18 March 2011

Original operating manual

Teat slider

from version H 7.00

Table of contents

1 Introduction

This operating manual puts you in the position to operate the teat slider safely as intended.

> Please read the operating manual carefully before putting the teat slider into service.

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

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

1.1 Teat slider versions

- **Teat slider top SA/SM**: this version consists of the front plate with teat lock and a valve unit.
- **Teat slider top IFS**: this version consists of the front plate with teat lock and an IFS control unit.

1.2 Copyright

1.3 Disposal

All components, liquids and solids must be disposed of in compliance with the official local regulations for waste prevention and appropriate waste recycling or disposal which apply in your country. Also observe the corresponding safety data sheets.

1.4 Transport

The teat slider is delivered in a box with the dimensions 62 x 62 x 97 cm.

> Check the product for visible signs of damage upon delivery and report them immediately to the carrier.

1.5 Contact details of the manufacturer

Please get in touch with us if you have any questions on 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
D-78234 Engen, Germany
Phone: +49 / (0)7733 / 9406 - 0
Fax: +49 / (0)7733 / 9406 - 99
info@foerster-technik.de
www.foerster-technik.de

2 For your safety

2.1 Target group

2.1.1 Necessary qualifications of the owner

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

2.1.2 Necessary qualifications of the service technician

Only trained service technicians are authorised to install the teat slider, put it into service and subject it to maintenance and repairs.

Service technicians are electricians with appropriate qualifications, i.e. 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. This also includes knowledge of relevant accident prevention regulations, generally accepted safety regulations, EC guidelines and country-specific standards and provisions.

2.2 Intended use of the teat slider

Only use the teat slider as a safety device for the sucking teat on automatic calf feeders.

2.3 Safety signs on the machine

The safety signs on the machine are an important part of the safety concept and help prevent accidents.

They indicate danger areas at the machine and warn against residual risks.

Keep all safety signs completely in legible condition and renew them if they become unreadable.

	**Danger due to automatic running!** You can injure your hands if you reach into the danger area of the indicated points. • Never reach into the danger area of the indicated points as long as parts are able to move there. • Always pull all mains plugs before carrying out any work on the teat slider.

	**Danger due to hot surface!** The solenoid valves can become hot during operation or when they malfunction. Severe burns may be the result. • Never touch the solenoid valves when they could be hot.

2.4 Indication of hazards

Hazards are indicated by a key word and a corresponding symbol, depending on the severity and probability:

	**Danger!** For an imminent danger, resulting in serious injuries or death.

	**Warning!** For a potentially dangerous situation which may cause serious injuries or even death.

	**Caution!** For a potentially dangerous situation which may cause minor injuries or material damage.

Attention	For a potentially harmful situation in which the product or an item can become damaged within its environment.

Note	For application notes and other useful information.

However, it is just as important to observe any other notes and information which are not highlighted to avoid failures which, in turn, may cause direct or indirect injuries or material damage.

2.5 Residual risks

The teat slider is state of the art and has been designed in accordance with approved safety-related rules. Hazards and adverse effects may nevertheless arise when using the teat slider.

Warning!
Serious injuries or death may be the consequence of the residual risks stated below!

Hazard:

Lethal electric shock

Danger point:

Connection point

Measures:

- A residual current device (RCD) of 30 mA should be installed by the customer.
- The cover of the automatic feeder may only be opened by an electrician.

Hazard:

Poisoning

Danger point:

Entire assembly

Measures:

- Remove all coolants and lubricants completely in accordance with the cleaning specifications in “Cleaning” auf Seite 31ff when putting the teat slider into service for the first time.

Hazard:

Crushing, cutting

Danger point:

Teat lock

Measures:

- A pressure reducer with maximum 4 bar output pressure must be provided by the customer for the teat slider.

Hazard:

Breakdown

Danger point:

Electrical equipment

Measures:

- The teat slider must be checked regularly for electrical safety in compliance with national regulations (repeated inspection).

Hazard:

Indirect contact

Danger point:

Electrical equipment

Measures:

- Fuse protection of 16 A (provided by the customer) and a residual current device (RCD) of 30 mA need to be installed in compliance with local regulations for the teat slider.

Hazard:

Short circuit

Danger point:

Electrical equipment

Measures:

- The connection of the teat slider has to be secured via the control to a maximum of 6.3 A (see machine circuit diagram about this).

