

Operating Manual

## **Adjustment of the manure belt**

Code No. 99-97-0141

Edition: 04/2012 GB



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## Overview of changes / updates in the manual

Name of chapter	Type of change / update	No. of BD product information	Issue date	Page
4 "Running manure removal"	Notes added		04/2012	20

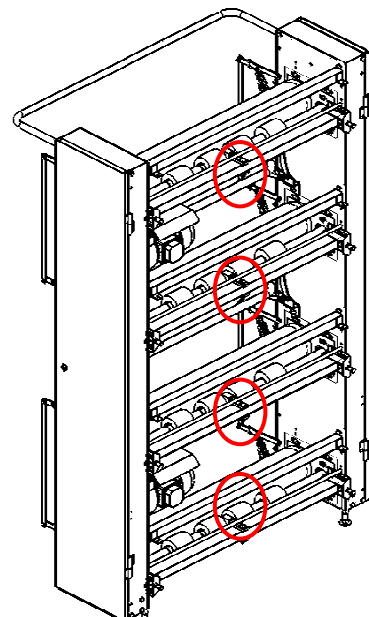
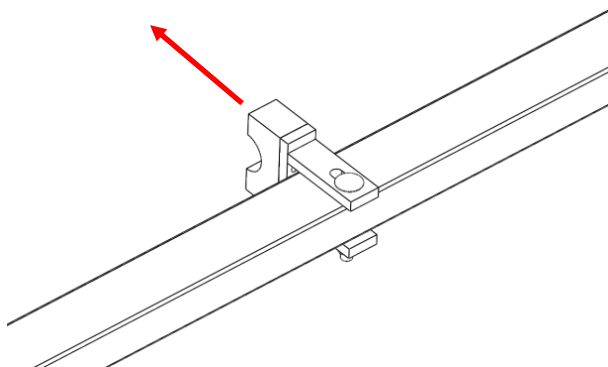


### No. 47

Date: August 2013

## Adjustment of the support for pressure shaft on the manure belt drive

1. Carry out the basic adjustment at the manure belt drive according to chapter 3.2 "Presettings at the manure belt drive" in the instruction manual "Adjustment of the manure belt" (Code no. 99-97-0141".
2. Presetting of the bearing shell
  - a) Push forward the bearing shell to the stopper in the slot.

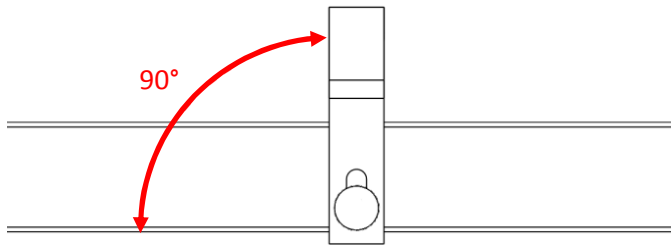


RIGHT

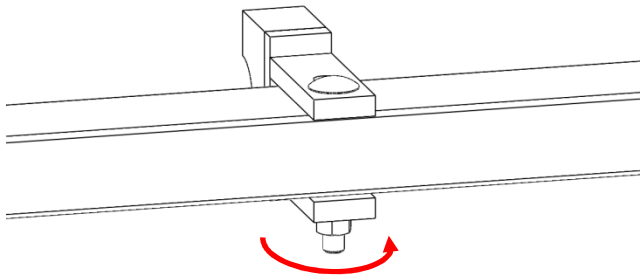


WRONG

b) Align the bearing shell at right angles with the pressure tube.

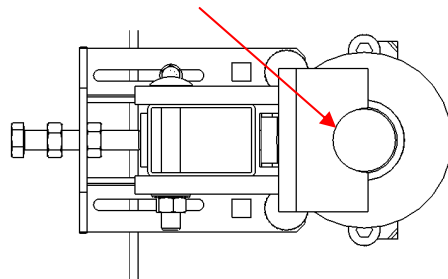


c) Tighten the bearing shell by means of a hexagon nut.



### 3. Installation and adjustment of the support

a) Install the support according to the instruction manual.  
The bearing shell must slightly abut on the pressure shaft.

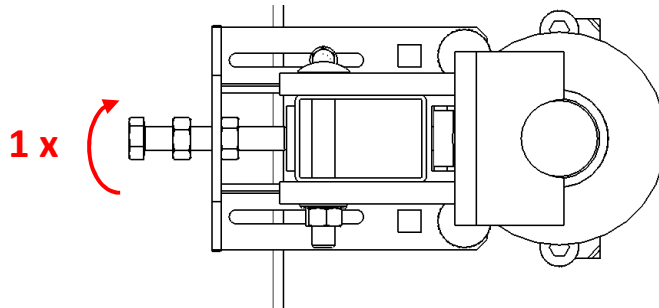


b) Align the pressure tube and fix on both sides by means of the hexagon head screw on the brackets in the way that **the clearance between the pressure tube and the outer edge of the bracket is 50 mm**.

