. Confirm your entry with Enter.

5.5.7 Circulation valve

You will see **HE** (= heat exchanger) displayed if the automatic feeder is equipped with automatic heat exchanger cleaning. The circulation valve is included as standard.

You set the circulation valve as follows:

1. In the setup menu, open the **Equipment** menu item.
2. In the **Circulation valve** menu, select **HE**.

3. Confirm your entry with Enter.

5.5.8 Air valve

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

5.5.9 Ball valve

The ball valve is included as standard.

You activate the ball valve as follows:

1. In the setup menu, open the **Equipment** menu item.
2. In **Ball valve**, select **yes**.
3. Confirm your entry with Enter.

5.5.10 Mixer temperature sensor

The temperature sensor in the mixer continually records the temperature of the feed in the mixer beaker. If the temperature deviates from the set value, the boiler heater is adjusted to compensate. The feed always has the desired temperature, regardless of the season. The temperature sensor is included as standard.

You activate the mixer temperature sensor in the mixer as follows:

1. In the setup menu, open the **Equipment** menu item.
2. In **Mix. Sensor T.**, choose **yes** if there is a temperature sensor fitted, otherwise choose **no**.
3. Confirm your entry with Enter.

5.5.11 Water meter

Please do not change the factory settings [**yes**].

5.5.12 Supply and point electrode

You activate the electrodes as follows:

1. In the setup menu, open the **Equipment** menu item.
2. In the **Elec. Supply** and in the **Elec. Point** menu, select [**yes**].
3. Confirm your entry with Enter.

5.6 Identification

Here you set the identification system:

The input or reading sensitivity of the identification system is set via the squelch value. The larger the entered value, the lower the range of the identification (see 3.6 "Connecting the antennas" - 29).

You set the identification system as follows:

1. In the setup menu, open the **Identification** option.
2. In the **Type** menu, select the identification system **Multi, Tiris** or **Ned**.
3. In **Squelch**, select the squelch value.
4. Confirm your entry with Enter.

5.7 ID chip

Before delivery, the ID chip is configured with the Setup settings for the automatic feeder. These are saved in non-editable form. This means you can restore the original settings of the setup at any time. For example, this may be necessary if you have accidentally changed a setting or the processor board has to be replaced.

You set the ID chip as follows:

1. In the setup menu, choose the **ID chip** option.
2. In **activated**, you must specify **yes** because the automatic feeder is equipped with an ID chip.
3. Confirm **read?** by choosing Enter, if you wish to transfer the data from the ID chip to the processor board.
4. Confirm your entry with Enter.

Note: Include retro-fitted items and peripherals at this point.

5.8 Calibration scales

You activate the calibration scales as follows:

1. In the setup menu, open the **Calibration scales** option.
2. In **activated** choose **yes** if calibration scales have been installed.
3. Confirm your entry with Enter.
4. In **adjust?**, press Enter, to adjust the calibration scales.
5. The adjustment process begins with the taring of the calibration scales. You will be informed of this in the message **calibration scales are being tared**.
6. A menu appears where you need to enter the reference weight in grams that you require for the adjustment. If necessary, adapt the respective value in this menu (default value: 500 g).

   Note: A 500 g reference weight is included in the delivery.
7. Place the reference weight with the hole on the screw in the feeding box such that it is fixed in place, and then press Enter, to start the adjustment process.

8. After completing the adjustment process, a corresponding message about the success or lack of success of the adjustment will be issued. At the same time, the currently determined weight value will be shown. After removing the calibration weight, 0 grams should be shown here.
9. Press Enter. **Date** now shows the current date.

5.9 Stations

Activate the feed or concentrate station and define the additional equipment for these stations or any additional equipment in the **Stations** menu.

5.9.1 Feed

You set the feeding box as follows:

1. In the setup menu, choose the **Stations > Feed > Internal** option.
2. Choose < > **intern 1** or **intern 2**.
3. In the **Allocation** menu, select the feeding box to be allocated to the internal control system.
4. Confirm your entry with Enter.

5.10 Terminal

5.10.1 Address

The hand terminal is integrated into the CAN bus system of the automatic feeder. That is why is needs its own address. **Address 1** is set by default.

Note: In a CAN bus system, each address may only be assigned once.

You set the address as follows:

1. In the setup menu, choose the **Terminal** option.
2. In **Address**, select [**1**].
3. Confirm your entry with Enter.

5.10.2 Contrast

You set the contrast as follows:

1. In the setup menu, choose the **Terminal** option.
2. In **Contrast**, enter the desired value. The default value is 60%
3. Confirm your entry with Enter.

5.10.3 Sleep mode

If no key has been pressed on the hand terminal for a fairly long period of time, it will switch to sleep mode. If the hand terminal is in sleep mode, the Förster-Technik logo will appear in the display.

You set sleep mode as follows:

1. In the setup menu, choose the **Terminal** option.
2. In **Sleep mode**, enter the desired value. The default value is 10 minutes. To deactivate sleep mode, set [0] minutes.
3. Confirm your entry with Enter.

5.11 Communication

5.11.1 Printer

Current animal lists can be generated via the automatic feeder's printer function.

- **Serial:** Select this option if you have connected a printer to the automatic feeder via the serial interface.
- **CAN:** Select this option if the printing data is to be sent via the CAN bus. In this case, a PC program will play the counterpart.

5.11.2 Network configuration

Here you can configure all parameters of the network.

- **(M) MAC address:** Here you can see the MAC address of your network. Your processor card is uniquely identified via its MAC address. This address cannot be changed.
- **M-ECN:** Here the check sum of the MAC address is displayed.
- **(IP) IP address:** Here you can see the IP address of your processor card and if necessary change it.
- **(SN) Subnet mask:** Here you can see the subnet mask of your network and if necessary change it.
- **(GW) Gateway:** Here you can see the IP address of your gateway and if necessary change it.
- **IP assignment:** If you set the value here to **DHCP**, your processor card will try to get its IP address from a DHCP server in your network. If you select **static** here, you will have to set the IP address of your processor card yourself, in consultation with your IT specialist.

  Note: If after 10 seconds no IP address has been set by the DHCP server, the IP address 169.254.2.1 will be used automatically.
- **Accept?:** Press here Enter. The data will be saved.

5.11.3 Cloud

Here you can change the values for the CalfCloud and the automatic feeder's Internet connection to the cloud.

1. In **start?**, press Enter. You then create the connection between the cloud and the automatic feeder.
2. You will see the message **You hereby accept the data protection provisions listed on www.calf-cloud.com!**.
3. Press Enter. The error menu **last error** will appear.
   - **none**. There are no errors present.
   - **no eth. cable**. No Ethernet cable is plugged in.
   - **no Internet**. There is no Internet connection available.
   - **connect.error**. There is a connection error to the server.
4. In **Finish?** you break off the connection to the cloud and therefore stop data transfer.
5. In **Status**, you can see the current status of the connection to the cloud. The possible statuses are **online**, offline or **reconnecting**.
6. In **Auth. token** you can see the authentication key for the automatic feeder.
   Note: This token allows you to add the automatic feeder to the cloud data.

5.11.4 Gateway

Here you can configure all relevant parameters of the Förster gateway (optional).

- **(M) MAC address:** You can see the MAC address of your gateway here. Your gateway is uniquely identified via its MAC address. This address cannot be changed.
- **(IP) IP address:** You can see the IP address of your gateway here and, if need be, change it. You will need this value to register your feeder at the CalfManagerWIN or in connection with the communication module.
- **(SN) Subnet mask:** You can see the subnet mask of your gateway here and, if need be, change it.
- **IP assignment:** If the value here is **automatically** set, then your gateway will try to get its IP address from a DHCP server in your network. If you select **manual** here, then you will have to set the IP address of your gateway yourself.
- **DHCP status** (only in connection with the automatic assignment of IP addresses): This line gives you information about the internal status when getting the automatically assigned IP address. There are five statuses that can occur: OK, waiting, off, on and unknown (=n/a).
- **Factory settings:** If you call up this item and confirm the security query which then appears, the values of your gateway for the IP address, the subnet mask and the manual or automatic procurement of the IP address will be reset back to the factory settings.

5.11.5 MultiReader

Here you can call up information about the connected MultiReader calf identification system.

- **Version** shows the current version of the MultiReader identification system.
- If in the Update menu you press Enter you can update the MultiReader identification system.

  Note: To update the MultiReader identification system, you may have to first update the automatic feeder.

5.11.6 Restart

Here you can restart the automatic feeder.

6. Calibration

The first calibration is performed by your service technician during commissioning.

You must manually recalibrate powder and liquid feed and cleaning agents because the actual quantity will deviate from the set quantity for various reasons, such as fluctuations in water pressure.

If your automatic feeder is equipped with calibration scales, milk, water and MP are automatically calibrated every day. You need manually recalibrate only the cleaning agent and additives. You must also recalibrate after every new delivery of milk substitute.

NOTICE!

If you do not recalibrate your automatic feeder on a regular basis, your calves will receive insufficient or improperly mixed feed.

This will cause malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even the death of your calves.

Calibration involves several steps:

- The volume of the liquid components (water, milk cleaning agents and additives) is determined.
- The weight of the powder components (milk substitute, additives) is determined.

If your automatic feeder does **not** have **automatic calibration scales** you must provide the following items for the calibration:

- 1 Measuring cylinder with ml graduations (capacity about 1 liter).
- 1 scales (weighing accuracy 1 g).
- 1 vessel for collecting milk substitute.

6.1 Calibrating without calibration scales

You determine the actual value using scales and a graduated cylinder and the program will prompt you to enter this value using the number keys.

Proceed as follows to calibrate liquid components without calibration scales:

1. Navigate via  **> Calibration** to the **Components** sub-menu.
2. In the **Water** menu, you calibrate water.
   - 2.1. Confirm **Water** by choosing Enter.
   - 2.2. **Set qty** shows the quantity of water to be dispensed by the automatic feeder.
   - 2.3. **Runtime** shows the time in which the automatic feeder should dispense the water.
   - 2.4. **Date** shows when the water was last calibrated.
   - 2.5. Tilt the drained mixer forwards and hold the measuring cylinder under the discharge.
   - 2.6. Confirm **Start?** by choosing Enter.
   - 2.7. Confirm **Exit automatic mode?** by choosing Enter. This message will only be displayed if your automatic feeder is still in automatic mode.

Water is dispensed.

2.8. Tilt the mixer so that the water flows into the graduated cylinder. Measure the collected water in milliliters.

2.9. In the **Actual** menu, enter this measured quantity using the number keys.

2.10. Confirm with Enter.

2.11. **Date** now shows the current date.

2.12. Repeat the calibration to check your results.

3. Calibrate other **liquid components** using the same method.

Proceed as follows to calibrate powder components without calibration scales:

1. Navigate via  **> Calibration** to the **Components** sub-menu.

2. In the **MP** menu, you calibrate the milk substitute.

2.1. Confirm **MP** by choosing Enter.

2.2. **Set quantity** shows the amount of milk substitute (MP) to be dispensed by the automatic feeder.

2.3. **Runtime** shows the time in which the automatic feeder should dispense the MP.

2.4. **Date** shows when MP was last calibrated.

2.5. Tilt the empty mixer forward.

2.6. Hold the container for the MP under the powder discharge.

2.7. Confirm **Start?** by choosing Enter.

2.8. Confirm **Exit automatic mode?** by choosing Enter. This message will only be displayed if your automatic feeder is still in automatic mode.

Powder will be dispensed.

2.9. Place the container with the collected MP on the scales.

2.10. In the **Actual** menu, enter the weighed quantity using the number keys.

2.11. Confirm with Enter.

2.12. **Date** now shows the current date.

2.13. Repeat the calibration to check your results.

3. Calibrate other **powder components** using the same method.

6.2 Calibrating with calibration scales

The automatic feeder determines the actual value using the built-in automatic calibration scales (additional equipment).

Proceed as follows to calibrate liquid components using the calibration scales:

1. Navigate via  **> Calibration** to the **Components** sub-menu.

2. In the **Water** menu, you calibrate water.

2.1. Confirm **Water** by choosing Enter.

2.2. **Set qty** shows the quantity of water to be dispensed by the automatic feeder.

2.3. **Runtime** shows the time in which the automatic feeder should dispense the water.
2.4. **Date** shows when the water was last calibrated.
2.5. Confirm **Start?** by choosing Enter. The calibration procedure will start. The set value of 500 ml will be shown first in the display.
2.6. Confirm **Exit automatic mode?** by choosing Enter. This message will only be displayed if your automatic feeder is still in automatic mode.

The device now performs two check weighings without the user having to do anything and shows the result.

2.7. Then the average value of these two control weighings is shown flashing in the displayed line. Confirm with Enter. You then return to the calibration menu.
2.8. **Date** now shows the current date.
2.9. Repeat the calibration to check your results.

3. Calibrate other **liquid components** using the same method.

Proceed as follows to calibrate powder components using the calibration scales:

1. Navigate via  **> Calibration** to the **Components** sub-menu.
2. In the **MP** menu, you calibrate the milk substitute.
   2.1. Confirm **MP** by choosing Enter.
   2.2. **Set quantity** shows the amount of milk substitute (MP) to be dispensed by the automatic feeder.
   2.3. **Runtime** shows the time in which the automatic feeder should dispense the MP.
   2.4. **Date** shows when MP was last calibrated.
   2.5. Confirm **Start?** by choosing Enter.
   2.6. Confirm **Exit automatic mode?** by choosing Enter. This message will only be displayed if your automatic feeder is still in automatic mode.
   2.7. Place the calibration box into the mixer beaker and confirm the prompt **Calibration box used?** by choosing Enter.