Hazard:

Infection

Danger point:

Teat

Measures:

- Observe the specifications of the manufacturer of the cleaning agent used for cleaning.

- Always wear your personal protective equipment when handling cleaning agents.
- Calves must be kept so that illnesses and the spread of illnesses are limited to the greatest extent possible.

Hazard:

Burns

Danger point:

Valves

Measures:

- Pay attention when touching the valve surfaces, that they can be hot.

2.6 Obligations of the owner

The owner is obliged to:

- Make misuse by children impossible.
- Carefully read and understand this operating manual before putting the teat slider into service.
- Only allow operating personnel to work with/on the teat slider who:
  - Are familiar with the basic operational safety and accident prevention regulations.
  - Have been trained to work with/on the teat slider.
  - Have read and understood this operating manual.
- Operate the teat slider only as intended.
- Keep all safety signs on the teat slider in legible condition and renew damaged ones.

- Do not change the design or functions of the teat slider.
- Operate the teat slider only in perfect functional condition.
- Subject the teat slider to regular visual inspection for possible damage and have the latter rectified by a service technician if necessary.
- Provide the required personal protective devices for the operator.
- Make sure the pneumatic connections of the teat slider and the power supply provided by the customer are easy to access at all times.
- Protect the teat slider and all pneumatic lines from exposure to sunlight.

2.7 Obligations of the operator

Before beginning work, the operator is obliged to:

- Observe the basic operational safety and accident prevention regulations.
- Read and understand this operating manual.
- Observe all the safety information and instructions included in this operating manual.

When cleaning, the operator is also obliged to wear his/her personal protective equipment (safety glasses, protective gloves).

The compulsory accident prevention regulations which apply at the operation site in the country of use and the technical rules for safety-related and specialist work must also be observed by all means.

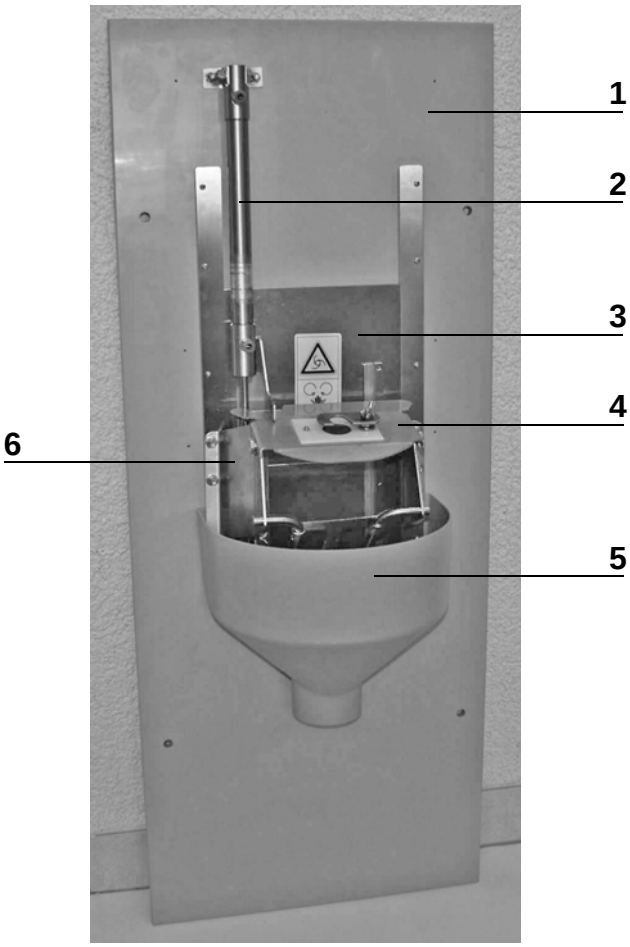
2.8 Structural alterations

The teat slider must not be subjected to any unauthorised alterations at any time.

Only original spare parts, wear parts and accessories may be used, since any warranty claims will otherwise expire.