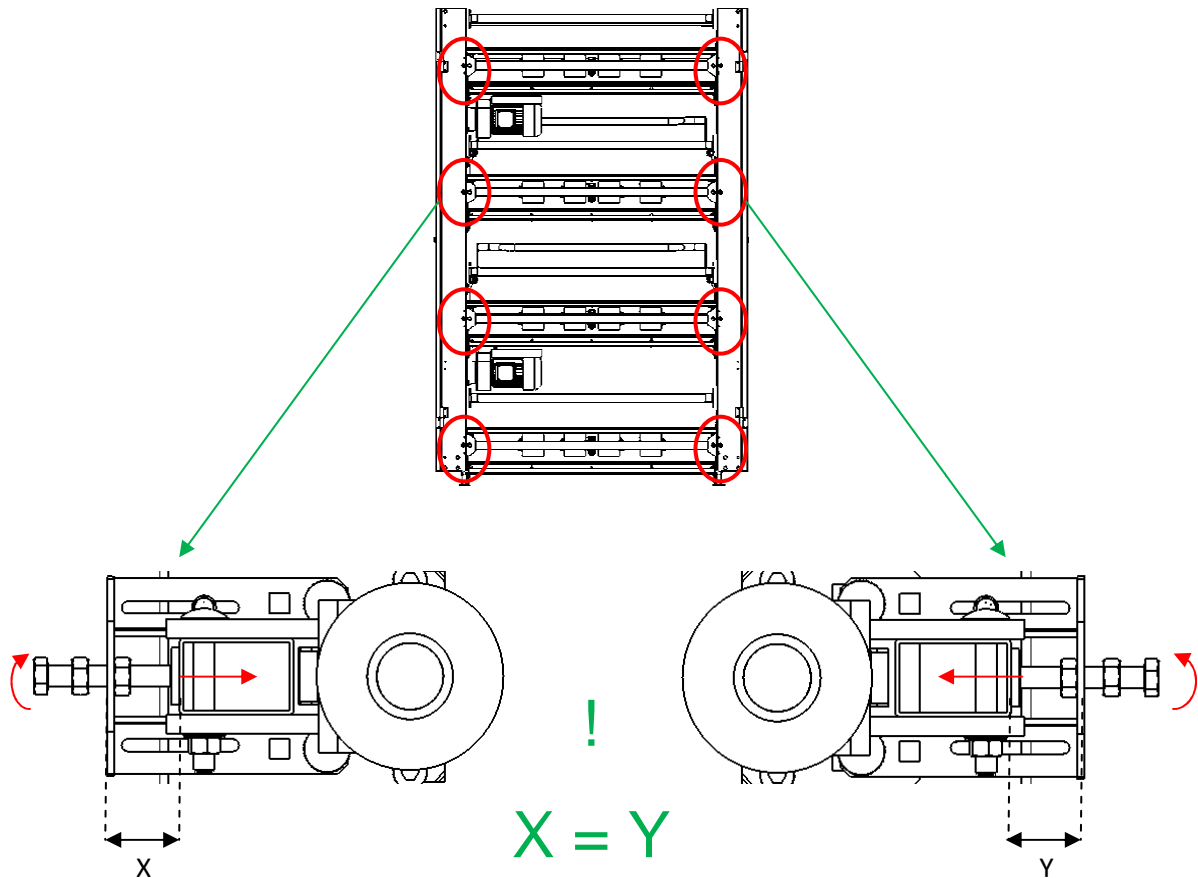


## 4. Securing of the support position

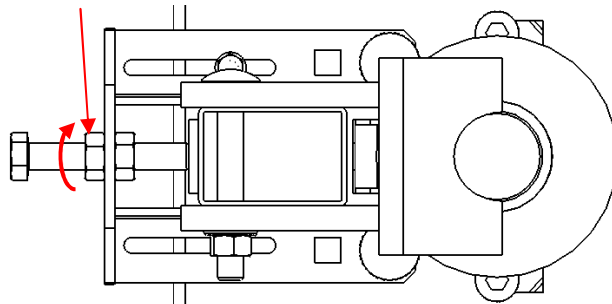
- a) As soon as the support is mounted in position with a slight counter pressure (approx. 50 mm), every adjusting screw is to be tightened by one more turn.



**Important: the clearances X and Y must be identical.**

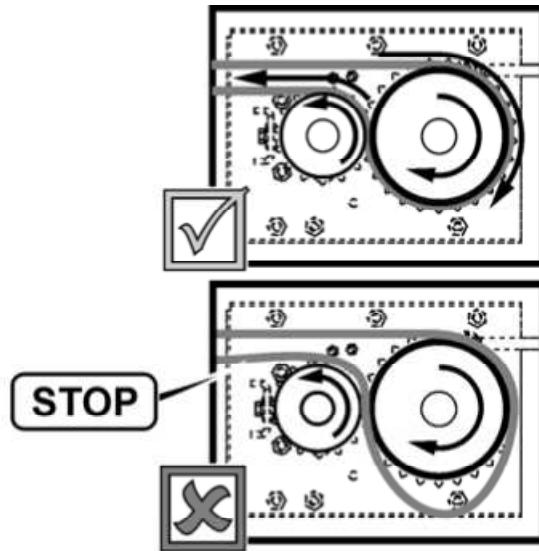


- b) Secure the adjusting screws with the hexagon nuts (retaining nut).



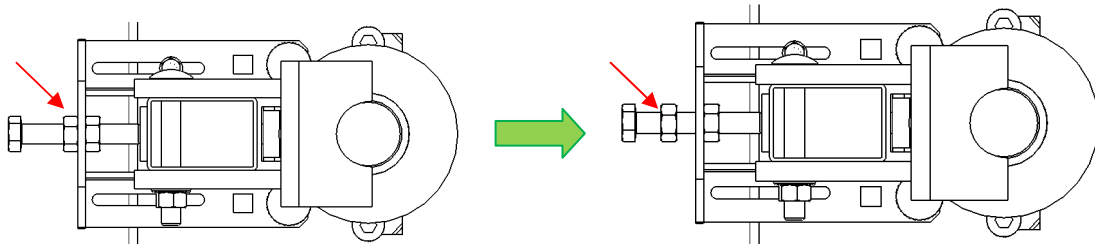
## 5. Subsequent adjustment of the support during operation

If the manure belt slips during the operation...

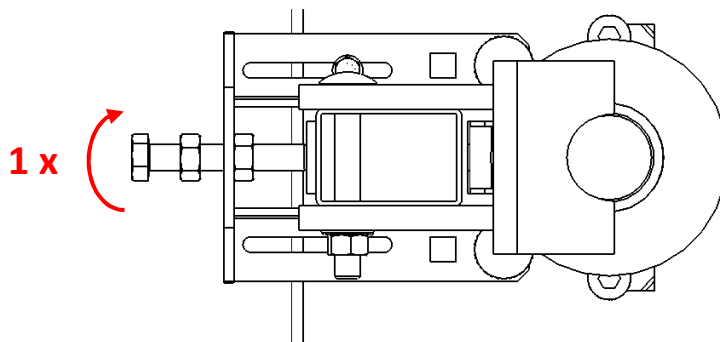


the following subsequent adjustment must be carried out.

a) Loosen the retaining nuts.

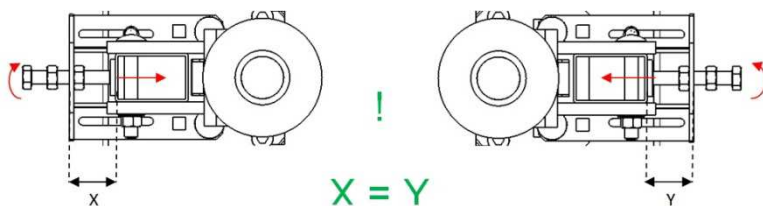


b) Retighten the adjusting screws on the right and left hand side each by one turn

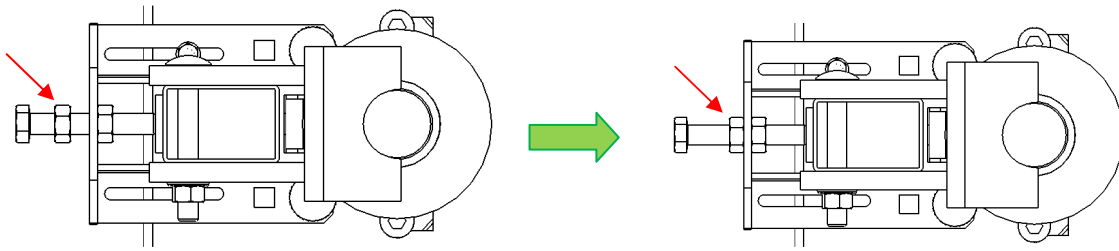


**Important:**  
Check the clearance X and Y

$$X=Y$$



c) Tighten the retaining nuts.



**Note: Should the manure belt slip again,  
the subsequent adjustment must be repeated according to section 5.**

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- Product Manager -  
*Drive Systems*

Alexander Ernst  
- Product Operator -  
*Drive Systems*





# Product information



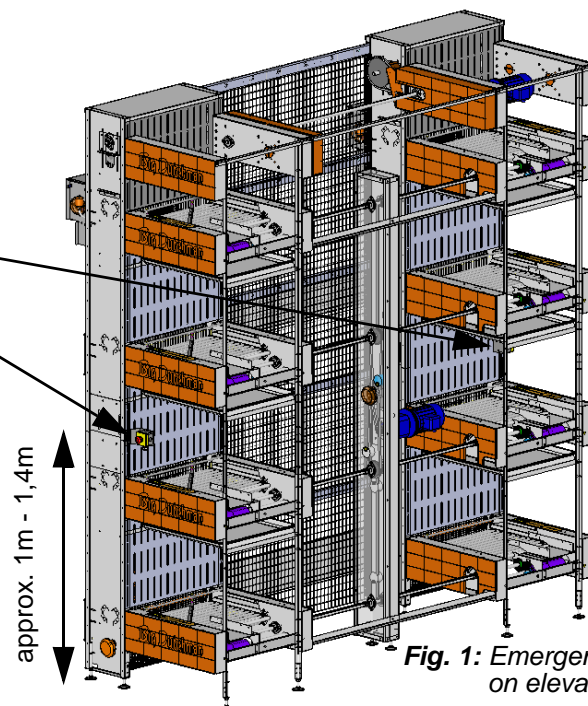
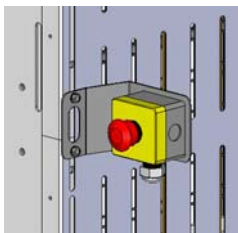
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No. 1316 September 21, 2012