   MP will be dispensed into the calibration beaker.

   The device now performs two check weighings without the user having to do anything and shows the result.

   2.8. Then the average value of these two control weighings is shown flashing in the displayed line. Confirm with Enter. You then return to the calibration menu.
   2.9. **Date** now shows the current date.
   2.10. Remove the calibration beaker from the mixer beaker.
   2.11. Repeat the calibration to check your results.

Proceed as follows to calibrate the cleaning agent using the calibration scales:

1. Navigate via  **> Calibration** to the **Components** sub-menu.
2. In the **Flushing agent** menu, you calibrate the cleaning agent.
   2.1. Confirm **Flushing agent** by choosing Enter.

2.2. **Set qty** shows the quantity of cleaning agent to be dispensed by the automatic feeder.

2.3. **Runtime** shows the time in which the automatic feeder should dispense the cleaning agent.

2.4. **Date** shows when the cleaning agent was last calibrated.

2.5. Confirm **Start?** by choosing Enter.

2.6. Confirm **Exit automatic mode?** by choosing Enter. This message will only be displayed if your automatic feeder is still in automatic mode.

2.7. Place the calibration box into the mixer beaker and confirm the prompt **Calibration box used?** by choosing Enter.

Cleaning agent will be dispensed into the calibration beaker.

2.8. The device now performs two check weighings without the user having to do anything and shows the result.

2.9. Then the average value of these two control weighings is shown flashing in the **displayed line**. Confirm with Enter. You then return to the calibration menu.

2.10. **Date** now shows the current date.

2.11. Remove the calibration beaker from the mixer beaker.

2.12. Repeat the calibration to check your results.

3. If the automatic feeder is equipped with a second cleaning agent pump, also calibrate the **Flushing agent 2**.

⚠ WARNING!

Risk of injury and death!

Never mix alkaline and acidic cleaning agents, since this may cause a dangerous chemical reaction. Dangerous gases may be produced and cause serious breathing difficulties. They may also cause explosions.

► Empty the calibration beaker and rinse it out with clean water before using it to calibrate the second cleaning agent.

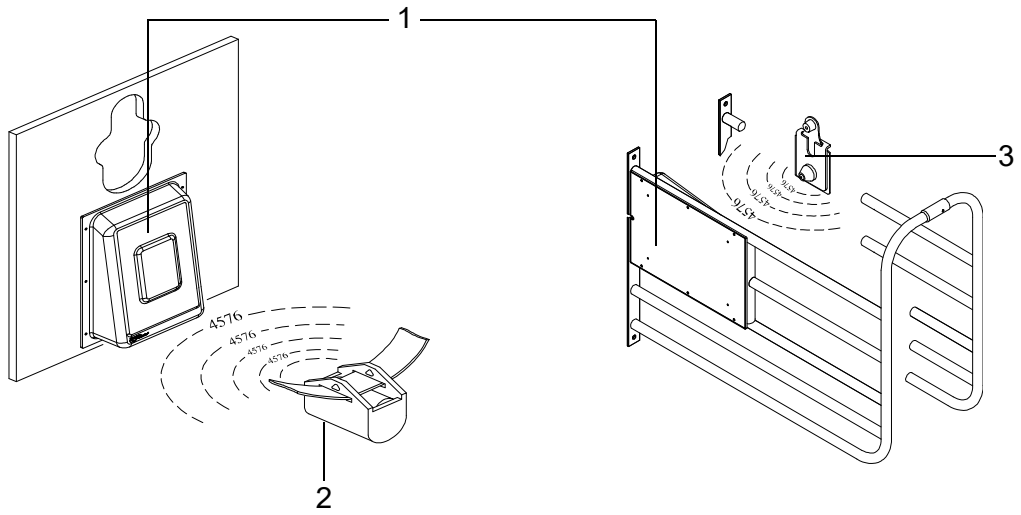
7. Transmitter and animal management

All menus for management of the list of all transmitters and the calves registered at the feeder can be found via  **> Animal management**.

7.1 Managing the transmitters

7.1.1 Basics

7.1.1.1 Identification process at the station



1 Antenna
2 Collar transmitter
3 Earmark transmitter

For identification purposes, each calf wears a collar with a transmitter or an earmark with a transmitter. The transmitter has a multi-digit number, which is also usually stamped into the transmitter housing. This **transmitter number** is sent from the transmitter to the antenna, which is part of the feeding box.

Note: Calves without collars should never be in the bay. They could push other animals out of the way and steal remaining amounts of feed.

Connection of transmitters and animal numbers

The multi-digit transmitter number is not well suited for the rapid location of individual calves. For this reason, a calf is issued an animal number along with the transmitter number. The animal wears this animal number on an easily readable collar, or the animal number is put on the earmark where it can be easily read. Up to 250 different animal numbers of up to six digits can be assigned to the calves.

7.1.2 Creating transmitter numbers

When the feeder is being commissioned, existing transmitters have to be created once in the system. When you do this, each transmitter number is assigned one animal number of no more than six digits. These animal numbers are then available and can be used to register the calves.

7.1.3 Reading transmitter numbers

When creating new transmitter numbers, it is a good idea to have these read by the feeder. This saves you from typing in the numbers and eliminates the possibility of typing errors.

You read transmitter numbers in the automatic feeder as follows:

1. Navigate via  **> Animal management > Transmitters** to the **New** sub-menu.
2. Hold a transmitter next to the identification unit of a feeding box.

   The number of the transmitter will be read in and displayed in the line after **No. ł** . At the same time, the animal number to be newly assigned will be suggested in the **Animal no.** line.

   Note: You can affect the suggested animal number by selecting in the **No.** line **automatic** or **sequential** as the scheme for assigning the animal numbers (see 7.1.5 "Assigning animal numbers" - 83).
3. Check whether the suggested **animal number** is correct and if so go to the line **accept?** and press Enter.

   Note: Make sure that in **Station** you select the feeding box within which you have located the transmitter which you have identified.
4. In order to allocate the newly read transmitter number to the displayed animal number, confirm the security prompt **Create new no. xxx for animal xx?** by choosing Enter.

7.1.4 Manually entering transmitter numbers

Instead of reading the transmitters, you can also manually type in the transmitter numbers, if necessary

You manually enter transmitter numbers as follows:

1. Navigate via  **> Animal management > Transmitters** to the **New** sub-menu.
2. Enter the transmitter number in the **No. ł** menu and confirm it by choosing Enter.
3. In the **Animal No.** menu, check the suggested animal number and confirm it by choosing Enter.
4. Confirm **accept?** by choosing Enter.
5. In order to allocate the input transmitter number to the displayed animal number, confirm the security prompt **Create new no. xxx for animal xx?** by choosing Enter.

7.1.5 Assigning animal numbers

If the transmitter numbers are automatically read when new numbers are created, an animal number will be automatically suggested. When doing this, there are two schemes to choose from for the assignment of numbers.

7.1.5.1 Consecutive assignment of animal numbers

There is a counter which counts up for each new transmitter number as it is read. In this way, all of the transmitter numbers that are registered by the identification function are linked to consecutive animal numbers; e.g., from 1 to 50.

You set up consecutive assignment of animal numbers as follows:

1. Navigate via  **> Animal management > Transmitters** to the **New** sub-menu.
2. Select the **consecutive** option in **No.**
3. If necessary, in the **next** menu, specify the animal number at which you want automatic reading of transmitters to start.

   Note: If you use collars, it makes sense to start with 1 and read in the transmitters in order.

7.1.5.2 Assignment of animal numbers based on transmitter numbers

More and more often, calves are already equipped with an electronic earmark transmitter when they are born and keep this earmark their whole lives. The automatic feeder program has been adapted for this type of transmitter so that the registration process of the transmitters and calves can take place completely automatically.

You set up automatic assignment of animal numbers as follows:

1. Navigate via  **> Animal management > Transmitters** to the **New** sub-menu.
2. Select the **automatic** option in **No.**
3. In the **Range** menu, define the part of the transmitter number that you would like to use as the animal number. The animal number can have a maximum of six digits.

   For example: 5-2 means that, counting from the right, the second to the fifth digits of the transmitter number will be used as the animal number. **6-1** means that, counting from the right, the first to the sixth digits of the transmitter number will be used as the animal number.

7.1.6 Editing transmitters or animal numbers

If necessary, (e.g., if a transmitter is lost), a transmitter number can be subsequently changed or deleted.

7.1.6.1 Changing the transmitter number

Manually changing the transmitter number

You manually change a transmitter number as follows:

1. Navigate via  **> Animal management > Transmitters** to the **Edit** sub-menu.
2. Select the transmitter number to be changed.
3. Change the transmitter number in the **No.** menu and confirm by choosing Enter.

Reading the new transmitter number for the change

You read a new transmitter number as follows:

1. Navigate via **> Animal management > Transmitters** to the **Edit** sub-menu.
2. Select the transmitter number to be changed.
3. Confirm **read?** by choosing Enter.

   A new menu is displayed, and the transmitter number flashes in the first line.
4. Hold the transmitter that you want to read next to the identification unit.

   The number is automatically accepted in the first line.
5. Confirm **accept?** by choosing Enter.

7.1.6.2 Changing the animal number

Like the transmitter number, the animal number can also be changed.

1. Navigate via **> Animal management > Transmitters** to the **Edit** sub-menu.
2. Select the animal number you would like to change.
3. In the **Animal No.** menu, change the animal number that is currently allocated to the transmitter and confirm by choosing Enter.

7.1.6.3 Deleting transmitter numbers

You delete transmitter numbers as follows:

1. Navigate via **> Animal management > Transmitters** to the **Edit** sub-menu.
2. Select the transmitter number to be deleted and confirm **Delete** by choosing Enter.

   Note: You can only delete transmitter numbers of calves that are not registered (= status: available).

7.1.7 Deleting the transmitter number when canceling an animal

Generally, the collars (or earmarks) with the respective transmitters remain at the organization and are reused after the calf is taken out of the pen and its registration is canceled. For this reason, the default setting when canceling the registration of a calf is to not delete its transmitter number. If the calf's transmitter is, however, **not** reused but rather stays with the calf, (lifelong earmark), make the following setting in the feeder:

1. Navigate via **> Animal management > Cancellation** to the **Settings** sub-menu.
2. Select the **yes** option in the **Delete no.** menu

   When a calf's registration is canceled, the transmitter number is also deleted along with the animal number. This prevents an accumulation of unused transmitter numbers, which would use up the available storage space.

7.1.8 Calling up the transmitter statistics

You call up a transmitter statistic as follows:

1. Navigate via **> Animal management > Transmitters** to the **Information** sub-menu.
2. An overview of the transmitters created in the system is displayed.
   2.1. In the **Registered** menu you check the number of registered transmitters or calves.
   2.2. In the **Available** menu you check the number of available transmitters.
   2.3. In the **Free** menu you check how many transmitters you can still create.

7.2 Registering animals

Calves are only fed at the feeder if they are also registered there. You can either manually register each calf or instruct the feeder to automatically register the calves. In the latter case, the calf is registered as soon as it enters the feeding station for the first time. This means that the manual registering of the calves is not needed.

During registration, the calf is allocated to one of four groups, A to D. The calf will then be fed in accordance with the feed, concentration and milk ratio plans of this group.

The group to which you allocate the calves depends solely on the feed quantity, the concentration and the milk ratio the end user wishes to dispense to the calves. In this case, it does not matter which station the calves consume their feed in or which bay the calves have been housed in.

If the end user houses two groups of animals, and one group will receive milk only and the other will receive MP only, allocate these calves to different feeding groups.

7.2.1 Manual registration of animals

You register animals manually as follows:

1. Navigate via **> Animal management > Registration** to the **Animals** sub-menu.
2. Select one of the available (not yet registered) animal numbers.
3. In **Group**, select the group to which the calf is to be allocated.
4. If you wish to reduce the total feeding duration for the calf, you can set this up under Correction days (see **Feeding> Total feeding duration** in the operator's manual).
5. Confirm **Register?** by choosing Enter.
6. Confirm the prompt **Register animal xx in group X?** by choosing Enter.

Note: On its registration day, the animal receives the exact amount of feed, spread over the course of the day, as intended for the first day according to the feeding plan. If you have entered correction days, the animal will receive the feed that is intended for the corresponding day.

Note: For the next manual registration, the values last set will again be shown and can be used or changed for the current animal.

7.2.2 Automatically registering animals

If an animal that is not yet registered enters the feeding station for the first time, it can then be automatically registered. For automatic registration, three different modes can be set which are described in detail in the following three sub-sections. The following table presents an overview of this.

Overview of the three modes for automatic registration

Automatic registration mode	Transmitter number being identified	
	available	unknown
deactivated	Warning unknown transmitter	Warning unknown transmitter
available transmitters	Animal will be registered	Warning unknown transmitter
all transmitters	Animal will be registered	Transmitter is created, new animal number is assigned, animal is registered

7.2.2.1 Deactivating automatic registration

Automatic registration is deactivated by default. You can restore this setting at any time.

You deactivate automatic registration as follows:

1. Navigate via  **> Animal management > Registration** to the **Automatic** sub-menu.
2. Select **Mode no** and confirm by choosing Enter. Automatic registration is then deactivated.

   Note: When the registration function is deactivated, the **unknown transmitters warning** will be triggered if an unregistered calf enters a station.

7.2.2.2 Register available transmitters only automatically

Automatic registration shortens the registration process for the calves. When doing this, you can specify that only calves whose transmitter numbers are already in the system can be registered. If an available transmitter number is registered in the identification unit, the corresponding calf will be registered automatically. Calves or transmitter numbers that have not yet been created in the system will trigger the **Unknown transmitter number** warning.

