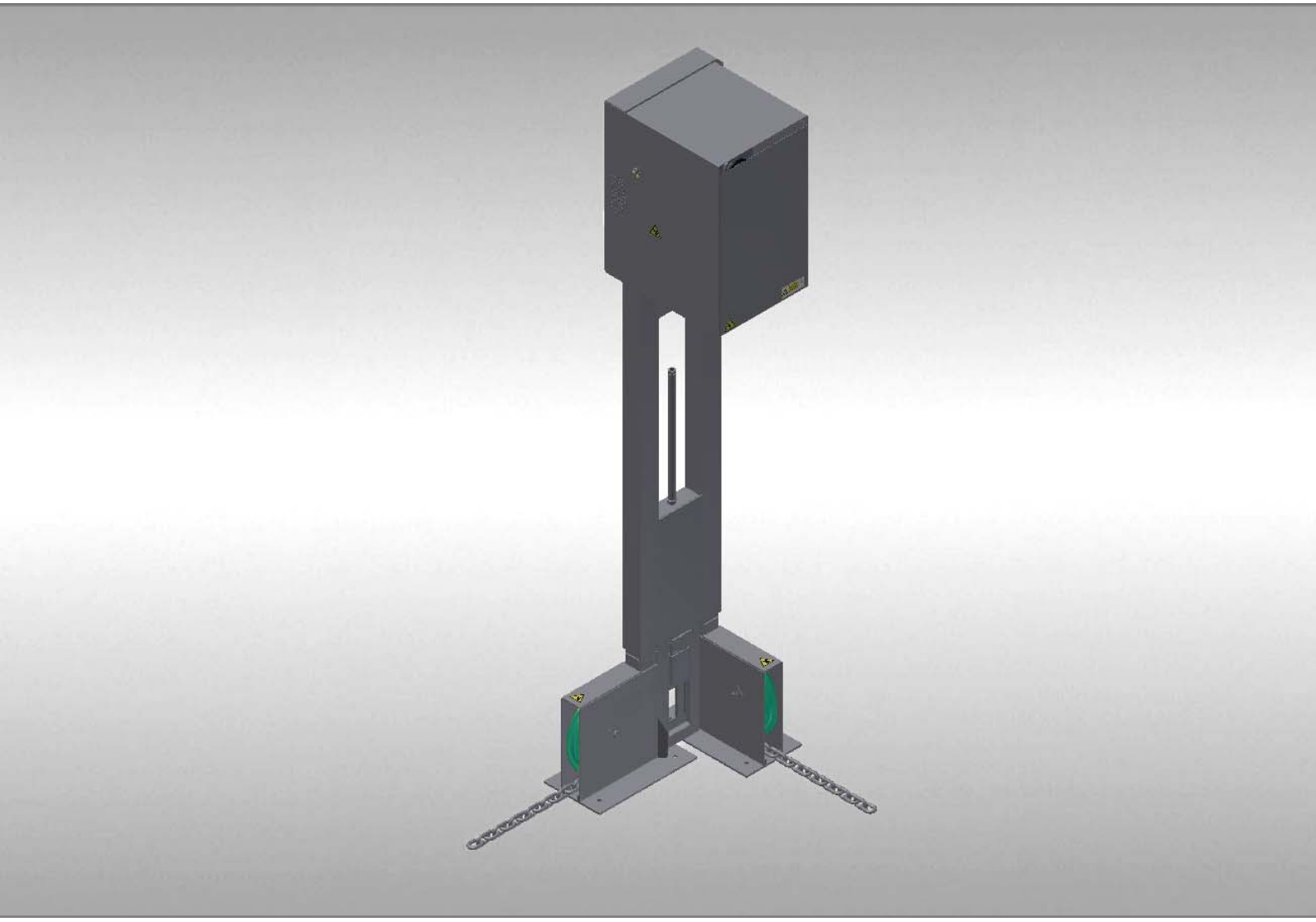

13-mm (0.51") Chain Drive

Automatic Manure Removal System

Instruction Manual / Installation Instructions / Parts List
(Translation of the original operating instructions)

5560-9001-014
07-2014

engineering for a better world

GEA Farm Technologies

Contents

1 Preface

1.1 Information on the instructions

This user manual is intended for end users who use a chain-driven automatic manure removal system.

☞ Chain-driven automatic manure removal system:
In the rest of this document, the system will be referred to as the "chain manure removal system".

The manufacturer reserves the right to make changes due to technical developments in the data and images given in this manual.

Reproductions, translations and copies of any kind, even of extracts, require written authorization from the manufacturer.

Abbreviations, units, specialist terms, special names or specialist terminology are explained in more detail in the ”Appendix”.

This manual is supplied with the product.

- They should be kept close at hand and remain with the equipment even if the equipment is sold.
- This manual is not subject to an amendment service. The most recent version of this manual can be obtained at any time through the technical dealer or directly from the manufacturer.
- This manual has a modular structure and is intended exclusively for the mentioned product.
  For more information on the product and its components refer to the corresponding documents and manuals.
  This applies especially to the safety instructions!

Required documents:

- This manual is only part of the product documentation.
  The complete documentation consists of the following manuals:

Part No.	Description
5560-90..-015	Digital Control BLC for manure removal systems
5599-90..-057	Installation Instructions/Spare Parts List Manure Removal System


For further information on the speed reducer, please refer to the "Speed reducer components" section.

Pictograms used

This pictogram refers to information that will help provide a better understanding of the working processes.

A correction bar in the margin indicates changes to the previous edition. The character string ”!!” in the search field of the PDF document locates the correction bar.


This pictogram refers to another document or chapter.

If a manual number is given, the middle 4 digits indicate the language, as follows:

	language		**language**		**language**
-9000-	German	-9013-	Dutch	-9032-	Serbian
-9001-	English (United Kingdom)	-9015-	English (America)	-9034-	Slovakian
-9002-	French (France)	-9016-	Polish	-9035-	Chinese
-9003-	Italian	-9018-	Japanese	-9038-	Portuguese (Brazil)
-9004-	Romanian	-9021-	Danish	-9036-	Lithuanian
-9005-	Spanish	-9022-	Hungarian	-9039-	French (Canada)
-9007-	Swedish	-9023-	Czech	-9040-	Latvian
-9008-	Norwegian	-9024-	Finnish	-9041-	Estonian
-9009-	Russian	-9025-	Croatian	-9043-	Spanish (North America)
-9010-	Greek	-9027-	Bulgarian		
-9012-	Turkish	-9029-	Slovenian		
Under certain circumstances, not all of the above-mentioned languages are available.					

1.2 Manufacturer's Address

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1.3 Customer services

Authorised Technical Dealer

If necessary, contact your nearest authorized technical dealer.

There is a comprehensive dealer Internet search function on our website at the following address:

www.gea-farmtechnologies.com

European Contact Information:

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1.4 Declaration of conformity

Manufacturer:	**GEA Farm Technologies GmbH** **Royal De Boer Stalinrichtingen B.V** **Vestaweg 5** **NL-8938 AV Leeuwarden**
Product description:	**Drive station for a 13-mm chain (7/8")** **0.37 kW, 0.55 kW, 0.75 kW; for closed barn floors and slatted floors**
Type of product:	**5505-0140-003, 5505-0144-000, 5505-0145-000,** **5505-0170-010, 5505-0174-000, 5505-0175-000.**
Serial number:	**2011-05 and later**

The product referred to complies with the provisions of the following European directives:

2006/42/EC	Machinery Directive
2006/95/EC	Low voltage guideline
2004/108/EC	Responder settings

Conformity with the requirements of these directives is testified by complete adherence to the following standards:

- Harmonized European standards

EN 953 (2009-07)	Safety of machinery Separating safety devices
EN 12100-1 (2009-10)	Machine safety, basic terms, general design guidelines. Part 1: Basic terminology, methods
EN 12100-2 (2009-10)	Machine safety, basic terms, general design guidelines. Part 2: Technical guidelines and specifications
EN ISO 13857 (2008-06)	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
EN 14121-1 (2007-09)	Safety of machinery - Risk assessment Part 1: Principles
EN 50081-1	Electromagnetic compatibility - General emission standards Part 1: Domestic, business and commerce, small enterprises.
EN 50081-2	Electromagnetic compatibility - General emission standards Part 2: Industrial
EN 60204-1 (2007-06)	Electrical equipment of machines

In addition, the requirements of the following standards have been met:

- National Standards:

US FCC part 15, paragraph B, Class B	Federal Communications Commision Rules and regulations regarding unlicensed transmissions

Person responsible for compiling the relevant technical documents:

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Roelof Westerbeek
(Head of Research and Development)

Leeuwarden, October 2013

The undersigned is acting by virtue of power of attorney from the management of:
GEA Farm Technologies GmbH
Royal De Boer Stalinrichtingen B.V, Vestaweg 5, NL-8938 AV Leeuwarden

This declaration certifies compliance with the guidelines indicated, but does not establish any guarantee in the sense of paragraphs 443, 444 BGB.
This declaration of conformity becomes invalid if design changes are made which affect the technical data given in the instructions and the correct use of the product, thereby significantly altering the machine!

2 Safety

2.1 Owner's obligation of care

The product has been designed and constructed while taking account of a potential risk analysis and after careful selection of the harmonized standards and other technical specifications to be complied with. It therefore guarantees a maximum level of safety.

This safety can only be achieved in practice on the farm however when all of the necessary measures have been taken. It is part of the owner's obligation of care to plan these measures and check that they are carried out.

☞ **Note!**
We would point out that commissioning is not permitted until it has been established that the machine/system in which this product is installed meets the conditions of the directives affecting them.

The owner must ensure that:

- Everyone who works with or performs activities in connection with the product carefully reads the instructions (especially the safety instructions and warnings) and signs to confirm that they have understood them and will act in accordance with them!
- A full set of legible instructions is kept by the product at all times.
- Any person who has to carry out work on the product has access to the instructions at all times.
- The instructions in the section on ”Basic safety instructions” are observed.
- The legal requirements are observed.
- The product may only be used for its intended purpose.
- The product may only be operated when in perfect working order. The safety equipment, in particular, should be checked on a regular basis to ensure it is working properly.
- All work that has to be carried out is always performed by a suitably qualified person!
- Safety signs, plates and decals which are attached to the product must be replaced immediately if they become illegible or are lost.
- Escape routes are marked by means of signs in accordance with national regulations!
- Any personal safety equipment required for the operating, maintenance or repair personnel must be provided and used.
- Unauthorised persons (e.g. children) are kept away from hazard areas.

2.2 Explanation of safety symbols

The safety symbols draw attention to the importance of the adjacent text.

The design of the warnings is based on ISO 3864-2 and ANSI 535.6

Safety symbols and key words

Danger!
The indication ”Danger” signals immediate danger to life or health of personnel.
Death or serious injury may result if the danger is not avoided.

Caution!
The indication ”Caution” signals dangerous situations.
Death or serious injury may result if the danger is not avoided.

Attention!
The indication ”Attention” signals important information on risks for the product or the environment.

2.3 Basic safety instructions

Note!
Additional dangers are indicated in the corresponding chapters!

The operation and maintenance of equipment in large cattle farms has inherent risks. Read and follow the instructions carefully (especially the section on "Safety") to ensure your own safety.