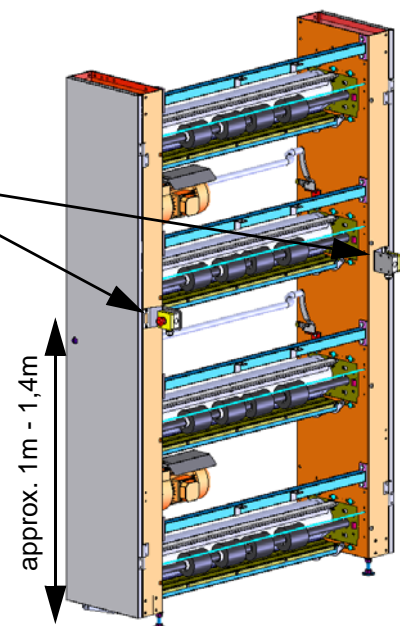
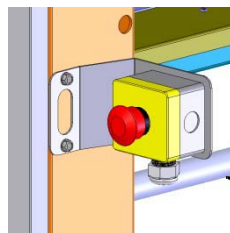
## Switch for emergency shutdown for elevators and manure belt drives

With immediate effect our elevators and manure belt drives are delivered with a switch for emergency shutdown.

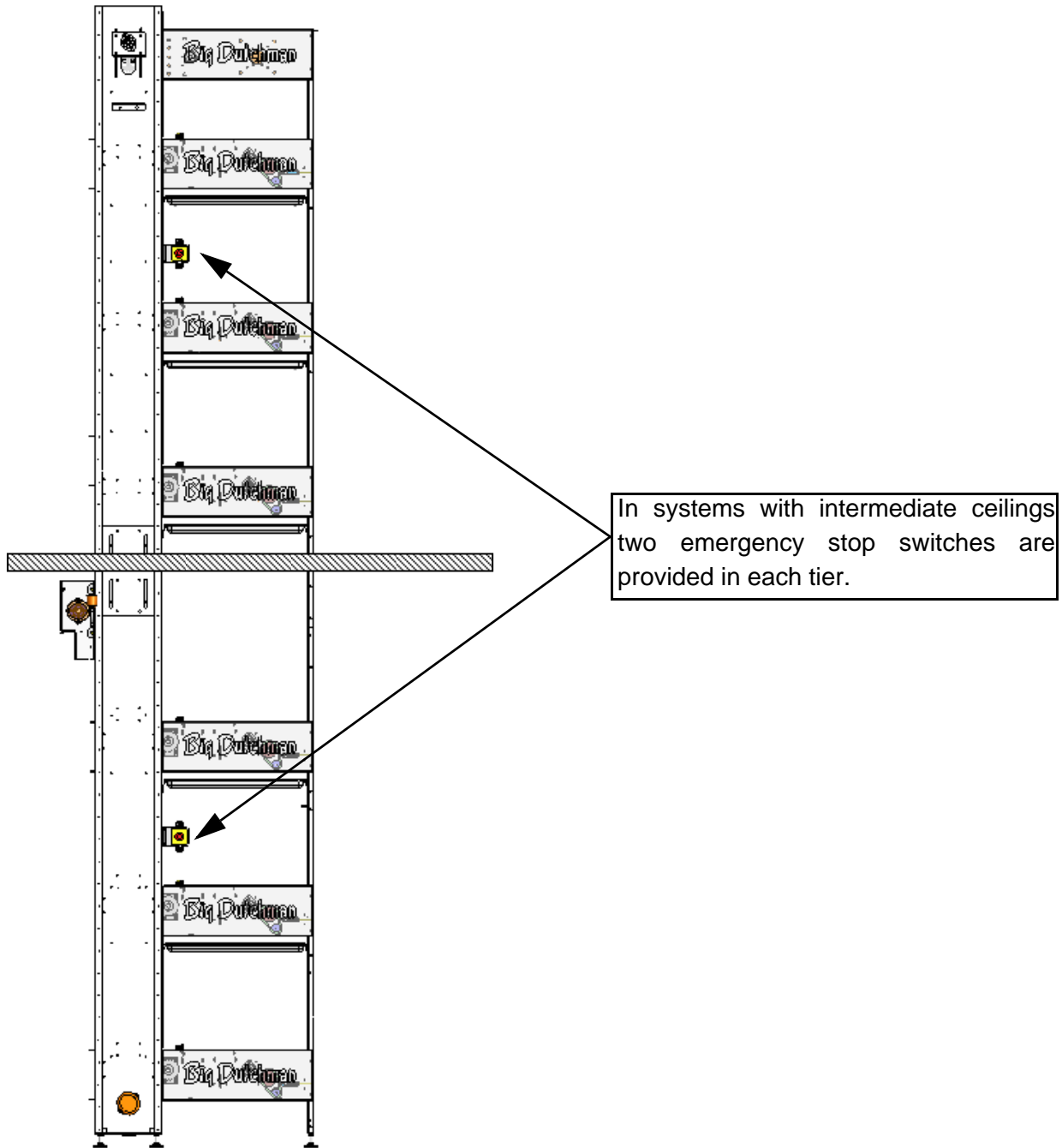


**Fig. 1:** Emergency stop switch on elevator

The emergency stop switches are to be installed at a position of approx. 1m to 1.4m from the floor at both sides.



**Fig. 2:** Emergency stop switch on MB-drive



**Fig. 3:** Emergency stop switch in system with intermediate ceiling

The switches for emergency shutdown including fixation material are also available as retrofit version:

Code no.	Description
83-09-3597	Switch f/emergency shutdown cpl for Elevator ST/EC/EggStarr

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# 1 Basic instructions



Please take care of this manual and always keep it in the same place close to the installation for quick reference. All persons working with the system, assembling, cleaning and servicing have to be familiar with the contents of these instructions.

Please observe the contained safety instructions!

If this manual gets damaged or lost, request a new copy from **Big Dutchman**.

## 1.1 Basics

The **Big Dutchman** installation has been constructed according to the current state of the art and all acknowledged regulations regarding technical safety. The installation is reliable. Upon operation, however, dangers to life and limb of the user or third persons or impairments of the system or other material property are still possible.

**The system may only be mounted, attended, repaired und used:**

- for due use
- in an excellent state from the safety and technical point of view
- by persons who are familiar with the safety regulations

In the event of special problems which are not described in detail in this manual, we recommend to contact us for your own safety.

## 1.2 Designated use

The **Big Dutchman** manure belt drives are designed for the transport of the manure occurring in the poultry houses out of the system rows.

The **Big Dutchman** system may only be used according to its designated use.

Every other use is considered as non-designated use. The manufacturer does not accept liability for damages resulting from other uses, the user alone has to bear the risk. The designated use also includes the exact following of the operation, maintenance and repair conditions as prescribed by the manufacturer.

### 1.3 Prevention of reasonably predictable incorrect uses

The following uses of the **Big Dutchman** system are not permitted and qualify as misuse:

- Transport of persons.
- Transport of objects.
- Unattended manure removal.
- Starting the linear manure removal before the start of the transverse manure removal.
- The use outdoor, especially in areas that are susceptible to frost.
- The use of the system where the temperature inside the house is below 0°C.
- Utilising the system with aggressive and/or corrosive materials in quantities that do not constitute good professional practise.
- A mechanical loading of the system that exceeds the loading that would be considered normal for such a system.




A non-designated use will lead to a liability exclusion by **Big Dutchman**.

