May 31, 2017

Original operating manual

SynchroFeed feeding station

TA Version H 8.14 / S 1.10 and higher

Versions: IFS 1-fold 6.05 / IFS 4-fold 6.11

Table of contents

1 Introduction

This operating manual puts you in the position to operate the SynchroFeed feeding station safely as intended.

Please read the operating manual carefully before putting the SynchroFeed feeding station into service.

Keep the operating manual readily available at all times and pass it on to the next user.

Observe all of the warnings and safety instructions in this operating manual at all times.

1.1 Models

The SynchroFeed feeding station is available in the following versions:

- **Extension 1 feeding station SynchroFeed**
- **Extension 4 feeding stations SynchroFeed**

1.2 Functional description

The SynchroFeed feeding station

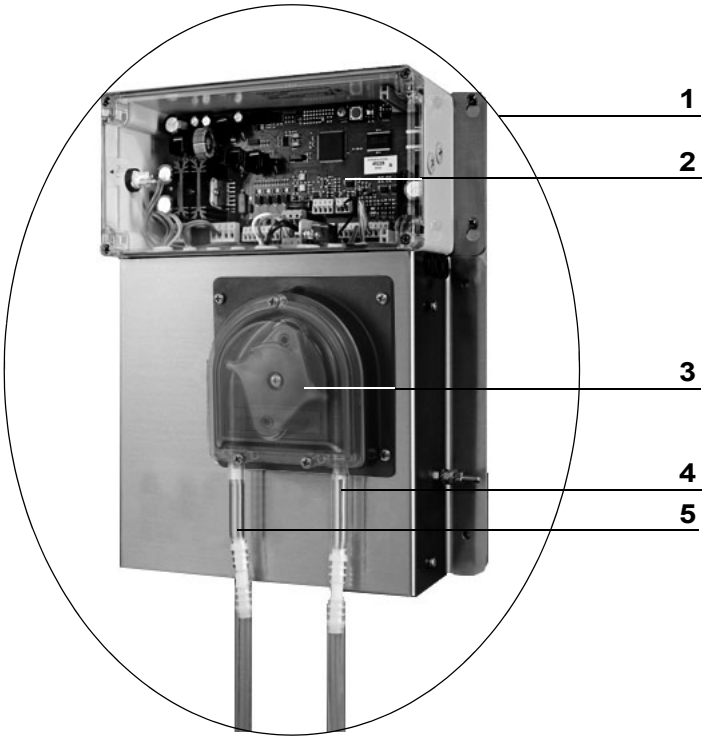
- Allows several feeding stations to be supplied simultaneously with feed via servo-controlled hose pumps
- Facilitates feeding of calves (especially young calves) without practice (up to an age of about five weeks) if the hoses have a length of several meters
- Facilitates feeding of calves if the teat is more than 10 to 15 cm higher than the hose connection point of the mixer

When a calf entitled to feed enters the feeding box, feed is mixed in the mixer jar and conveyed to the pressure sensor via servo-pump. When the calf entitled to feed sucks on the teat, milk is supplied from the pressure sensor to the teat.

For parallel feeding (SynchroFeed), the supplied quantity is identified at the same time via the pump and registered for the corresponding calf.

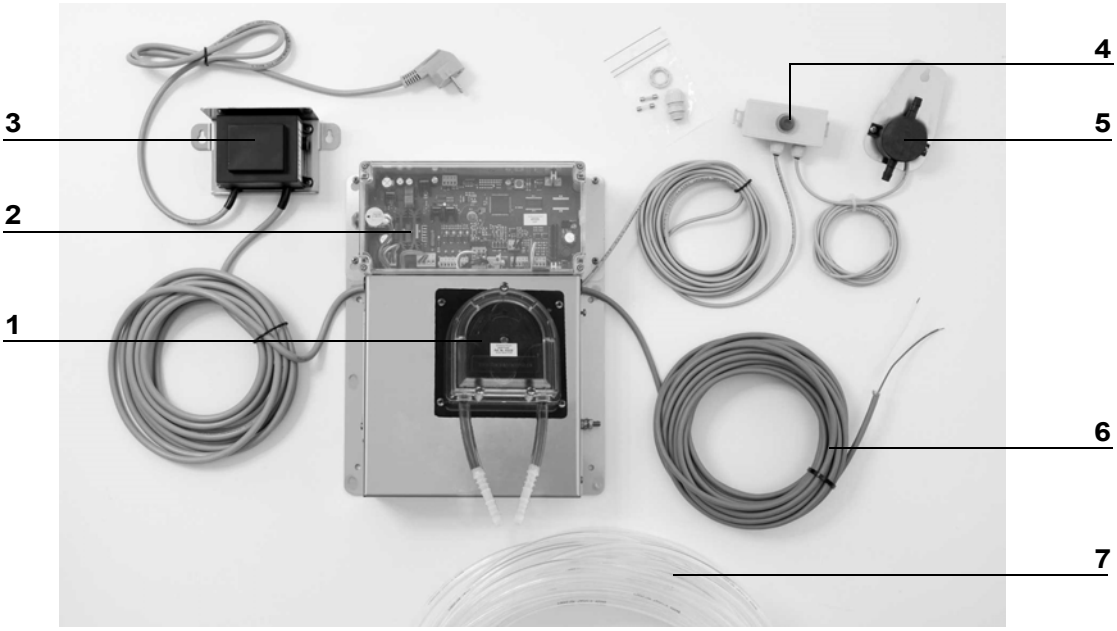
1.3 Components

1.3.1 Extension 1 feeding station SynchroFeed



1 SynchroFeed feeding station, complete
2 IFS control
3 Servo pump
4 Servo pump, intake side
5 Servo pump, pressure side

1.3.1.1 Scope of delivery, 1 SynchroFeed feeding station extension

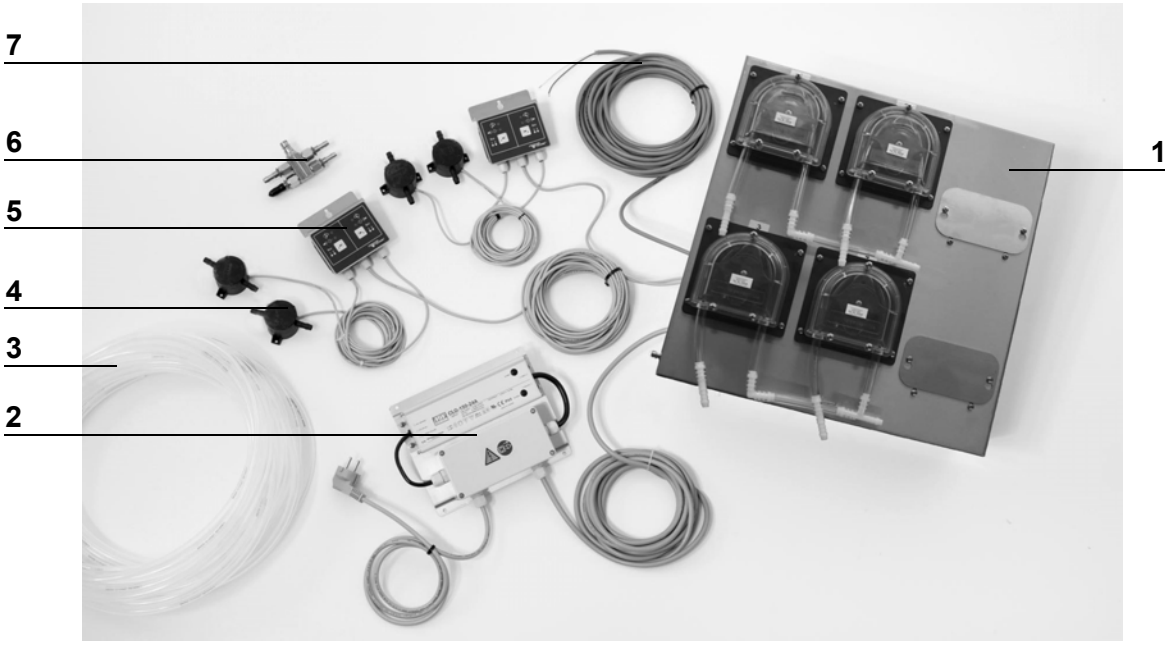


- 1x servo pump + reed switch for quantity identification **(1)**
- 1x IFS control **(2)**
- Mains adapter for IFS control **(3)**
- 1x pushbutton for manual feeding **(4)**
- 1x pressure sensor **(5)**
- 1x 10 m CAN bus cable **(6)**
- 1x 10 m suction hose (7 x 2 mm) **(7)**
- 1x partition fitting (not illustrated
- 1x standard suction retainer with 1x teat each (not illustrated)
- 1x T-hose adapter (plug-in) (not illustrated)
- 1x 0.4 m hose (8 x 3 mm) (not illustrated)
- 1x partition fitting (not illustrated
- 1x screwed fitting (not illustrated)
- Silicone grease (not illustrated)

1.3.2 Extension 4 feeding stations SynchroFeed

1 SynchroFeed feeding station incl. control
2 Servo pump
3 Servo pump, intake side
4 Servo pump, pressure side

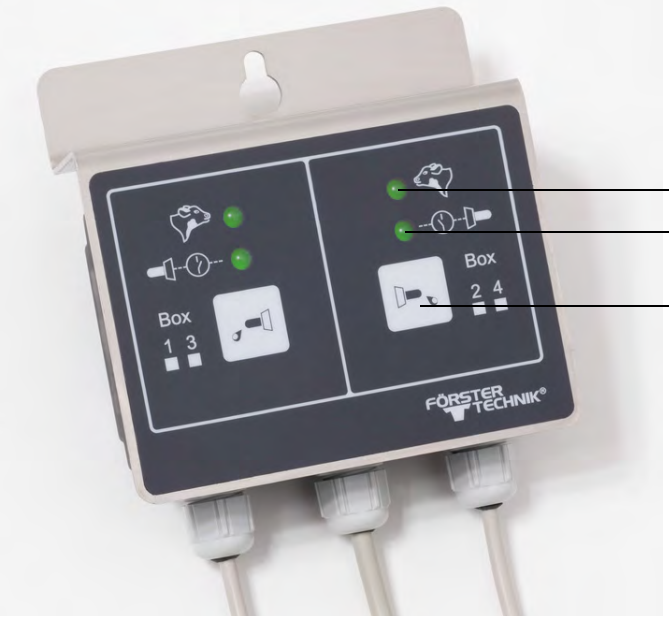
1.3.2.2 Scope of delivery: 4 SynchroFeed feeding stations extension



- 4x servo pump + reed switch for quantity identification and IFS control **(1)**
- Mains adapter for IFS control **(2)**
- 1x 30 m suction hose (7 x 2 mm) **(3)**
- 4x pressure sensors **(4)**
- 2x dual stationary remote control with LEDs **(5) -> OPTION!**
- 1x flow adapter, 4-fold (with 4x plugs) **(6)**
- 1x 10 m CAN bus cable **(7)**
- 1x partition fitting (not illustrated)
- 1x 0.4 m hose (8 x 3 mm) (not illustrated)
- 4x standard suction retainer with 1x teat each (not illustrated)
- 1x screwed fitting (not illustrated)
- 2x blind plug (not illustrated)
- Silicone grease (not illustrated)

1.3.2.3 Remote operation with LEDs (OPTION)

The remote operation contains two LEDs. The entitlement LED and the pressure sensor LED.