- The "Technical specifications" section contains the permissible operating conditions that must be met at all times.
- Do not open or dismantle devices (risk of injury)!
- Do not remove any protective devices (risk of injury)!
- There is a fire hazard associated with welding work!
  Before starting welding work, remove any easily flammable material from the work area and obtain a hot work permit from the farmer.
- Regarding products from other manufacturers, always heed the warnings given in the safety data sheets and the operating instructions from the product manufacturer.
- Take measures to protect against noise!
- Do not stand underneath suspended loads.
- always keep control cabinet / all electricity supply units / electrical control units closed. Access is only allowed to authorized personnel.
- Protect live and high-voltage components against moisture. Under no circumstances may water jets or high-pressure cleaners be directed at these!
- Before entering the operating area of the manure scraper, the main switch should be switched off and locked using a padlock.
- Before carrying out any work on the system, always switch off the main switch and lock using a padlock. This prevents the system from starting unexpectedly.
- Moving parts such as scrapers, deflection pulleys and chains must be covered or fenced off if they are located outside the protected barn area.
- Manure drains and manholes must be effectively covered or fenced off.

Warning! Danger of falling!
Open voids around the manure pit!
These can lead to serious injury with possible fatal consequences.
Cover or fence off the pump shaft.

- The system must only be operated in an area that cannot be accessed by unauthorised persons.
- If necessary, additional measures should be implemented to ensure proper screening.

2.4 Personnel Qualification

Personnel performing work on or with the product must carefully read and understand the instructions and act accordingly.

- All work on electrical equipment and electrical connection work should only be carried out by qualified electricians.
- All welding work must only be performed by qualified welders.

In addition, special qualifications are required for the following activities:

- Transportation
- cleaning
- Installation
- Commissioning
- Operation
- maintenance / servicing
- Troubleshooting
- repairs
- Decommissioning

Note!
If the work requires special qualifications, these are described in the corresponding chapters!

3 Description

3.1 Intended use

The product described has been developed for use on dairy farms.

The equipment (drive station, deflection pulleys, scraper and chains) are intended exclusively for cleaning solid floors or slatted floors in cow barns. The scraper is pulled across the floor to the end of the alley using a chain and deflection pulleys.

The product is exclusively designed for removing manure/slurry from an alley.

Applications which are not listed here are not part of the intended use and are therefore considered as improper use!

In particular, the following is prohibited:

- Using the drive unit of the chain manure removal system for moving/lifting other objects other than the manure scraper.
- Removing solid substances other than manure/slurry.
- Switching off protective devices.
- Overloading the chain/scraper/deflection pulleys with heavy materials if not otherwise specified in the manual.

The manufacturer/supplier is not liable for any resulting damage. The user alone bears the risk

Intended use also includes reading the instructions and observing the inspection and maintenance conditions.

- The manufacturer expressly points out that only original parts and accessories designed for this product have been released and authorised for use.
- The installation or use of products from other manufacturers may affect the specified properties of the original parts and lead to injury to people and animals.
- The manufacturer does not accept any liability for injury to people or animals, or damage to the product, caused by the use of products from other manufacturers.
- For safety reasons, do not make any unauthorised changes Any planned changes must be approved by the manufacturer in writing.

3.2 Technical Specifications

3.2.1 Name plate

The nameplate on the frame of the machine contains its part number and serial number.

3.2.2 Performance data 0,37kW

Type number of the complete drive unit	**5505-0140-003 on concrete floors**	**5505-0170-010 on slatted floors**
Type number of upper section	5505-0141-000	5505-0141-000
Pulling medium	13-mm chain (7/8”)	13-mm chain (7/8”)
Motor capacity [kW]	0.37	0.37
Control unit power supply	Control cabinet 5505-9999-009	Control cabinet 5505-9999-009
Speed [m/min]	2.8	2.8
Motor protection switch	5505-9999-001	5505-9999-001
Setting range [A]	1 – 1,6	1 – 1,6

3.2.3 Performance data 0,55kW

Type number of the complete drive unit	**5505-0144-000 on concrete floors**	**5505-0174-000 on slatted floors**
Type number of upper section	5505-0144-001	5505-0144-001
Pulling medium	13-mm chain (7/8”)	13-mm chain (7/8”)
Motor capacity [kW]	0.55	0.55
Control unit power supply	Control cabinet 5505-9999-009	Control cabinet 5505-9999-009
Speed [m/min]	3.5	3.5
Motor protection switch	5505-9999-004	5505-9999-004
Setting range [A]	1,6 - 2,5	1,6 - 2,5

3.2.4 Performance data 0,75kW

Type number of the complete drive unit	**5505-0145-000 on concrete floors**	**5505-0175-000 on slatted floors**
Type number of upper section	5505-0145-003	5505-0145-003
Pulling medium	13-mm chain (7/8”)	13-mm chain (7/8”)
Motor capacity [kW]	0.75	0.75
Control unit power supply	Control cabinet 5505-9999-009	Control cabinet 5505-9999-009
Speed [m/min]	3.5	3.5
Motor protection switch	5505-9999-004	5505-9999-004
Setting range [A]	1,6 - 2,5	1,6 - 2,5

3.2.5 Technical specifications of RDB chain manure removal system

Drive motor connected load IP 55 (EN 60034)	**50 Hz**			
	Part No.	**5505-9516-004**	**5505-9516-000**	**5505-9516-003**
	V (± 10%)	230/400 [V] Δ/Y	230/400 [V] Δ/Y	230/400 [V] Δ/Y
	I	2.42/1.40 [A]	2.0/1.74 [A]	3.8/2.2 [A]
	P	0.37 kW	0.55 kW	0.75 kW
	N	665 / 800 min-1	676 / 814 min-1	670 min-1
	Cos [φ]	0.70	0.70	0.72


Please refer to the
"Abbreviations" section for an overview of the abbreviations used.

3.2.6 Thermal specifications

Operating temperatures	• All temperatures normally occurring in barns.
Drive station	• Can be installed indoors or outdoors. • During periods of frost, ensure that the system is kept particularly clean to reduce the risk of freezing!
Reversing rollers	• Can be installed indoors or outdoors. • During periods of frost, ensure that the system is kept particularly clean to reduce the risk of freezing!
Electrical components	• Electrical components (except the drive motor) must be installed indoors. • In the case of wall-mounted systems, observe a distance of 1 cm (0.5") from the wall to avoid condensation.

3.2.7 Field of application: chain

Drive unit	Floor type	Number of alleys	Number of scrapers per alley	Maximum circuit length in metres Output in kW									
				70	90	110	130	150	170	190	210	230	250
chain 13mm 0,37kW	Slatted floors	1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
			2	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
		2	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37			
	Solid floor Manure with litter Normal load	1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
			2	0.37	0.37	0.37	0.37	0.37	0.37	0.37			
		2	1	0.37	0.37	0.37	0.37	0.37	0.37				
	Solid floor Manure with straw or sand Heavy load	1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
			2	0.37	0.37	0.37	0.37	0.37					
		2	1	0.37	0.37	0.37	0.37	0.37					
		1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
chain 13mm 0,55kW	Slatted floors	1	2	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55
		2	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55
			2	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
		3	1	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	
		4	1	0.55	0.55	0.55	0.55	0.55	0.55				
		1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
	Solid floor Manure with litter Normal load		2	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55
		2	1	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55		
			2	0.55	0.55	0.55	0.55	0.55					
		3	1	0.55	0.55	0.55	0.55	0.55	0.55				
		4	1	0.55	0.55	0.55	0.55	0.55					
	Solid floor Manure with straw or sand Heavy load	1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
			2	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55	0.55	0.55
		2	1	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55		
			2	0.55	0.55	0.55							
		3	1	0.55	0.55	0.55	0.55						
		1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
chain 13 mm 0,75 kW	Slatted floors	1	2	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55
		2	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55
			2	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
		3	1	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.75
		4	1	0.55	0.55	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75
		1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
	Solid floor Manure with litter Normal load		2	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55
		2	1	0.37	0.37	0.37	0.37	0.37	0.37	0.55	0.55		
			2	0.55	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75	0.75
		3	1	0.55	0.55	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75
		4	1	0.55	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75	0.75
	Solid floor Manure with straw or sand Heavy load	1	1	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
			2	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55	0.55	0.55
		2	1	0.37	0.37	0.37	0.37	0.37	0.55	0.55	0.55		
			2	0.55	0.55	0.55	0.75	0.75	0.75	0.75	0.75	0.75	0.75
		3	1	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75	0.75	0.75
		4	1	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	

3.2.8 Field of application: chain/rope combination

Drive unit	Floor type	Number of alleys	Number of scrapers per alley	Maximum circuit length in metres Output in kW					
				>190	220	280	310	370	400
chain 13 mm 0,37 kW	• Slatted floors	1	1 - 2	0.37	0.37	0.37	0.37	0.37	0.37
		2	1	0.37	0.37	0.37	0.37	0.37	0.37
			2	0.37	0.37	0.37	0.37		
		3	1	0.37	0.37	0.37	0.37		
	• Solid floor • Manure with litter • Normal load	1	1	0.37	0.37				
			2	0.37	0.37	0.37	0.37	0.37	0.37
		2	1	0.37	0.37				
			2	0.37					
	• Solid floor • Manure with straw or sand • Heavy load	1 - 2	1	0.37	0.37				
		1	2	0.37	0.37	0.37	0.37	0.37	0.37
chain 13 mm 0,55 kW	• Slatted floors	1	1 - 2	0.37	0.37	0.37	0.37	0.37	0.37
		2	1	0.37	0.37	0.37	0.37	0.37	0.55
			2	0.37	0.37	0.37	0.37	0.55	0.55
		3	1	0.37	0.37	0.37	0.37	0.55	0.55
		4	1	0.55	0.55	0.55	0.55	0.55	0.55
	• Solid floor • Manure with litter • Normal load	1 - 2	1	0.37	0.37				
		1	2	0.37	0.37	0.37	0.37	0.37	0.37
		2	2	0.37	0.55	0.55	0.55	0.55	0.55
		3	1	0.55	0.55	0.55	0.55		
		4	1	0.55	0.55	0.55	0.55	0.55	0.55
	• Solid floor • Manure with straw or sand • Heavy load	1 - 2	1	0.37	0.37				
		1	2	0.37	0.37	0.37	0.37	0.37	0.37
		2	2	0.55	0.55	0.55	0.55		
		3	1	0.55	0.55	0.55			
		4	1	0.55	0.55				
chain 13 mm 0,75 kW	• Slatted floors	1	1 - 2	0.37	0.37	0.37	0.37	0.37	0.37
		2	1	0.37	0.37	0.37	0.37	0.37	0.55
			2	0.37	0.37	0.37	0.37	0.55	0.55
		3	1	0.37	0.37	0.37	0.37	0.55	0.55
		4	1	0.55	0.55	0.55	0.55	0.55	0.55
	• Solid floor • Manure with litter • Normal load	1	1	0.37	0.37				
			2	0.37	0.37	0.37	0.37	0.37	0.37
		2	1	0.37	0.37				
			2	0.37	0.55	0.55	0.55	0.55	0.55
		3	1	0.55	0.55	0.55	0.55		
		4	1	0.55	0.55	0.55	0.55	0.55	0.55
	• Solid floor • Manure with straw or sand • Heavy load	1	1	0.37	0.37				
			2	0.37	0.37	0.37	0.37	0.37	0.37
		2	1	0.37	0.37				
			2	0.55	0.55	0.55	0.55	0.55	0.75
		3	1	0.55	0.55	0.55	0.75		
		4	1	0.55	0.55	0.75	0.75	0.75	0.75

If one scraper is used, the stroke length corresponds to the length of the alley.
If two scrapers are used, the potential alley length corresponds to twice the stroke length.
Circuit length = total length of alley + total length of cross alley
Stroke length = max. distance that the scraper can travel

4 Transportation

4.1 Special personnel qualifications required for transport

Transport may only be performed by specially qualified personnel in accordance with the safety instructions.