**Only the user of the system takes the risk resulting from a misuse!**

## 1.4 Explaining the symbols


### 1.4.1 Safety symbols in this manual


Upon reading this **manual** you will come across the following symbols


	<p><b>WARNING</b></p> <p>This symbol indicates risks possibly leading to personal injury resulting in death or to severe injuries.</p>
	<p><b>CAUTION</b></p> <p>This symbol indicates risks or insecure procedures possibly leading to injuries or material damage.</p>
	<p><b>NOTE</b></p> <p>This symbol indicates notes leading to an effective, economic and environmentally-conscious handling of the installation.</p>

### 1.4.2 Safety symbols in the manual and on the installation

These safety symbols illustrate remaining dangers when handling the system. They are supplements to the above-mentioned symbols:

	<p>Warning against dangerous electrical voltage</p>
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	<p>Warning against the cold</p>
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	<p>Warning against slippery surface</p>
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### 1.4.3 Safety symbols and notes on your installation

Depending on the type of installation you will find the following safety symbols. They indicate technically remaining dangers when handling the system and give information on how to avoid these dangers.

	<p><b>GENERAL DANGER !</b></p> <p>Installation automatically starts working. Before starting repair, maintenance or cleaning work, put main switch to "OFF".</p>
	<p><b>Danger of bruising due to rotating machine parts!</b></p> <p>Close protective devices each time before taking the system into operation. Opening protective devices is only allowed when the system is in a standstill. People have to be authorised for this.</p>
	<p><b>RISK OF INJURY due to operating auger, chain or cable discs!</b></p> <p>Never reach into or climb into a feed container or trough while the motor is running.</p>
	<p><b>DANGER OF SKIN CORROSION due to purifying agents!</b></p> <p>Always wear protective clothing when repairing, maintaining and cleaning the installation. Always observe the manufacturer's instructions when using acids!</p>

Implicitly observe the instructions attached to the installation, such as the arrow on the motor indicating the direction of rotation.

The signs and safety instructions always have to be visible and must not be damaged. If they are soiled by dust, manure, feed remains, oil or grease, clean them by means of a water-detergent mixture.

	<p><b>If a safety symbol or instruction is fixed to a part to be replaced, ensure that it will be fixed to the new part as well.</b></p>
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## 1.5 Ordering spare parts



### **Operational safety is the prime necessity!**

For your own safety only use original **Big Dutchman** spare parts. For foreign products that have not been released or recommended or for modifications carried out (e.g. software, control units) we cannot judge whether there is a safety risk in connection with the **Big Dutchman** systems.

### **Indicate the following for ordering spare parts:**

- Code No. and description of the spare part or
- Invoice No. of original invoice
- Power supply e.g. 230/400V-3Ph.- 50/60Hz

## 1.6 Obligations

Closely adhere to the instructions in this manual.

A basic condition for safe operation and trouble-free handling of this system is the knowledge of the basic safety instructions and regulations.

These mounting and operating instructions, particularly the safety instructions, have to be observed by everyone working with this system. Moreover, the regulations and instructions for the prevention of accidents valid at the respective place of use have to be observed.

The manufacturer is not responsible for any damages to the machine resulting from changes done by the user.

## 1.7 Warranty and liability

Warranty and liability claims regarding personal and material damage are excluded if they result from one or several of the following causes:

- non-designated use of the installation
- inappropriate mounting and operating of the system
- operating the system with defective safety equipment or not duly fixed or not functioning safety and protective devices,
- non-observance of the instructions in this manual regarding transport, stock keeping, mounting, maintenance, operating and upgrading of the system

- unauthorised modifications on the system
- inappropriate repairs
- in the event of disasters caused by foreign matters or force majeure.

## 1.8 Disorders due to power failure

We recommend the installation of warning systems for a better monitoring of your production units and the installation of an emergency power-generating set for adequate supply with power in case of power failure. By this, you protect the animals and thus your own economical health. For further information please contact your property insurance.

## 1.9 First aid

For the case of an accident, unless specified otherwise, a first-aid kit must always be available at the place of work. Material taken out and used is to be replaced immediately.

**If you need help, describe the accident as follows:**

- where it happened
- what happened
- the number of persons injured
- what type of injury
- who is reporting the accident (your data)!

## 1.10 Pollution abatement regulations

All works on and with the installation have to be carried out in compliance with the legal requirements concerning waste prevention and proper recycling / disposal of waste.

Special care has to be taken when carrying out installation, repair and maintenance works, as water pollutants like lubricating grease and oils, as well as solvent-containing cleaning solutions are not to pollute the soil or get into the canalisation! These materials have to be kept, transported, collected and disposed of in appropriate containers!

## 1.11 Waste disposal

After finishing the assembly or repair of this installation, dispose of the packing material and remains which do not need to be further used according to the legal provisions for recycling. The same applies to the component parts after putting the installation out of service.

## 1.12 Notes for use

We reserve the right to modify the construction and technical data for reasons of further development.

Therefore, no claims can be derived from the information, pictures, drawings and descriptions. Subject to correction !

Get the information on mounting, adjusting, operating and maintaining before taking the system into operation.

Apart from the safety-relevant instructions in this manual and the safety precautions valid in the country of use, also consider the generally acknowledged technical regulations (safe and appropriate working according to UVV, VBG, VDE etc.).

## 1.13 Copyright

This manual is subject to copyright. The information and drawings included in this manual shall not be copied without the manufacturer's consent, nor shall they be used for anything other than the designated use. Neither shall they be given to third parties.

If you find mistakes or unclear information in this manual, please do not hesitate to let us know.

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## 2 Safety instructions

These mounting and operating instructions, particularly the safety regulations, have to be observed by all persons working on this system. Moreover the regulations for accident prevention valid for this place have to be observed!

### 2.1 General safety instructions




All established safety precautions and other generally accepted safety regulations and medical references have to be observed. Please check safety and function control devices to ensure safe and accurate operation:



- before putting into operation
- at adequate time intervals
- after modifications and repairs.

Check the proper functioning of the system after any kind of repair works. You may only take the device into operation, when all protective systems have been put into place again. Follow the directions of the electric and water supply company.

### 2.2 Safety regulations for the use of electrical appliances

You have to ensure that the system with the electrical appliances is operated and maintained according to the electro-technical regulations.

	Installation and work on electric components/structural groups may only be carried out by qualified personnel according to electro-technical regulations (e.g. EN 60204, DIN VDE 0100/0113/0160).
	Dangerous electric tensions are bare in case of open control equipment. Be aware of the danger and keep workers of other professions away from the danger zone !
	Do not install control devices directly in the house, but in the service room to prevent corrosion caused by ammonia gas.

	<b>Warning</b>
	<b>Never repair or bypass the fuses!</b>
	Damaged fuses have to be replaced with new fuses!

Immediately switch off the installation in the event of malfunctions of the power supply units. Use a bipolar voltage probe to make sure that the electrical equipment is not alive.

Check the electrical wiring and cables for recognisable damage before putting the device into operation. Replace damaged wiring and cables before taking the device into operation.

Only use the fuses indicated in the circuit diagram. Immediately replace damaged fuses. Never repair or bypass the fuses!

Never cover the electrical motor. This can cause high temperatures resulting in fire and a break-down of the equipment.

The control box as well as the terminal and connector boxes of the installation must always be kept shut.


Let damaged or broken plugs be replaced by an electrician.

Do not pull the plug from the socket at the flexible cable.

For the respective connections please see the enclosed connecting plan of the system parts delivered.

## 2.3 System safety instructions

### 2.3.1 Danger zone

	Never reach into the running installation. Before reaching into the installation, turn the system off and secure it against unintentional actuation.
	Assure yourself beforehand that the main switch is in the OFF position and can not be put in the ON position without your knowledge.

The different areas of the **Big Dutchman** installations are characterised by different types of construction.