Proceed as follows to set up automatic registration of available transmitters:

1. Navigate via  **> Animal management > Registration** to the **Automatic** sub-menu.
2. In **Mode** select the **available** option.
3. In **Group**, choose the group in which you want to automatically register the calves.

   Note: The registration of calves that are to be removed should only be canceled after they have left the bay, as they will otherwise automatically be re-registered when they enter the station and will then be returned to the start of the feeding plan.

7.2.2.3 Creating transmitter numbers and automatically registering calves

To shorten the registration process even more, you can specify that calves can also be registered if their transmitter numbers are not known in the system. This eliminates the need for reading or manual entry of transmitter numbers. In this case, if an unknown transmitter number is registered in the identification unit, this transmitter number is automatically created in the system and a new animal number is issued and registered at the same time.

Note: When newly creating transmitters and animal numbers, the animal number will either be produced consecutively or as a part of the transmitter number (see 7.1.5 "Assigning animal numbers" - 83).

Proceed as follows to create transmitter numbers and automatically register calves:

1. Navigate via  **> Animal management > Registration** to the **Automatic** sub-menu.
2. In **Mode** select the **All** option.
3. In **Group**, choose the group in which you want to automatically register the calves.

7.3 Canceling animals or animal groups

Individual calves or a group of calves that are no longer being fed according to the plan must be removed from the pen compartment and their registration canceled. The same applies to calves whose feeding plan has expired.

7.3.1 Canceling individual animals

You cancel an individual animal's registration as follows:

1. Navigate via  **> Animal management > Cancellation** to the **Animals** sub-menu.
2. Select the desired animal number.
3. In the **Plan end** menu, you check how much longer the calf is to be fed according to the plan.
4. In the **MP** menu, you can check how much milk powder the calf has consumed from the start of registration to its cancellation.
5. In the **Milk** menu, you can check how much milk the calf has consumed from the start of registration to its cancellation.
6. Confirm Cancel? by choosing Enter, to cancel the calf's registration.

NOTICE!

There is a risk of malnutrition if calves do not receive any feed.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

► Inform the end user that he/she must provide the canceled calves with feed using an alternative method.

Note: If you have chosen the value All or Available for the automatic registration mode, the end user should remove unregistered calves from the bay, because otherwise they will be automatically registered again.

7.3.2 Canceling a group

You can cancel a group registration as follows:

1. Navigate via  **> Animal management > Cancellation** to the **Group** sub-menu.
2. Select the required group.
3. In the **Registered** menu you can see how many calves are being fed according to the corresponding plan.
4. In the **Weaned** menu you can see how many calves have finished the feeding plan and are therefore no longer receiving any feed.
5. Confirm **Cancel?** by choosing Enter, if all calves of the group are to be canceled regardless of whether they are registered or weaned calves.
6. Confirm the security prompt **Cancel animals in group?** by choosing Enter.

7.3.3 Canceling weaned animals

You can cancel the registration of weaned calves as follows:

1. Navigate via  **> Animal management > Cancellation** to the **Weaned calves** sub-menu.
2. Confirm **Cancel?** by choosing Enter, if weaned animals are to be canceled.
3. Confirm the security prompt **Cancel animals?** with Enter.

7.4 Changing the registration of animals

You can transfer calves registered at an automatic feeder to another group at any time.

To change a registered calf to another group, proceed as follows:

1. Navigate via  **> Animal management** to the **Change registration** sub-menu.
2. Select the desired calf.
3. Select the desired feeding group in **Group**.
4. Confirm the prompt **Change registration of animal xx into group X?** by choosing Enter.

   Note: When registration is transferred, the feeding day is retained; the calf will not be reset to the start of the feeding plan (= to plan day 1).

8. Shutdown and recommissioning

This chapter explains how to shut down the automatic feeder temporarily or permanently and recommission it.

8.1 Shutdown

You can shut down the automatic feeder temporarily or permanently.

To make the procedure easier and ensure that you do not miss any steps, see the check list **Shutting down the automatic feeder** in the appendix (see 10.3 "Shutdown checklist" - 131).

Note: If you have installed additional devices such as an **additive dispenser**, the **IFS feeding station**, the **ActivityBox** or the **CalfRail**, you must also follow the shutdown instructions in the operating manual for these devices.

8.1.1 Temporary shutdown

You can temporarily shut down the automatic feeder, for example from the end of one calving season to the start of the next.

If you are shutting down the automatic feeder for a prolonged period of more than one year, you should store the feeder in an upright position in a clean, dry and frost-free location.

In addition, observe the following rules when transporting the automatic feeder:

⚠ CAUTION!

Health hazards caused by lifting heavy loads.

► Do not move the automatic feeder by yourself.

- The automatic feeder must always be transported in an upright position.

To ensure that the automatic feeder does not become a breeding ground for germs, which could endanger the health and life of the calves when you recommission the feeder, you must thoroughly clean the automatic feeder before shutting it down.

Depending on how the automatic feeder is configured, you must run the manual or automatic cleaning programs for the mixer, heat exchanger, hoses, teat and powder and milk container.

After cleaning, the power, water and milk supply must be interrupted, the heat exchanger drained, the cable glands for antennas and the Ethernet connection sealed with dummy plugs and the water drained from the magnetic valves and the volume control valve.

To shut down the automatic feeder, proceed as follows:

⚠ WARNING!

Beware of chemical burns from the cleaning agents used.

The cleaning agent can cause chemical burns to your eyes or hands.

► Always wear safety glasses and chemical-proof protective gloves when disposing of cleaning agents. Follow all the safety instructions listed in the safety data sheet for the cleaning agent and wear the specified safety equipment.

1. Start the maximum number of cleaning programs (see **Cleaning** chapter in the operating manual for the automatic feeder).
2. Take the cleaning agent lance off the cleaning agent container, flush it out with water and place it in a bucket full of water
   2.1. Navigate via  **> Diagnostics** to switch to the **Motors** sub-menu.
   2.2. Confirm **Flushing agent: start?** by choosing Enter, to flush remnants of cleaning agent out of the system.
3. Remove the cleaning agent lance from the bucket and perform points 2.1 and 2.2 again, to flush liquids out of the system.
4. Collect the liquid separately and tip the bucket out. Dispose of this as recommended by the cleaning agent manufacturer.
5. Drain the water from the boiler, solenoid valves and the pressure-reducing valve to prevent the automatic feeder from being damaged by frost.

NOTICE!

Beware of damage to the automatic feeder.

Frozen water expands and can damage automatic feeder components that contain water, such as the solenoid valves.

   5.1. Close the water tap that supplies water to the automatic feeder.
   5.2. De-pressurize the hoses by dispensing water into the mixer beaker.
   5.3. Press  .
   5.4. Confirm **Bo. water start?** by choosing Enter.
   5.5. Pour the liquid from the mixer into a container or the drain.

DANGER!

Fatal electric shock

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and disconnect the power plug before continuing.

6. Switch the automatic feeder off using the Main switch and disconnect the mains plug.
   6.1. Disconnect the water hose between the solenoid valve for water and the heat exchanger.
   6.2. Open the vent screw on the cover of the heat exchanger. As soon as air flows in, the water will drain.
   6.3. Let the water drain completely.
   6.4. Reattach the water hose and tighten the vent screw.
7. Remove the hose from the ball valve and dispose of it.

NOTICE!

Beware of the risk of infection.

To prevent infections, use a new hose when recommissioning the unit.

8. Disconnect the water hose from the water tap that supplies the automatic feeder with water and from the water connector on the automatic feeder.
9. Dispose of the water hose.

NOTICE!

Beware of the risk of infection.

To prevent infections, use a new hose when recommissioning the unit.

10. Disconnect the hose from the milk connector of the automatic feeder and from the milk tank.
11. Dispose of the milk hose.

NOTICE!

Beware of the risk of infection.

To prevent infections, use a new hose when recommissioning the unit.

12. Remove the teat from the feeding box.
13. Dispose of the teat.

NOTICE!

Beware of the risk of infection.

To avoid infections, use a new teat when recommissioning the unit.

14. Disconnect the hose from the teat to the feeding box valve or the mixer beaker.
15. Dispose of the hose.

NOTICE!

Beware of the risk of infection.

To prevent infections, use a new hose when recommissioning the unit.

16. Disconnect the hose that runs from the drain channel to the mixer drain valve.
17. Dispose of the hose.

NOTICE!

Beware of the risk of infection.

To prevent infections, use a new hose when recommissioning the unit.

18. Seal the cable gland of the Ethernet connection with a dummy plug and close the antenna connections using the locks.

NOTICE!

Moisture.

Moisture can enter the control box through the cable gland of the Ethernet connection and damage it.

19. Clean the outside of the automatic feeder using a damp cloth. Clean all areas that are not reached by the cleaning program.

NOTICE!

Pressure washers can damage the automatic feeder.

► Only clean the automatic feeder by hand using a damp cloth.

20. Empty the powder container.
21. Remove the screws holding the safety grid on the powder container. Remove the safety grid.
22. Clean the powder container and dosing unit (see **Cleaning** chapter in the operating manual for the automatic feeder). To do this, use the scraper supplied.
23. Clean the milk tank.
24. Seal the cleaning agent storage container.

⚠ **WARNING!**

Beware of chemical burns from the cleaning agents used.

The cleaning agent can cause chemical burns to your eyes or hands.

► Always wear safety glasses and chemical-proof protective gloves when disposing of cleaning agents. Follow all the safety instructions listed in the safety data sheet for the cleaning agent and wear the specified safety equipment.

25. Cover the automatic feeder with a tarpaulin. This will protect it from dirt.

8.1.2 Permanent shutdown

If you are going to permanently shut down the automatic feeder, you must dispose of it in accordance with the law. To find out which regulations apply to you, contact your waste disposal company or a waste disposal center listed in the yellow pages.

In the appendix of this manual, you will find a list of the materials used in the construction of the automatic feeder (see 10.2 "Materials list" - 130).

1. To shut down the feeder, perform the steps for a temporarily shut down (see 8.1.1 "Temporary shutdown" - 90). You do not have to perform step 1, cleaning.
2. Dispose of any residual cleaning agent. See the data sheet of the cleaning agent for information on the disposal of the cleaning agent.

⚠ WARNING!

Beware of chemical burns from the cleaning agents used.

The cleaning agent can cause chemical burns to your eyes or hands.

► Always wear safety glasses and chemical-proof protective gloves when disposing of cleaning agents. Follow all the safety instructions listed in the safety data sheet for the cleaning agent and wear the specified safety equipment.

3. Dispose of the automatic feeder as described in the **Disposal** chapter in the operator's manual for the automatic feeder.

8.2 Recommissioning

8.2.1 Recommissioning after temporary shutdown

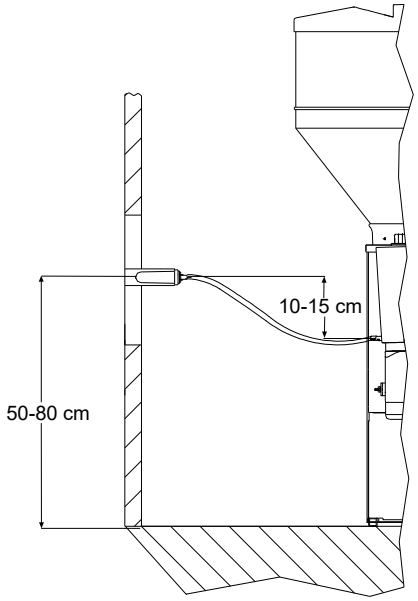
Proceed as follows to recommission the automatic feeder:

1. Remove the protective covers from the automatic feeder.
2. Clean the outside of the automatic feeder with a damp cloth.
3. Install the safety grid for the powder hopper attachment. Screw the screws back into the holes provided. The safety grid for the powder hopper attachment prevents you from being injured by the rotating tools in the powder hopper, for example, when adding milk powder.
4. Connect the water connector of the automatic feeder to the water tank using a clean new water hose.
5. Connect the milk connector of the automatic feeder to the milk tank using a clean new hose.
6. Proceed as follows to restore the cleaning agent supply to service.
7. Install a new teat.
8. Connect the teat to the feeding box valve (rationed mode) or the mixer beaker (ad lib mode). Use a new hose for this connection.

NOTICE!

The hose must be installed at a gradient to the automatic feeder without sagging.

This makes it easier for calves to consume feed and makes it easier to drain the hose (see the illustration).



Hose with gradient between teat and feeding box valve

9. Connect the mixer drain valve to the drain channel. Use a new hose for this connection.
10. Attach a new hose to the ball valve.
11. Remove the dummy plugs for the Ethernet Cable and replace them with a grommet.
12. Connect the Ethernet cable.
13. Remove the locks on the antenna connections and connect them to the antennas.
14. Plug the power plug into the power outlet.
15. Switch the automatic feeder on using the Main switch .

    Fault, HE not filled will appear in the display of the hand terminal.
16. Press Enter.
17. Confirm **HE: fill?** by choosing Enter.

    The heat exchanger will automatically be filled with water.
18. Navigate via **> Device data** to the **Time** or **Date**.sub-menu.
    - 18.1. In the **Time** menu, you enter the time of day using the number keys
    - 18.2. In the Date menu, you enter the time of day using the number keys.
    - 18.3. In the **Format** menu, choose < >, the desired format for the date.

19. Start the maximum number of cleaning programs (see **Cleaning** chapter in the operating manual for the automatic feeder).