- The driver must be in possession of a national driver's licence for self-propelled machines, fork lifts and other trucks.

4.2 Safety Instructions for Transport

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- For transport, only the load suspension and support equipment specified in this document should be used at the specified anchorage points.


Please read the "Safety" section carefully!

Special transport hazards:

- Projecting sharp edges may cause injury.
- Suspended loads can fall and cause death or serious injury - do not stand under suspended loads!
- The permissible load bearing capacity of the floor must be observed!

4.3 Dimensions and weight

- The product weight depends on the layout of the product.
- The weight of the drive station depends on the type. The weight of the different types varies between 250 and 350 kg.
- A deflection pulley weighs approx. 50 kg.


For further information on the dimensions of the product, please refer to the "Appendix".

4.4 Permissible devices and aids for transportation

Provide proper hoisting and transport equipment. Use the following means of transportation for the chain manure removal system:

- Fork lift trucks
- Palettes

4.5 Product Package Includes

Check the goods supplied against the packing list enclosed for completeness and damage.

4.6 Information on disposing of packing material

After unpacking, the packing material must be handled properly and disposed of carefully in accordance with the valid local regulations on waste disposal and utilisation.

5 Installation

If necessary, contact your nearest authorized technical dealer.

5.1 Special Personnel Qualification Required for Installation

Installation may only be carried out by specially qualified personnel in accordance with the safety instructions.


Please also refer to the section:
"Personnel Qualifications"

5.2 Safety instructions for installation

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Observe applicable national standards and requirements during installation!
- Before installation, look for any damage caused during transport. Do not use damaged components!
- Electrical components should only be connected by a qualified electrician.
- Devices that require 24 VDC must be supplied from a 24-V power pack that is approved by the manufacturer, otherwise the safety of humans and buildings cannot be guaranteed!
- All electrically conductive parts with which the animals might come into contact must be connected to each other and to the installation's protective earth conductor by an additional equipotential bond.


Please read the "Safety" section carefully!

Special Hazards During Installation:

- Injury can be caused by the electrical current from live cable ends and components.
- Incorrectly installed electrical lines can burn and cause cable fire. Remove bending radiuses that are too extreme, where necessary.
- Before working on electrical installations or equipment (components, housings, etc.), they are to be disconnected from the mains.
  Secure main switches or emergency stop switches with a padlock to ensure they cannot be switched back on again and put up a warning sign.
- Components which have been incorrectly set down or which have not been fastened properly may fall off or twist.
- Components with sharp edges which are still open and accessible represent a source of injury.
- Ensure that the manure alley is not entered before, during or after operation of the control box.
- Assemble and install control boxes and electrical installations in accordance with the valid regulations.

5.3 Environmental conditions for setup

The concrete platform must be constructed according to the manufacturer's drawing.

Install the product in a frost-free and well-ventilated room.

5.4 Environmental conditions for the alley

The alley must fulfil the following requirements:

- The floor must be longitudinally level.
- In the case of a prefabricated floor made of concrete elements, pay particular attention to the seams between the elements. The difference in height should not exceed 5 mm (0.2").
- The alley must be free of obstacles.
- The alley must have an uninterrupted lateral guide level of at least 6 cm/2.36" (slatted floors) or 15 cm/5.9" (solid floors).

Note!
A deviation from these dimensions is only permitted after consultation with the manufacturer.

5.5 Installation of the deflection pulleys

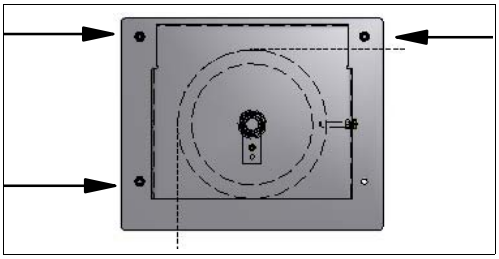
- Determine where the deflection pulleys are to be installed.

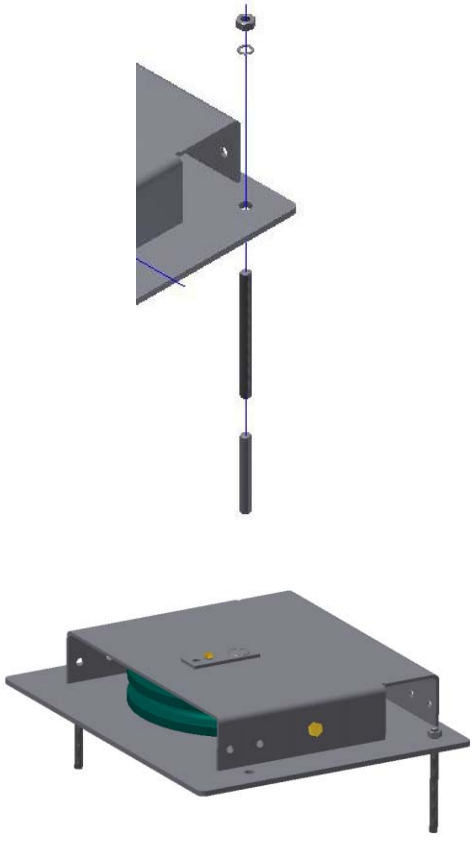
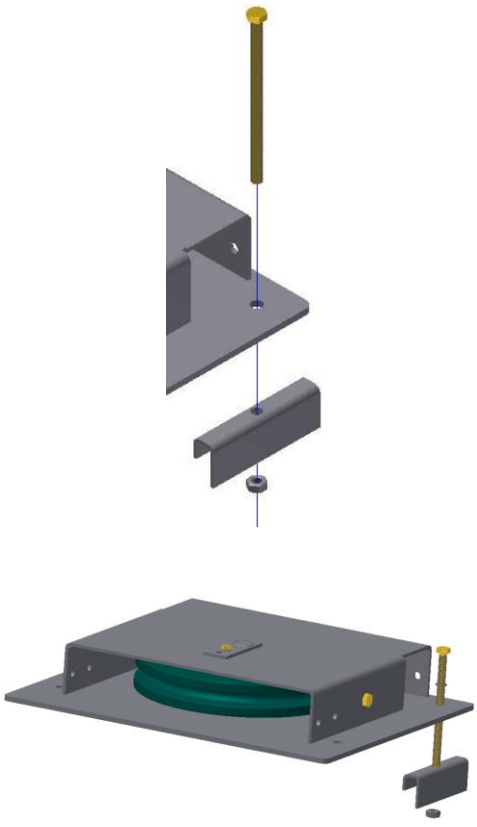
Attention!
The position of the deflection pulleys depends completely on the situation in the barn. Always seek advice from the product dealer or directly from the manufacturer!

For an overview of the different options, please refer to the section: "Installation of the chain or rope".

Attention!
Install the deflection pulleys at a height that ensures the intake of a deflection pulley is horizontal.

Anchor the deflection pulleys in concrete floors using 3 chemical reaction anchors or on slatted floors using 3 slat anchors.



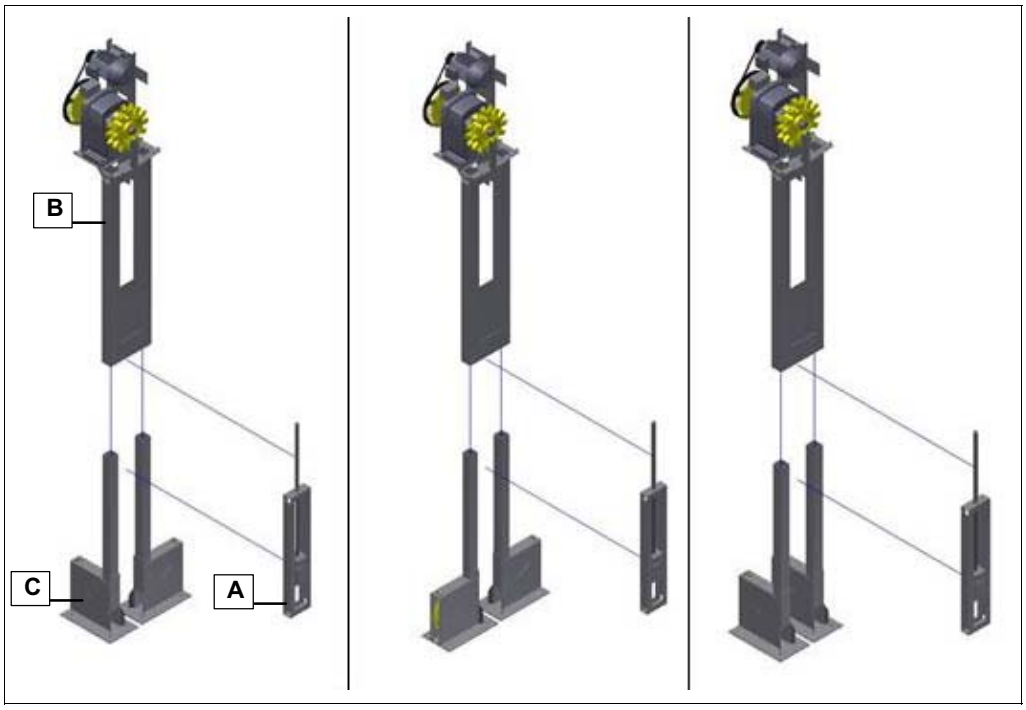
Concrete floors	Slatted floors
	

For further information, please refer to the section: "Deflection pulley components".

5.6 Assembly of the drive station

5.6.1 Assembly of the upper section and base parts

- Place the upper section (B) flat on the floor where the drive station is to be installed.
- Push the two base parts (C) into the upper section.
- The base parts can be placed in different positions.
- At the same time, position the tensioner (A)between the two base parts.



Attention!
The position of the components depends completely on the situation in the barn. Always seek advice from the product dealer or directly from the manufacturer!

For an overview of the different options, please refer to the section: "Installation of the chain or rope".

- Mounting the drive station.
- Push the drive station into the correct position and anchor the base parts with 4 chemical reaction anchors (on concrete floors) or with 4 slat anchors (on slatted floors).