There are several system parts that run out, rotate or slide that can increase the risk of an accident when you are unaware of the type of construction.

There are hazard areas where a risk of injury exists

- due to rotating parts
- due to electrical current in case of non-reliable or defective switching-off of overload current.

### 2.3.2 Entire system

- Parts lying about on the system or around it can cause you to stumble or fall so that you can get injured by the constructional parts of the system.
- Ignorance of the constructional structure of the system can lead to injuries.
- Parts lying about in / on the components (e.g. in the feed trough, on the egg belt, in the nests etc.) can severely damage the system.



After repair or maintenance work, never place any objects (e.g. spare parts, replaced parts, tools, cleaning implements etc.) in the accessible areas of the system or around it!

Make sure that all loose or replaced parts have been removed from the system components **before** the system is taken into operation again!


Make yourself familiar with the construction of the system in sufficient light! If this is not possible at site, get all available information on the remaining dangers in connection with this system!


When working **under** the installation, always wear a safety helmet!


## 2.3.3 Individual components

### 2.3.3.1 Manure belt drive and manure belt idler

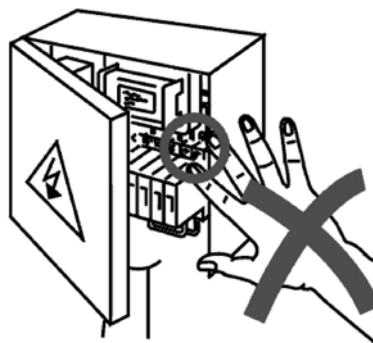
- Rotating parts (chains, toothed wheels and chain wheels, etc.) may lead to severe injuries!

	<p><b>Warning:</b></p> <p>Never touch the drive, guide and idler rollers when the manure collection system is switched on!</p>
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	<p><b>Warning:</b></p> <p>After repairs and <b>before the system is taken into operation again, all covers</b> for drive have to be attached again respectively fixed and secured against unintentional opening.</p> <p><b>Missing protective covers can lead to severe injuries.</b></p>
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	<p>After repair or maintenance work, never place any objects (e.g. spare parts, replaced parts, tools, cleaning implements etc.) in the accessible areas of the system or around it!</p> <p>Make sure that all loose or replaced parts have been removed from the system components <b>before</b> the system is taken into operation again!</p> <p>Make yourself familiar with the construction of the system in sufficient light! If this is not possible at site, get all available information on the remaining dangers in connection with this system!</p> <p>When working <b>under</b> the installation, always wear a safety helmet!</p>
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### 2.3.3.2 Electrical components






 	<p><b>High electric tension!</b></p> <p>If touching live parts, severe injuries due to electric shocks are possible!</p> <p>During repair or maintenance work, live elements can be bare!</p> <p>Never touch bare electrical components. Staff members must not use machines with bare electrical components.</p>
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## 2.4 Personal safety instructions




These safety instructions are intended to make you familiar with all information regarding the system that are important for your safety and that of the system.

Maintenance may only be carried out by specially trained and briefed users.

Keep with the safety instructions in this manual.

	<p>Missing knowledge on the structural design of the installation can lead to injuries.</p> <p>Make yourself familiar with the design and construction of the installation Inform yourself and your colleagues about the remaining dangers in connection with this installation!</p>
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### 2.4.1 Clothing for personal safety

  	<p>Wear close-fitting clothes when carrying out mounting, maintenance and cleaning work at the installation.</p> <p>Do not wear rings, chains, watches or other items which could get caught at parts of the installation.</p> <p>Never work with long hair that is not tied together. Your hair could get caught in moving devices or system parts and thus cause serious injuries.</p> <p>During all mounting, maintenance and cleaning work at the installation, wear protective clothes and shoes as well as safety glasses and gloves if required.</p>
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#### 2.4.1.1 Clothing and footwear

- Wide, fluttering clothes increase the risk of an accident.

- Wide pieces of clothing, ties, scarves etc. can get caught in the moving or rotating system parts.
- High heels are a safety risk.
- If you stumble, you can knock against sharp-edged, moving or rotating system parts and get severely injured.



Secure wide, fluttering clothes or take them off!

When working at or on the system, only wear slip-free footwear and safety shoes when replacing heavy system parts!

#### 2.4.1.2 Jewellery

- Loose or large jewellery increases the risk of an accident.
- The large or loose parts of jewellery can get caught in components of the installation.



Take off all jewellery, particularly necklaces, bracelets and rings!

#### 2.4.1.3 Hair

- Long hair increases the risk of an accident.
- Long hair can get caught in moving or rotating system parts.



Secure long hair by tying it back or wearing a bandanna or cap!



### 2.4.2 Assembly and maintenance

Assembly of the installation can be carried out by the farmer himself or by an authorized person. We assume that the operator or authorized person either have some sort of technical training or have the necessary knowledge or practical experience that are a main condition for a proper assembly of the installation.

Repairs must only be carried out by persons who can guarantee for a proper execution on the basis of their training or their practical knowledge and experiences. Only the owner or the operator have the power of such a decision.

Every electrical work must only be carried out by qualified electricians according to the respectively valid electrical regulations such as DIN, VDE, safety regulations and the prescriptions of the local electric power supply companies or the regulations valid in the country.


Only work with appropriate tools; in case of possible danger to hands, use protective gloves, and safety glasses in case of danger to the eyes.

	Always switch off the installation, disconnect the power supply and make sure that the installation cannot be switched on again before carrying out any repair, maintenance and cleaning work or before removing any malfunction.
	Secure the installation by putting a fixed sign at the main switch "Do not activate!" and if required add the note that maintenance work is carried out.

Check the proper functioning of the system after any kind of repair or maintenance. You may only take the device into operation, when all protective systems have been put into place again.



### 2.4.3 Employing external personnel

Mounting, maintenance and repair work is frequently carried out by non-operating personnel, which is not familiar with the special circumstances and the inherent dangers

	As supervisor, you are responsible for the safety of external personnel!
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You as operator are to survey the personnel and to define responsibilities and powers. Inform these people in detail on the dangers of their area of work. Check their method of working and intervene as soon as possible.

## 2.5 Safety contrivances

	It is strictly forbidden to remove or put out of operation any safety contrivances. This leads to risk of injury and danger of life! Should the safety devices be damaged, the system has to be put out of operation immediately. The main switch has to be locked in zero position.
	

## 2.6 Dangers resulting from non-compliance with the safety instructions

Non-observance of these instructions can cause severe danger for life and health of people or can lead to material or environmental damages and to the forfeiture of any claim for damages. To be precise, the non-observance of these instructions can lead to:

- Failure of vital functions of the installation
- Failure of prescribed maintenance methods
- Dangers for people owing to electrical and mechanical influences.

### 3 Operation



We can offer you **Big Dutchman** videos concerning the description of the operation of the manure belts. The corresponding headlines refer to these videos with an addition ("Video X.Y").