1 Entitlement LED
2 Pressure sensor LED
3 Feeding button

Entitlement LED

- LED lights up: The calf is entitled.
- LED flashes slowly: The calf has ≤0.5 liters entitlement.
- LED flashes quickly: The calf is not entitled.
- LED off: The calf is not recognized.

Pressure sensor LED

The pressure sensor LED shows the status of the sensor, as does the LED directly on the pressure sensor.

1.4 Technical data

The SynchroFeed feeding station can be connected to the Vario, Vario+ and VARIO smart automatic feeders.

1.4.1 Extension 1 feeding station SynchroFeed

Height:	360 mm
Width:	300 mm
Depth:	150 mm
Weight:	about 12.5 kg

Mains connection:

Grounded socket: 230 V/50 Hz (L/N/PE)

Fused at customer with: 10/16 A

Customer's residual current device (RCD): 30 mA

Potential equalization: at least 4 mm² CU

Mains adapter:

DIN EN 61558-2-6-compliant, protection cl. I

Primary: 230 V / 50 Hz / 0.3A

Secondary: 21 VAC / 72 VA

Control:

Input: 21 VAC

1.4.2 Extension 4 feeding stations SynchroFeed

Height:	450 mm
Width:	500 mm
Depth:	240 mm
Weight:	about 45 kg

Mains connection:

Grounded socket 230 V/50 Hz (L/N/PE)

Fused at customer with: 10/16 A

Customer's residual current device (RCD): 30mA

Potential equalization: at least 4 mm² CU

Mains adapter:

Input: 100...240 V / 47...63 Hz / 1 A at 230 VAC

Output: 24 VDC / 6.3 A

Control:

Input: 21 VAC / 24 VDC

1.5 Manufacturer's contact details

Please contact us if you have any questions about our products or require technical support!

Please note down the item number stated on your device to have it ready and available whenever you make a call.

Item no.:

Our contact details:

Förster-Technik GmbH
Gerwigstrasse 25
78234 Engen, Germany
Phone: +49/ (0)7733/ 9406- 0
Fax: +49/ (0)7733/ 9406- 99
info@foerster-technik.de
www.foerster-technik.de

2 Important safety instructions

This chapter outlines:

- The hazards caused by your SynchroFeed feeding station and how to avoid them.
- The safety labels attached to the SynchroFeed feeding station and what they mean.
- How to operate the SynchroFeed feeding station safely.

The SynchroFeed feeding station 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 SynchroFeed feeding station and warning notices in this manual provide warning of these hazards.

2.1 Intended use

The SynchroFeed feeding station is only intended for the provision, delivery and dosing of animal feed in liquid form for the Vario automatic calf feeder.

2.2 Target group

2.2.1 Necessary qualifications of the owner

The owner must be a trained farmer or have good practical experience in farming. He must know the relevant accident prevention regulations and generally accepted safety regulations.

2.2.2 Necessary qualifications of the service technician

Only trained service technicians are authorized to install the SynchroFeed feeding station, put it into service and subject it to maintenance and repairs.

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 and life caused by the SynchroFeed feeding station:

⚠ WARNING!

Danger from electric current

The SynchroFeed feeding station is operated with electrical current.

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

- Read the operating manual before operating the SynchroFeed feeding station.
- Keep children away from the SynchroFeed feeding station.
- Do not touch any moving parts of the SynchroFeed feeding station; for example, the servo pump.
- Only use genuine spare parts from the manufacturer.
- Turn off the automatic feeders and disconnect the power plug before carrying out any maintenance or cleaning work on the SynchroFeed feeding station.
- If you operate the SynchroFeed feeding station outside closed spaces, you must protect the SynchroFeed feeding station against rain and moisture; for example, with a roof.
- The following specific hazards are associated with the SynchroFeed feeding station'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 SynchroFeed feeding station 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.
- The servo pump may start up unexpectedly if a calf which is entitled to feed approaches the unit. This can crush fingers or hands. Never reach into the area of the automatic feeder while the automatic feeder is in operation.
- **Chemical burn**. The cleaning agent used to clean the SynchroFeed feeding station 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.
- **Substantial physical exertion**. The SynchroFeed feeding station can weight up to about 45 kg. Never attempt to carry them by yourself as this can cause excessive physical strain.

Material damage caused by the SynchroFeed feeding station

The following material damage can be caused by the SynchroFeed feeding station:

- **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 SynchroFeed feeding station ceasing to function correctly.

2.4 Your duties

- Prevent misuse by children.
- Carefully read this operating manual before commissioning the SynchroFeed feeding station and ask your service technician to explain anything that you do not understand before you commission it.
- Follow the health and safety and accident prevention regulations.
- Clean the SynchroFeed feeding station only with the cleaning agents recommended in this operating manual (see 5.2 "Maintenance intervals and activities" - 42)
- When cleaning the SynchroFeed feeding station, observe the safety instructions stipulated in the safety data sheet for the cleaning agent.
- Wear the safety equipment specified in the safety data sheet for the cleaning agent, such as goggles and chemical-proof protective gloves, when cleaning the SynchroFeed feeding station.
- Only operate the SynchroFeed feeding station if it is in faultless condition and fully functional.
- Only operate the SynchroFeed feeding station if the safety equipment is fitted and intact.
- Regularly check the fitted safety equipment to ensure that it is working properly. You can find a care and maintenance schedule in the appendix (see 5.2 "Maintenance intervals and activities" - 42), which provides recommendations on how often to check the various safety devices.
- Visually inspect the SynchroFeed feeding station for possible damage. You can find a care and maintenance schedule in the appendix (see 5.2 "Maintenance intervals and activities" - 42), which provides recommendations on how often you should check the various parts of the SynchroFeed feeding station.
- Repair any damage to the SynchroFeed feeding station or, if you are not authorized or capable of doing so yourself, have it repaired by a service technician.
- Never carry out any unauthorized structural modifications to the SynchroFeed feeding station.
- Keep all safety signs on the SynchroFeed feeding station in legible condition. Replace any damaged or illegible safety signs immediately. You can order new safety signs from Förster-Technik GmbH.
- Only use genuine accessories, spare parts, and wearing parts. They are available from your dealer.

2.5 How am I warned of hazards?

You are warned of hazards by safety signs (warning signs, caution and prohibitory signs) directly on the SynchroFeed feeding station and by special hazard descriptions in the operating manual.

Warnings about the risk of fatal injury or a health hazard are stronger than warnings about material damage (for example, colors, hazard words or symbols are used).

Safety signs are an important part of the safety concept of the SynchroFeed feeding station. They warn you about the hazards presented by the SynchroFeed feeding station and how to avoid these hazards.

Always keep all safety signs of the SynchroFeed feeding station in legible condition. If the safety signs become difficult to read, replace them immediately. You can purchase new safety signs from Förster-Technik GmbH.

2.5.1 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?).

2.5.2 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 at the SynchroFeed feeding station and 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 at the SynchroFeed feeding station and 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 at the SynchroFeed feeding station and in the operating manual: **CAUTION** (black text on yellow background).

2.5.3 Material damage

NOTICE!

The word ATTENTION indicates possible material damage. The SynchroFeed feeding station or an object in its vicinity, such as a calf, may be damaged.

Prohibition notice on the SynchroFeed feeding station: 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

2.6 Safety signs

What are warning signs?

Warning signs consist of:

- A pictogram in a yellow triangle that illustrates 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 mandatory signs?

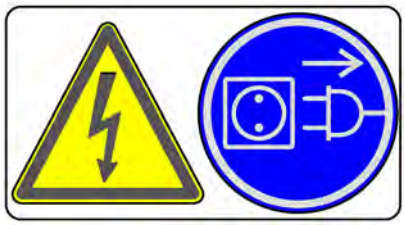
Mandatory signs show a pictogram of the mandatory action in a blue circle. They graphically depict the mandatory action. In this example, the pictogram means that you must always disconnect the plug first.

Other signs

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

2.6.1 Warning signs on the machine

Danger of death by electric shock



Earthing symbol

2.7 Safety devices

The SynchroFeed feeding station may only be operated if the safety equipment is complete and intact. The safety devices are:

- Safety signs (warning signs, instruction and prohibition signs).

The safety devices on 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.

3 Commissioning

- The SynchroFeed feeding station may only be put into service by a service technician.
- When returning the SynchroFeed feeding station to service, proceed as described in “putting into server”.

The appendix contains a checklist with all points you have to observe during commissioning or recommissioning. (see 9.1 "Checklist for commissioning and recommissioning" - 56).

3.1 Electrical connection provided by the customer

The SynchroFeed feeding station needs its own current circuit.

- Have the electrical connection (provided by the customer) installed by a qualified electrician.
- Comply with the local regulations and safety measures.
- A 30 mA residual current circuit breaker in the power supply (provided by the customer) is compulsory for the operation of the SynchroFeed feeding station.
- The power supply must meet the voltage and frequency specifications. The specified supply voltage must correspond to that of the power supply.
- Have excess voltage limiters installed as a lightning protection measure by a qualified electrician in your power supply (provided by the customer).
- Protect the SynchroFeed feeding station and all corresponding cables from exposure to sunlight.

Potential equalization

To protect the animals and prevent electrical faults, all metallic objects, such as water pipes, SynchroFeed feeding station, stand partition and automatic feeder must be grounded. These locations are indicated by the grounding label (see 2.6 "Safety signs" - 17). The connecting screw to ground the SynchroFeed feeding station is on the side of the control 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 4 mm²).

3.2 Mounting the SynchroFeed feeding station

Practical example with two SynchroFeed feeding stations

⚠ CAUTION!

Beware of the health hazards caused by lifting heavy loads.

► Observe the weight of the assembly in chapter 1.4 "Technical data" - 10 and the industrial safety regulations.

NOTICE!

If the SynchroFeed feeding station cannot be set up in a frost-free area, it requires frost protection to prevent it from being damaged.

1. Mount the SynchroFeed feeding station
   - No higher than the teat
   - If possible, near the automatic feeder
   - Ideally in a frost-free room
2. Fasten the mains adapter of the SynchroFeed feeding station.

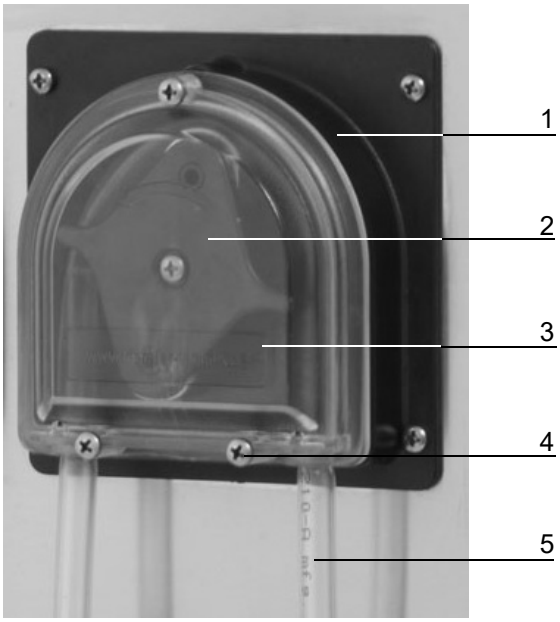
⚠ WARNING!