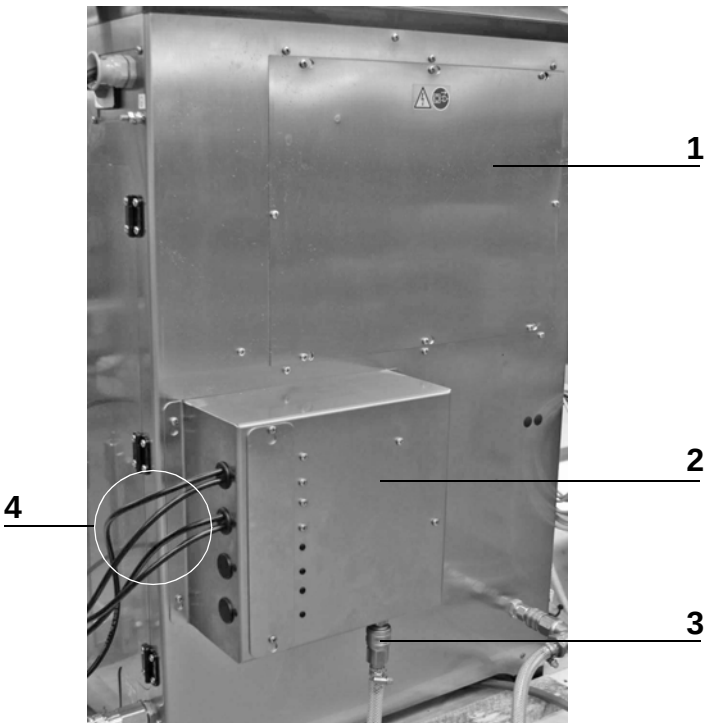
3 Components

3.1 Teat slider



1	Front plate
2	Pneumatic cylinder
3	Teat slider (here closed)
4	Swivelling suction bracket
5	Discharge tray
6	Fixing bracket

3.2 Back of automatic feeder



1	Automatic feeder control box
2	Valve unit
3	Pneumatic connection of the compressor
4	Pneumatic hoses

Note	If the teat slider is controlled via an IFS control unit, the valve unit is replaced by an IFS control unit.

4 Technical data

The teat slider is delivered for self-installation and can be retro-fitted on all available Förster feeding boxes, in combination with automatic feeders that are equipped with a H program.

4.1 Dimensions

Front plate with teat lock

Height:	1000 mm
Width:	500 mm
Depth:	210 mm

4.2 Teat slider top SA/SM

Voltage: 230V / 50-60Hz

Output: 2W

Fuse (depending on control unit): maximum 6.3 A

Residual current device (RCD) provided by the customer: 30 mA

4.3 Teat slider top IFS

Voltage: 24V DC

Output: 2W

Fuse (depending on control unit): maximum 6.3 A

Residual current device (RCD) provided by the customer: 30 mA

4.4 Compressor with pressure reducer

Working pressure: 2.5 to 4 bar

5 Putting the unit into service

5.1 Electrical connection provided by the customer

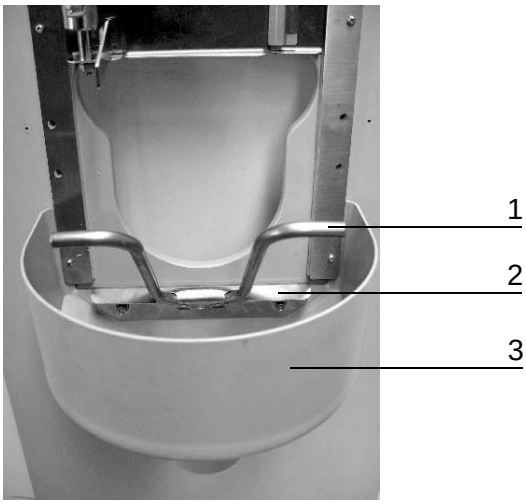
- Have the electrical connection (provided by the customer) installed by a qualified electrician.
- Observe the local regulations and protective measures.
- A 30 mA residual current device (RCD) in the power supply (provided by the customer) is compulsory for the operation of the teat slider.
- The rated voltage and rated frequency must be observed. The supply voltage stated on the name plate of the device must correspond to that of the mains supply.
- Have excess voltage limiters installed by a qualified electrician in your power supply (provided by the customer) (lightning protection measure).
- Protect the teat slider and all corresponding cables from exposure to sunlight.

5.2 Cleaning

For reasons of hygiene, the teat slider must be cleaned thoroughly before putting it into service to completely remove any existing coolant or lubricant residue. See also “Cleaning” auf Seite 31ff.