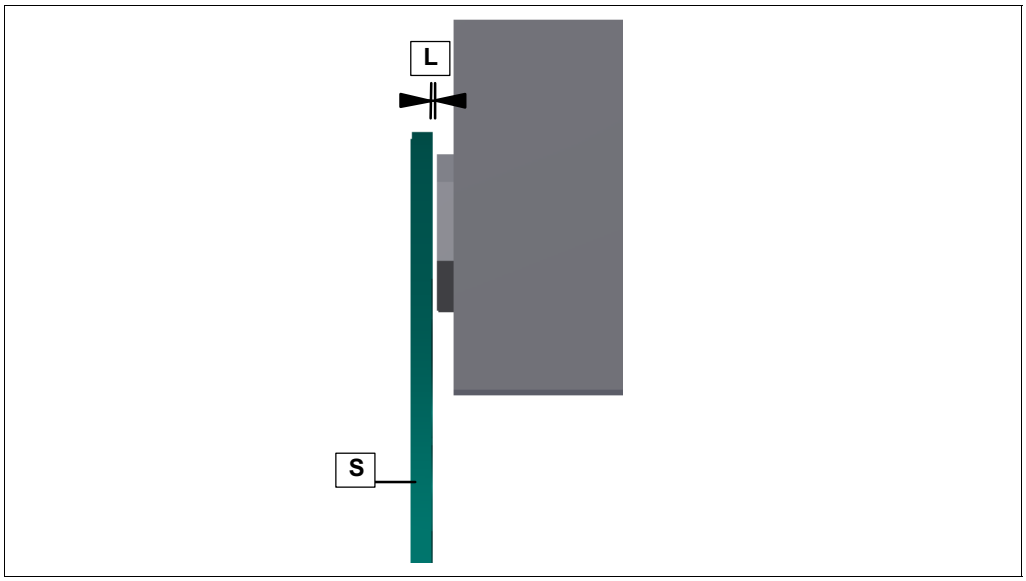
Note!
When moving the drive station into position during installation, lift the upper section using a strap attached to the upper section frame.

Warning! Suspended load
These can lead to serious injury with possible fatal consequences.
The upper section weighs ±100 kg and may only be moved using suitable equipment!
Persons are not allowed to stand under suspended loads!

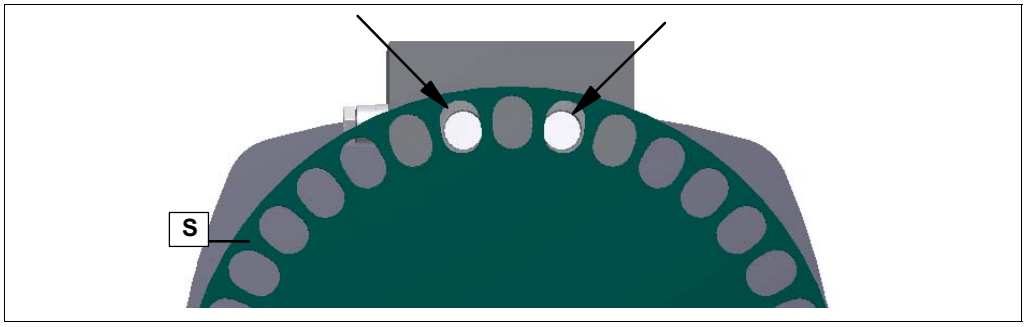
5.6.2 Checking the sensor holder

If the drive station is to function properly, there must be a distance of 0.5 mm-2 mm (L) between the sensors attached to the sensor holder and the sensor disc.

- Check that the sensors in the sensor holder are 0.5 mm-2 mm away from the sensor disc (S).

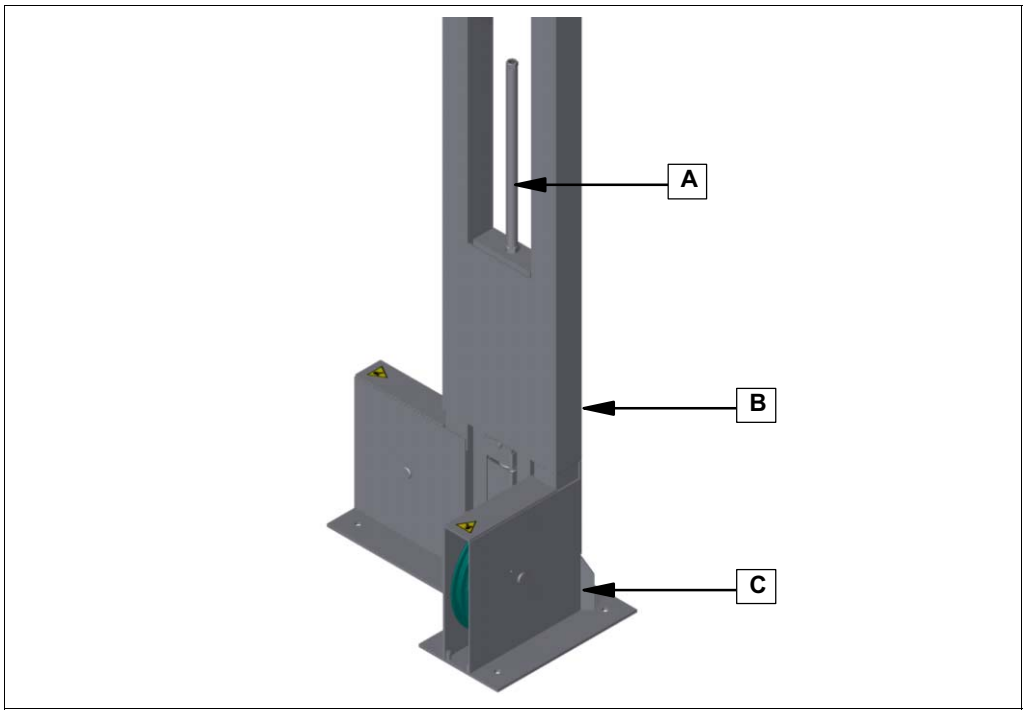


- Completely rotate the sensor disc to do so.
- The distance (L) can be adjusted by moving the sensor holder.
- Ensure that the two sensors in the sensor holder are properly positioned with regard to the slots! The sensor holder is fixed in position using 3 set screws. Remove the screws to move the sensor holder.



5.7 Installing the chain tensioner

- It is important to set the tensioner at the beginning in such a way that the upper section (B) of the drive station is in contact with the pulley box of the base (C).
- The upper section can be moved up or down by using a size 24 socket wrench to move the draw-in tube (A) clockwise or anticlockwise.



5.8 Installing the manure scraper

- Install the manure scraper ±2 m (6.56 ft) from its end position.
- When doing so make sure that both manure scrapers are exactly the same distance from their end positions. This ensures that there is enough room for manipulation during installation and adjustment of the drive unit.


For further information, please refer to the section:
"Manure removal system".


Please refer to the manure scraper manual for further information on this topic.

5.9 Installation of the chain or rope

During the installation of the drive chain, all electric components must be switched off (disconnected from the mains).

Attention!
Danger! High Voltage!
Danger or serious injury resulting in death.
Switch off the main switch.

- Rotate the sensor disc by hand to rotate the chain wheel.
- Tighten the chain in the system. The chain is moved by about ± 45 cm (18") with each turn of the tensioner.
- Position the manure scrapers at a distance of 2 metres (6.56 ft) from their end positions. Use the same distance to ensure that the system functions properly.
- Feed the chain through the deflection pulleys and the chain wheel.
- Do not tighten the chain yet.
- By rotating the sensor disc on the drive, the chain wheel turns and tightens the chain.
- Adjust the length of the chain. If the chain is tight, its length can be adjusted and it can be attached to the scraper.

5.9.1 The following must be observed when installing the chain

- The chain should be as tight as possible when attached to the scrapers.

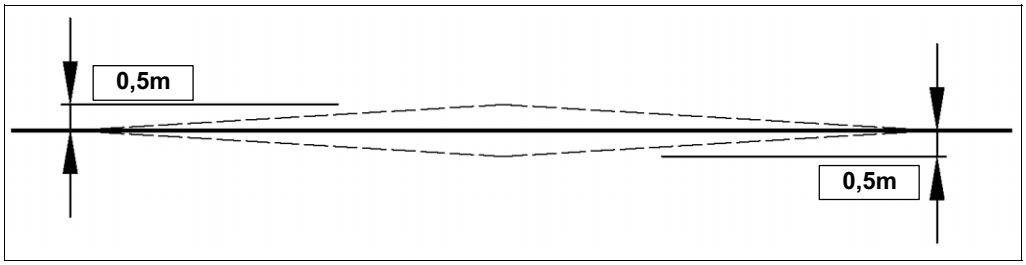
Please refer to the manure scraper manual for further information on this topic.

- Check that the chain links are seated properly on the chain wheel.

Attention!
The links of the chain should not be twisted!

Guidelines for chain tension

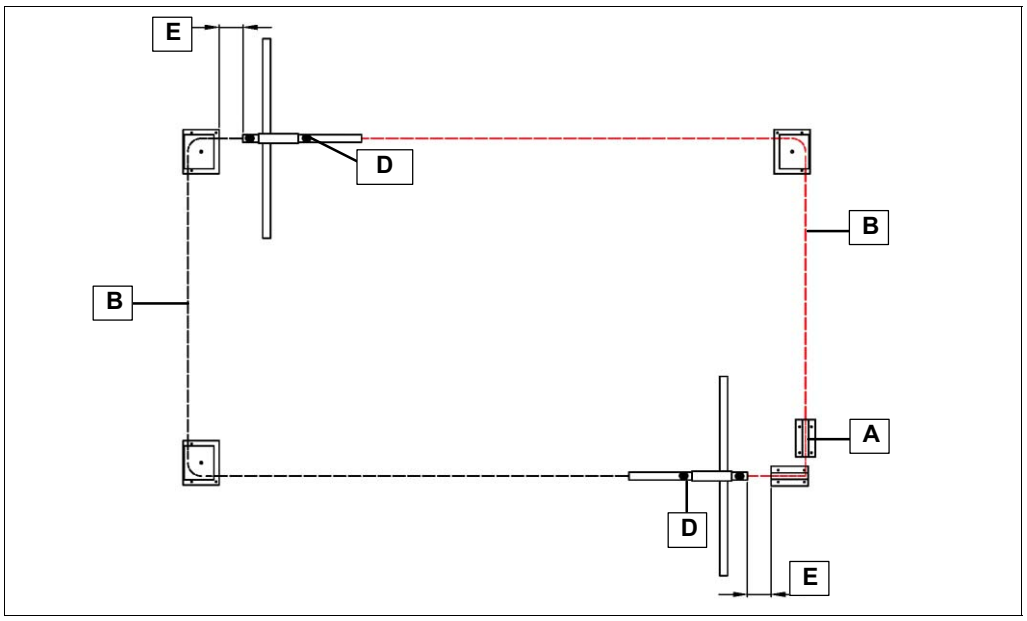
- The deviation of the chain from the centre line of the alley should not exceed 0.5 m (1.6 feet) to the left or right in the middle of the barn.