Risk of injury and death!

► During assembly, make sure that the SynchroFeed feeding station and all electrical components included in the scope of delivery are assembled outside the animal area, otherwise they could be damaged. Otherwise, significant material damage could occur as well as serious injuries to animals and humans or even death.

3.3 Inserting the pump hose in the servo pump

To avoid damage due to squashing of the pump hose, it is not installed on delivery.



1 Housing
2 Rotor
3 Transparent cover
4 Fastening screws
5 Pump hose

⚠ CAUTION!

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

The servo pump can start up automatically at any time, crushing your fingers.

► Disconnect the control from the power supply before you insert the pump hose in the servo control. Connect the servo pump to the power supply only with the transparent cover attached.

To insert the pump hose in the servo pump, proceed as follows:

1. Remove the transparent cover.
2. Apply a thin layer of silicone grease, which is included in the delivery, onto the complete inner edge of the pump housing. To do this, turn the rotor counterclockwise.

NOTICE!

Use only the supplied silicone grease. Another silicone grease can damage the pump housing and the pump hose.

Note: If silicone grease is already present in the pump housing, you can skip this step.

3. Turn the rotor to a vertical position.
4. Clamp the supplied pump hose between the housing and the roller of the rotor. Position the pump hose by turning the rotor counter-clockwise so that it is centered on the roller.

NOTICE!

Make sure that both ends of the pump hose have the same length to facilitate the connection of the suction hoses.

NOTICE!

Make sure the pump hose is not twisted.

NOTICE!

The pump hose must lie on the pump housing in the top half (range of the rotor).

5. Place the transparent cover on the housing and tighten the screws.

3.4 Installing the pressure sensor

On delivery, the pressure sensor is in the transport retainer on the right side of the housing of the SynchroFeed feeding station (only available for the extension of a SynchroFeed feeding station).

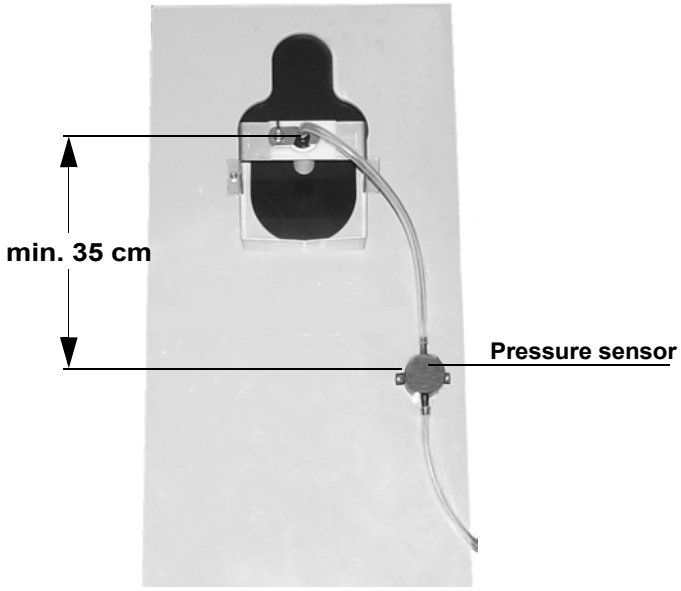
NOTICE!

The pressure sensor must be protected from frost otherwise it could be damaged.

Proceed as follows for the installation:

1. Remove the pressure sensor from the transport retainer (if present). Position the pressure sensor so that the PG screw connection points downwards.
2. Mounting the pressure sensor **ideally** near the teat, but always at least 35 cm to the right or left under the teat, on the back of the front plate (see figure below).

   Only the center hose fitting is open. The remaining fittings are without function.



NOTICE!

If the teat is near the technical facilities room with the automatic feeder, it is advisable to mount the pressure sensor at least 35 cm below the height of the teat instead of on the front plate in the technical facilities room.

3.5 Attaching the pushbutton/remote control for manual feed start (OPTION)

The pushbutton/feeding button activates the feeding pump. The feeding 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 the SynchroFeed feeding station and all electrical components included in the scope of delivery are assembled outside the animal area, otherwise they could be damaged. Otherwise, significant material damage could occur as well as serious injuries to animals and humans or even death.

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

3.6 Connect the antenna (for retrofitting)

DANGER!

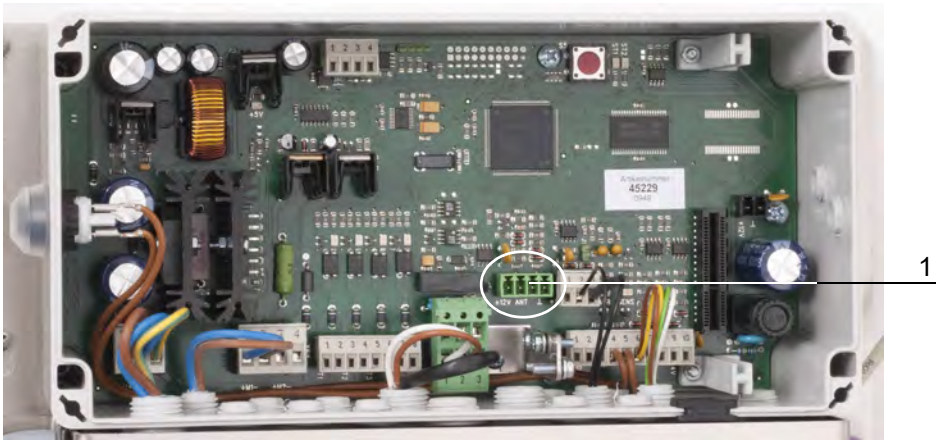
Lethal electric shock

The electrical components of the SynchroFeed feeding station are live.

► Always disconnect the mains plug before you open the IFS control.

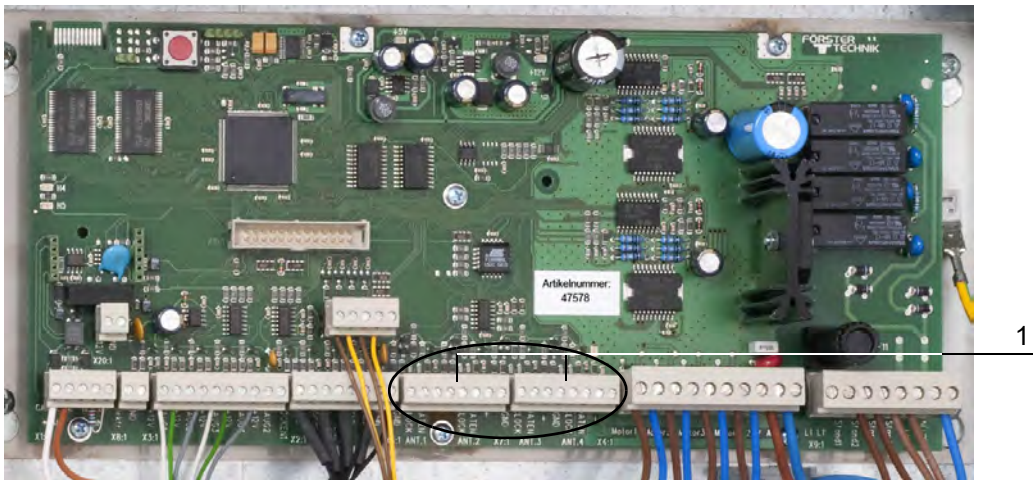
- Connect the antenna/s to the SynchroFeed feeding station as indicated in the circuit diagram (also see figure).

Extension 1 feeding station SynchroFeed



1 Connection for antenna

Extension 4 feeding stations SynchroFeed



1 Connections for antennas

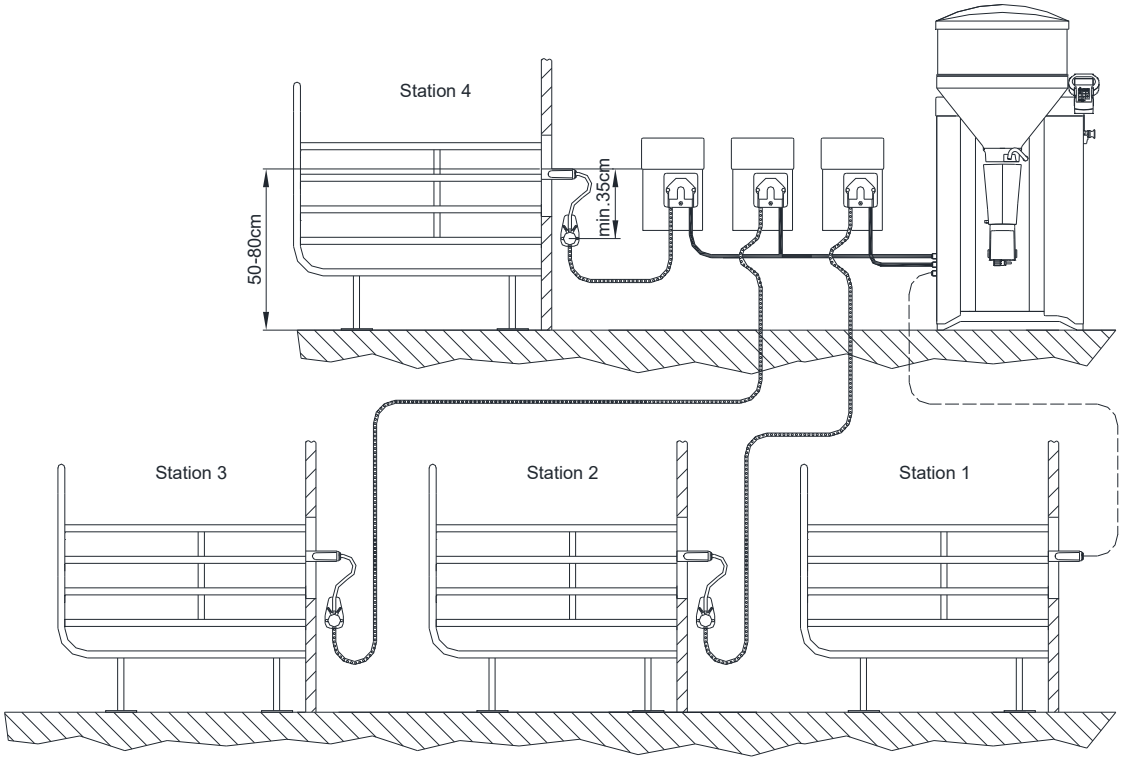
Note: A jumper is set in the control on slot X8. This must be removed from the control if you use an X-Ponder as identification.

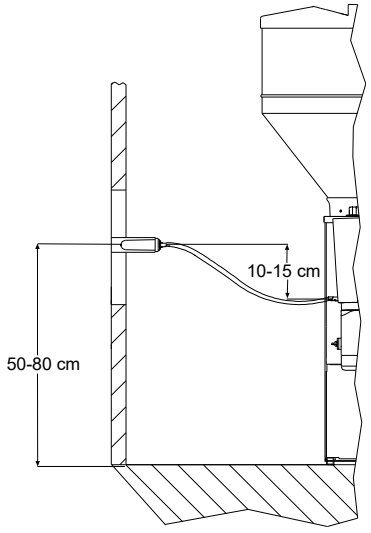
3.7 Connecting the suction hoses

3.7.1 Extension 1 feeding station SynchroFeed

There are two ports on the automatic feeder for the hose connections of the three servo pumps. If these connections are not present, they must be subsequently mounted.