    Clean the milk container, the hoses and the powder container.

    By doing this, you prevent germs that enter the automatic feeder from multiplying and infecting your calves.

20. Fill the powder container with milk substitute (MP). Use only milk substitute that is suitable for feeding calves.

NOTICE!

► Make sure that no paper or other foreign bodies enter the powder container. This could damage the dosing mechanism or impair dosing accuracy.

21. Fill the milk tank with milk. Cool the milk or acidify it with formic acid.

    Note: When setting the concentration, always follow the instructions of the formic acid manufacturer.

NOTICE!

► Make sure that the milk to be dispensed is free of straw, hay or other foreign bodies. These can impair the functioning of the automatic feeder.

NOTICE!

► Only heat milk in the automatic feeder if its acidification process has been fully completed. Otherwise, the stainless steel coil of the heat exchanger could become clogged.

    Note: Use a low-speed intermittent stirrer for cow's milk and flocculated milk to prevent the milk from creaming. Stirrers that run constantly or at high speed churn the milk into butter.

22. Calibrate all feed components (see 3.24 "Calibrating feed components" - 39).

23. Check the setup settings (see 5. "Setup" - 65).

8.2.2 Recommissioning after processor card replacement

After a shutdown, for example after replacing the processor board, you must set up the device data again.

Proceed as follows:

1. Switch on the automatic feeder.
2. Confirm the message **first startup press enter to start installation** by choosing Enter.
3. The message **restore last backup?** will appear if there is a valid backup of the animal and device data in the automatic feeder. Confirm the message with Enter.

   If no data are present, follow the same steps as in commissioning (see 3. "Commissioning" - 25).

4. Read the ID chip and check the setup settings (see 5. "Setup" - 65).
5. In the **Basic settings** menu, enter the desired language, the current date and the current time of day.

   This concludes the recommissioning process.

9. Faults and warnings

The automatic feeder shows fault messages or warning messages on the display to indicate faults during feeder operation.

In the event of a **fault,** automatic mode is interrupted and no feed is prepared.

NOTICE!

An interruption in feeding operation means that your calves will not receive any feed.

This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

► Inform the end user that he/she must provide the calves with feed using an alternative method if feed operation is interrupted.

In the event of a **warning,** automatic mode will not be interrupted and feeder operation will continue.

Once you have eliminated the fault, delete the fault and warning messages.

- Some fault and warning messages are deleted automatically.
- Some fault and warning messages can be deleted by pressing C.
- Some fault and warning messages can be deleted by confirming **Delete fault?** or **Delete warning?** with Enter.

9.1 Faults

9.1.1 Calibration scales

If the calibration scales were not adjusted during setup, you will see **Fault, calibration scales** in the display.

You can correct the fault as follows:

1. Confirm **Calibration scales** with Enter.
2. In **Adjust**, press Enter, to adjust the calibration scales.

   Proceed as described in chapter 5.8 "Calibration scales" - 73.

9.1.2 Heating up

If the temperature of the boiler water is too low, **Fault heating up xx.x °C** will appear in the display. Feeder operation will be interrupted until the set minimum temperature has been reached. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

If heating up the boiler water does not solve the problem, act as follows to remedy the problem:

1. Navigate via 2 **> Device data > Portion** to go to the **Set temp.** or **Min. temp.** sub-menu and check the temperature settings.

2. Check that the heater is working properly.

9.1.3 Temperature too high

If the water temperature in the boiler is too high, **Fault, temperature too high** will appear in the display. Feeder operation will be interrupted until the water in the boiler has cooled to the set maximum temperature. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

1. Confirm **Fault, temperature too high** by choosing Enter.
2. In **Boiler water start?**, press and keep depressed Enter.
3. Release water from the heat exchanger's boiler into the mixer beaker until the fault message in the display disappears.
4. Confirm **Mixer: draining?** by choosing Enter.

Check the temperature of the water supply if the heat exchanger is supplied with preheated water.

9.1.4 Heat exchanger not filled

When you switch on the automatic feeder, the control unit checks whether the boiler of the heat exchanger is filled with water. If it is not filled, feeder operation will be interrupted and the message **Fault, HE not filled** will appear in the display.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

1. Confirm **Fault, HE not filled** by choosing Enter.
2. Check the water supply.
3. In the **Fill HE?** menu, press Enter.
4. Check that the water jet hits the supply electrode.

If the fault persists, proceed as specified in 9.1.5 "Shortage of water" - 99.

9.1.5 Shortage of water

If the rod electrode or the supply electrode is not grounded in the mixer beaker when water is being added and the water meter sends no pulse, a water test will be started. If the water test is not successful, then feed preparation and animal identification will be switched off.

Fault, water shortage appears in the display.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

1. Confirm **Fault, water shortage** by choosing Enter.
2. Confirm **Boiler water start?** by choosing Enter.
3. Check that the water jet hits the rod or point electrode (see 9.5.3 "Checking sensors" - 120).
4. Check the water supply to the automatic feeder.
5. Check whether deposits such as calcium have formed on the electrodes.
6. Confirm **Delete fault?** by choosing Enter when you have fixed the fault.

⚠ DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and then disconnect the power plug before changing the response sensitivity of the electrode.

Check and change the response sensitivity of the electrode.

1. Navigate via 2 **> Diagnostics > Sensors** to the **Elec. point** or **Elec. rod** sub-menu.
2. In the right-hand column, check the status (**free** or **covered**).
3. Confirm **Elec. point** or **Elec. rod** with Enter.
   - 3.1. In the **Status** menu, check the status (**free** or **covered**).
   - 3.2. Confirm **Bo. water start?** by choosing Enter.
     The electrode will be triggered if **water** is dispensed into the mixer beaker.
   - 3.3. Confirm **Mixer: draining?** by choosing Enter, to pump out the liquid again.
4. Visually inspect the electrode.
   - 4.1. If the electrode reports that it is **covered** although it is actually free, the response sensitivity of the electrode is too high.
   - 4.2. Reduce the response sensitivity of the electrode by rotating the potentiometer (see machine circuit diagram in the appendix) counterclockwise on the main board.
   - 4.3. If the electrode reports that it is **free** although it is actually covered, the response sensitivity of the electrode is too low.
   - 4.4. Increase the response sensitivity of the electrode by rotating the potentiometer (see machine circuit diagram in the appendix) clockwise on the main board.
5. Confirm **Delete fault?** by choosing Enter when you have fixed the fault.

9.1.6 Water meter

If the rod electrode is grounded when water is dispensed but the water meter sends out no pulse, **Fault, water meter** will appear in the display.

Feeder operation can be continued in emergency mode.

You start emergency mode as follows:

1. Confirm **Fault, water meter** by choosing Enter.
2. Confirm **Bo. water start?** by choosing Enter.
3. Check whether pulses are shown in the display.
4. Confirm **Mixer: draining?** by choosing Enter.
5. Confirm **Delete fault?** by choosing Enter.
6. Confirm **emergency mode start?** by choosing Enter.

   Warning, water meter will appear in the display. The calibration values for the water boiler become invalid.
7. Calibrate the boiler water.

   The automatic feeder will operate in emergency mode, the error message **Calibr. Bo. water**will disappear

You can correct the fault as follows:

1. Repair or replace the water meter if necessary.
2. Delete the **water meter warning**.

   You will see the fault message **Calibr. Boiler water** in the display.
3. Calibrate water.
4. Return to automatic mode.

9.1.7 Emptying the mixer

Fault, mixer draining will appear if the mixer cannot be drained.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

⚠ DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and then disconnect the power plug before working on components of the feeder.

You can correct the fault as follows:

1. Switch the automatic feeder off using the Main switch and disconnect the mains plug.
2. Check all components carrying feed from the mixer to the mixer drain valve or from the mixer up to the teat for clogs and remove them.

3. Insert the mains plug again and switch the automatic feeder on using the Main switch .
4. Confirm **Fault, draining the mixer** by choosing Enter.
5. Check the feed pump:
   5.1. Confirm **Feeding pump: start?** by choosing Enter.
6. Check the mixer drain valve:
   6.1. Confirm **Mixer drain: open?** by choosing Enter.
7. Check the rod electrode:
   7.1. Confirm **Bo. water start?** by choosing Enter, to fill the mixer with water. Check in the **Diagnostics > Sensors** menu (see 9.5.3 "Checking sensors" - 120), whether the message **empty** or **covered** appears.
   7.2. Confirm in **Mixer draining?**, by choosing Enter.
8. Confirm **Delete fault?** by choosing Enter when you have fixed the fault.
9. Remove cleaning agent remnants from components carrying feed by rinsing them with water.

NOTICE!

Cleaning agent remnants that enter the feed can be hazardous to the health of calves.

► Remove cleaning agent remnants before recommissioning the automatic feeder.

10. Return to automatic mode.

9.1.8 Heating system

Fault, heating will be shown in the display if the heater is faulty.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and then disconnect the power plug before working on components of the feeder.

You can correct the fault as follows:

- Check whether safety temperature limiter has been triggered.
- Check the setup settings for the heating system.
  - **Setup > Machine > Heating:** electronic
- Check the temperature sensor.
  If the temperature sensor is defective, replace it.

- Check that voltage is present at the heater. If necessary, check the fuses provided by the customer (solid state relay).
- Check the heating rod for continuity.

  If the heating rod is defective, replace it.

⚠ DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and disconnect the power plug before manually reactivating the safety temperature limiter.

You reactivate the safety temperature limiter as follows:

1. Switch the automatic feeder off using the Main switch and disconnect the mains plug.
2. Open the right side door of the automatic feeder.
3. Remove the metal cover under which the safety temperature limiter is located.
4. Press the reset button in order to reset the safety temperature limiter.
5. Reattach the metal cover.
6. Close the side door.
7. Insert the mains plug again and switch the automatic feeder on again using the Main switch .

9.1.9 Boiler temperature sensor

Fault, Temp. sensor, boiler is shown in the display if the temperature sensor of the boiler is defective.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

⚠ DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and then disconnect the power plug before working on the main circuit board.

You can correct the fault as follows:

1. Switch the automatic feeder off using the Main switch and disconnect the mains plug.
2. Remove the metal cover on the back of the automatic feeder.
3. Measure the resistance of the temperature sensor on the main board.

4. Compare the measured value with the value in the table. The table can be found in the machine circuit diagram in the appendix.
5. If the measured value differs from the value in the table, you must replace the sensor.
6. Reattach the metal cover.
7. Insert the mains plug again and switch the automatic feeder on again using the Main switch .

9.1.10 Milk valve/circulation valve

If the **Fault, milk valve/circulation valve** message appears in the display you can presume that there is a leak in the milk valve or in the circulation valve.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

1. Visually inspect and check the function of both valves.
2. Confirm **Fault, milk valve/circulation valve** by choosing Enter.
3. In **Start milk pump?** press Enter. If liquid comes out of the milk outlet after the pump starts, then one of the valves is leaking.
4. Check and, if need be, replace the valves.
5. When the cause of the fault has been remedied, in **Delete fault?** press Enter.

9.1.11 Calibration

If the liquid or powder feed components and the cleaning agent have not been calibrated, **Calibration fault** will appear in your display.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

1. Confirm **Fault, calibration** by choosing Enter.
2. Calibrate all components shown in the display (see 3.24 "Calibrating feed components" - 39).

9.1.12 Milk empty

You can correct the fault as follows:

1. **> Device data > Operating modes**

   If **Milk empty > Stop** is set in the menu, feeder operation will be interrupted when the milk tank is empty.
2. Confirm **Fault, milk empty** by choosing Enter.
3. Top up the milk tank and press Enter.

4. In the **Milk: suck in?** menu, press Enter until milk comes out of the inlet without any bubbles and the supply electrode or rod electrode continuously indicates that it is covered.
5. Confirm with Enter, to stop suction of milk.
6. When the cause of the fault has been remedied, in **Delete fault?** press Enter.
7. Confirm **Milk topped up?** by choosing Enter.

9.1.13 Supply electrode

If the supply electrode is permanently grounded **Fault, supply electrode** will be shown in the display.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

- Visually check the electrode for deposits and remove them.
- If the fault persists, you must replace the electrode.

9.1.14 ID chip

The automatic feeder is equipped with an electronic name plate (ID chip) upon which the device number and other important information for the operation of the automatic feeder is stored.

Fault, ID chip missing is shown in the display if the ID chip is defective. For the first 30 days after the fault appears, feeder operation will continue normally. After this, the automatic feeder will not be fully functional.

Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

⚠ DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder using the main switch and disconnect the mains plug before you work on the main board.

You replace the ID chip as follows:

1. Switch the automatic feeder off using the main switch and disconnect the power plug.
2. Open the flap on the back of the automatic feeder.
3. Disconnect the old ID chip from the main board (see circuit diagram provided).
4. Insert the ID chip on the main board.
5. Close the flap on the back of the automatic feeder.
6. Insert the mains plug and switch on the automatic feeder again using the main switch.

7. Choose **Setup > ID chip** to go to the **Read** sub-menu.
8. Activate the ID chip by choosing Enter.

9.1.15 Station/drain valve

If a feeding box valve or the mixer drain valve (optional) is leaking**Fault, station/drain valve** appears in the display . The automatic feeder loses water during cleaning.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

1. Check all feeding box valves and the mixer drain valve for leaks.
   1.1. Clean leaky valves in order to remove any foreign objects that might have entered the system.
   1.2. Repair leaky valves or replace them.
2. Check the rod electrode.
   2.1. Navigate via  **> Diagnostics > Sensors** to the **Elec. rod** sub-menu.
   2.2. In the right-hand column, check the status (**free** or **covered**).
   2.3. Confirm **Elec. rod** with Enter.
   2.4. In the **Status** menu, check the status (**free** or **covered**).
   2.5. Confirm **Bo. water start?** by choosing Enter.