Tightening the chain:

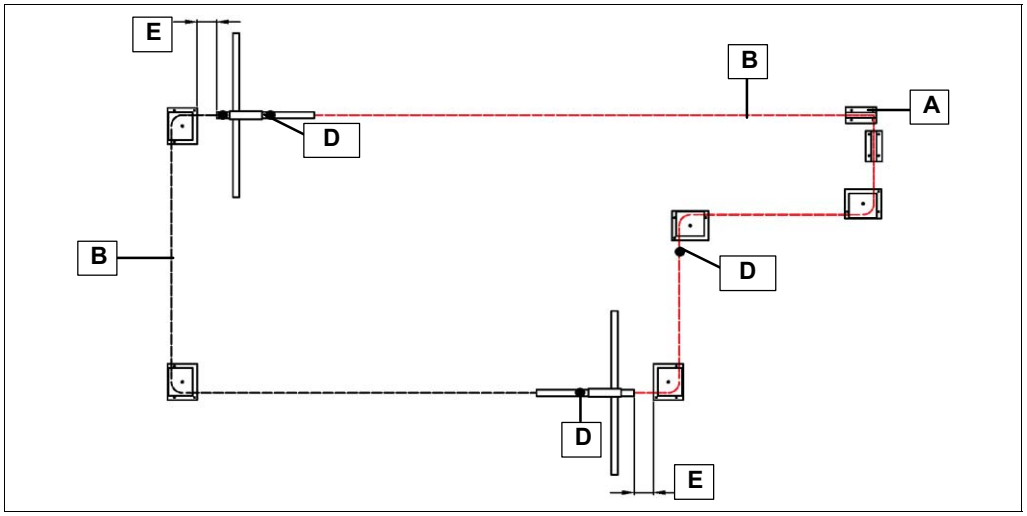
- Attach a hand ratchet with a 24-mm socket to the draw-in tube of the tensioner.
- Turn the hand ratchet clockwise. The upper section of the drive station moves upwards, tightening the chain.
- The tensioner has a spring travel of approx. 3 cm (1.2"). When the system stops, the chain tensioner must not be pushed in all the way.

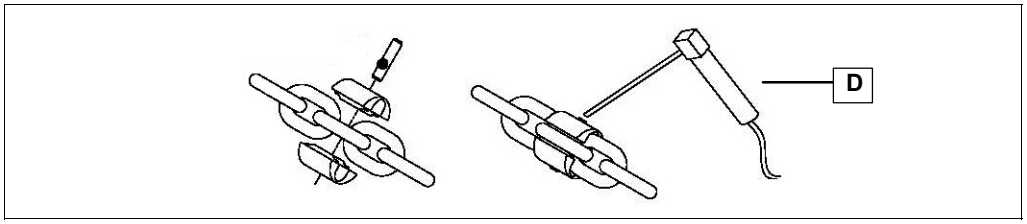
5.9.2 Chain-driven system with 13-mm chain: identical alley lengths



A	Drive station
B	chain
D	Rotation bracket assemblies
E	±2 meters (6.5 ft)

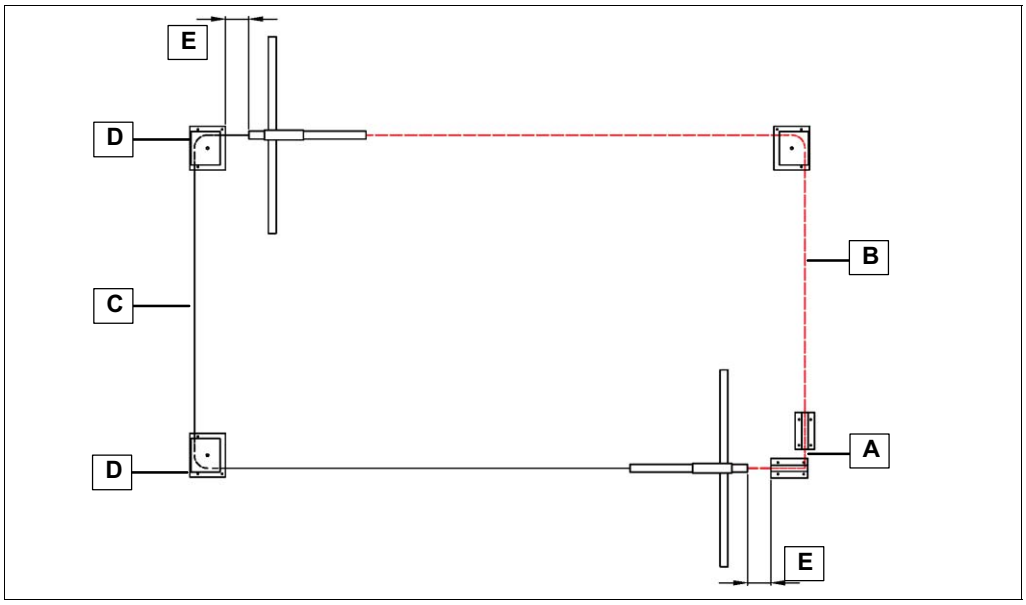
5.9.3 Chain-driven system with 13-mm chain: different alley lengths





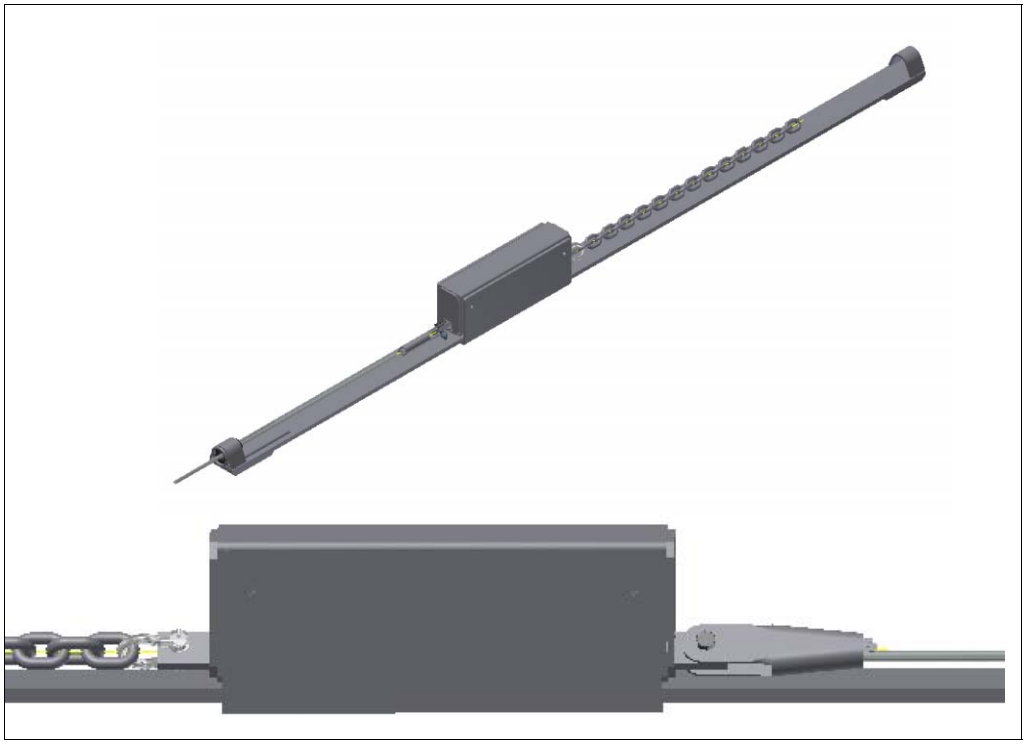
A	Drive station
B	chain
D	Rotation bracket assemblies The pusher must not pass the drive station.
E	±2 meters (6.5 ft)

5.9.4 Chain-driven system with 13-mm chain: chain + cable



A	Drive station
B	Chain (red)
C	Wires
D	Cable deflection pulley
E	±2 meters (6.5 ft)

The chain and cable are assembled in the middle section of the manure scraper.



- Use a clevis to connect the chain.
- Use rope sockets to connect the cable.

5.10 Installing the control box

Attention!
Electrical hazard when opening the control box!
Danger or serious injury resulting in death.
Switch off the main switch.
Electrical components should only be connected by a qualified electrician in accordance with the valid standards.

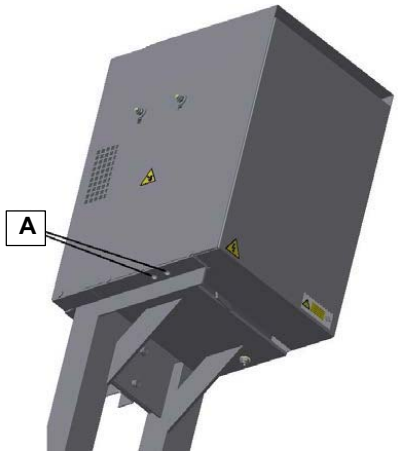
- The supplied voltage and frequency must correspond to the specifications on the manufacturer's plate of the control unit and/or electric motor.
- The control box should only be installed indoors, at eye level and within sight of the system. Ensure that the control box is not installed within the working area of other machinery and is outside the area where the animals are kept.
- Connect the control unit in accordance with the manual for the digital control unit for manure removal systems.

This manual also includes further information on the control unit.

- Install a motor protection switch between the control box and the motor as close as possible to the drive station. The motor protection switch protects the motor and is also used as an operating switch.
- Install the motor protection switch beyond the reach of the livestock.
- Set the correct trigger value on the motor protection switch.

Note!
The trigger value for the motor protection switch can vary for drives with higher output.

- Always check the details on the nameplate.
- Never set a trigger value (1) on the motor protection switch that is higher than the rated current on the nameplate.
- The frame has holes (A) for feeding the supply and sensor cables into the device.

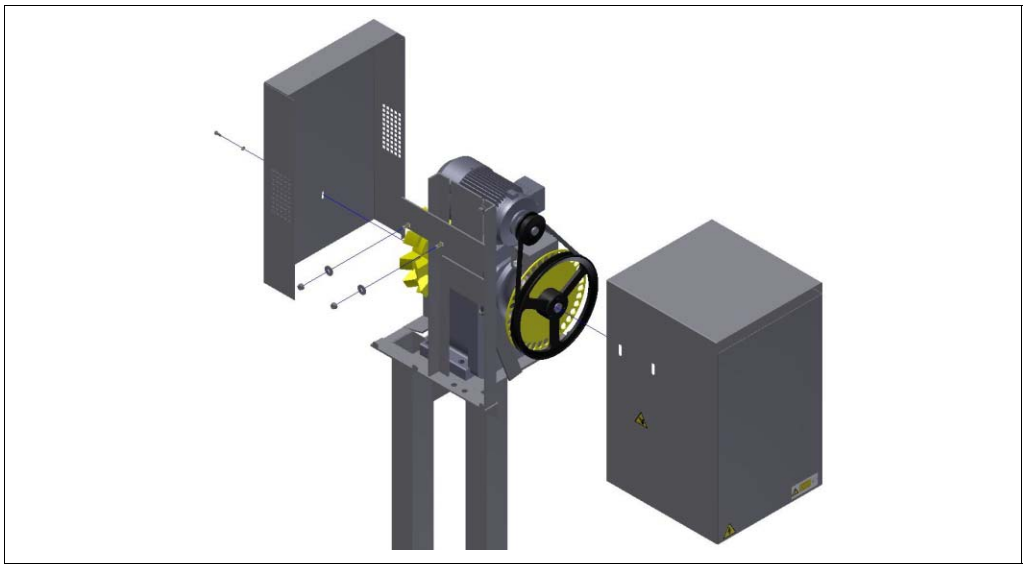


5.11 Installing the protective covers

- Install the protective covers before commissioning the system.
- The system must not be operated without protective covers!

Attention!
Pinching hazard
Can cause serious physical injury.
Switch off the main switch.

- Install the protective covers using the screws and nuts provided.



5.12 Disposal of installation material after installation is completed

Handle unused installation material properly and dispose in accordance with current valid local regulations on waste disposal and utilization.