Installation example of 1 SynchroFeed feeding station extension





For retrofitting, also perform the following steps:

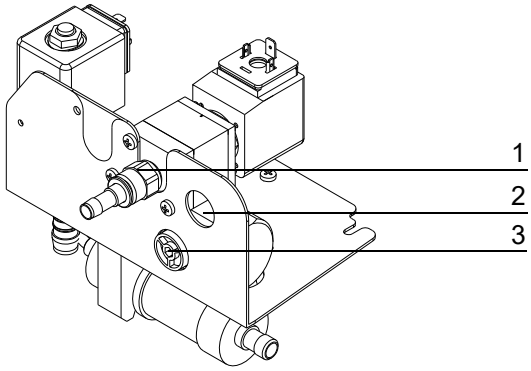
⚠ WARNING!

Risk of burns due to hot surfaces.

The solenoid valves can reach temperature of up to 100°C during operation or malfunctions. This can cause severe burns.

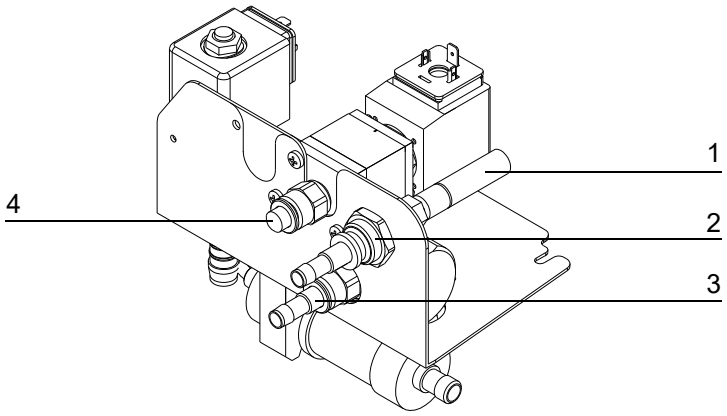
► Allow the valve unit to cool down before starting to retrofit.

1. Break the pre-lasered metal piece out of the angular sheet of the valve unit and mount the partition fitting included in the scope of delivery with a hose fitting (**blue**) with hose fitting for servo pumps 1 to 2 (corresponds to feeding boxes 2 to 4).



1 Connection of an internal station (feeding box 1)
2 Pre-lasered metal piece
3 Blind plug for connection 3

2. Remove the blind plug used to seal the second hose fitting of the mixer jar.
3. Push one end of the 8 x 3 mm hose onto the fitting on the mixer jar and the other end onto the fitting of the partition fitting (**blue**). To do so, you must thread the hose through the hole sealed with a blind plug on the intermediate panel of the automatic feeder.
4. For servo pump 3 turn the blind plug on the left under the partition fitting (blue) out of the angular sheet and replace it with the screwed fitting (**red**) included in the scope of delivery.



1 Hose 8 x 3 mm mixer jar -> valve
2 Partition fitting blue with fitting for connecting servo pumps 1 + 2
3 Screwed fitting red with fitting for connecting 3
4 Connection of internal station (feeding box 1)

3.7.1.1 Hose piece 1 (automatic feeder -> servo pumps 1 to 2)

1. Cut the suction hose included in the scope of delivery into appropriately long pieces, depending on requirements.
2. Push one hose end onto the hosing fitting of the partition fitting (**blue**) and the other end on to the hose fitting on the suction side of servo pump 1.
3. For the **second servo pump,** push one end of the hose on to the hose fitting of the partition fitting and the other end on to a hose fitting of the connecting piece included in the scope of delivery. From here, the hoses branch off to the corresponding ports on the suction side of SynchroFeed feeding stations 1 and 2 (see 3.7.1.3 "Hose piece 3 (pressure sensor -> teat)" - 27).
4. For the **third servo pump,** push suction hose 2 onto the hose fitting of the screwed fitting (**red**) and the other end on to the hose fitting on the suction side of servo pump 3.

3.7.1.2 Hose piece 2 (servo pumps -> pressure sensor)

1. Connect the pressure sides of the servo pumps to the corresponding hose fittings under the pressure sensors.

   Note: The suction hose between automatic feeder and teat should be installed at the shortest distance and no higher than the teat.

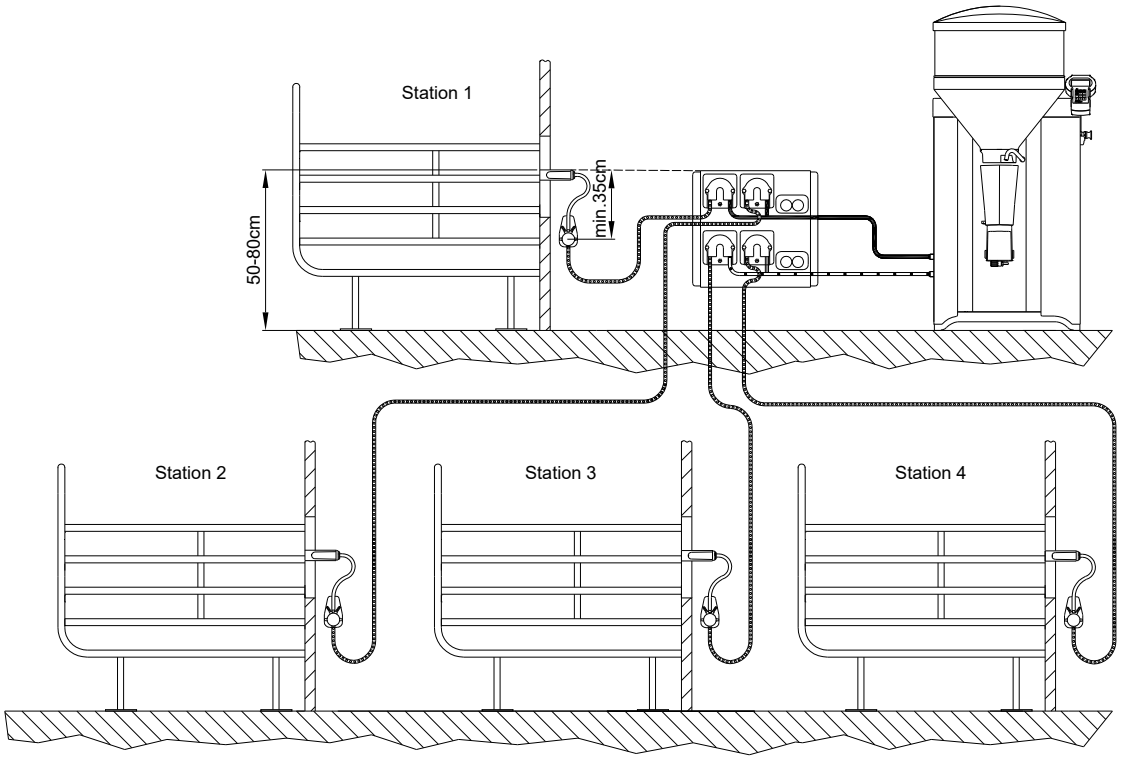
3.7.1.3 Hose piece 3 (pressure sensor -> teat)

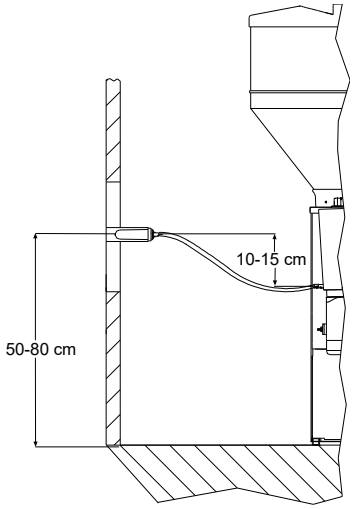
1. Push one end of the hose onto the connection in the center of the top side of the pressure sensor and the other end onto the hose fitting of the teat.

3.7.2 Extension 4 feeding stations SynchroFeed

There are two ports on the automatic feeder for the hose connections of the total of four servo pumps. If these connections are not present, they must be subsequently mounted.

Installation example of the extension of 4 SynchroFeed feeding stations





For retrofitting, also perform the following steps:

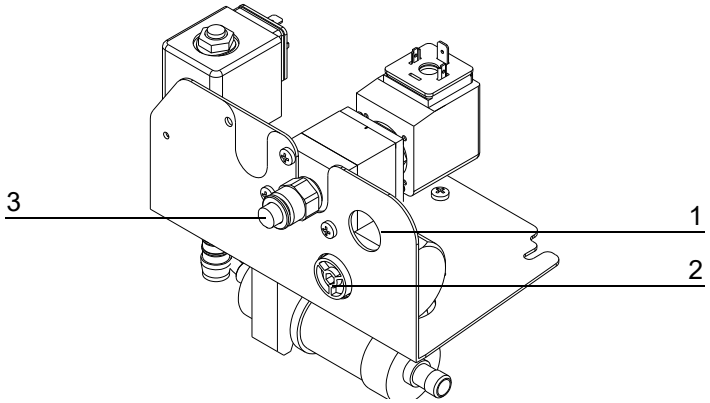
⚠ WARNING!

Risk of burns due to hot surfaces.

The solenoid valves can reach temperature of up to 100°C during operation or malfunctions. This can cause severe burns.

► Allow the valve unit to cool down before starting to retrofit.

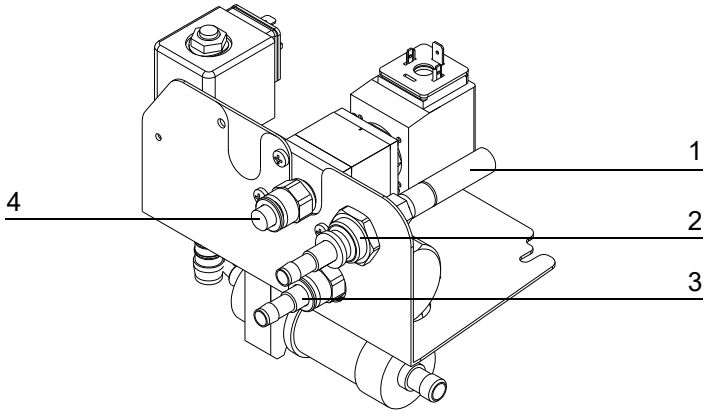
1. Seal the connection of the internal box with the blind plug included in the scope of delivery (no function).
2. Break the pre-lasered metal piece out of the angular sheet of the valve unit and mount the partition fitting included in the scope of delivery with a hose fitting (**blue**) with hose fitting (for servo pumps 1 + 2).



1 Pre-lasered metal piece
2 Dummy plug
3 Non-return valve sealed with blind plug (no function)

3. Remove the blind plug used to seal the second hose fitting of the mixer jar.
4. Push one end of the 8 x 3 mm hose on to the fitting on the mixer jar and the other end on to the fitting of the partition fitting (**blue**).