   The electrode must report that it is covered if **water** is dispensed into the mixer beaker up to the electrode.

   If the rod electrode reports that it is **free**, you must readjust it (see 9.1.6 "Water meter" - 100).

   If the fault persists, you must replace the rod electrode.
3. Confirm **Delete fault** by choosing Enter, when you have fixed the fault.

9.1.16 Uncontrolled output

The automatic feeder monitors all outputs during current operation which are responsible for the dispensing of water, milk, milk powder, additives and flushing agent as well as the mixer drain valve. If the corresponding relays are actuated for more than 60 seconds, **Fault, uncontrolled output** will appear in the display. Depending on the type of defect, one of the following fault codes will be displayed:

- **Milk**, if the milk valve is defective.
- **Circ. valve**, if the circulation valve is faulty.
- **Boiler water**, if the boiler water valve is faulty.
- **Mixer drain**, if the mixer drain valve is faulty.
- **Powder**, if the motor of the milk powder conveyor is defective.
- **Additive dispenser**, if the additive dispenser is defective.

Feeder operation will be interrupted. Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

You can correct the fault as follows:

1. Check the milk valve.
   1.1. Navigate via  **> Diagnostics** to switch to the **Valves** sub-menu.
   1.2. Confirm **Mixer open?** by choosing Enter, to open the milk valve. The valve remains open as long as you hold down Enter.
   1.3. Check that the valve opens. The valve opens when the milk is dispensed.
   1.4. Repair the valve or replace it.
2. Check the water valve of the heat exchanger.
   2.1. Navigate via  **> Diagnostics** to switch to the **Valves** sub-menu.
   2.2. Confirm **Bo. water open?** by choosing Enter, to open the water valve. The valve remains open as long as you hold down Enter.
   2.3. Check that the valve opens. The valve opens when the water is dispensed.
   2.4. Repair the valve or replace it.
3. Check the circulation valve.
   3.1. Navigate via  **> Diagnostics** to switch to the **Valves** sub-menu.
   3.2. Confirm **Circulation valve open?** by choosing Enter, to open the circulation valve.
   3.3. Listen to check whether the valve opens.
   3.4. If a valve is defective, repair or replace it.
4. Check the mixer drain valve.
   4.1.  and press and hold Enter, until the mixer is filled with water.
   4.2. Navigate via  **> Diagnostics** to switch to the **Valves** sub-menu.
   4.3. Confirm **Mixer drain: open?** by choosing Enter, to open the mixer drain valve. The valve remains open as long as you hold down Enter.
   4.4. Check that the valve opens. The valve opens when the water drains.
   4.5. Repair the valve or replace it.
5. Check the motor of the milk powder conveyor.
   5.1. Navigate via  **> Diagnostics** to switch to the **Motors** sub-menu.
   5.2. Confirm **Powder start?** by choosing Enter, to start the motor for the milk powder conveyor.
   5.3. If the motor does not start, check the plug on the powder conveyor or check the power supply.
6. Check the additive dispenser.
   6.1. Navigate via  **> Diagnostics** to switch to the **Motors** sub-menu.
   6.2. Confirm **Additive dispenser start?** by choosing Enter, to start the motor for the additive dispenser conveyor.

6.3. If the motor does not start, check the plug or the power supply.

9.2 Warnings

9.2.1 Emptying the mixer

If the mixer cannot be emptied, the message **Warning, draining the mixer** will appear. For example, this can be because the drain is clogged or the feeding pump is no longer running.

⚠ DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and then disconnect the power plug before working on components of the feeder.

You rectify the warning as follows:

1. Check all components carrying feed from the mixer to the mixer drain valve or from the mixer up to the teat for clogs and remove them.

NOTICE!

The hose which goes from the mixer drain valve to the drain channel must not be lengthened.

2. Check the feeding pump.
   2.1. Confirm **Mixer draining warning** by choosing Enter.
   2.2. Confirm **Feeding pump: start?** by choosing Enter.
   The feeding pump will be actuated.
3. Check the mixer drain valve.
   3.1. Confirm **Mixer draining warning** by choosing Enter.
   3.2. Confirm **Mixer drain: open?** by choosing Enter.
   The mixer will be drained.
4. Check the rod electrode.
   4.1. Visually check the rod electrode for deposits.
   4.2. Check that the rod electrode works properly (see 9.5.3 "Checking sensors" - 120).
5. Fill and drain the mixer.
   5.1. Confirm **Bo. water start?** by choosing Enter.
   The mixer will fill up with water.
   5.2. Confirm **Mixer: draining?** by choosing Enter.
   The mixer will be drained.

If the fault has been fixed, acknowledge the message **Delete warning?** in the display with Enter.

9.2.2 Mixer temperature sensor

If the temperature sensor in the mixer beaker is faulty or the temperature of the mixed feed in the mixer beaker drops below 0°C, the **Mixer temp. sensor warning** will appear in the display.

You rectify the warning as follows:

1. Use a ohmmeter to measure the voltage at the input of the temperature sensor on the board. Compare the measured value with the value in the circuit diagram, and if it is different, replace the temperature sensor (see the machine circuit diagram).

9.2.3 Identification

If animal identification is not working, **Warning, identification** will appear in the display.

You rectify the warning as follows:

1. Check the cables leading to the antenna. Repair any damage or replace the cables or antennas.

9.2.4 Incorrect ID

All CAN nodes have a unique ID which cannot be changed. The ID is used to automatically check that the right participant reports on the CAN address. If this is not the case, it is possible for the feeder and the participant to communicate, but there will be no proper data exchange. **Warning, Incorrect ID** appears in the display.

You rectify the warning as follows:

1. Check all CAN addresses.
2. Switch the feeder on and hold the button 2 until the setup menu appears on the display.
3. Navigate to **Setup > Boxes** and check the **CAN addresses** of the individual CAN nodes.
4. To exit setup, repeatedly press Esc, until the message **End setup?** appears. Confirm with Enter.

If IDs have changed, e.g., for reasons of compatibility, you must update all CAN nodes. To do this, use an SD card or FlashManagerPlus.

9.2.5 Address used twice

If two or more nodes are linked together in a bus system, it can happen that a CAN address is issued twice. **Warning, duplicate address** appears in the display.

You rectify the warning as follows:

1. Confirm the **Warning, duplicate address** using Enter.

   The CAN participant with the duplicate address will be displayed.
2. Choose **Setup > Boxes** to open the sub-menu shown in the display with the duplicate address.

3. Assign another address which is still available to the CAN node with the duplicate address. For more information on assigning CAN addresses, see the **Setup > Address** chapter (see 5.4.3 "Automatic feeder address" - 69).

   Note: If possible, use an address from the standard range of numbers for the CAN participant concerned.

4. Confirm the changes with Enter.
5. To exit setup, repeatedly press Esc, until the message **End setup?** appears. Confirm with Enter.
6. Delete the warning on all feeders.

9.2.6 Unknown transmitter

The **Unknown transmitter warning** appears in your display:

- If a transmitter is detected by the identification unit for which no animal number has been assigned.
- If a transmitter number has been allocated to an animal number, but has still not been registered.

You rectify the warning as follows:

1. Confirm **Unknown transmitters warning** by choosing Enter.
2. In **No.**, check the unknown transmitter number.
3. In **Number**, you check how often the unknown transmitter number has been identified.
4. In **Time**, you check when the transmitter was last registered by the identification system.
5. Confirm **Delete?** by choosing Enter, if you wish to delete the transmitter number.
6. Confirm **Register** by choosing Enter, if you want to allocate the unknown transmitter number to an animal number.

9.2.7 Calibration

If the last calibration was 120 days ago or if automatic calibration failed, the **calibration warning** will appear in your display. You will see which components you have to calibrate.

You rectify the warning as follows:

1. Calibrate all components shown in the display (see 3.24 "Calibrating feed components" - 39).
2. Confirm **delete warning?** by choosing Enter.

Note: If you delete the warning without calibrating, the message will appear again the next day.

9.2.8 Fill up the MP container

If the automatic feeder is equipped with a powder sensor, this will output a warning if the MP in the container is lower than the sensor. If the sensor reports container empty for 10 portions in succession, **Warning, top up MP** will appear in the display.

You rectify the warning as follows:

1. Confirm the MP warning by choosing Enter.
2. Fill the powder container with milk powder

9.2.9 Milk empty

If the milk tank is empty the **Milk empty warning** will appear in the display. Instead of milk, the calves will be fed feed with milk powder stirred into it, if via  **> Device data > Operating modes** you have set **Milk empty MP** in the menu. Otherwise, feeder operation will be interrupted.

Make sure that the end user provides the calves with feed using an alternative method as long as feed operation is interrupted.

The fault is corrected as follows:

1. Refill the milk container.
2. Confirm **Warning, milk empty** by choosing Enter.
3. In the **Milk: suck in?** menu, press Enter until milk comes out of the inlet without any bubbles and the supply electrode or rod electrode continuously indicates that it is covered.
4. Confirm with Enter, to stop suction of milk.
5. Confirm **delete warning?** by choosing Enter.
6. Confirm **Milk topped up?** by choosing Enter.

   The stainless steel coil of the heat exchanger is filled again.

9.2.10 Calibration scales

If the calibration scales are not working, the **calibration scales warning** will appear in your display.

NOTICE!

There is a risk of malnutrition caused by incorrectly dispensed feed portions.

Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

► You must ensure that the end user provides his/her calves with feed using an alternative method as long as the calibration scales are not working.

DANGER!

Fatal electric shock.

The electrical components of the automatic feeder are live.

► Always switch off the automatic feeder firstly with the Main switch and then disconnect the power plug before working on components of the feeder.

You rectify the warning as follows:

1. Check that the circuit board for the mixer scales is correctly plugged into the main board of the feeder.
2. Check the load rod and the calibration unit of the mixer scales.

Note: The warning is automatically deleted when the fault has been rectified.

9.2.11 Circulation pump

The feeder control unit checks that the circulation pump is working at the start of the day. If it is not working, the **Warning, circulation pump** will appear in the display.

You rectify the warning as follows:

1. Open the right side door of the automatic feeder.
2. Navigate via  **> Diagnostics > Motors** to the **Circulation pump** sub-menu.
3. Confirm **start?** by choosing Enter.
4. Listen to check whether the circulation pump is running.
5. Confirm **check?** by choosing Enter, in order to perform an extensive test of the circulation pump.
6. If the circulation pump is defective, replace it.
7. Confirm **delete warning?** by choosing Enter when you have fixed the fault.

9.2.12 ID chip

The automatic feeder is equipped with an electronic name plate (ID chip) upon which the device number and other important information for the operation of the automatic feeder is stored.

If the ID chip is defective, the **warning ID chip still xx day** will appears in your display. After 30 days, the functionality of the feeder will be limited.

NOTICE!

An interruption in feeding operation means that your calves will not receive any feed.

This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even death of the calves.

► Make sure that the end user provides the calves with feed using an alternative method as long as feeder operation is interrupted.

You replace the ID chip as follows:

1. Order the new ID chip, specifying the device number.

DANGER!

Fatal electric shock

The electrical components of the automatic feeder are live.

► Always first switch off the automatic feeder using the main switch and disconnect the mains plug before you work on the main board.

2. Switch the automatic feeder off using the main switch and disconnect the power plug.
3. Open the flap on the back of the automatic feeder.
4. Unplug the old ID chip from the main board (see circuit diagram provided).
5. Insert the new ID chip on the main board (see circuit diagram provided).
6. Close the flap on the back of the automatic feeder.
7. Insert the mains plug and switch on the automatic feeder again using the main switch.
8. Choose **Setup > ID chip** to go to the **Read** sub-menu.
9. Activate the ID chip by choosing Enter.

9.2.13 Duplicate animal number

If the same number was assigned twice during the fully automated registration process, **Warning, Duplicate animal no.** will appear in your display.

You change the duplicate animal number as follows:

1. Confirm **Duplicate animal no. warning** by choosing Enter.

   The **Duplicated** menu in Animal control appears (see the **Animal checking > Duplicated** chapter in the operator's manual).
2. In **No.**, the full transmitter number of the animal appears.
3. In **Animal no.**, change the automatically assigned number.
4. In **Time** and **Date**, check when the duplicate animal number appeared.

5. Once you have changed the animal number, confirm **confirm?** by choosing Enter.

Note: Only when you have changed the animal number will your confirmation take effect and the warning be deleted.

9.2.14 Machine capacity

When there is no more storage space available for animal numbers or transmitter numbers, the **Warning, Machine capacity** will appear.

Confirm **Machine capacity** by choosing Enter, to obtain detailed information.

- **system limit 250 animals** means: No more free animal numbers are available.
- **Transmitter storage full** means: No more storage space available for further transmitter numbers.

You rectify the warning "system limit 250 animals" as follows:

1. Cancel the registration of one or more animals in the **Animal control** menu (see the operator's manual).

NOTICE!

When you have canceled an animal's registration it will not receive any feed.

This can lead to malnutrition. Malnutrition can cause impaired growth and development, increased susceptibility to illness or even the death of your calves.

► The end user must use an alternative method to supply their calves with feed.

2. Confirm **delete warning?** by choosing Enter.

You rectify the warning "transmitter storage full" as follows:

1. Navigate via 2 **> Animal management > Transmitters** to the **Edit** sub-menu.
2. Select the transmitter number to be deleted and confirm **Delete** by choosing Enter.