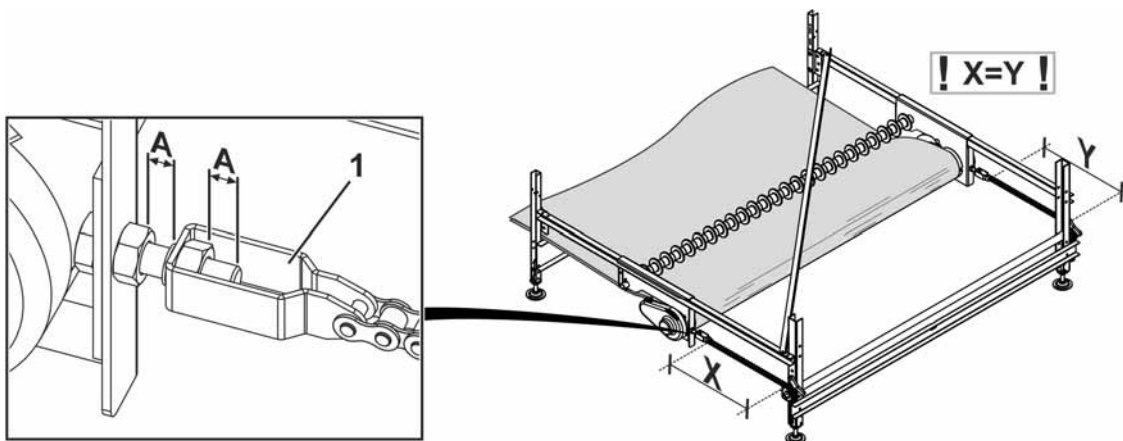


#### Important:

1. **The farm staff must be thoroughly trained for the manure removal process.**
2. **For the commissioning of the manure removal, two persons who maintain contact with a radio unit are required, as a basic rule. One person must stand at the manure belt drives and one at the idler units.**

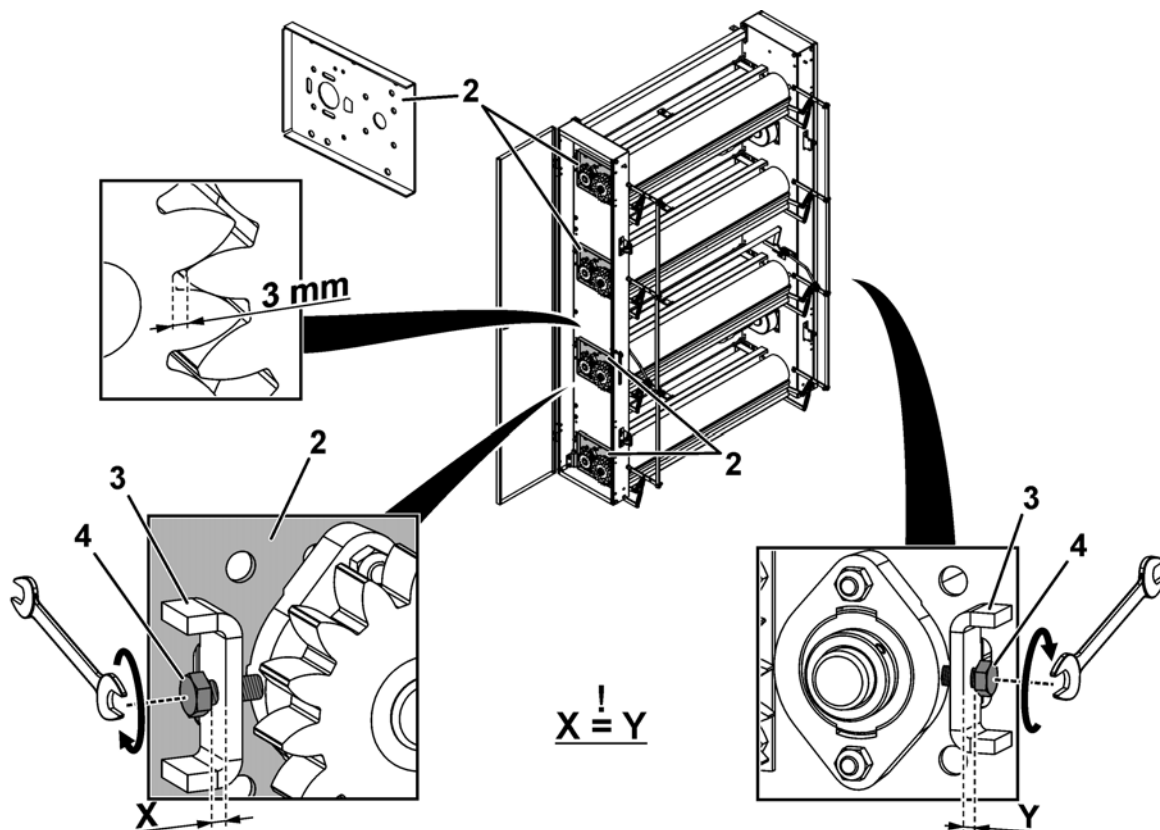
#### 3.1 Preliminary settings at the manure belt idler

- Make sure that the same number of chain links is set on both sides of the idler unit. Bring the end piece of the chain link (1) to enter position ("A").
- Pretension the idler roller after the welding of the manure belts that way that they do not sag any more.



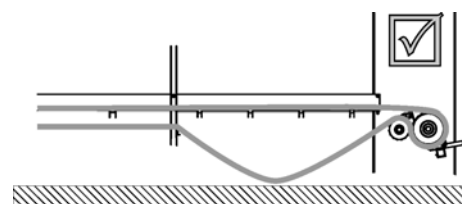
### 3.2 Presettings at the manure belt drive (video 1.7)

- Bring the sliding plate (2) to center position, observe the position of the mushroom head screws in the long hole.
- Distance between pressure shaft and pressure roller:  
The gap between the base of the tooth and the root of the tooth must be approx. 3 mm. This is adjusted by means of the screw (4).
- Adjust the tensioning bracket (3) evenly on both sides by using the straining screw (4).

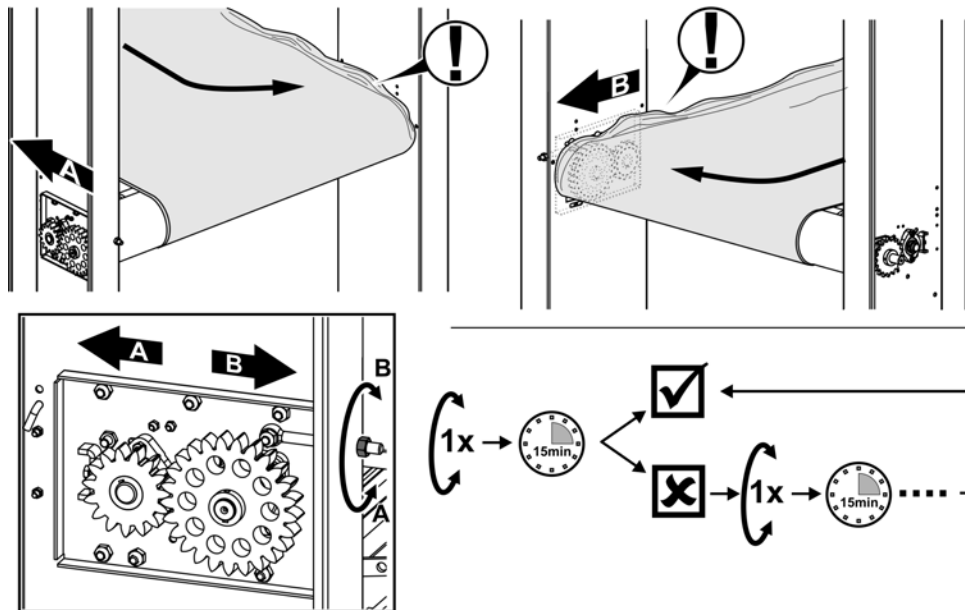


**Start manure removal:** Correct the belt running at the deflector if necessary and at the manure belt drive **as follows:**

- Manure removal takes place row-by-row. Make slight manure belt adjustments at the idler roller or manure belt drive according to chapter 3.3 and 3.4 .
- At the beginning of the manure removal (with max. manure belt load), the manure belt must sag in the return run. Adjust this pre-tension at the idler unit.