   To do so, you must thread the hose through the hole sealed with a blind plug on the intermediate panel of the automatic feeder.
5. For servo pumps 3 and 4 turn the blind plug on the left under the partition fitting (blue) out of the angular sheet and replace it with the screwed fitting (**red**) included in the scope of delivery.



1 Hose 8 x 3 mm mixer jar -> valve
2 Partition fitting blue with fitting for connecting servo pumps 1 + 2
3 Screwed fitting red with fitting for connecting servo pumps 3 + 4
4 Non-return valve sealed with blind plug (no function)

3.7.2.4 Hose piece 1 (automatic feeder -> servo pumps 1 + 2)

1. Cut the suction hose included in the scope of delivery into appropriately long pieces, depending on requirements.
2. Push one hose end onto the hosing fitting of the partition fitting (**blue**) and the other end on to the hose fitting on the suction side of servo pumps 1 + 2.

3.7.2.5 Hose piece 2 (automatic feeder -> servo pumps 3 + 4)

1. Push suction hose 2 onto the hose fitting of the screwed fitting (**red**) and the other end on to the hose fitting on the suction side of servo pumps 3 + 4.

3.7.2.6 Hose piece 3 (servo pumps -> pressure sensor)

1. Connect the pressure sides of the servo pumps to the corresponding hose fittings under the pressure sensors.

   Note: The suction hose between automatic feeder and teat should be installed at the shortest distance and no higher than the teat.

3.7.2.7 Hose piece 4 (pressure sensor -> teat)

1. Push one end of the hose onto the connection at the top side of the pressure sensor and the other end onto the hose fitting of the teat.

3.8 Connecting the CAN bus cable

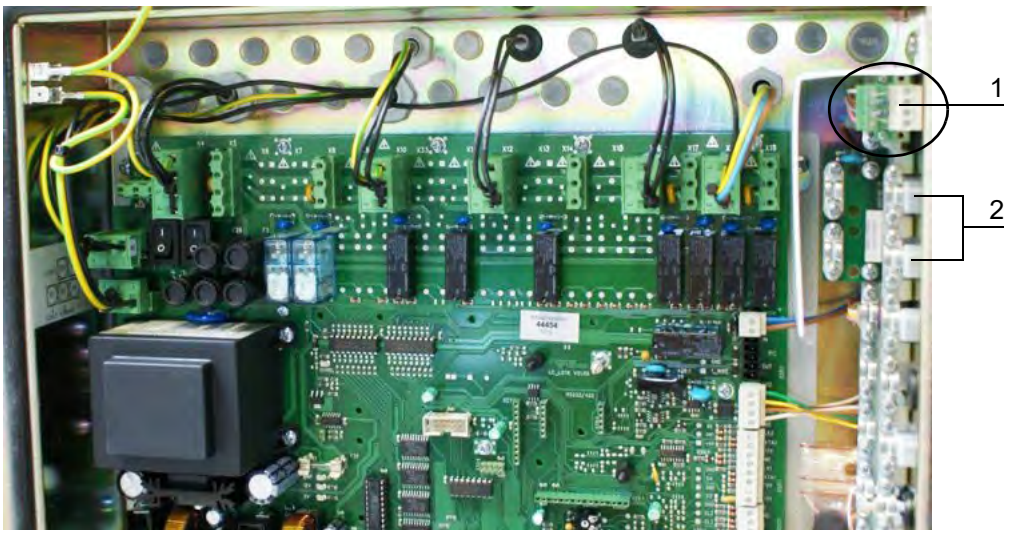
⚠ DANGER!

Lethal electric shock.

The electrical components of the SynchroFeed feeding station are live.

► Always disconnect the mains plug before opening the control box of the automatic feeder.

- Connect the CAN bus cable to the main board of the automatic feeder, as indicated in the machine's circuit diagram (also see figure).



1 Connection for CAN bus
2 Access

3.9 Registering the IFS feeding box

The SynchroFeed feeding station must be activated in the setup for the automatic feeder.

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

3.9.1 IFS feeding box 1-fold

1. Insert the plug of the SynchroFeed feeding station and the automatic feeder in the provided socket.
2. Press [📖2] on the hand terminal of your automatic feeder and hold down this key when you switch on the device.

   After a short time, you will see the **the setup menu** will appear in the display.
3. In the setup menu, open the **Stations > Feed > IFS feed 1-fold** menu point.
4. Use [<] [>] to select the station that is to be registered.
5. Select the desired station in **Allocation** where the SynchroFeed feeding station is to be allocated and confirm your input with [Enter].
6. At **Address,** choose an address that can be used to identify the IFS feeding box in the CAN bus system. The address range is between 41 and 50.
7. Select the desired station in **Type,** select whether an animal consuming its portion at this IFS feeding box can feed simultaneously with other animals (**Parallel mode**) or whether the calf must wait until the calves at the other stations have finished their feed consumption (**Preference mode**).
8. If you have selected the **Preference mode** value, indicate whether a gradient or a servo control is connected at the **Extras** line.
9. If a **Teat slider** or **CalfProtect** is present, select the value **yes** .

   Note: Either the teat slider or CalfProtect can be activated for each IFS feeding box. The simultaneous use of teat sliders and CalfProtect for one box is not possible.
10. Remove the cover from the IFS control unit.

    In order that a data exchange between automatic feeder and IFS feeding box can take place, the selected CAN bus address has to be transferred to the IFS.
11. Confirm **search?** with [Enter].

    You see the message **IFS feed 1-fold is being searched for!** will appear in the display.
12. Press the round red button (S5) on the main board of the IFS control unit in order to activate search mode.
13. Wait until the green LED (H3) flashes 10 times per second.
14. You see the message **IFS feed 1-fold found!** in the display if the IFS feeding box is recognized on the CAN bus.

    Note: Please check the CAN bus line if this message is not displayed.

15. To leave setup, repeatedly press Esc until the message **End setup?** is displayed. Confirm with Enter.
16. Screw the cover of the IFS control unit back on.
17. Activate other IFS feeding boxes the same way. Be sure that each IFS station is allocated to another address.

3.9.2 IFS feeding box 4-fold

1. Insert the plug of the SynchroFeed feeding station and the automatic feeder in the provided socket.
2. Press on the hand terminal of your automatic feeder and hold down this key when you switch on the device.

   After a short time, you will see that the **setup menu** will appear in the display.
3. In the setup menu, open the **Stations > Feed > IFS feed 4-fold** menu point.
4. Use < > to select the IFS feed 4-fold.
5. All four pumps of the IFS feeding box 4-fold station must be allocated and configured. This is done for each pump in a separate submenu. Change to the pump you want to configure (e.g., Pump 1) and press Enter.

   5.1. In **Allocation,** select the feeding box out where the IFS feed 4-fold is to be allocated and confirm your input with Enter.

   5.2. If a **Teat slider** or **CalfProtect** is present, select the value **yes** .

   Note: Either the teat slider or CalfProtect can be activated for each station of the IFS feed 4-fold. The simultaneous use of teat sliders and CalfProtect for one station is not possible.
6. At **Address,** choose an address that can be used to identify the IFS feeding box in the CAN bus system. The address range is between 61 and 70.
7. Open the housing of the IFS control unit.

   In order that a data exchange between automatic feeder and IFS feeding box can take place, the selected CAN bus address has to be transferred to the IFS.
8. Confirm **search?** with Enter.

   You see the message **IFS feed 4-fold is being searched for!** will appear in the display.
9. Press the round red button (S2) on the main board of the IFS control unit in order to activate search mode.
10. Wait until the green LED (H4) flashes 10 times per second.
11. You see the message **IFS feed 4-fold found!** in the display if the IFS feeding box is recognized on the CAN bus.

    Note: Please check the CAN bus line if this message is not displayed.
12. To leave setup, repeatedly press Esc until the message **End setup?** is displayed. Confirm with Enter.

13. Close the housing of the IFS control unit.

3.10 Calibration

To ensure that the hose pump dispenses accurately, it must be calibrated during commissioning.

Note: When doing this, pay attention to the **Calibration chapter** in the operating manual of the automatic feeder.

3.10.1 Calibration of the hose pump

Note: To calibrate the hose pump, all feeding components must be calibrated.

Note: If the **Drainage mode** has been activated, the hoses will be emptied after calibration (see operating manual of the automatic feeder).

You can calibrate all hose pumps together or each one individually.

Proceed as follows to automatically calibrate all hose pumps:

1. Change over using [📖] **> Calibration > Hose pumps**.
2. Press **all automatic?** [Enter]. The calibration process starts. The sequence of procedures is automatic.

   Note: Do not intervene in the calibration process or it will be stopped.
3. After the completion of the calibration, the message **Calibration complete** will appear in the display.

This is how to calibrate the hose pump individually:

1. Change over using [📖] **> Calibration > Hose pumps**.
2. Press **Select the stations** [Enter].
3. Use [<] [>] to select the desired feeding box.
4. Confirm **start?** with [Enter]. The calibration process starts. The sequence of procedures is automatic.

   Note: Do not intervene in the calibration process or it will be stopped.
5. After the completion of the calibration, the message **Calibration complete** will appear in the display.

3.10.2 Automatic calibration

If automatic calibration is used, all pumps are automatically calibrated once a day. If one of the new automatically determined calibration values deviates greatly from the previous value, then the previous value will remain valid. Then the **Auto-calibration warning** will be triggered.

1. Change over using [📖] **> Calibration > Settings > Hose pumps**.
2. In **Auto-calib.** select the value **yes** if an automatic calibration should be carried.

3. In **Calibration time**select the time at which the automatic calibration should take place The default setting for this is every day at 00:00 hours.

3.10.2.8 Setting of the tolerance values

A tolerance value can be defined separately for each feeding box. This defines the number of percentage points by which the new automatically determined calibration value can deviate from the previous calibration value and still be considered valid and therefore accepted as the new value.

1. Change over using  **> Calibration > Hose pumps**.
2. Use < > to select the desired feeding box.
3. At **Tolerance,** indicate the required percentage for the tolerance value.

Default value:	15%
Permitted range of values:	5 to 50%

Note: If the value determined by the automatic calibration is discarded, the Auto-calibration warning is displayed (see 8.2.6 "Automatic calibration" - 53).

3.11 Cleaning

For reasons of hygiene, the SynchroFeed feeding station must be cleaned thoroughly with cleaning agent before putting it into service to completely remove any existing coolant or lubricant residue. For more information about this, see chapter 4 "Cleaning" - 36.

⚠ WARNING!

Chemical burns due to 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.

3.12 Feeding settings

Plan for maximum speed

This plan regulates the percent of maximum speed at which the hose pumps rotate. By default, the pumps run at 70% of maximum speed at the beginning of the feeding period. This value increases continuously up to 90% at the end of the feeding period. If necessary, you can divide the plan for the maximum speed into up to five periods. You can define values between 30 and 100% for the maximum speed.

Note: The speed of the pumps can be defined for each group individually. By adjusting the pump speed, you can ensure that calves are fed in an age-appropriate fashion.

You set the speeds as follows:

1. Change over using [2] **> Feeding > Plans > Feed** to the **Max. speed**submenu.
2. Use [<] [>] to select the desired group (A, B, C or D).