6 Initial Commissioning

6.1 Special personnel qualification required for initial commissioning

Initial commissioning may only be carried out by specially qualified personnel in accordance with the safety instructions.

Any settings that have to be made (e.g. on control units) must always be made by personnel who have been suitably instructed/trained by the manufacturer.


Please also refer to the section:
"Personnel Qualifications"

6.2 Safety Instructions for Initial Commissioning

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Before starting for the first time check that all tools and other parts have been removed from the danger area.
- Ensure that there are no persons in the operational area of the manure scraper.
- Ensure that the system is operated in an area that is not accessible to unauthorised persons. If this is not the case, the system must be protected using additional measures.
- Activate all safety devices and emergency stop switches before commissioning.
- Check the direction of rotation of the motor before commissioning.
- Are all of the operating media suitable, present and connected?


Please read the "Safety" section carefully!

Special risks involved in initial commissioning:

- Incorrectly wired connections may destroy electrical/electronic components.
- Defective connections can cause the product to start up unexpectedly or make uncontrolled movements.
- Connections that have been mixed up will cause the motor to run in the wrong direction - which may cause serious damage to property and/or life-threatening injury to people.

6.3 Checks before commissioning

- Replace the oil cap of the gearbox with the vent cap provided.
- Install the protective caps on the drive station.

Attention!
Pinching hazard
Can cause serious physical injury.
Ensure that the main switch is locked when adjustments are carried out.

- Lubricate the chains and hinges of the manure scraper with lubricating grease or oil.
- To prevent damage, ensure that the manure scrapers are several metres from the end position and can move freely when the system is switched on.
- Check that the deflection pulleys are rotating.

6.4 Handing over to the owner

Declaration of conformity and CE mark
(only necessary for European Union member states)

A declaration of conformity must be produced and a CE mark applied if a total operational installation is assembled from individual components.

If several directives apply to the total installation, the CE mark means that the requirements of all relevant directives have been met.

The technical center/specialist dealer performing the installation work must:

- perform the installation work in accordance with the installation and safety information given in the relevant operating and installation manuals
- complete the hand-over report and have it signed
- produce the declaration of conformity for the total installation being handed over
- apply the CE mark so that it is clearly visible on the installation.

7 Operation

7.1 Special personnel qualification required for operation

Operation may only be performed by specially qualified personnel in accordance with the safety instructions.

The operator may only carry out work on the product if he has been trained, instructed and authorised to do so by the owner.

7.2 Safety instructions for operation

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- The product is only used for its intended purpose.
- If the correct procedure is not followed in cases of emergency, serious injury to personnel and damage to property can occur. Familiarise yourself with the emergency instructions.

 Please read the "Safety" section carefully!

Special dangers involved in operation and normal operation:

- Incorrect use may lead to serious damage to property and/or life-threatening injury to people.
- The careless use of personal protection equipment could result in serious physical injury.
- The system must not be operated if all of drives are not equipped with motor protection switches.
- The system must not be operated if the protective covers have been removed.

Prior to operation, the operator should be adequately familiar with the following:

- The operating and control elements
- The equipment included
- The method of operation
- The immediate environment
- The safety devices

Carry out the following checks before every start:

- Check and make sure that all operating media is suitable, present and connected.
- Check and ensure that all safety devices have been installed and are working properly (baffles, emergency off switches, protective fences, protective covers, etc.).
- Check the product for visible damage; immediately remove any faults that are found (note personnel qualification required) or send to the specialist dealer - the product may only be used if it is perfect condition.
- Check and make sure that unauthorised personnel are not inside the working area and that nobody is put at risk during start-up.
- Check and make sure that there are no objects or materials in the working area if they are not necessary for operation.

In normal operation:

- The product may only be started from the location specified.
- No safety devices may be removed or deactivated during operation.
- During operation, it is strictly forbidden to remain within the hazard area!
- Operating personnel should make sure that no unauthorized personnel are in the working area.
- When the system is switched off, the operating personnel must wait until all moving parts have come to a halt and the operating lights have gone out. Only then should the system be left unattended.
- The following checks should be performed at least once a day:
  - Visual checks for any damage that can be seen on the outside.
  - Check that all safety devices are working.

7.3 Operation

This manual also includes further information on the control unit.

8 Operating Faults

If necessary, contact your nearest authorized technical dealer.

8.1 Special personnel qualification required for troubleshooting

Troubleshooting may only be performed by specially qualified personnel in accordance with the safety instructions.


Please also refer to the section:
"Personnel Qualifications"

8.2 Safety Instructions for Troubleshooting

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- First secure the product against accidental restart.
- When troubleshooting and remedying faults, always switch off and lock the main switch.
- Make sure that the equipment can be decommissioned safely by a second person at all times.
- Always disconnect electrical components from the power supply!
- Secure the range of action for any moving parts.


Please read the "Safety" section carefully!

Particular hazards during troubleshooting:

- If energy sources are switched on unintentionally this may lead to serious damage to property and/or life-threatening injuries to people and animals.
- Unsecured manual operation always poses a higher risk of injury.
- Electrostatic processes may damage electronic components.

8.3 Troubleshooting possible faults

The manual for the digital control unit of manure removal systems contains further information on troubleshooting.

Symptom	Possible cause	Solution
The stop point of the manure scraper is inaccurate.	The chain is slipping because of insufficient tension or dirt on the drive wheel.	Clean the drive wheel and tighten the chain.
	The chain drive wheel is worn, causing the drive wheel to slip occasionally.	Replace the drive wheel and/or use the larger drive wheel. If necessary, replace the chain as well.
The motor protection switch is triggering.	Motor is overheating due to overload.	Allow the motor to cool for 30 minutes and then restart.
	The motor protection switch is set too low.	Have the setting checked by a qualified electrician.
	Drive unit is defective.	Check the following: ● Electric motor ● V-belt drive ● Gears ● Drive wheel If possible, repair or replace components.
Fuses trigger on a regular basis.	Motor protection is "sticking".	Have the protection replaced by a qualified electrician.
The manure scraper is not cleaning the floor properly.	The folding arms and/or hinges of the manure scraper are not functioning properly.	If required: ● Clean ● Repair ● Replace

9 Maintenance

If necessary, contact your nearest authorized technical dealer.

9.1 Special personnel qualification required for maintenance work

Maintenance work may only be performed by specially qualified personnel in accordance with the safety instructions.

Please also refer to the section:
"Personnel Qualifications"

9.2 Safety instructions for maintenance

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Only use original spare parts / original wearing parts / original accessories. In the case of products by other manufacturers it cannot be ensured that they have been designed and produced from the point of view of loads and safety.
- All of the steps involved in the maintenance work must be worked through in the order specified.
- The maintenance work prescribed in the manual should be carried out at the scheduled times.
- Maintenance should only be carried out using the tools designated for this purpose.
- All warnings and warning signs must be present and legible.
- Immediately replace any components that are not in perfect condition.
- Always ensure that the main power switch is switched off and locked with a padlock when carrying out maintenance tasks.
- To prevent injury, always disconnect the ENTIRE system from the mains power supply during maintenance of electrical components (control box, switches, sensors).

Attention!
Electrical hazard when opening the control box!
Danger or serious injury resulting in death.
Switch off the main switch.
Electrical components should only be connected by a qualified electrician in accordance with the valid standards.

Please read the "Safety" section carefully!

Before carrying out maintenance work, make sure of the following:

- The working area and its access points are cordoned off and there are no unauthorised personnel in the working area.
- Before performing any work on electrical installations or equipment, switch off all power supplies and ensure that they cannot be switched back on again. Put up a sign warning against switching them back on again.
  Obey the safety rules:
  - Isolate
  - Ensure devices cannot be switched back on again
  - Verify safe isolation from supply.
- When replacing larger components, use suitable lifting devices and equipment.
- Suitable collection vessels should be available for all substances that might be harmful to ground water.

Special risks involved in maintenance work:

- Serious damage to property might occur if incorrect replacement or wearing parts are installed.
- Unintentional powering up of energy source can lead to serious bodily injury or damage to property.
- Accessible components with sharp edges can cause injury.
- Electrostatic processes can cause damage to electronic components.

  Note!
  Only touch the edge of the printed circuit board and avoid static caused for example by clothing.

- Connections that have been mixed up will cause the motor to run in the wrong direction - which may cause serious damage to property and/or life-threatening injury to people.
- Incorrectly wired connections may destroy electrical/electronic components.
- Serious injury to persons or property can be caused if incorrect torque is applied when tightening screws.

On completion of the maintenance work, check that:

- all screwed connections that were loosened earlier have been tightened.
- All safety devices, guards, tank covers, etc. that were removed previously have been put back correctly.
- All safety devices are working perfectly again.
- all of the tools, materials and other equipment that were used have been removed from the working area again.
- The working area has been cleaned (from leaked liquids and similar substances)
- Operation has been checked after maintenance work has been completed or parts replaced.

9.3 Maintenance frequency and replacement criteria

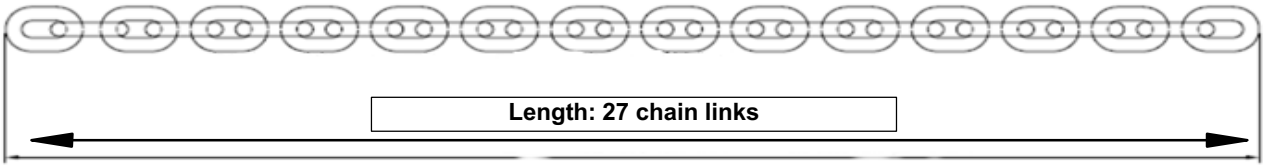
Daily	
Manure alley	● Check for manure scraper blockages and remove if necessary.
System function	● If the system is not working, remove the error and restart the system.
Periods of frost	● During periods of frost, check the drive station on a daily basis for signs of freezing. ● Keep the drive station and deflection pulleys especially clean.

weekly	
chain	● Check the manure scraper for damage to the attachment points. ● If serious damage is discovered, replace the chain. ● Check the seating of the chain. ● Check the chain tension.

	Please also refer to the section: "Checking the chain tension".

weekly	
Drive station	● Cleaning the drive station ● Check the base of the drive station and the chain guides for accumulated manure. ● Lubricate the chain wheel with a thick and biologically degradable type of lubrication oil. ● Electrical components should never get wet!
Reversing rollers	● Cleaning the deflection pulleys. ● Check the function of the deflection pulleys. ● If the deflection pulleys do not move smoothly after cleaning, carry out maintenance (replace bearing/complete corner pulley).
Manure scraper	● Cleaning the pulling block and anti-sway profile. ● The middle piece should be able to move over the profile. If this is not the case, carry out maintenance work (or have maintenance work carried out). ● Cleaning the folding arms (if applicable) and pivot points of the manure scraper. ● Functional test. ● Lubricate with a thick and biologically degradable type of lubrication oil.

Monthly	
Manure scraper	• Check the rubber components (if applicable). • Carry out maintenance (or have maintenance carried out) if there are uneven or abrased areas or holes. • If necessary, replace the rubber components.
V-belt drive	• Check the V-belt tension. • The V-belt can be tensioned using the draw-in tube.
	Please also refer to the following section: "Checking the chain tension".
chain	• Check that the chain links are seated properly on the chain wheel. • If the chain links are not seated properly, install the larger chain wheel (see illustration).