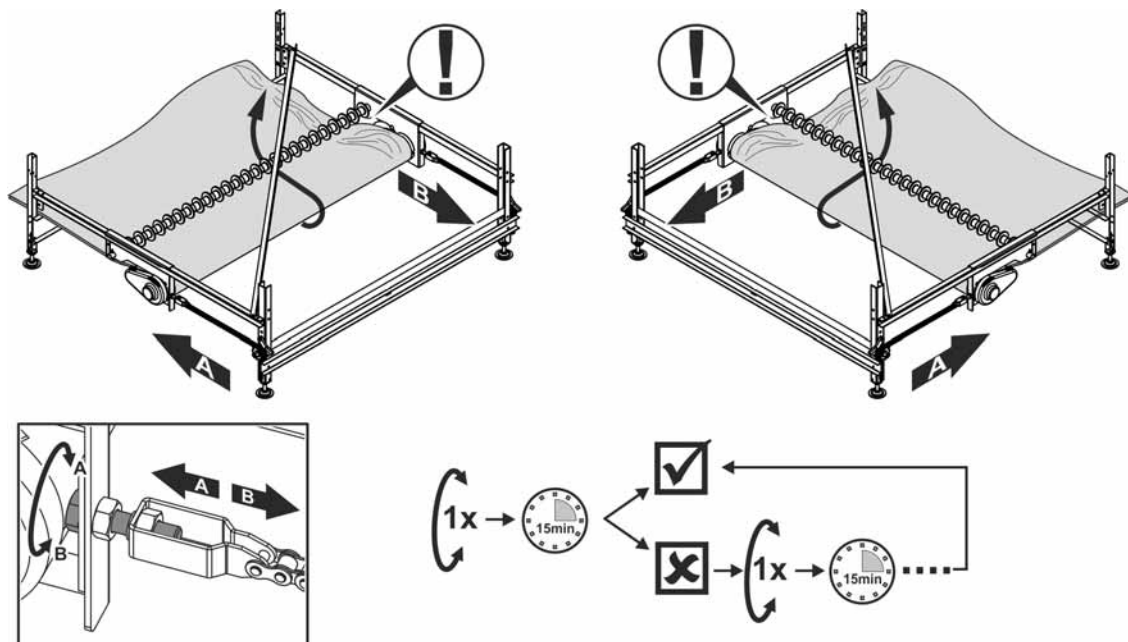


### 3.3 Adjusting the manure belt run at the manure belt drive (video 1.8)



**Setting:** Turn screw once, allow belt to run and wait for 15 min. Repeat the process until the belt runs straight.

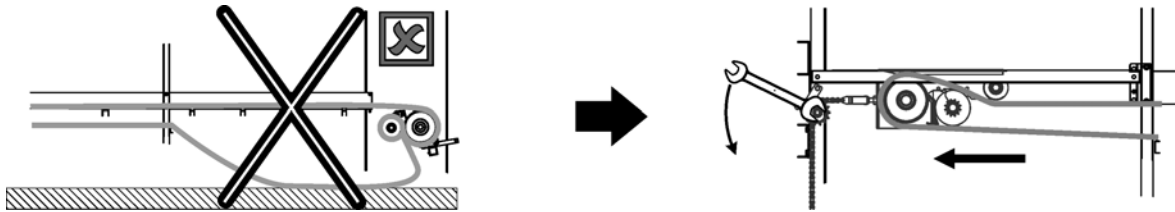
### 3.4 Adjusting the manure belt run at the manure belt idler



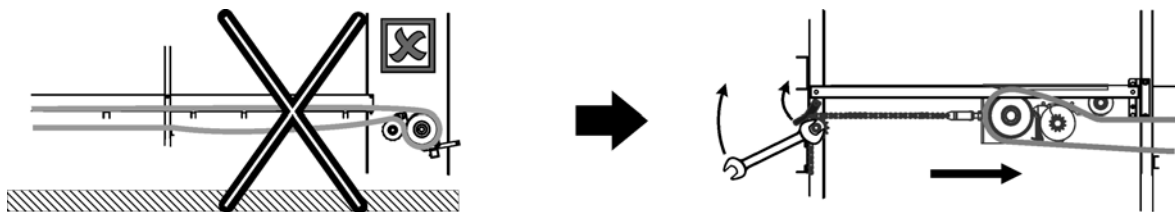
**Setting:** Turn screw once, allow belt to run and wait for 15 min. Repeat the process until the belt runs straight.

### 3.5 Manure belt tension too low (video 1.9)

**Attention:** If the manure belt sags too much, this may lead to a winding on the drive roller (see following illustration).



### 3.6 Manure belt tension too high (video 1.10)





## 4 Running manure removal



We can offer you **Big Dutchman** videos concerning the description of the operation of the manure belts. The corresponding headlines refer to these videos with an addition ("Video X.Y").

### 4.1 Important information



Systems without manure belt ventilation must have manure removed daily!


Systems with manure belt ventilation (=> at least 50% solid material) must have manure removed every 5th day at the latest!

Any extension of this interval may result in system parts being damaged!

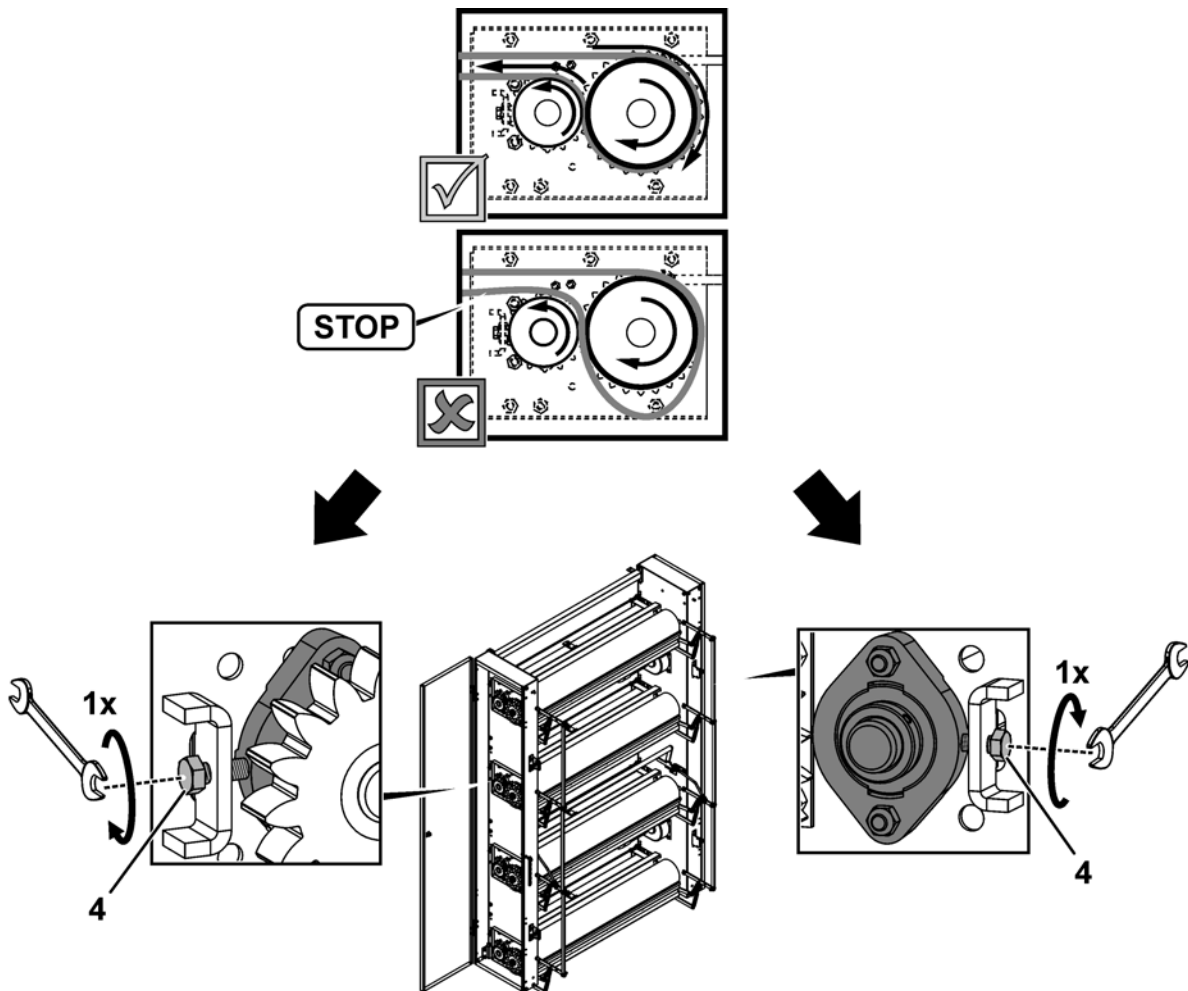
- Drive and deflection pulleys must be clean, as well as scrapers which are adjacent to other scrapers.
- The menu belts must be correctly tensioned - adjust if necessary.
- There must be no foreign bodies sit between the manure belts.
- Check the manure belts for damage and repair them immediately!
- Observe the manure belts during the entire running time.