   The corresponding plan for maximum speed will be shown.
3. Enter the length (number of days) of the first feeding period in **P1** and confirm your entry by choosing [Enter].
4. Enter the starting value for the maximum speed in the **from** column and confirm your entry with [Enter].
5. Enter the final value for the maximum speed in the **to** column and confirm your entry with [Enter].
6. Repeat these steps for P2 to P5, if necessary.
7. At **Duration,** you can check the total duration of the pump speed plan.

   Note: The total duration of the pump speed plan does not have to match the length of the feeding plan period. The speed of the last defined day is retained until the end of the feeding plan.

Note: During cleaning and calibration, the pump always runs at 100%.

4 Cleaning

4.1 Specifications for cleaning

You must clean all parts of the SynchroFeed feeding station that come into contact with liquid or powder animal feed.

How often does the unit have to be cleaned?

- The suction hoses and the pump hose of the servo pump must be cleaned on a daily basis via the cleaning process of the automatic feeder.
- The pressure sensor with diaphragm must be cleaned at least once a year.

The type of feed you are using also plays a role here. For example, raw milk contains more germs than pasteurized milk. Therefore, if you are feeding raw milk, you must clean the feeder more often than if you are using pasteurized milk.

Remember:

- You must follow all safety instructions in the safety data sheet for the cleaning agent you are using.
- You must always wear the protective gear, such as protective goggles and gloves, specified in the safety data sheet for the cleaning agent you are using.
- Undiluted cleaning agent may not be drained into the ground water or sewage system. Observe the recommendations in the safety data sheet for your cleaning agent and contact your water utility company and your sewage disposal company to find out which regulations apply to you.
- Observe the cleaning intervals recommended by the manufacturer of the cleaning agent as well as those recommended in this operating manual.
- Only use the cleaning agents recommended in this operating manual.
- Observe the manufacturer's guidelines regarding the amount, temperature and concentration of cleaning agent used.
- Do all of the cleaning recommended in this operating manual.

4.2 Cleaning agents

⚠ WARNING!

Chemical burns due to 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.

4.3 Cleaning procedure

4.3.1 Automatic rinsing linked to cleaning process

The automatic rinsing of the suction hoses and pump hose takes place during the cleaning process for the automatic feeder. When this is done, the **Rinsing water** is pressed out via the suction hoses and the teat if **Rinsingiskdflskdjolsi** is activated in the settings for cleaning. If the **Drainage mode** is activated, the hoses are automatically emptied after the cleaning. More information is available in the original operating manual for your automatic feeder.

⚠ WARNING!

Chemical burns due to 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.

4.3.2 Flushing ring line

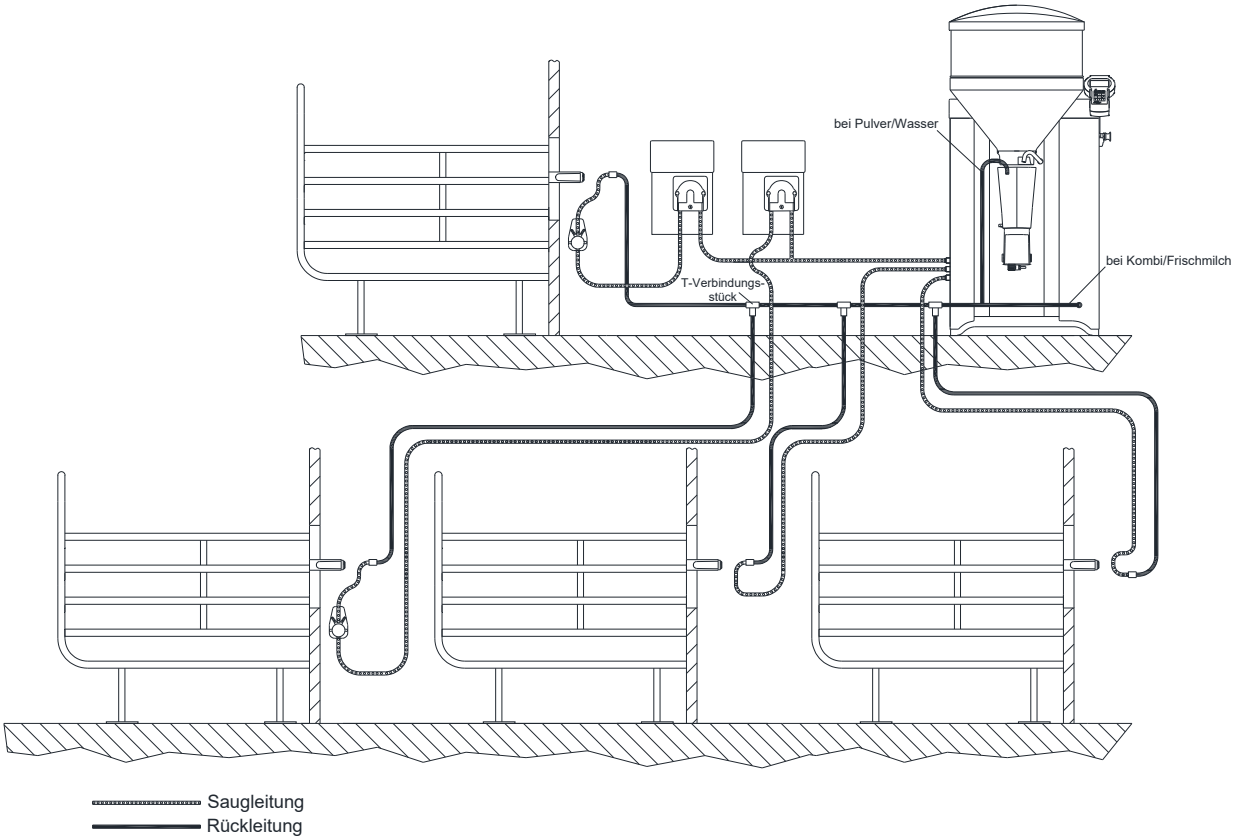
For the automatic cleaning of the suction hoses and of the pump hose, it is recommended to lay a **return line** from each feeding box to the automatic feeder.

NOTICE!

For **powder automatic devices,** the circuit is established via the **Mixer**; for **combination automatic devices,** is established via the **Milk connector** . More information is available in the original operating manual for your automatic feeder.

Extension 1 feeding station SynchroFeed

Example of a flushing ring line



Proceed as follows when cleaning:

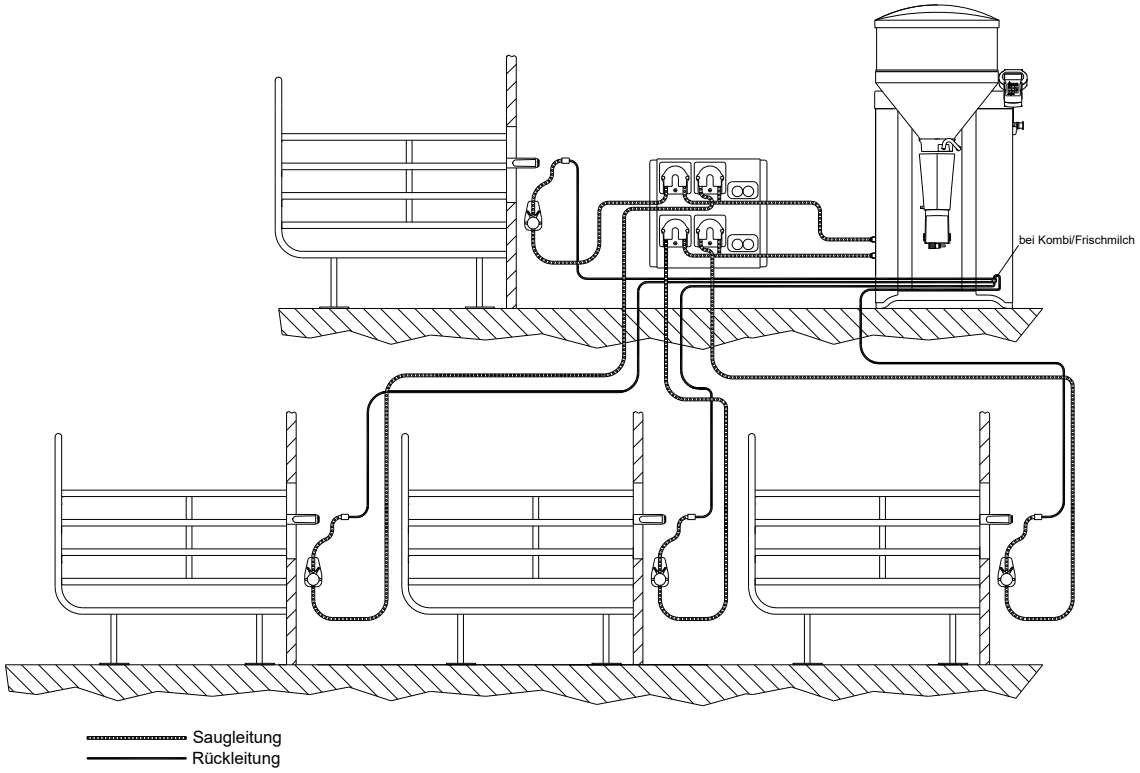
1. Before starting to clean, disconnect the suction hoses from the teat and connect them to the return line.
2. Join the return lines via the flow adapter in front of the device.

   If necessary, also use the T-hose connecting piece included in the scope of delivery of the "SynchroFeed 1 feeding station extension".
3. Using  **> Cleaning > Rinsing cycle** to activate automatic cleaning of the automatic feeder. More information is available in the original operating manual for your automatic feeder.

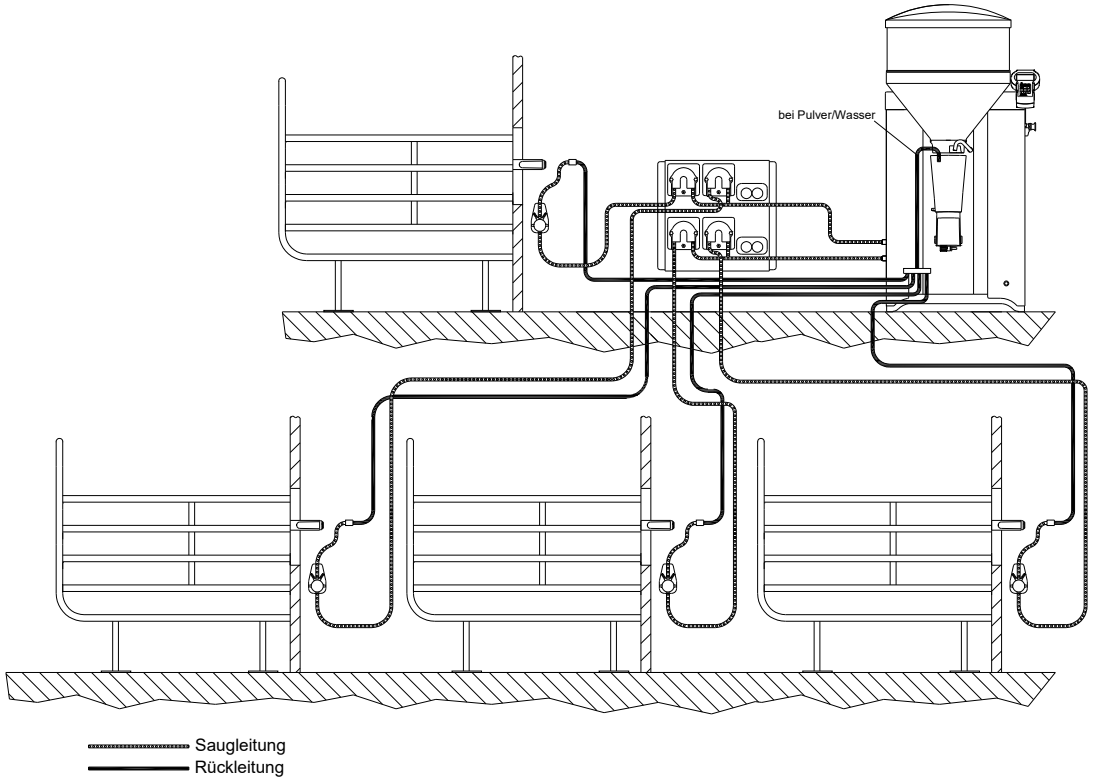
   Note: The hose pumps, suction or pressure sensors and the valves, if present, are thus integrated in the cleaning cycle.
4. With  **> Cleaning > Drainage mode** , you can empty the suction hoses.