   Note: You can only delete transmitter numbers of calves that are not registered (= status: available).
3. Confirm **delete warning?** by choosing Enter.

9.2.15 Check the ball valve

If the ball valve is for working correctly and water cannot flow away into the gully, the message **Warning, check the ball valve** will appear in the display.

This is how to check the ball valve:

1. Confirm **Warning, check the ball valve** by choosing Enter.
2. Navigate via 2 **> Diagnostics > Valves** to the **Ball valve** sub-menu.
3. In the **Water flowing to the gully**, menu, press Enter. The symbol ✓ is displayed in the line.
4. In the **Boiler water: open?** Menu, press Enter, until the mixer is filled with water.

5. In the **Circulate water** menu, press Enter and check that water is flowing away into the gully.

   If water is flowing out of the milk inlet into the mixer, the ball valve is clogged or defective.

   5.1. Clean the ball valve or replace it.

6. In the **Water flowing to the mixer**, menu, press Enter. The symbol ✓ is displayed in the line.
7. In the **Boiler water: open?** Menu, press Enter, until the mixer is filled with water.
8. In the **Circulate water** menu, press Enter and check that water is flowing via the circuit into the mixer.

   If the water is flowing away via the gully, the mixer, the ball valve is clogged or defective.

   8.1. Clean the ball valve or replace it.

9. Confirm **delete warning?** by choosing Enter.

9.2.16 Check SD card

The **Check SD card** warning appears in the display:

- If data is to be saved manually, but no SD card is present.
- If data is to be saved manually, but the SD card is currently write-protected.
- If data is to be saved automatically but the SD card is full.
- If data is to be saved automatically but the SD card is currently write-protected.

9.3 Other faults and messages

9.3.1 Automatic feeder

9.3.1.1 Starting program

The message **Smart Vxx.xx starting program** appears when the control program of the automatic feeder starts.

Wait until the automatic feeder is ready to operate.

9.3.1.2 Initialization of the feeder

The message **first startup Press enter to start installation** will appear in the display in the following cases:

- When the automatic feeder starts for the first time.
- If the processor card must be replaced due to a hardware defect.

Follow the instructions on the screen. The following steps can be performed in the course of the initialization:

- Restoration of the last backup (if available).
- Entry of the language for the user interface.
- Entry of the current date and time.

9.3.2 Hand terminal

9.3.2.1 CAN bus off

If a short circuit or electromagnetic discharges negatively affect the CAN cable, the message **terminal Vxx.xx CAN bus off** will appear in the display.

You can correct the fault as follows:

Check the CAN bus for short circuits and other faults and correct them.

9.3.2.2 CAN bus heavy

The following faults trigger the message **terminal Vxx.xx CAN bus heavy**:

- Short circuit.
- Terminating resistor not set.
- Break in the data line.
- CAN cable incorrectly attached.
- No connection for automatic feeder control unit.

You can correct the fault as follows:

- Check the CAN bus for short circuits.
- Check that the terminating resistor has been properly set.
- Check whether the data line has been interrupted.
- Check that the CAN cables are correctly connected.
- Check that the data line is correctly wired and that the feeder control is working.

9.3.2.3 Waiting

The following faults prevent the hand terminal from initializing:

- The CAN bus address of the terminal is not the same as the one defined in setup of the of the automatic feeder.
- The feeder control unit is not active.

The message **terminal Vxx.xx waiting** appears.

You can correct the fault as follows:

1. Start search mode: Press [<] [>] when you switch on the feeder and keep this key depressed.
2. When the display reappears, you must check that the feeder controller is working.

9.3.2.4 Searching

When the hand terminal is in search mode, the message **terminal Vxx.xx searching** will appear.

You can correct the fault as follows:

- Check that the feeder is working.
- If the message is not automatically hidden in about 10 seconds, you must check the feeder control.

9.3.3 Boot loader

9.3.3.1 Waiting for update

The following faults trigger the message **boot loader Vxx.xx waiting for update**:

- The automatic feeder's control program is not able to run.

  Update the program using an SD card or the FTP Manager.
- The boot loader was (accidentally) activated while switching on.

  If when the automatic feeder was being started the ▲ 0 ▼ +/- was accidentally depressed

9.3.3.2 Flash programming

The message **boot loader Vxx.xx flash programming** will appear whilst the program is being updated.

Wait until the update has been completed.

9.3.3.3 Starting program

The message **boot loader Vxx.xx starting program** will appear when the boot loader for the automatic feeder starts.

Wait until the program has started.

9.4 Service messages

A service message will appear in the automatic feeder's display every four months. This message indicates the maintenance (regular service) that must be performed. Compliance with these maintenance intervals is the only way to ensure the long life and reliability of the automatic feeder.

The following regular services (RS) have been defined:

- RS1 must be performed every 4 months.
- RS2 must be performed every 12 months.
- RS3 must be performed every 36 months.

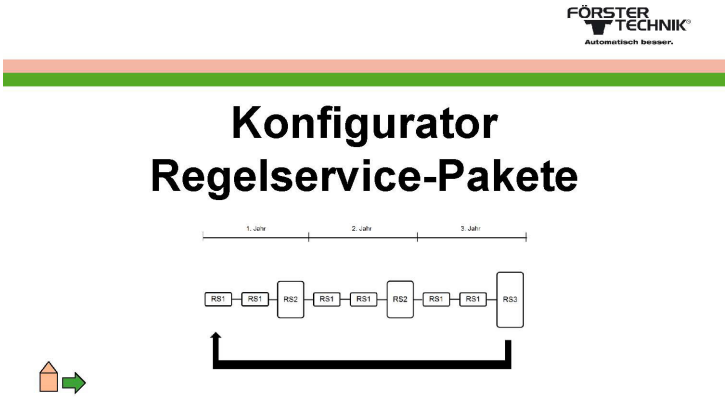
Using **Setup > Service > last**, check when the last regular service were performed and in **Type** which regular service it was (RS1, RS2 or RS3).

Using **Setup > Service > next**, check when the next regular service is due and check in **Type** to see which regular service will be carried out (RS1, RS2 or RS3).

9.4.1 Service work

For each regular service, there are various service packages (sets of spare parts) with the spare parts required, which will differ, depending on the type of feeder and type of service. After replacing the parts subject to wear, you must also check that the feeder is working properly, for example, the calibration. The service work is described in the installation information for the sets of spare parts.

You can collect the corresponding service packages (sets of spare parts) via a regular service configuration tool which can be found in the dealer area of Förster-Technik's web site (**www.foerster-technik.de**).



After performing the regular service, go to **Setup > Service > Serv. performed?** to confirm the **Accept today's date as the date of regular date?** message with Enter.

Note: This service message will be shown on the display for three days and will then disappear until the next regular service is due. It can be deleted earlier by pressing C 9 however, it will be regenerated every day within these three days.

9.5 Diagnosis

The **Diagnostics** menu helps you to find faults in the event of technical problems. You can reach this menu via 2. A diagnosis can be performed for the following parts of the automatic feeder:

- Valves
- Motors
- Heating system
- Sensors
- Calibration scales
- Stations
- Check
- Version
- Setup
- Software
- Remote maintenance

9.5.1 Checking valves/motors

In this menu, you check actuators (valves and motors) and their actuation.

9.5.1.1 Valves

Check the valves as follows:

1. Navigate via 2 **> Diagnostics** to switch to the **Valves** sub-menu.
2. Confirm **Bo. water open?** by choosing Enter, to open the water valve. The valve remains open as long as you hold the key down.

3. In **Ball valve**, press Enter. A new menu in which you can check the ball valve will open.
   3.1. Confirm **Water to the gully** by choosing Enter, to rotate the valve towards the gully, or confirm **Water to the mixer** by choosing Enter, to rotate the valve towards the gully.
   The check (✓) behind the selected line show the last position to which the valve was switched.
   3.2. In the **Boiler water: open?** Menu, press Enter, until the mixer is filled with water.
   3.3. Confirm **Water circulation** by choosing Enter, to pump the water around the circuit or into the gully. The direction can be detected at ✓.
4. Confirm **Mixer open?** by choosing Enter, to open the milk valve. The valve remains open as long as you hold down Enter.
5. Confirm **Mixer drain: open?** by choosing Enter, to open the mixer drain valve. The valve remains open as long as you hold down Enter.
6. Check that the valve opens.

9.5.1.2 Motors

Check the motors as follows:

1. Navigate via  **> Diagnostics** to switch to the **Motors** sub-menu.
2. Confirm **Mixer: start?** by choosing Enter, to start the mixer.
3. Confirm **Mixer pump start?** by choosing Enter, to start the mixer pump.
4. Confirm **Powder start?** by choosing Enter, to start the powder conveyor.
5. In the **flushing agent 1** menu, press Enter.
   5.1. Confirm **check?** by choosing Enter, to check the cleaning agent pump.
   5.2. Confirm **Flushing agent: start?** by choosing Enter, to start the cleaning agent pump.
   Check that cleaning agent flows from the outlet.
6. In the **start flushing agent 2?** menu, press Enter.
   6.1. Confirm **check?** by choosing Enter, to check the cleaning agent pump.
   6.2. Confirm **Flushing agent: start?** by choosing Enter, to start the cleaning agent pump.
   Check that cleaning agent flows from the outlet.

⚠ WARNING!

Hazardous or irritant materials!

► Collect the cleaning agent residues and additive residues and dispose of them safely. When doing this be sure to comply with the manufacturer's instructions and national regulations for the use and disposal of the cleaning agent and additive being used. In addition a mixer cleaning must then be performed.

7. Confirm **Feeding pump: start?** by choosing Enter, to start the feeding pump.

8. In the **Circulation pump** menu, press Enter.
   8.1. Confirm **start?** by choosing Enter, to start the circulation pump. (Simple functional test)
   8.2. Confirm **check?** by choosing Enter, to check the circulation pump. (Extensive functional test)

9.5.2 Checking the heating

In this menu, you check the boiler heating system.

Check the boiler heating system as follows:

1. Navigate via  **> Diagnostics** to switch to the **Heating system** sub-menu.
2. Confirm **switch on?** by choosing Enter.
3. In the **Boiler** menu, you check the temperature.
4. Keep the Enter in **switch on?** Depressed, the boiler will then heat up. If the temperature rises, that means the heater is working.

9.5.3 Checking sensors

In this menu, you check the sensors of the following components:

- Supply, point and rod electrode.
- Flushing agent
- Button for the manual feeding pump (active/inactive).
- Mixer and boiler (temperatures of the liquids in the boiler and in the mixer beaker).
- Water meter

9.5.3.1 Supply, point and rod electrode

Check the electrodes as follows:

1. Navigate via  **> Diagnostics** to the **Elec.** sub-menu. **Supply, elec. point** or **Elec. rod** sub-menu.
2. In the right-hand column, check the status (**free** or **covered**)
3. Confirm **Elec. Supply, elec. point** or **Elec. rod** with Enter.
   3.1. In the Status menu, check the status (**free** or **covered**).
   3.2. Confirm **Bo. water start?** by choosing Enter.
   The electrode will be triggered if **water** is dispensed into the mixer beaker and hits the electrode.
   3.3. Confirm **Milk: start?** with Enter.
   The electrode will be triggered if **milk** is dispensed into the mixer beaker.
   3.4. Confirm **Mixer: draining?** by choosing Enter, to pump out the liquid again.

9.5.3.2 Flushing agent

You check the flushing agent follows:

1. Navigate via  **> Diagnostics > Sensors** to the **Flushing agent** sub-menu.
2. Check that the temperature in the right-hand column has the status **OK**.

9.5.3.3 Button for the manual feeding pump

Check the button as follows:

1. Navigate via  **> Diagnostics > Sensors** to the **MP button** sub-menu.
2. In the right-hand column, check the status (active or inactive).

9.5.3.4 Temperature in the mixer and boiler

Check the temperature of the liquid in the mixer or boiler as follows:

1. Navigate via  **> Diagnostics > Sensors** to the **Boiler** or **Mixer** sub-menu.
2. Check the temperature in the right-hand column.

9.5.3.5 Water meter

In this menu, you check the water meter.

Check the water meter as follows:

1. Navigate via  **> Diagnostics > Sensors** to the **Water meter** sub-menu.
2. In **Pulses**, you check the pulses from the water meter.
3. Confirm **Boiler water** with Enter.
   If the number of pulses increases, the water meter is responding.
4. Confirm **Mixer: draining?** by choosing Enter, to pump out the liquid again.

9.5.4 Calibration scales

In this menu, you check the calibration scales.

Check the calibration scales as follows:

1. Navigate via  **> Diagnostics** to switch to the **Calibration scales** sub-menu.
2. Confirm **check?** by choosing Enter, to check the calibration scales.
3. Confirm **adjust?** by choosing Enter, to tare the calibration scales.

9.5.5 Checking stations

In this menu, you check the feeding box(es).

- You check that the identification system of the feeding box is working.
- You can open the feeding box valve.
- In the display, you can view the control unit assigned to the feeding box.

You check the identification system of a feeding box as follows:

1. Navigate via  **> Diagnostics > Boxes > Feed** to the **Feeding box 1** or **Feeding box 2** sub-menu.
2. To check the identification (antenna test), hold a transmitter near the antenna.
3. In **No. ‡**, you check the transmitter number.

If the transmitter number is not recognized, proceed as follows:

1. Check in the setup whether the correct identification system is configured.
2. Check that the data lines between antenna and automatic feeder are undamaged.
3. Check the setup for the allocation of the station that is causing identification problems.