## 4.2 Slipping manure belt (video 1.11)

If belts slip, look for the reason and remedy the fault. If there is no fault to be seen, increase the pressure on the pressure rollers.

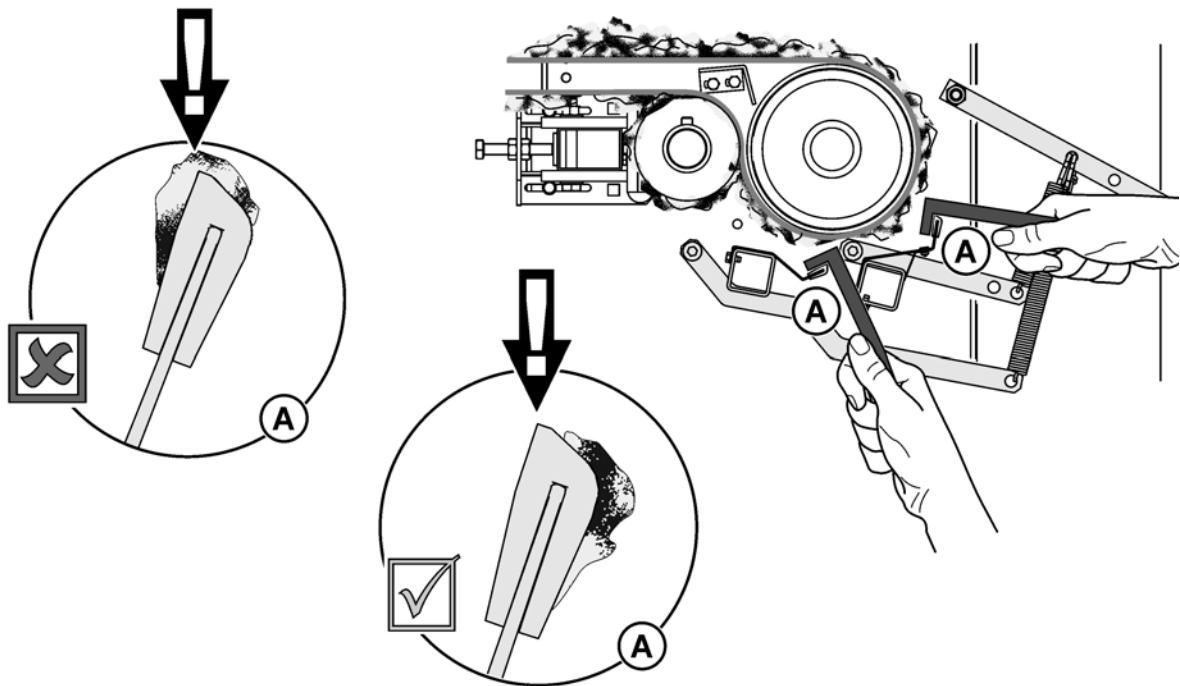
	<p><b>Important:</b></p> <p>If the manure belt is slipping, tighten the tension screws (4) one rotation <b>on both sides</b> according to the following illustration.</p> <p><b>Proceed cautiously with this adjustment.</b> The toothed wheels in front of drive and pressure rollers must not be pressed together. <b>Excessive pressure on the toothed drive wheels can damage them.</b></p>
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Adjust the pressure roller on the MB drive:

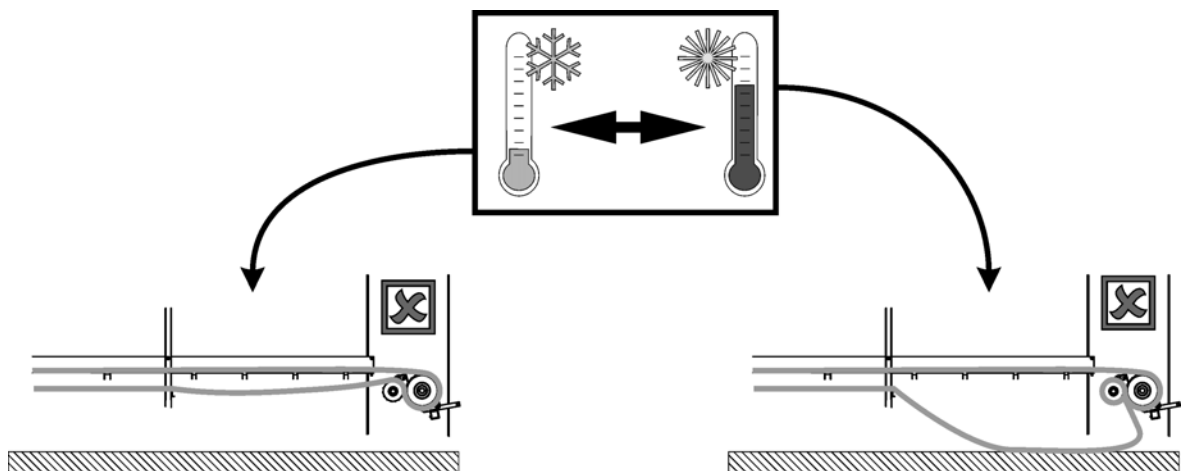


### 4.3 Cleaning the scraper (video 1.12)

- For every manure removal, all manure belts must be inspected at manure belt deflectors and MB drives for straight running, as a basic rule.
- The scrapers must be cleaned thoroughly after every manure removal!



### 4.4 Temperature change



- Always perform manure removal at a constant temperature (in the morning). Please observe this Kapitel 3 "Operation" .
- When moving birds out in the winter (house temperature < 15 °C), completely release the manure belts!

## 5 System cleaning

In all the tiers, the manure belts must run all the time in the row for cleaning.

Continuous operation during cleaning can cause the manure belts to stop running true.

**For that reason, check regularly that all the manure belts are running true.**

If necessary, **immediately** adjust the manure belts at the idler roller or at the manure belt drive!

During wet cleaning, water can quickly accumulate on the belts from high-pressure cleaners in an extremely short space of time, that it cannot run off the manure belts fast enough and collects in pools between the manure belt base supports.



The accumulated water causes such high stresses that the manure belt base supports bend and may be torn out, causing damage to the manure belt drives.

We urgently recommend that you make holes in the centre of the manure belts, so that the cleaning water can flow down through all the tiers to the house floor, without the systems becoming over-stressed.

According to our experience, the manure belts **must** have holes made in them, if cleaning methods involving many high-pressure cleaning jets (> 200 l per min) are used, in order to prevent damage to the systems.

**Please also observe the notes in the manual "Assembly of the manure belt"!**