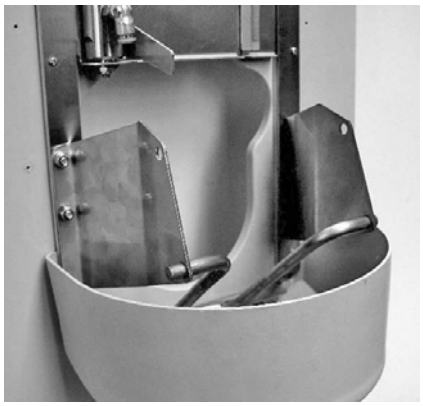
5.3 Installing the divider bar, discharge tray and swivelling suction bracket

1. The scope of delivery includes a divider bar with splash guard. The supplied screws fit in the pre-drilled holes. Screw the discharge tray with the splash guard to the front plate (see picture).

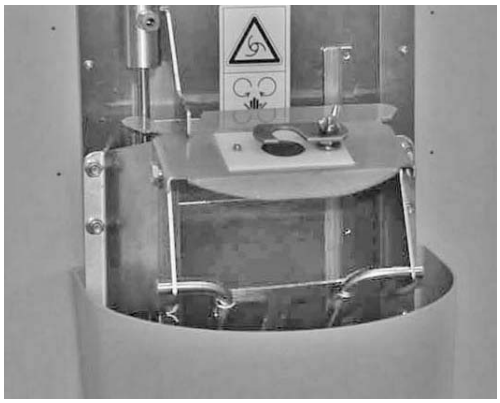


1	Divider bar
2	Splash guard
3	Discharge tray

2. Guide the divider bar into the matching hole of the fixing bracket and fasten it to the front plate.



3. Screw on the swivelling suction bracket with the two fixing brackets.



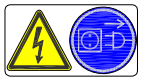
Note	It is recommended to fix the screws of the suction bracket with a drop of special glue (e.g. Loctite).

4. Fasten the sucking teat on the swivelling suction bracket.

5.4 Installing valve (for retrofitting)

5.4.1 Teat slider top SA/SM

For new equipment the valve unit is already fastened on the automatic feeder and connected. If you are retrofitting the teat slider, proceed as follows:



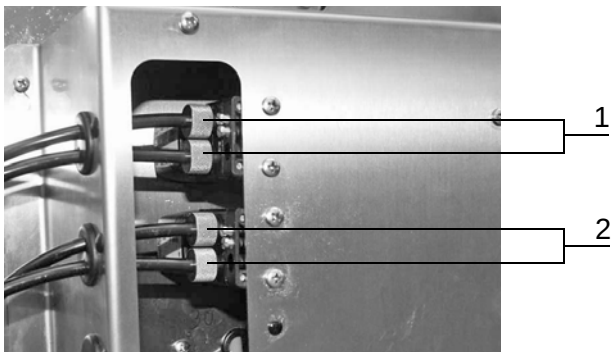
Danger due to live electrical components!

Danger of death by electric shock!

- Always disconnect the mains plug of the automatic feeder, before opening the cover of the automatic feeder control box.

1. Replace the dummy plug, which is on the back of the automatic feeder, with a bushing socket.
2. Remove the powder hopper including the powder conveyance.
3. Screw the valve unit on the back of the automatic feeder.

4. Guide the connection cable between the boiler/heat exchanger and back of the automatic feeder in the direction of the control box.
5. Remove the dummy plug at the control box and install the cable screw connection M12.
6. Lay the cable in the control box and clamp it to the main board (see machine circuit diagram).
7. Put the powder hopper with powder conveyance back on.
8. Remove the housing cover of the valve unit.
9. Replace the dummy plug on the valve unit with a bushing socket.
10. Connect the pneumatic hose on the valve (see picture).

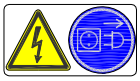


1	Hose connection for box 1
2	Hose connection for box 2

Note	To fasten the pneumatic hose on the valve, only tighten the fastening nuts by hand.

5.4.2 Teat slider top IFS

When installing the pneumatic valve on the IFS control unit, proceed as follows:



Danger due to live electrical components!

Danger of death by electric shock!

- Always disconnect the mains plug of the IFS control unit, before starting work on the IFS control unit.