Length: 27 chain links (new) 1000mm Standard size chain wheel (green)	• 5505-0510-008 Axle bore 50mm • 5505-0510-007 Axle bore 40mm	
Length: 27 chain links >1025mm 1. Larger chain wheel (red)	• 5505-0510-010 Axle bore 50mm • 5505-0510-009 Axle bore 40mm	
Length: 27 chain links >1050mm 2. Larger chain wheel (blue)	• 5505-0510-013 Axle bore 50mm • 5505-0510-011 Axle bore 40mm	

Optional	
Gears	● Clean the gearbox thoroughly after 3,000 hours of operation and fill it up with one of the gearbox oils: - Shell omala 220, Fina Giran 220, Aral Degol BMB/DG/TU220, Texaco Meropa 220, Gulf E.P. Lubricant HD 220, Chevron NON-leaded gear compound 220, Elf Reductelf SP220, Mobil Mobilgear 630 ● Volume of DSG 33 1,3L (5505-9560-001) ● Volume of DSG 44 6,5L (5505-9540-000)
Periods of frost	● Setting the frost protection system. This causes the manure scraper to move continuously through the barn in short intervals.
Decommissioning	● Thoroughly clean, lubricate and grease the drive station, deflection pulleys, manure scraper and chain.
Deflection pulleys with grease nipples	● Clean ● check operation ● Grease, if required ● If the deflection pulleys do not move smoothly after cleaning, carry out maintenance (replace bearings/complete deflection pulley).

9.4 Checking the chain tension

Attention!
Danger! High Voltage!
Danger or serious injury resulting in death.
Always ensure that the main switch is switched off and locked with a padlock when carrying out maintenance and adjustments.

● Check that the chain links are seated properly on the chain wheel.

Guidelines for chain tension

● The deviation of the chain from the centre line of the alley should not exceed 0.5 m (1.6 feet) to the left or right in the middle of the barn.

Tightening the chain:

● Attach a hand ratchet with a 24-mm socket to the draw-in tube of the tensioner.

● Turn the hand ratchet clockwise. The upper section of the drive station moves upwards, tightening the chain.

● The tensioner has a spring travel of approx. 3 cm (1.2"). When the system stops, the chain tensioner must not be pushed in all the way.

Loosening the chain

When, after a period of time, the tensioner has reached its final position, tighten the chain again as follows:

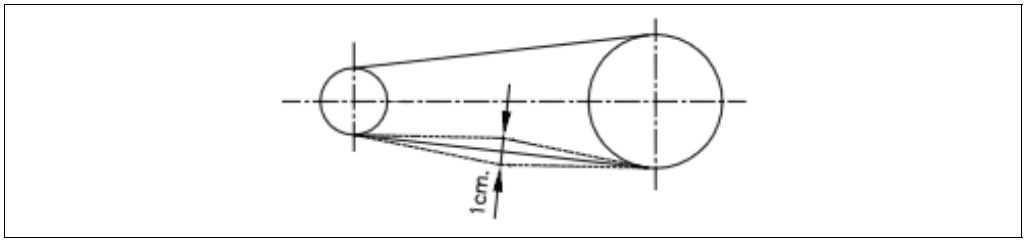
- Lower the upper section of the chain to the lowest position.

Attention!
Pinching hazard
Can cause serious physical injury.
Ensure that the main switch is locked when adjustments are carried out.

- Remove the section of the chain that runs through the drive station from one of the scrapers.
- Then remove 14 chain links using a grinder.

Grinding!
The shortening of the chain is carried out bit by bit in front of and behind the scraper and in the driven section of the chain as well as in the section that is not driven.

Please also refer to the red line shown in the sub-sections of the section:
"Installation of the chain or rope".



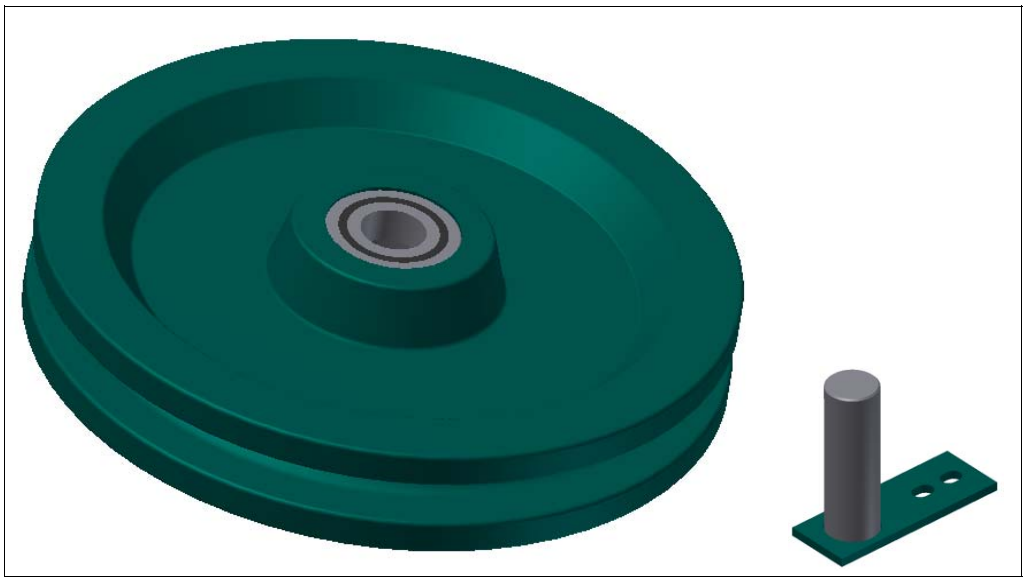
- Reattach the chain to the manure scraper. Ensure that the chain links are not twisted.

For further information, please refer to the section:
”Installing the manure scraper”.

- Tighten the chain using the tensioner.
- Start the system and check if the scrapers are still stopping at the intended stop points.
- Reset the end positions, if required.

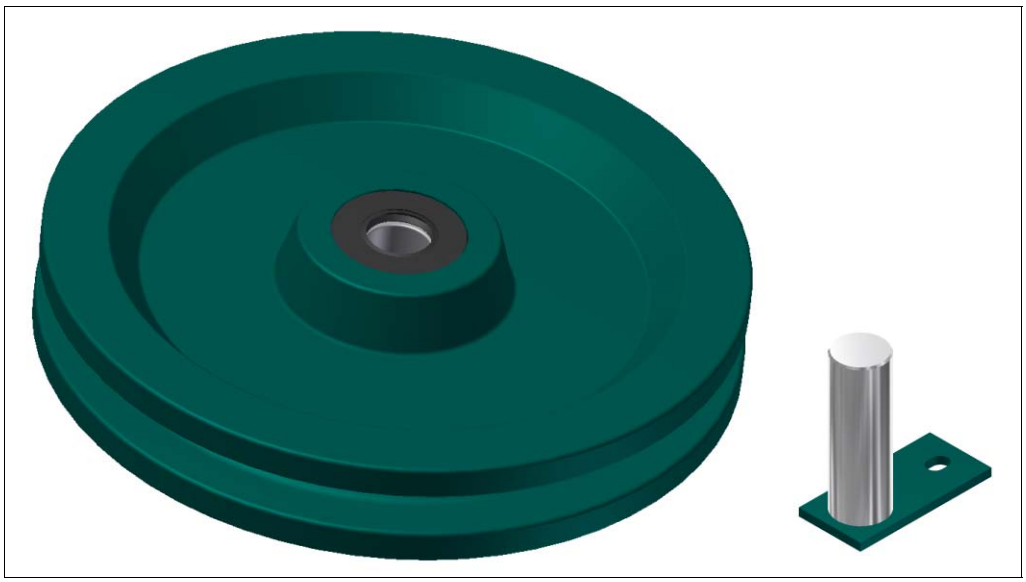
For further information on resetting the end positions, please refer to the manual for the digital control unit of manure removal systems.

9.5 Replace the deflection pulley rolling bearings.



Pulley bearing components up to February 2014:

1 shaft (bright steel), Ø 30 mm, with welded mounting strip	5505-0230-004
2 single-row deep groove ball bearings Ø62/Ø30x16 mm	5505-0162-001
1 steel tube Ø60/Ø55x38 mm	5505-4242-000



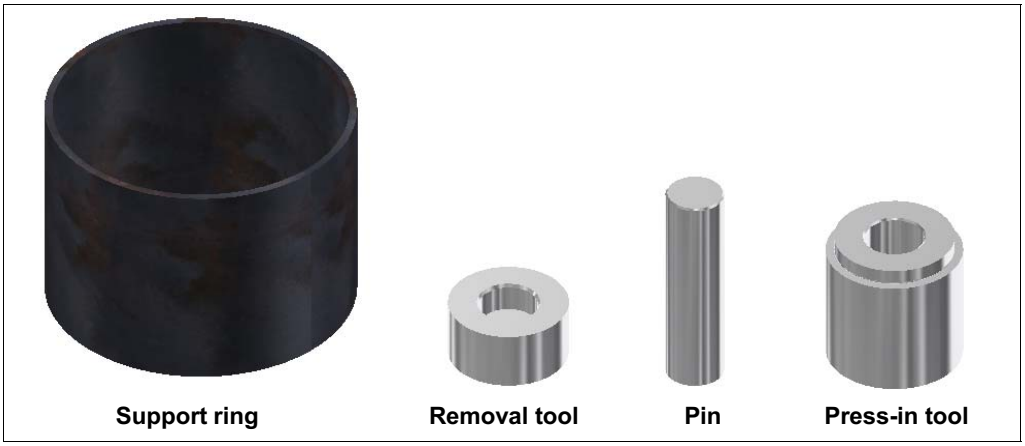
Pulley bearing components from February 2014:

1 shaft (hard-chrome plated), Ø 30 mm, with welded mounting strip	5505-0714-005
2 double-row angular ball bearings Ø62/Ø30x24 mm	5560-3206-000
2 oil seals Ø62/Ø30x7 mm	5560-0213-005
2 coil springs, Ø 30 mm (mounted in an oil seal)	5560-0215-005

9.5.1 Required tools, equipment and personal protective equipment

The following tools and equipment must be provided:

- 1 13-mm wrench (external hexagonal M8)
- 1 mounting set (M5505-4242-025), comprising (see illustration 1):
  - 1 support ring Ø150x110 mm
  - 1 removal tool Ø62x35 mm
  - 1 pin Ø30x110 mm
  - 1 press-in tool Ø70x71 mm



- 1 tool (e.g. bench press) that is capable of creating an even pressure of at least 5 kN (”500 kg”).

☞ To ensure a long service life for the bearing, it must be pushed into the deflection pulley under even pressure and without tilting.

- A small quantity of grease for lubricating the inside diameter of the oil seal.
- 1 brush for applying the grease.
- 1 cloth/tissue paper for cleaning, if necessary.

Required personal protection equipment:

- Protective gloves.
- Safety footwear with steel toecaps (at least protection class SB).

9.5.2 Disassembling the deflection pulley

- Switch off the power supply to the control box and lock it.

Attention!
Danger! High Voltage!
Danger or serious injury resulting in death.
Always ensure that the main switch is switched off and locked with a padlock when carrying out maintenance and adjustments.