You check the feeding box valve as follows:

1. Navigate via  **> Diagnostics > Boxes** to the **Feeds** sub-menu.
2. Confirm **open?** for the valve concerned by choosing Enter.
3. Check that the valve opens.

9.5.6 Monitoring

In this menu, you check the following faults:

- How often the automatic feeder was without power (**power failures**).

  Note: Switching on and off are also considered to be power failures.
- In **Watchdog**, the software is monitored.
- How often the feeder control unit had to be restarted after a program error (**Reset**).
- How often the connection to the **terminal** was faulty.
- How often an error occurred in connection with the **database**.
- How often the automatic feeder received no response from the **identification** system.
- How often the minimum temperature in the heat exchanger was not met (**heating**).
- How often the water test was negative (**water shortage**).
- How often the milk test was negative (**milk shortage**).
- How often the mixer could not be drained via the mixer drain valve (**mixer draining**).
- How often the **heating** function was faulty.
- How often erroneous values were provided by the **water meter**.

- How often faults occurred during automatic cleaning of the mixer or during automatic cleaning of the heat exchanger (**cleaning**)
- How often the test of the heat exchanger by the boiler was run unsuccessfully (**HE not filled**).
- How often the **milk valve or flushing valve** were not properly closed.
- How often implausible values were reported by the temperature sensors in **Boiler** and **Mixer**.
- How often the **temperature** of the boiler water was **too high**. e.g., if the automatic feeder was supplied with hot water.
- How often the **supply electrode** was grounded before mixing a feeding portion.
- How often a CAN node is registered with the incorrect CAN address (**incorrect ID**).
- How often the automatic feeder could not switch to automatic mode because, for example, the liquid and powder feed components were not calibrated (**calibration**).
- How often the same address has been assigned in the CAN bus to devices (**duplicate address**).
- How often a fault has occurred in connection with the **ID chip**.
- How often **Unknown transmitter** was detected by the identification system.
- How often it has been indicated that an animal number has already been assigned (**duplicate animal no.**).
- How often the test of the **circulation pump** was negative.
- How often the **flushing agent** empty indicator was displayed.
- How often the automatic feeder tried to establish a connection to the cloud (**Cloud connect retry/Cloud reconnect**)

You check the faults as follows:

1. Navigate via  **> Diagnostics** to switch to the **Checking** sub-menu.
2. Select the fault that occurred.
   2.1. In **Number**, you check how many times the fault occurred.
   2.2. In **since**, you check when the entries were last deleted.
   2.3. In **last on** or **last at** you can determine the day on which or the time at which a certain event last occurred.
3. Confirm **Delete?** by choosing Enter to delete the fault message.

9.5.7 Version

In the **Version** menu, you can check version numbers. The following units have a version number:

- Feeder
- Processor
- ID chip
- Terminal
- Identifications at existing feeding stations.
- Peripheral device

Check the version as follows:

1. Navigate via  **> Diagnostics** to switch to the **Version** sub-menu.
2. Then use < > Go to the desired sub-menu and read the version number.

9.5.8 Setup

In this menu you can only view the settings. To make changes, you must open the setup menu (see 5. "Setup" - 65 and following pages)

You check the setup settings as follows:

1. Navigate via  **> Diagnostics** to switch to the **Setup** sub-menu.
2. Go to the desired sub-menu and check the settings.

9.5.9 Software

This menu is only intended for the manufacturer’s development department.

9.5.10 Remote maintenance

During remote maintenance, the automatic feeder is operated via the CalfCloud.

1. Navigate via  **> Diagnostics** to switch to the **Remote maintenance** sub-menu.
2. In **start?**, you permit remote maintenance of the automatic feeder.
3. In **end?**, you break off remote maintenance of the automatic feeder.
4. In **Status**, you can see the current status of the connection to the cloud. The possible statuses are online, offline or reconnecting.
5. In **Service-ID** you can view the unique service identification number of the automatic feeder.

   Note: Remote maintenance starts when the service ID is entered into the cloud. The service ID is valid until 23:59:59 hours.

10. Appendix

Note: The following checklists and overviews also include additional equipment. If this equipment is not fitted in your specific case, skip the irrelevant items on the list.

10.1 Checklist for commissioning and recommissioning

Note: Before each initial startup or restart of the automatic feeder, you must carefully read and observe the operating manual, particularly the safety information.

General tasks	OK?
Inform the end user that the automatic feeder must be installed in a frost-proof location or must be fitted with frost protection equipment.	☐
Inform the end user that he/she must ensure appropriate lightning protection (e.g., lightning protection system for the entire building).	☐
Tell end users that the automatic feeder must be protected from rain and moisture.	☐
Tell the end user that the water should be of drinking water quality. Excessive calcium and/or iron and/or manganese concentrations may cause premature wear.	☐
Tell end users that the hose which goes from the mixer drain valve to the drain shaft may not be lengthened.	☐
Tell end users that the feeder and cables must be protected against exposure to sunlight.	☐
Set up the automatic feeder on an even surface.	☐
Remove the wing nut from the mixer.	☐
Cut the discharge hoses short to length.	☐
Electrically ground the automatic feeder.	☐
Connect water supply.	☐
Connect milk supply.	☐
Connect drain.	☐
Install feeding box and feeding station.	☐
⊕Attach pushbutton/remote control.	☐
Connect antennas and Ethernet cable.	☐
⊕Install concentrate station (including antennas) and fill concentrate container.	☐
⊕Install animal scales: install scales controller(s), install weighing platforms in the stands.	☐
Install suction hoses.	☐
Install safety grid for the powder hopper attachment.	☐
Fill up MP container.	☐
Fill milk container.	☐

Installing external cleaning agent supply	☐
Test the switch setting of the vapor barrier.	☐
Connect power supply.	☐
Switch on automatic feeder.	☐
Fill HE with water.	☐
Reinstall device data.	☐

Setup	**OK?**
Switch the automatic feeder off and again at main switch whilst holding down  .	☐
Check the following settings:	
Language:	☐
Check time/date, set if necessary.	☐
Machine:	
Assign number and address.	☐
Determine HE size.	☐
Heating system electronic/none.	☐
Equipment:	
Mixer drain fitted yes/no.	☐
⊕Additive dispenser 1/2 powder or liquid fitted yes/no.	☐
Flushing agent pump fitted yes/no.	☐
⊕Flushing agent sensor no/rod.	☐
Circulation valve fitted HE/no.	☐
⊕Air valve (pulsating compressed air cleaning) fitted yes/no.	☐
Ball valve fitted yes/no.	☐
Mixer temperature sensor fitted yes/no.	☐
Water meter fitted yes/no.	☐
Point and supply electrode fitted yes/no	☐
Identification:	
Set type.	☐
Set squelch value.	☐
ID chip	☐
⊕**Calibration scales:**	
activate yes/no	☐
adjust.	☐

Stations:	
Activate internal feeding box(es), controlled by feeder.	☐
⊕Configure single IFS feeding box(es) / set extras, if any. For IFS feeding box(es), assign CAN bus addresses: To do this, put IFS (feeding box) into search mode and then, via search? assign the address.	☐
⊕Configure quadruple IFS feeding box(es) and issue CAN bus addresses: To do this, put compact IFS unit into search mode and then allocate address via **search?** assign the address. For each of the four pumps, enter the assignment to the station and its equipment.	☐
⊕Configure the CalfRail and issue a CAN bus address: To do this, put CalfRail unit into search mode and then, allocate address via **search?** assign the address.	☐
⊕Configure IFS concentrate station 1(...). Select concentrate feeder type. Issue CAN bus addresses: To do this, put IFS (C-station) into search mode and then, via **search**? assign the address.	☐
⊕Configure scales controller(s) 1/x. To do this, set the CAN address on the scales controller circuit board via HEX switch and enter the set address in setup. Activate any weighing units (1/2).	☐
Terminal:	
Assign address.	☐
Communication:	
Institute yes/no	☐
Printer no/serial/CAN.	☐
Configure gateway, parameters.	☐
Configure network.	☐

Device data	**OK?**
Operating modes:	
Set rationed or ad lib mode.	☐
Set portion:	
Set the set and minimum temperature.	☐
Set output pause.	☐
Set mixer draining and mixer OFF delay	☐
Set milk values:	
Set MP/milk mode or MP mode.	☐
Continue with MP / machine stop.	☐
Enter milk dry matter.	☐
Activate milk draining.	☐

Check **time and date**.	☐
Assign the **function keys**	☐
Specify the **animal list**.	☐
Define the station parameters:	
Drain time.	☐
Switch **auto-calibration** on or off, specify the time of auto-calibration.	☐
⊕**Teat slider** (close/open after xx min).	☐
⊕**CalfProtect** (open after xx min).	☐

Calibration	**OK?**
MP	☐
Boiler water	☐
Milk	☐
⊕Additive 1/2	☐
Flushing agent	☐
⊕Concentrate stations	☐
⊕Hose pumps	☐
⊕Settings for automatic calibration of MP/water/milk.	☐
⊕Settings for automatic calibration of the hose pump.	☐

Registration	**OK?**
Antenna test	☐
Set the scheme for the transmitter number assignment: consecutive, automatic.	☐
Reading transmitter numbers.	☐
Set registration mode: no, automatic, available transmitter numbers.	☐
Register the animals.	☐

Plans	**OK?**
Feed:	
Feeding plans	☐
Concentrate plans	☐
Milk plans	☐
Quantity limitation: check minimum saved amount/maximum saved amount.	☐
⊕Check the maximum speed of the hose pumps and adjust them if necessary.	☐
Weaning	☐

⊕**Concentrate:**	
Concentrate plan	☐
Portion size	☐
Quantity limitation: check minimum saved amount/maximum saved amount.	☐
Activate accustoming quantity yes/no.	☐
Check amount/threshold and adjust if necessary.	☐
Activate carryover: yes/no	☐

Change date of individual animals	**OK?**
Group	☐
Feed	☐
Concentration	☐
Milk share	☐
⊕Concentrate	☐
⊕Additive 1 / additive 2	☐
Weight	☐
Plan day (correction days)	☐

Cleaning	**OK?**
Check or make settings:	
Temperature, flushing water.	☐
Flushing agent amount.	☐
Flush the teats:	☐
Drainage mode	☐
Cleaning circuit	☐
⊕**Air** (pulsating compressed air cleaning)	☐
Perform cleaning.	☐

Recommissioning	**OK?**
Set up the automatic feeder.	☐
Clean outside of automatic feeder with damp cloth.	☐
Fit powder hopper attachment safety grid.	☐
Connect water connection of automatic feeder to milk tank using new hose.	☐
Connect automatic feeder milk connection to milk tank using new hose.	☐
Commission the cleaning agent supply.	☐

Fitting a new teat.	☐
Connect teat to feeding box valve (rationed mode) or to mixer beaker (ad lib mode) using new hose. (Install hose with downwards gradient to automatic feeder).	☐
Connect mixer drain valve and the drain channel using a hose. The hose may not be extended.	☐
Connect the hose to the ball valve.	☐
Replace the dummy plug with the cable gland for the Ethernet cable, and connect the Ethernet cable.	☐
Remove locks of antenna connections and connect antenna cable.	☐
Connect power plug to installed socket and switch on the automatic feeder.	☐
On the hand terminal, acknowledge the message **Fault, HE not filled** by pressing Enter. Press	☐
and confirm **HE: fill** by choosing Enter. Press	☐
Input the time and date using **> Device data > Date and Time**.	☐
Run cleaning programs.	☐
Fill milk powder (MP).	☐
Fill milk container.	☐
Perform calibration.	☐
Check setup settings.	☐

10.2 Materials list

The materials used in the automatic feeder include:

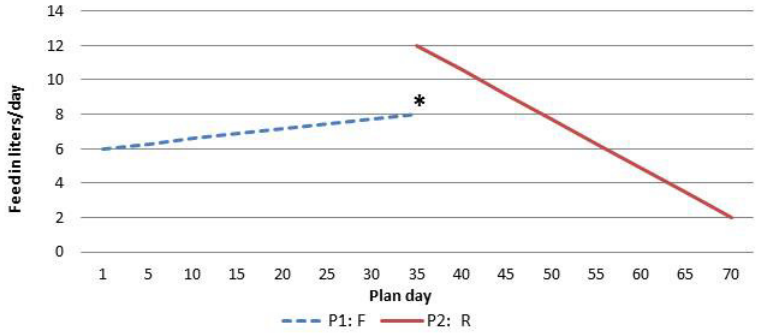
- Brass, Enzidor®
- Silicon carbide
- Carbon
- V2A, V4A
- Plastics: PET, TPE, silicone, PVC, NBR, ABS, PUR
- Viton
- Vulcanized fiber, graphite-loaded
- Rubber
- Bronze
- Brass: forged & chrome-plated

10.3 Shutdown checklist

Shutdown	OK?
Perform flushing.	☐
Stop the cleaning agent supply and drain the cleaning agent from the system.	☐
Drain water from boiler, solenoid valves, pressure valve, and volume control valve. 1) Close water tap. 2) On the hand terminal choose  **> Bo. water > Start?** Dispense water into the mixer beaker. 3) Switch off the automatic feeder and disconnect the power plug. 4) Disconnect water hose between water solenoid valve and boiler. 5) Open vent screw on boiler cover and drain boiler. 6) Reattach water hose and tighten vent screw.	☐
Disconnect the suction hose from the ball valve and dispose of it.	☐
Disconnect and dispose of water hose.	☐
Disconnect and dispose of milk hose from milk connection and milk tank.	☐
Tip out liquid in mixer.	☐
Disconnect hose between teat and feed station valve or mixer. Replace hoses and teats.	☐
Disconnect hose between mixer drain valve and drain channel.	☐
Close cable glands of Ethernet Connection with dummy plugs.	☐
Close antenna connection with locks.	☐
Clean outside of automatic feeder with damp cloth.	☐
Empty milk powder container.	☐
Remove powder container safety grid.	☐
Basic cleaning of milk powder container and dosing unit.	☐
Empty and clean milk tank	☐
Seal off the cleaning agent.	☐

10.4 Standard feeding plans

Standard Feeding Plan Group A



* This quantity is not intended as a maximum quantity but as a reference value to calculate an alarm level.