1. Remove the cover on the left side of the IFS control unit.
2. Replace the dummy plug on the cover by a bushing socket.
3. Fasten the bracket with the valve on the IFS control unit (see picture).

4. Loosen the screws in the top part of the IFS control unit so that you can slide the IFS control unit upwards.

1	IFS control unit
2	Screws (4x)

5. Connect the pneumatic valve according to the circuit diagram.
6. Slide the IFS control unit downward and tighten the screws.

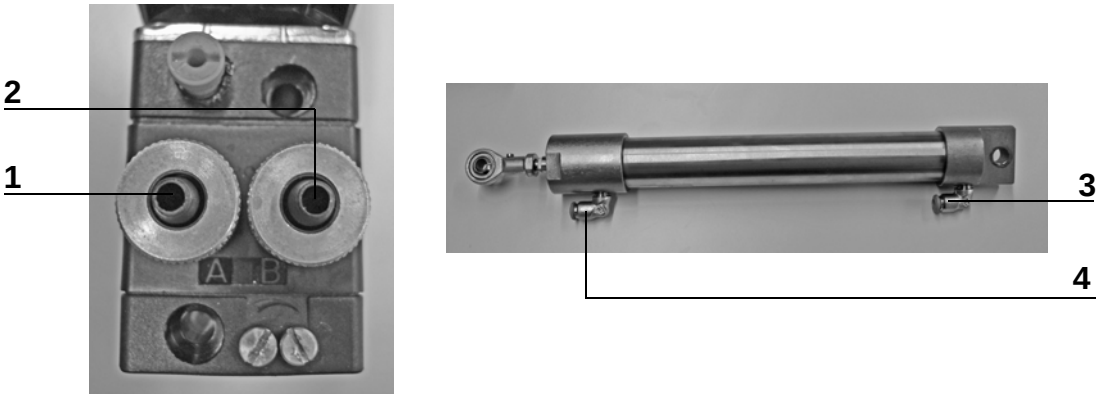
5.5 Connecting and setting the pneumatic valve

For operating the pneumatic valve, a commercially available compressor with pressure reducer is required.

Attention	Make sure that all pneumatic hoses are installed outside the animal area to prevent them from being damaged.

5.5.1 Teat slider top SA/SM

1. Connect **Connection A** on the **pneumatic valve** with the **front connection** of the **pneumatic cylinder**.
2. Connect **Connection B** on the **pneumatic valve** with the **rear connection** of the **pneumatic cylinder**.



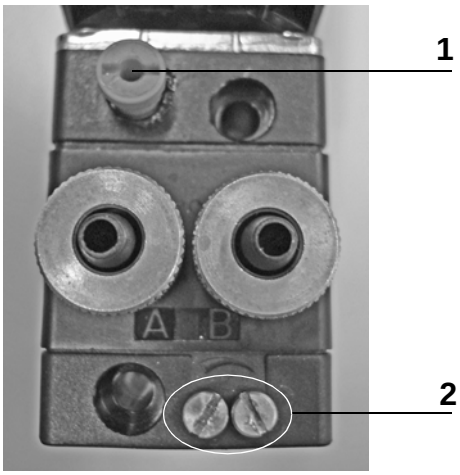
1	Connection A on the pneumatic valve
2	Connection B on the pneumatic valve
3	Rear connection on the pneumatic cylinder
4	Front connection on the pneumatic cylinder

Note	For installing the hoses on the quick-couplings of the pneumatic cylinder, you must **cut the hose ends straight**. Only then can it be ensured that the quick-couplings are leak-proof.

3. Plug the socket of the connection cable on the valve plug.
4. Fasten the housing cover back on the valve unit.
5. Connect the pneumatic hose of the compressor on the connection point of the valve unit.
6. Set the speed with which the valve opens or closes using the two restrictor screws below the valve plug.

   When you turn the restrictor screws clockwise, the speed is reduced.

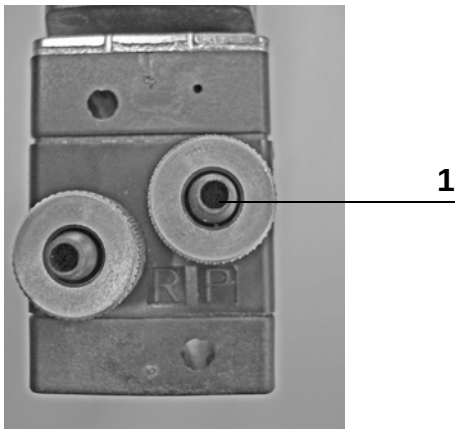
Note	For the correct setting, it is helpful to use the manual actuation of the valve (see the following picture).