Extension 4 feeding stations SynchroFeed

Example of a flushing ring line, combined/fresh milk



Example of a flushing ring line, powder/water



The extension of 4 feeding stations SynchroFeed includes a flow adapter with four connections used for the return lines.

1. Before starting to clean, disconnect the suction hoses from the teat and connect them to the return line.
2. Join the return line via the flow adapter in front of the device.
3. Using  **> Cleaning > Rinsing cycle** to activate automatic cleaning of the automatic feeder. More information is available in the original operating manual for your automatic feeder.

   Note: The hose pumps, suction or pressure sensors and the valves, if present, are thus integrated in the cleaning cycle.
4. With  **> Cleaning > Drainage mode** , you can empty the suction hoses.

4.4 Manual cleaning of the suction hoses

For automatic feeders equipped with a quick-release fastener for holding the suction hose fitting, a cleaning sponge soaked with water can be forced through a connected suction hose.

To clean, proceed as follows:

1. Exit automatic mode for the automatic feeder.
2. Remove the suction hose on both sides of the servo pump, on the pressure sensor and on the teat.
3. Connect the suction hoses to each other using the hose fittings and place the end in a container.
4. Disconnect the other end of the suction hose on the feeding box valve of the automatic feeder and attach a hose fitting to it.
5. Insert the cleaning sponge into the hose fitting.
6. Using the fitting, connect the suction hose to the outlet valve for hose cleaning on the left side of the automatic feeder.
7. Open the outlet valve. The cleaning sponge is forced through the suction hose by the water.

   Note: If the cleaning sponge pushes dirt or deposits along, the cleaning cycle should be repeated immediately and then at regular intervals.
8. Remove the cleaning sponge from the container.

   Note: Thoroughly clean the cleaning sponge after use and store it in a dry place.
9. Restore all hoses to their original positions.
10. Perform this procedure for all connected IFS feeding boxes.
11. Calibrate the hose pumps (see 3.10 "Calibration" - 33).
12. Switch the automatic feeder back to automatic mode.

    Note: The manual cleaning is only to be used with appropriate water pressure.

4.5 Cleaning the pressure sensor

For manual cleaning of the pressure sensor, proceed as follows:

1. Switch off the automatic feeder and the SynchroFeed feeding station.
2. Unscrew the lid of the pressure sensor and take out the inner insert.
3. Thoroughly clean the pressure sensor.

NOTICE!

► Do not use any sharp or sharp-edged objects, since that could damage the diaphragm.

4. Replace the diaphragm if necessary.
5. Put the insert back into the housing. Be sure that the pins are correctly seated in the housing.
6. Screw the lid back onto the housing.
7. Switch the automatic feeder and the SynchroFeed feeding station back on again.

5 Maintenance/servicing

This chapter covers the regular maintenance work and functional inspections on the SynchroFeed feeding station which ensure that the required hygienic standards are maintained. Maintenance work includes, for example, calibration, hygiene-related cleaning as well as scheduled replacement of wearing parts.

The visual and functional testing of components as well as the replacement of simple wear parts, such as the suction hose, can be carried out by the owner/operator.

Repair work as well as the replacement of wearing parts on the SynchroFeed feeding station may **only** be performed by a service technician.

5.1 Safety instructions

DANGER!

Lethal electric shock.

The electrical components of the SynchroFeed feeding station are live.

► Always disconnect the mains plug before starting work on the SynchroFeed feeding station.

WARNING!

Risk of burns due to hot surfaces.

The solenoid valves can reach temperature of up to 100°C during operation or malfunctions. This can cause severe burns.

► Never touch the solenoid valves when they could be hot.

WARNING!

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

Do not reach into the hazardous area of the servo pump. The servo pump can start up automatically at any time, crushing your fingers.

► Always disconnect the mains plug before you remove the transparent cover of the servo pump.

5.2 Maintenance intervals and activities

Note: If you detect any faults or damage to the SynchroFeed feeding station between the maintenance intervals recommended below, you must make sure they are rectified immediately by a service technician as required.

5.2.1 Daily

Visual inspection of the components

- The servo pump and the corresponding pressure sensors must be checked on a daily basis for damage and wear. If any damage or wear is detected during the visual inspection, the faulty components have to be replaced by a service technician before work can be resumed with the SynchroFeed feeding station.
- The suction hoses, the pump hose and the teat must be checked on a daily basis for damage and wear. If any damage or wear is detected during the visual inspection, the faulty components have to be replaced before work can be resumed with the SynchroFeed feeding station.

5.2.2 Every 4 months

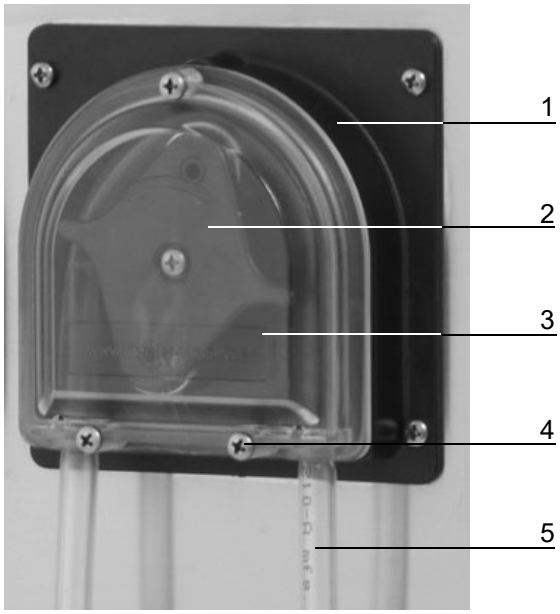
Every four months all milk conducting hoses from the mixer to the feeding station must be replaced.

5.2.3 Annually

The following maintenance work should be done every twelve months:

- Disassemble and clean the pressure sensor. If necessary, replace the diaphragms. For more information about this, see chapter 4 "Cleaning" - 36.
- Replace the pump hose of the servo pump. For more about this, see 5.2.3.1 "Replace the servo pump hose" - 43.

5.2.3.1 Replace the servo pump hose



1 Housing
2 Rotor
3 Transparent cover
4 Fastening screws
5 Pump hose

To replace the pump hose, proceed as follows:

⚠ WARNING!

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

The servo pump can start up automatically at any time, crushing your fingers.

► Disconnect the servo pump from the power supply before replacing the pump hose. Connect the servo pump to the power supply only with the transparent cover attached.

1. Pull out the mains plug from the automatic feeder or from the servo pump's control unit.
2. Undo the screws on the housing and remove the transparent cover.
3. Position the rotor of the servo pump at a right angle to the housing opening (there is only one roller directly on the housing) and remove the old pump hose by turning the rotor counter-clockwise.
4. Remove the silicon layer in the pump housing with a **dry cloth**.

NOTICE!

Do not use detergents or other chemical agents, otherwise the pump housing and the pump hose may be damaged.

5. Apply a thin layer of silicone grease onto the complete inner edge of the pump housing. To do this, turn the rotor counterclockwise.

6. Clamp the supplied pump hose between the housing and the roller of the rotor. Position the pump hose by turning the rotor counter-clockwise so that it is centered on the roller.

NOTICE!

Make sure that both ends of the pump hose have the same length to facilitate the connection of the suction hoses.

NOTICE!

Make sure the pump hose is not twisted.

NOTICE!

The pump hose must lie on the pump housing in the top half (range of the rotor).

7. Reattach the transparent cover and tighten the screws.
8. Reconnect the automatic feeder or the control for the servo pump to the power supply.
9. If need be, switch the automatic feeder on and calibrate the hose pump (see 3.10 "Calibration" - 33).

5.2.4 Testing 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.

This test may **only** be performed by a service technician.

If any damage is detected during the inspection, the faulty components must be replaced by a service technician before work can be resumed with the automatic feeder.

5.3 Service messages

A service message appears 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.

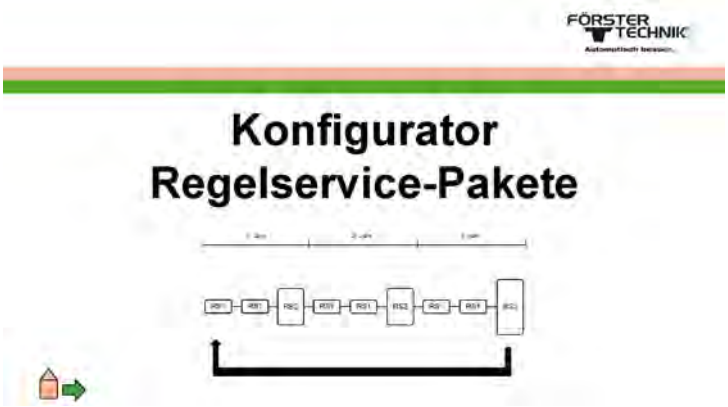
Using **Setup > Service > last**, check when the last regular service were performed and in **Type** which regular service it was (RS1, RS2 or RS3).

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).

5.3.1 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 is available 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 in 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 re-created every day within these three days.

5.4 Software update

To update the application program, depending on the device, you have a choice between an SD card or FlashManager Plus.

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

Note: Antennas can only be updated if they are connected directly to the automatic feeders and the feeder has been previously updated. Information on the color allocation for the MultiReader update via the H program can be found in the enclosed circuit diagram.

6 Shutdown

You must remove the SynchroFeed feeding station from service if you do not intend to operate it for a long period of time. You can shut down the SynchroFeed feeding station temporarily or permanently.

To make the procedure easier and ensure that you do not miss any steps, see the check list for **shutting down the SynchroFeed feeding station** (see 9.3 "Shutdown checklist" - 57).

6.1 Temporary shutdown

Proceed as follows to put out of operation:

1. Thoroughly clean the suction hoses and the pump hose of the servo pump (see chapter 4 "Cleaning" - 36).
2. Check out the SynchroFeed feeding station in the setup of your automatic feeder.
   2.1. Switch off the automatic feeder using the main switch.
   2.2. Press  on the hand terminal of your automatic feeder and hold down this key when you switch on the device.