Standard Feeding Plan
P1: 35 days from 6 to 8 L ***F***
P2: 35 days from 12 to 2 L ***R***

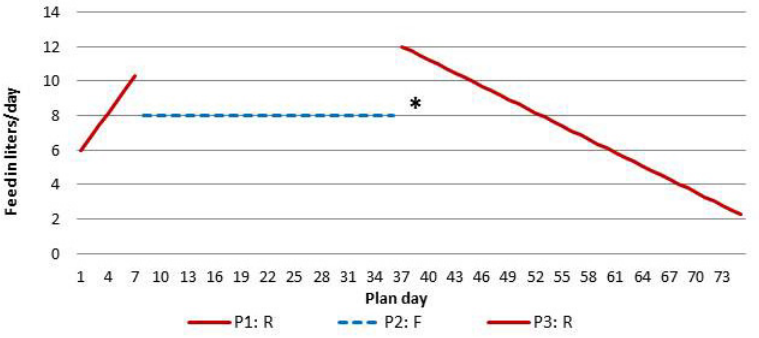
Total: 70 days

Standard Concentration Plan
P1: 70 days from 150 to 150 g/L

Standard Quantity Limitation Plan
P1: 10 days: 1.5 L (Min) 2.0 L (Max)
P2: 25 days: 2.0 L (Min) 2.5 L (Max)
P3: 35 days: 2.0 L (Min) 3.0 L (Max)

F = 40FIT feeding
R = Restricted feeding

Standard Feeding Plan Group B



* This quantity is not intended as a maximum quantity but as a reference value to calculate an alarm level.

Standard Feeding Plan
P1: 7 days from 6 to 10 L ***R***
P2: 28 days from 8 to 8 L ***F***
P3: 40 days from 12 to 2 L ***R***

Total: 75 days

Standard Concentration Plan
P1: 75 days from 150 to 150 g/L

Standard Quantity Limitation Plan
P1: 10 days: 1.5 L (Min) 2.0 L (Max)
P2: 25 days: 2.0 L (Min) 2.5 L (Max)
P3: 40 days: 2.0 L (Min) 3.0 L (Max)

F = 40FIT feeding
R = Restricted feeding

Standard Feeding Plan Group C

Standard Feeding Plan
P1: 2 days from 5.0 to 5.0 L
P2: 6 days from 5.0 to 6.0 L
P3: 21 days from 6.0 to 6.0 L
P4: 35 days from 6.0 to 2.5 L

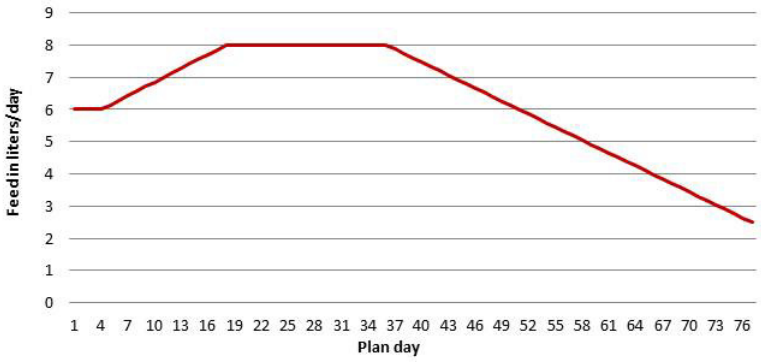
Total: 64 days = 316 L

Standard Concentration Plan
P1: 64 days from 150 to 150 g/L

Total: 64 days = 47.4 kg MP

Standard Quantity Limitation Plan
P1: 14 days: 1.5 L (Min) 2.0 L (Max)
P2: 14 days: 2.0 L (Min) 2.5 L (Max)
P3: 36 days: 2.5 L (Min) 3.0 L (Max)

Standard Feeding Plan Group D



Standard Feeding Plan
P1: 3 days from 6.0 to 6.0 L
P2: 14 days from 6.0 to 8.0 L
P3: 18 days from 8.0 to 8.0 L
P4: 42 days from 8.0 to 2.5 L

Total: 77 days = 478 L

Standard Concentration Plan
P1: 77 days from 150 to 150 g/L

Total: 77 days = 71.7 kg MP

Standard Quantity Limitation Plan
P1: 14 days: 1.5 L (Min) 2.0 L (Max)
P2: 14 days: 2.0 L (Min) 2.5 L (Max)
P3: 49 days: 2.5 L (Min) 3.0 L (Max)

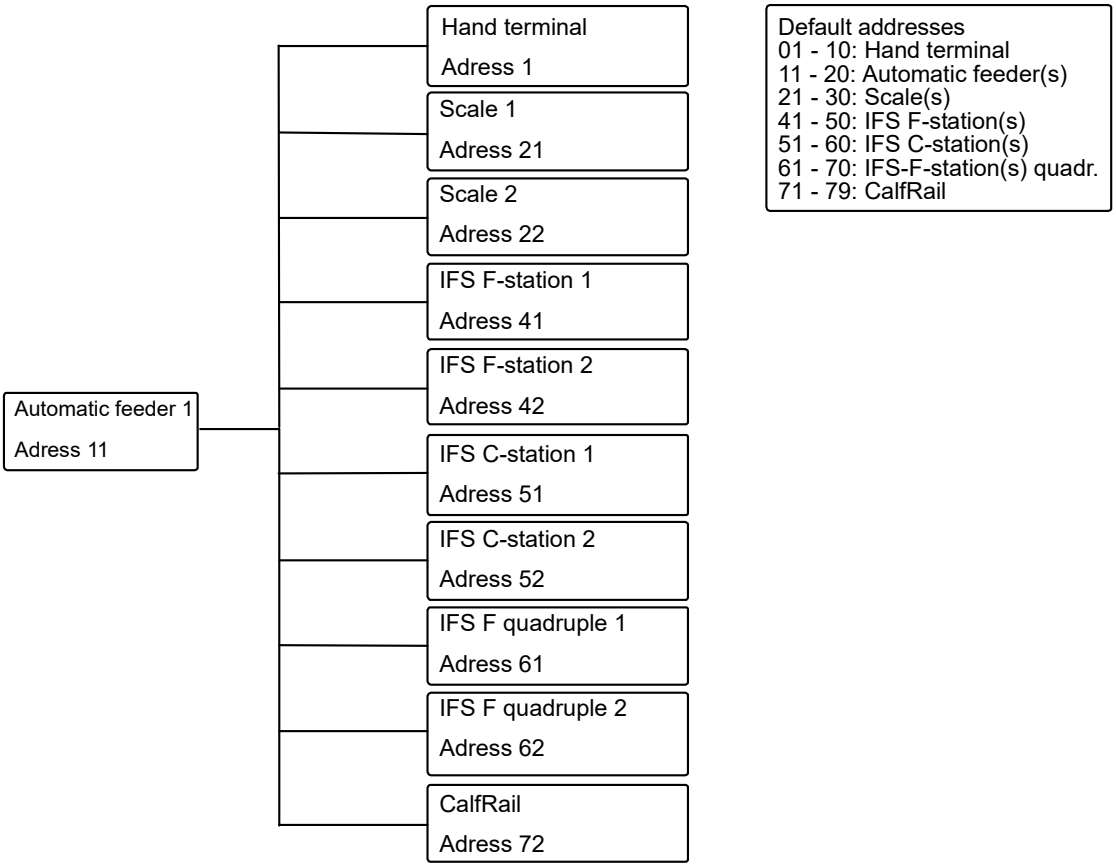
10.5 CAN bus addresses

Standard addresses

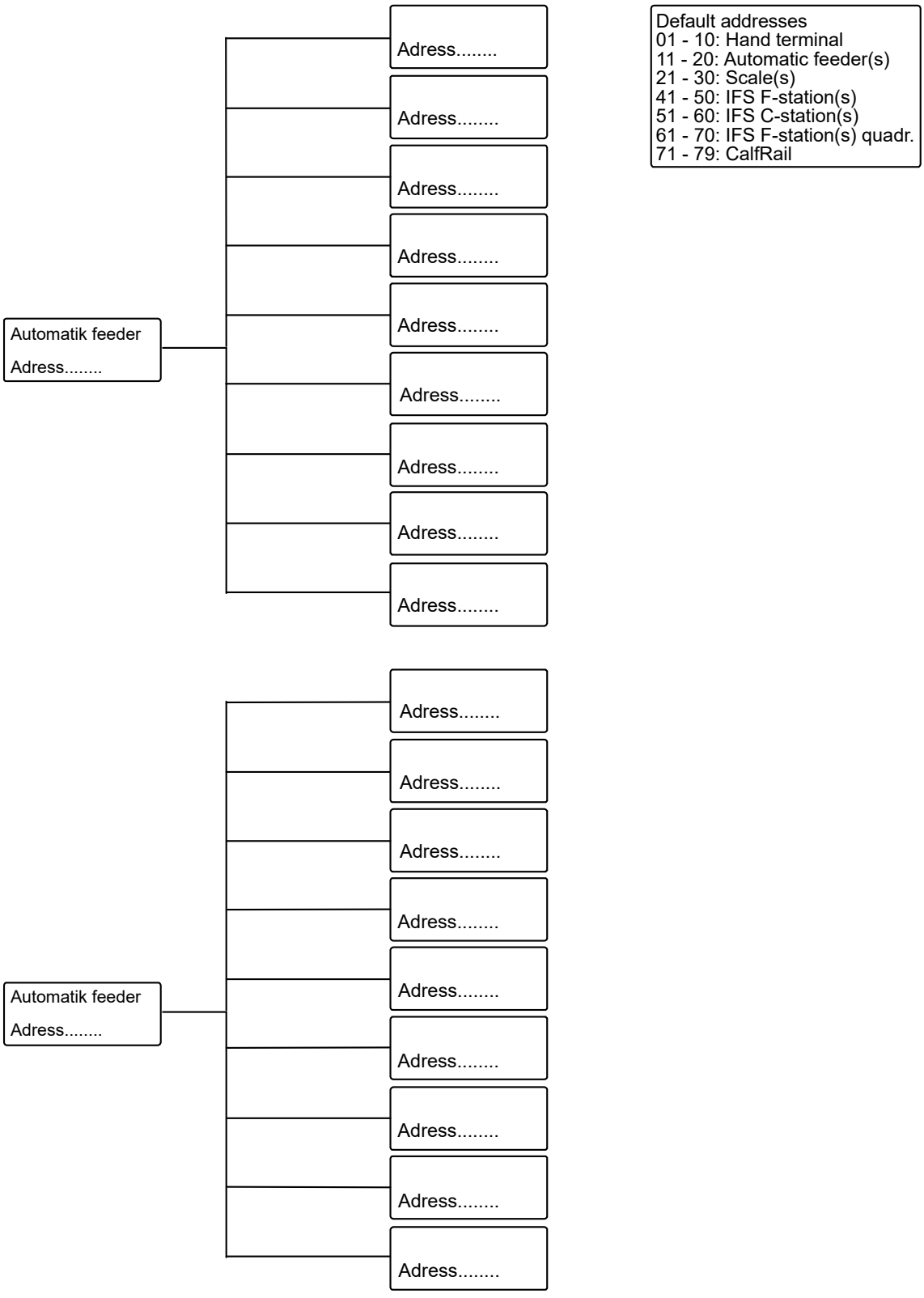
The following chart shows an example of address assignment based on default values. On the following page, you can assign completely customized addresses. Copy the template if needed.

Note: You can assign a number only once.

Note: If possible, do not change the standard addresses.



Template for custom address assignment



10.6 Checking components for compliance with national regulations

All electrical components must be checked regularly for electrical safety in accordance with the intervals and test methods defined in the national regulations.

If any faults or damage are detected during the inspection, the faulty components have to be replaced before the automatic feeder can be used again.

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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- VS2-*, TAP5-VS2-*, VDW5-VS2-*, TAK5-CS2-*, TAP5-CS2-*, TAK5- VS1-*, TAP5-VS1-*, VDW5-VS1-*, TAK5-CS1-*, TAP5-CS1-*, VDW5-CS1-*, TAK5- VH2-*, TAP5-VH2-*, VDW5-VH2-*, TAK5-CH2-*, TAP5-CH2-*, VDW5-CH2-*, TAK1-KU2-*, TAK5-KR3-*, TAP1-ZM2-*, TAP2-ZM2-*, VDW1-WA2-*, TAP7-AH2-*
Function:	Automatic preparation, heating, and dosing of liquid feeds for young animal feeding

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

2006/42/EG	Directive 2006/42/EG of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EG (recast)
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)

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

EN ISO 12100:2010-11	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (ISO 12100:2010)
EN 60335-1:2012/A11:2014	Household and similar electrical appliances - Safety - Part 1: General requirements IEC 60335-1:2010 (modified)
EN 61000-6-2:2005/AC:2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3:2007/A1:2011/ AC:2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

Engen, 23.06.2017

Place, date

Signature
Markus Förster
CEO