1	Manual actuation
2	Restrictor screws

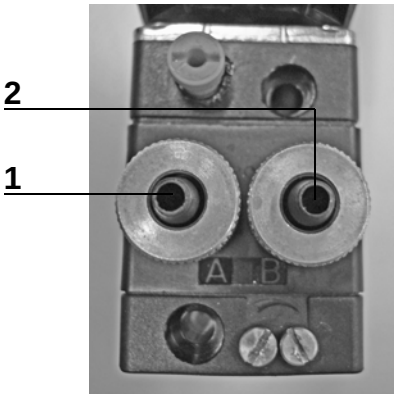
5.5.2 Teat slider top IFS

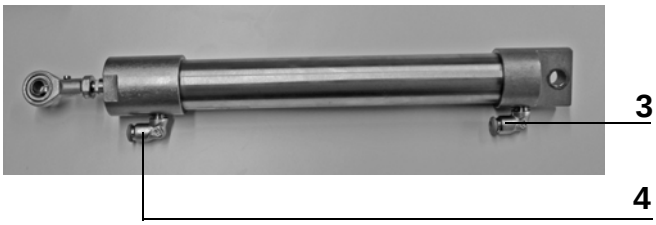
1. Connect the pneumatic hose of the compressor with the inlet "P" on the pneumatic valve (see picture).



1	Inlet P on pneumatic valve

2. The outlets A and B are on the other side of the pneumatic valve.
   - 2.1 Connect **Connection A** on the **pneumatic valve** with the **front connection** of the **pneumatic cylinder**.
   - 2.2 Connect **Connection B** on the **pneumatic valve** with the **rear connection** of the **pneumatic cylinder**.





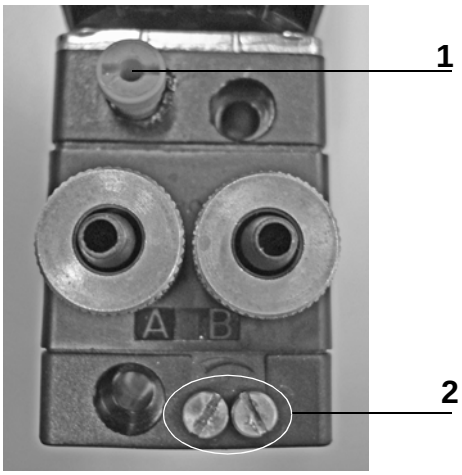
1	Connection A on the pneumatic valve
2	Connection B on the pneumatic valve
3	Rear connection on the pneumatic cylinder
4	Front connection on the pneumatic cylinder

Note	For installing the hoses on the quick-couplings of the pneumatic cylinders, you must **cut the hose ends straight**. Only then can it be ensured that the quick-couplings are leak-proof.

3. Set the speed with which the valve opens or closes using the two restrictor screws below the valve plug.

   When you turn the restrictor screws clockwise, the speed is reduced.

Note	For the correct setting, it is helpful to use the manual actuation of the valve (see the following picture).



1	Manual actuation
2	Restrictor screws

4. Fasten the cover back on the IFS control unit.

5.6 Software

When using the teat slider, the automatic feeder always has to be updated to the current program version.

5.7 Activating the teat slider

You can select among two control options for the operation of the teat slider:

- **Teat slider closed**

  The teat slider is closed in the default setting. It then remains closed until an animal with an entitlement enters the box. If this animal no longer has a feed entitlement, then the slider will be closed again two minutes (default setting) after the animal has consumed its portion. It then remains closed until an animal with an entitlement enters the box again.

- **Teat slider open**

  The teat slider is open in the default setting. It is always closed then when an animal without entitlement enters the box or two minutes after an animal has completely consumed its portion. After two minutes of being closed (default setting), the teat slider reopens.

The teat slider is activated in the setup of your automatic feeder.