   After a short time, the setup menu will appear on the display.
   2.3. In the setup menu, open the **Stations > Feed > IFS feed 1-fold** or **IFS feed 4-fold > pump x** menu point.
   2.4. Select the desired station in **Allocation** select the value **none** .
   2.5. Register all pumps the same way.
   2.6. To leave setup, repeatedly press Esc until the message **End setup?** is displayed. Confirm with Enter.
3. Disconnect the mains plug of the SynchroFeed feeding station.
4. Pull the suction hoses at the teat, pressure sensor and servo pump.
5. Pull the suction hose that runs from the automatic feeder to the servo pump.
6. Dispose the suction hoses.

NOTICE!

Risk of infection

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

7. If necessary, seal the open fittings on the automatic feeder.
8. Undo the screws on the housing of the servo pump and remove the transparent cover.
9. Remove the pump hose from the servo pump by turning the rotor anticlockwise.
10. Dispose of the pump hose.

NOTICE!

Risk of infection

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

11. Replace the transparent cover on the housing and tighten the screws.
12. Clean the outside of the SynchroFeed feeding station with a damp cloth.

6.2 Permanent shutdown

If you want to permanently shut down the SynchroFeed feeding station, you must dispose of it in accordance with the legal regulations. 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 the operating manual, you can find a list of the materials used to make the SynchroFeed feeding station (see 9.2 "Materials list" - 56).

1. Perform steps 2 to 11 of the shutdown (see 6.1 "Temporary shutdown" - 47). You do not have to perform steps 1 and 12 (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 goggles and 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.

⚠ DANGER!

Lethal electric shock.

The electrical components of the automatic feeder are live.

► Always disconnect the mains plug before opening the control box of the automatic feeder.

3. Remove the CAN bus cable of the control unit from the main board of the automatic feeder and replace it with a resistor.
4. Dispose of the SynchroFeed feeding station as described in the disposal chapter (see 7 "Disposal" - 49).

7 Disposal

All SynchroFeed feeding station components, liquids and solids must be disposed of in compliance with the applicable official regulations for proper waste recycling and disposal in your country. If you are not certain which regulations apply to you, ask your service technician and use the Internet or the yellow pages to find out which government agency is responsible for your jurisdiction. Contact the appropriate authorities and find out which regulations apply to you.

Always observe the safety data sheets supplied with some components, liquids and solids.

Before you dispose of the SynchroFeed feeding station, you must shut it down (see 6 "Shutdown" - 47).

7.1 Disposing of cleaning agent residues.

Dispose of any residual cleaning agent. See the cleaning agent manufacturer's technical data sheet for more information on the disposal of the cleaning agent.

⚠ WARNING!

Chemical burns due to 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.

7.2 Disposing of hoses

Dispose of hoses as controlled waste or municipal waste, depending on the material. Read the disposal instructions on the packaging of the hoses, or contact your waste disposal center for instructions.

7.3 Disposing of cables

Dispose of cables as controlled waste or municipal waste, depending on the material. Read the disposal instructions on the packaging of the cables, or contact your waste disposal center for instructions.

7.4 Disposing of the board

The SynchroFeed feeding station contains a board. You must dispose of this component separately. Ask your waste disposal company where you can dispose of electronic waste.

7.5 Disposal of the SynchroFeed feeding station

For disposal instructions, contact the appropriate authorities, such as your waste disposal company or local government agency.

See the appendix for an overview of the materials in the SynchroFeed feeding station.

Dispose of the SynchroFeed feeding station.

8 Failures and warnings

The automatic feeder shows fault messages or warning messages in 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 .

8.1 Faults

8.1.1 Calibration

You see **Calibration fault** in the display when the hose pumps are not calibrated.

Feeder operation will be interrupted. Supply your calves with feed in another way as long as feeder operation is interrupted.

You can correct the failure as follows:

1. Confirm **Calibration fault** with Enter.
2. Press **start?** Enter and calibrate each station individually or press **all automatic?** Enter to calibrate all stations automatically (see 3.10 "Calibration" - 33).

8.2 Warnings

8.2.1 Identification

You see **Identification warning** in the display if the animal identification does not work.

You can correct the failure as follows:

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

8.2.2 Incorrect ID

All CAN participants have a unique ID which cannot be changed. The ID is used to automatically check whether 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. You see **Warning incorrect ID** in the display.

You can correct the failure as follows:

1. Check the CAN address: of the IFS control unit.
2. Switch the feeder on and hold the button  until the setup menu appears on the display.
3. Change over using **Stations > Feed** to the **IFS feed 1-fold** or **IFS feed 4-fold**submenu.
4. Check the CAN address in **Address.**
5. To leave setup, repeatedly press Esc until the message **End setup?** is displayed. Confirm with Enter submenu.

8.2.3 Address used twice

If two or more participants are linked together in a bus system, it can happen that one CAN address is issued twice. You see **Warning double address** in the display.

You can correct the failure as follows:

1. Confirm the double address warning with Enter.

   The CAN participant with the double address will be displayed.
2. Switch the feeder on and hold the button  until the setup menu appears on the display.
3. Change over using **Stations > Feed** to the **IFS feed 1-fold** or **IFS feed 4-fold**.
4. At **Address,** assign a different and still available address to the the IFS feeding box that has the double address. For more information on assigning CAN addresses, see the chapter on commissioning (see 3.9 "Registering the IFS feeding box" - 31).

   Note: If possible, use an address from the standard range of numbers for the CAN participant concerned.
5. Confirm the changes with Enter.
6. To leave setup, repeatedly press Esc until the message **End setup?** is displayed. Confirm with Enter.
7. Delete the warning once the error has been rectified.

8.2.4 IFS feeding box

The warning messages **IFS feed 1-fold** or **IFS feed 4-fold** will appear if the automatic feeder cannot make contact via the CAN bus to the control unit of the IFS feeding box. The cause for this could be that the CAN participant is switched off or that the address of the IFS feed is not the same as that of the automatic feeder.

1. Confirm the IFS feed 1-fold or IFS feed 4-fold warning with Enter.
2. Confirm **search?** with Enter.

   You see the message **IFS feed x-fold is being searched for!** in the display.
3. Press the round red button (S5 or S2) on the main board of the IFS control unit in order to activate search mode.
4. Wait until the green LED (H3 or H4) flashes 10 times per second.
5. You see the message **IFS feed x-fold found!** in the display if the IFS feeding box is recognized on the CAN bus.

   Note: Please check the CAN bus line if this message is not displayed.

8.2.5 Feeding box motor

The message **Feeding box motor** is shown if the IFS feeding box motor no longer supplies metering pulses. Possible causes for this:

1. The motor which drives the hose pump is no longer running.
   1.1. Confirm **Feeding box motor** with Enter.
   1.2. In the submenu, press **Pump: start?** Enterto check the motor.
2. The cable between the motor and the circuit board which carries the motor pulses was pulled out or is defective.
   2.1. Repair or replace the cable.

8.2.6 Automatic calibration

The **Auto-calibration warning** indicates that the value determined during the last auto-calibration was not accepted since it deviated greatly from the current calibration value.

1. Calibrate (depending on the text of the message) the box for which warning was displayed (see 3.10 "Calibration" - 33).
2. Delete the warning once the error has been rectified.

   Note: You can change the tolerance value for the acceptance of the determined auto-calibration value in the calibration menu for the respective box.

8.2.7 Feed deviation

The **Feed deviation warning** appears if there is a deviation of two liters between the between the output and the quantity booked per visit. Click on Enter check the pumps and the supply lines between the pump and mixer.

8.3 Diagnosis

The **Diagnosis** menu facilitates troubleshooting in the event of a technical problem. You can reach this menu via [📖].

8.3.1 Checking boxes

You can check the servo pump in this menu.

1. Change over using [📖] **> Diagnosis > Stations** in the **Feed**submenu.
2. Use [<] [>] to select the desired station.
3. Press **Pump: start?** [Enter] to check whether the pump is running.

   While you are checking the pump, the asterisk (*) in the **Motor pulses** line should rotate. That indicates that the motor is generating pulses.
4. At **Control unit** you can view which IFS control unit is assigned to the feeding box.

8.3.2 Monitoring

In this menu, you check the following faults:

- How often the automatic feeder received no response from the **IFS feed 1-fold.**
- How often the automatic feeder received no response from the **IFS feed 4-fold.**
- How often the automatic feeder received no response from the **Identification.**
- How often the **feeding box motor** provides no pulses.

You check the faults as follows:

1. Change over using [📖] **> Diagnosis** in the **Monitoring**submenu.
2. Use [<] [>] to select the fault that occurred.
   2.1. At **Amount,** you check how many times the failure occurred.
   2.2. At **since** you check when the entries were deleted the last time.
   2.3. At **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?** with [Enter] to delete the fault message.

8.3.3 Version

You can check the version number in the **Version** menu.

Check the version as follows:

1. Change over using [📖] **> Diagnosis > Version** in the **Peripheral device**submenu.
2. Press **IFS feed 1-fold** or **IFS feed 4-fold** [Enter] and read the version number.

8.3.4 Setup

You can only view the settings in this menu. To make changes, you must open the setup menu.

You check the setup settings as follows:

1. Change over using  **> Diagnosis** in the **Setup**submenu.
2. Go to the desired submenu and check the settings.

9 Appendix

9.1 Checklist for commissioning and recommissioning

Note: You must carefully read the instructions in the operating manual, in particular the safety instructions, and observe them before putting the SynchroFeed feeding station into service.

Initial start-up	**OK?**
Tell end users that the SynchroFeed feeding station is to be installed so that it is frost-proof.	☐
Tell end users that the SynchroFeed feeding station is to be installed so that it is protected against rain and moisture.	☐
Tell end users that the feeder and cables are to be protected against exposure to sunlight.	☐
Mount the SynchroFeed feeding station.	☐
Ground the SynchroFeed feeding station.	☐
Attach the mains adapter.	☐
Insert the pump hose in the servo pump.	☐
Mount the pressure sensor.	☐
Mount the pushbutton/remote control for manual feed start (optional).	☐
Connect the antenna.	☐
Connect the suction hoses.	☐
Connect the CAN bus cable to the automatic feeder.	☐
Connect power supply.	☐
Register the IFS feeding box in the setup of the automatic feeder.	☐
Calibrate the hose pump.	☐
Perform the cleaning.	☐

9.2 Materials list

The following materials are used in the SynchroFeed feeding station:

- TPE
- Polyurethane

9.3 Shutdown checklist

	OK?
Clean the suction hoses and the pump hose.	☐
Cancel the registration of the IFS feeding box in the automatic feeder’s setup.	☐
Pull the mains plug.	☐
Remove the suction hoses.	☐
Close the fittings at the automatic feeder.	☐
Remove the pump hose from the servo pump.	☐
Clean the outside of the SynchroFeed feeding station with a damp cloth.	☐
Remove the CAN bus cable from the main board of the automatic feeder and replace it with a resistor.	☐
Store SynchroFeed feeding station in a dry and frost-free location	☐

Index

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:	Peripheral device
Type:	Extension 1 feeding station SynchroFeed, IFS V01

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, 20.04.2016

Place, date

Signature
Markus Förster
CEO

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

Manufacturer:
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Description and identification of the machinery:

Make:	Peripheral device
Type:	Extension 4 feeding stations SynchroFeed, IFS V01

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)
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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, 20.04.2016

Place, date

Signature
Markus Förster
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