Proceed as follows:

1. Switch off the automatic feeder.
2. Press  and hold the button while you switch the automatic feeder back on. After a short while, the setup menu appears on the display, from which you select:
    > **Machine >Boxes** > **Feed**

```
Setup
  Language [German]
  Time/date
▷ Machine
```

3. Select the control to which the teat slider should be allocated.

```
Feeding boxes
▶ Internal (feeder)
  IFS feed 1-fold
  IFS feed 4-fold
```

4. Select the desired control option.

```
<internal 1>
  Allocated to: box 1
  Extras: none
▷ Teat slider: [no]
```

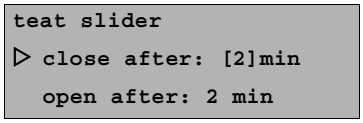
5. To leave setup, repeatedly press Esc until the message on the right is displayed. Confirm with Enter.

```
 setup
  terminate?
```

5.8 Time settings

In the **Device data** menu, set the time after which the teat slider should be opened or closed.

1.  > **Device data** > **Boxes** > **Feed** > **Teat slider**



Teat pusher:	opens after	closed after
Default value:	2 min	2 min
Permitted range of values:	0 to 9 min	0 to 9 min

6 Cleaning

6.1 Specifications for cleaning

What has to be cleaned?

The teat must be cleaned.

How often does cleaning have to be performed?

The teat must be cleaned daily using the automatic suction hose rinsing of the automatic feeder.

Which cleaning agents are allowed to be used?

For this, observe the information in the original operating manual of your automatic feeder.

6.2 Cleaning procedure

6.2.1 General safety instructions

- Always wear personal protective equipment (e.g. safety glasses, protective gloves) when handling cleaning agents. Observe also the specifications of the safety data sheet for your cleaning agent.
- Observe the exact cleaning water temperature and concentration specifications of the manufacturer.
- Never mix alkaline and acidic cleaning agents.

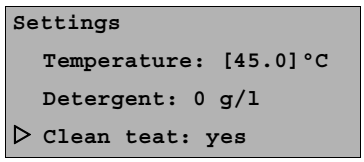
	**Warning!** Risk of injury and death! Never mix alkaline and acidic cleaning agents, since this could result in a dangerous chemical reaction. Dangerous gases may be created and cause serious breathing difficulties. They may also cause explosions. • For this reason, when performing individual cleaning cycles with an acidic cleaning agent, we recommend filling this into the feeding box manually in a cleaning cycle without automatic detergent dispensing.

- Make absolutely sure that no undiluted or large quantities of cleaning agent are drained into the ground water, bodies of water or the sewage system. No undiluted or non-neutralised cleaning agents may enter the sewage or outlet channels. Observe the provisions of your local waste disposal company and the safety data sheet for your cleaning agent.

6.2.2 Automatic suction hose rinsing with teat coupled with the cleaning process of the automatic feeder

The automatic rinsing of the suction hose and the teat takes place during the cleaning process for the automatic feeder.

1. Call up the following point in the automatic feeder menu:
    > **Cleaning** > **Settings**
2. Activate **Clean teat yes**.
   The rinsing water is then not evacuated via the mixer drain valve, but rather via the teat.



6.2.3 Automatic suction hose rinsing with teat after each visit with feed entitlement

If an animal has drunk the last portion of its feed entitlement, then 0.25 litres of water (after the end of the drink-out time) will be dispensed into the feeding box. Since the animal normally

remains a while longer in the feeding box to suck on the teat, the suction hose with teat can be cleaned in a simple manner.

Note	This function is **only** available on the version **teat slider top SA/SM** .

1. Call up the following point in the automatic feeder menu:
    > **Cleaning** > **Hose**
2. Select the desired group.
3. Select the desired setting in **activate**.
4. In **as of plan day**, set the desired value.

```
<Group 1>
▷ Activated: [yes]
  as of plan day: 14
```

Attention	Make sure that the suction hose cleaning is only activated once the calves have already had feed from the machine for 14 days. Very young calves possibly do not actually suck the water.

6.2.4 Compressed air (pulsating compressed air cleaning)

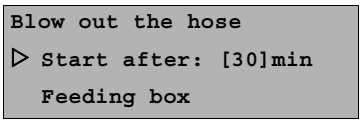
Note	This function is **only** available on the version **teat slider top SA/SM** .

The compressed air cleaning (**option**) works without detergents to clean the suction hoses to the tips of the teats. In order to achieve perfect cleaning results, the air pressure may not exceed 2.5 bar. The compressed air should be supplied through an oil-free compressor. This should be equipped with a pressure-reducing valve and be able to deliver 100 litres per minute.

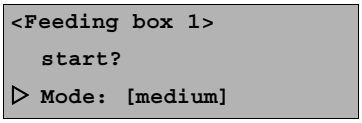
Attention	If the air pressure exceeds 2.5 bar, the membranes of the milk solenoid valves may be damaged.

The compressed air cleaning can be started automatically or manually.

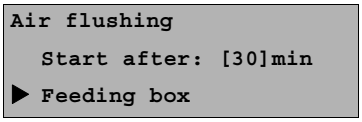
1.  > **Cleaning > Compressed air**



2. In **Start after**, enter the amount of time which has to pass after the last portion is issued before the **compressed air cleaning is automatically** started.
3. If you want to **manually start** the compressed air cleaning, press Enter in the **feeding box**. Select the **feeding box**.



4. Select the intensity of the air flushing in **mode**.
5. In **start**, press Enter.



	Start after	**Intensity**
Default value:	30 min	medium
Possible values	0 to 120 min	weak, medium and strong

7 Diagnosis

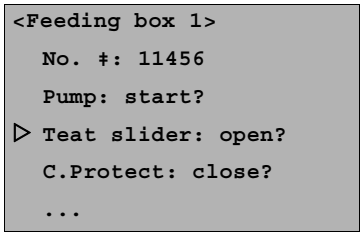
The **Diagnosis** menu helps you to find faults in the event of technical problems.

7.1 Checking boxes

7.1.1 Feeding boxes

> **Diagnosis** > **Boxes > Feed** > **Feeding box 1**

> Here you can open the teat slider.



Note	This function is **only** available on the version **Teat slider top IFS**.

8 Maintenance/servicing

The visual and functional inspection of the components can be conducted by the owner/operator.

Repair work must **always** be performed by a service technician.

8.1 Safety instructions

	**Danger due to automatic running!** You can injure your hands if you reach into the danger area of the indicated points. • Never reach into the danger area of the indicated points as long as parts are able to move there. • Always pull all mains plugs before carrying out any work on the teat slider.

	**Danger due to hot surface!** The solenoid valves can become hot during operation or when they malfunction. Severe burns may be the result. • Never touch the solenoid valves when they could be hot.

8.2 Maintenance intervals and activities

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

8.2.1 Daily

Visual inspection of the components

- The teat must be checked on a daily basis for damage and wear. If damage or wear is observed during the visual inspec-

tion, the teat must be replaced before the teat slider is operated further.

- All mechanical and electrical components must be subjected to visual inspection for damage and wear every day. If any damage is detected during the visual inspection, the faulty components have to be replaced by a service technician before work can be resumed with the teat slider.

8.2.2 In compliance with national regulations

Inspection of components by means of measurements

This inspection may be conducted **only** by a service technician!

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 damage is detected during the inspection, the faulty components have to be replaced by a service technician before work can be resumed with the teat slider.

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:	KFA3-MA2, KFA3-MA3, KFA3-SL2, KFA3-SL2-L VEW1-30-2, VEW1-50-2, VEW1-50-2 for MilchMobil, VEW1-50-2 Compact Front plate with teat slider; CalfProtect

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)
2004/108/EG	(Electromagnetic Compatibility) directive 2004/108/EC of the European Parliament and the Council from December 15, 2004, for adjustments of the legal regulations of the member states about electromagnetic compatibility and for repeal of directive 89/336/EEC

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

EN ISO 12100:2010-11	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology (ISO 12100:2010)
EN 60204-1:2006/A1:2009	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2005)
EN 60204-1:2006/AC:2010	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 60950-1:2006/A12:2011	Information technology equipment - Safety - Part 1: General requirements
EN 60950-1:2006/AC:2011	Information technology equipment - Safety - Part 1: General requirements
EN 60950-1:2006/A1:2010	Information technology equipment - Safety - Part 1: General requirements
EN 60950-1:2006/A11:2009	Information technology equipment - Safety - Part 1: General requirements

Engen, 28 October 2013

Place, date

Signature
Markus Förster
Geschäftsführer