- Loosening the chain
- If the deflection pulley cannot be pushed from the housing, dismantle the entire housing.
- Using a 13-mm wrench, remove the M8 hexagonal bolt from the pulley shaft cover strip. The pulley shaft can then be lifted, and the deflection pulley removed from its housing.
- Clean the deflection pulley using a cloth or tissue paper. Check if the sides of the deflection pulley are clean and smooth to ensure right-angled support of the support ring and removal tool.

9.5.3 Dismantling the old bearing

The old bearing can now be removed from the deflection pulley.

Proceed as follows (see Figure 2):

- Place the support ring (1) of the mounting set on the worktop.
- Place the deflection pulley on the support ring.
- Place the removal tool (2) in the centre of the upper bearing.
- Insert the pin (3) into the removal tool.
- Apply pressure to the pin until both bearings and the distance bush are pressed out of the deflection pulley completely and there is no longer any resistance (Figure 3).
- Clean the hub bore using a cloth or tissue paper.

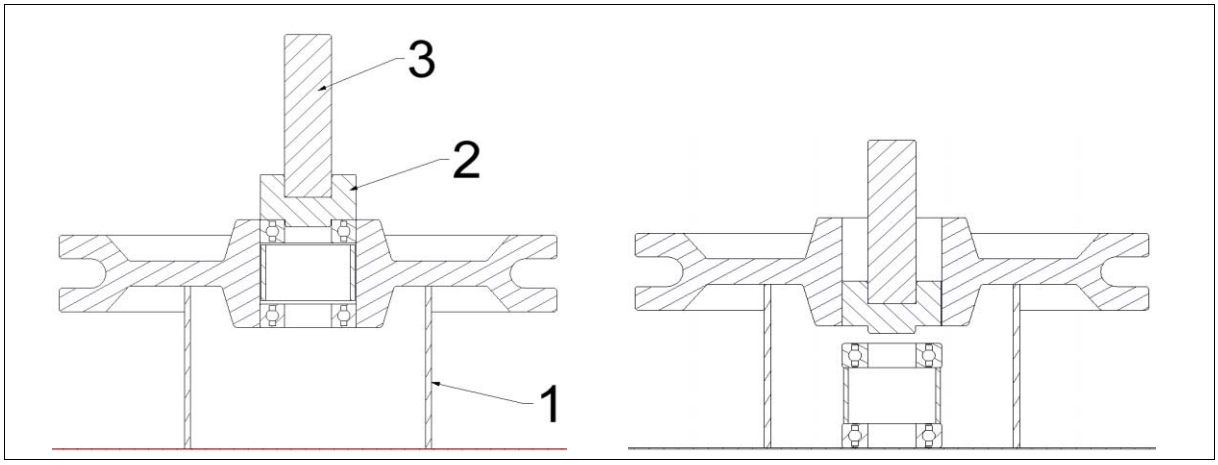


Figure 2 Figure 3

9.5.4 Fitting the new bearing

After removing the old bearing from the deflection pulley, the support ring must be removed. The deflection pulley can now be placed directly onto the worktop.

Then proceed as follows (see Figure 4):

- Place the removal tool (2) in the hub bore of the deflection pulley.
- Insert the pin (3) into the removal tool (2).
- Slide the bearing over the pin (3) as far as the deflection pulley.
- Slide the press-in tool (4) with the long tapered end pointing downwards over the pin (3) as far as the bearing.
  - Apply pressure to the press-in tool (4) until it makes contact with the deflection pulley.

The first bearing is now correctly positioned, i.e. at a mounted depth of 8 mm, in the deflection pulley (see Figure 5).

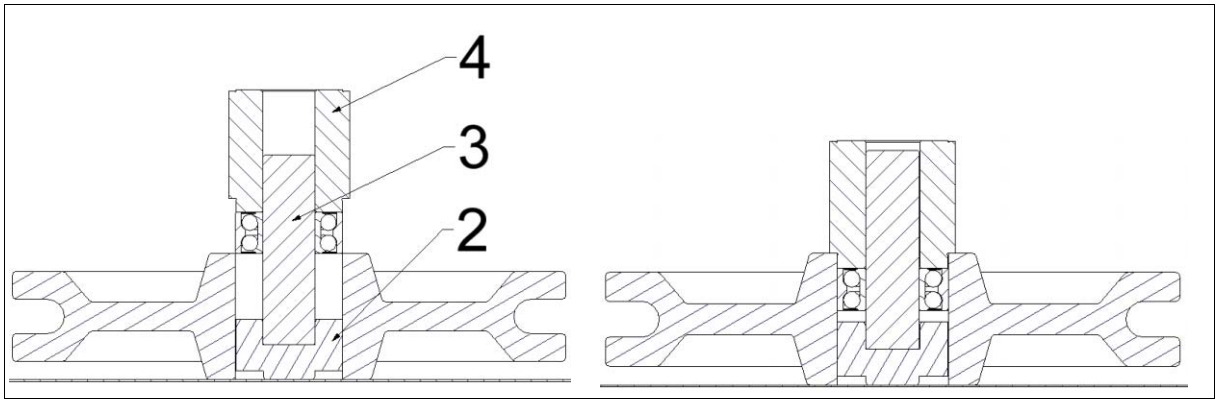


Figure 4 Figure 5

Then continue as follows (see Figure 6):

- Push down the press-in tool that is around the pin.
- Generously lubricate the inside diameter of an oil seal with grease.
- With the opening facing downwards, push the oil seal over the pin onto the deflection pulley.
- Slide the press-in tool with the long tapered end pointing downwards over the pin as far as the oil seal.
- Apply pressure to the press-in tool until it makes contact with the deflection pulley.

The first oil seal is now correctly positioned, i.e. at a mounted depth of 1 mm, in the deflection pulley (see Figure 7).

Remove the press-in tool and pin from the deflection pulley, turn the deflection pulley over and place it on the worktop.

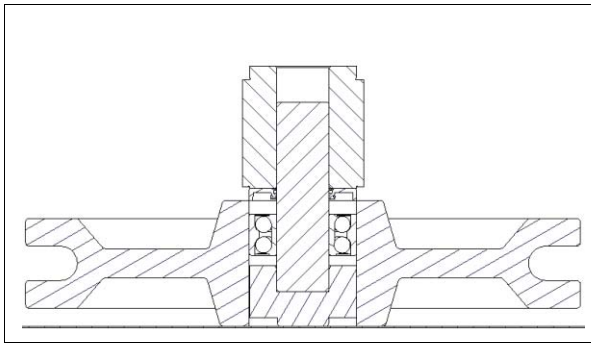


Figure 6

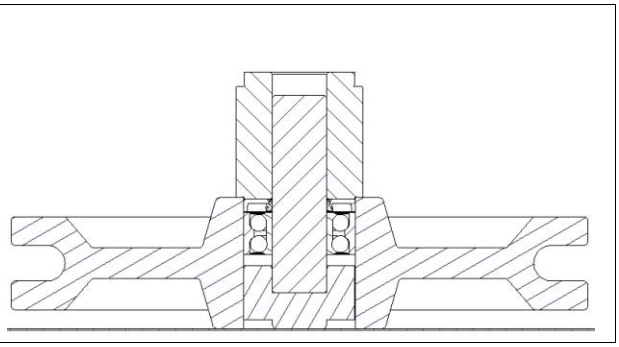


Figure 7

Then continue as follows (see Figure 8):

- Push the pin through the installed bearing and oil seal until it makes contact with the worktop.
- Push a bearing over the pin as far as the deflection pulley.
- Slide the press-in tool with the long tapered end pointing downwards over the pin as far as the bearing.
- Apply pressure to the press-in tool until it makes contact with the deflection pulley.

The second bearing is now correctly positioned, i.e. at a mounted depth of 8 mm, in the deflection pulley (see Figure 9).

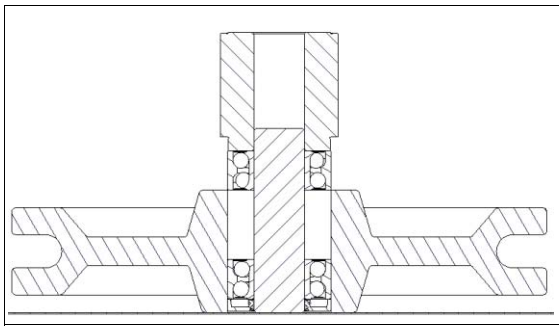


Figure 8

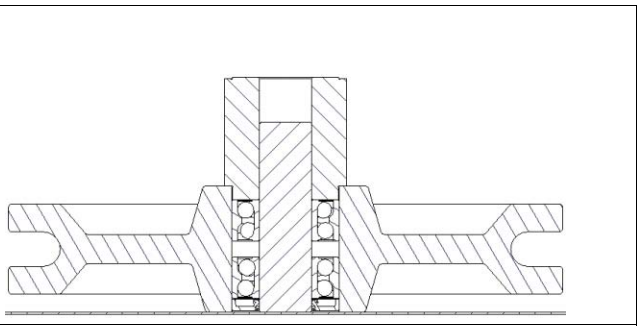


Figure 9

Then continue as follows (see Figure 10):

- Push down the press-in tool that is around the pin.
- Generously lubricate the inside diameter of an oil seal with grease.
- With the opening facing downwards, push the oil seal over the pin onto the deflection pulley.
- Slide the press-in tool with the long tapered end pointing downwards over the pin as far as the oil seal.
- Apply pressure to the press-in tool until it makes contact with the deflection pulley.

The second oil seal is now correctly positioned, i.e. at a mounted depth of 1 mm, in the deflection pulley (see Figure 11).

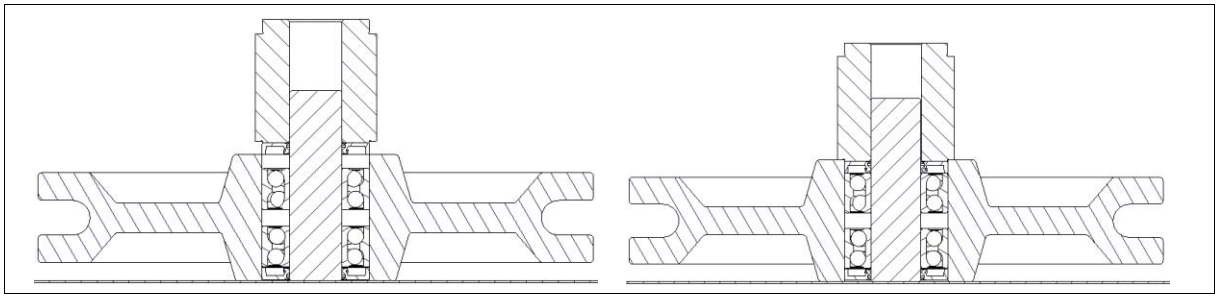


Figure 10

Figure 11

The installation of the bearings is now complete. The pin and the press-in tool can be removed and the deflection pulley can be installed in the deflection pulley housing.

9.6 Installing the deflection pulley in the deflection pulley housing

Push the deflection pulley into the deflection pulley housing. The hub bore in the deflection pulley must be aligned with the bore hole in the upper and lower part of the deflection pulley housing.
Insert the new chrome-plated pulley shaft from the top through the deflection pulley housing and the deflection pulley.
Use a 13-mm wrench and M8 hexagonal bolt to attach the shaft with welded mounting strip on the deflection pulley housing. Please refer to figure 12.

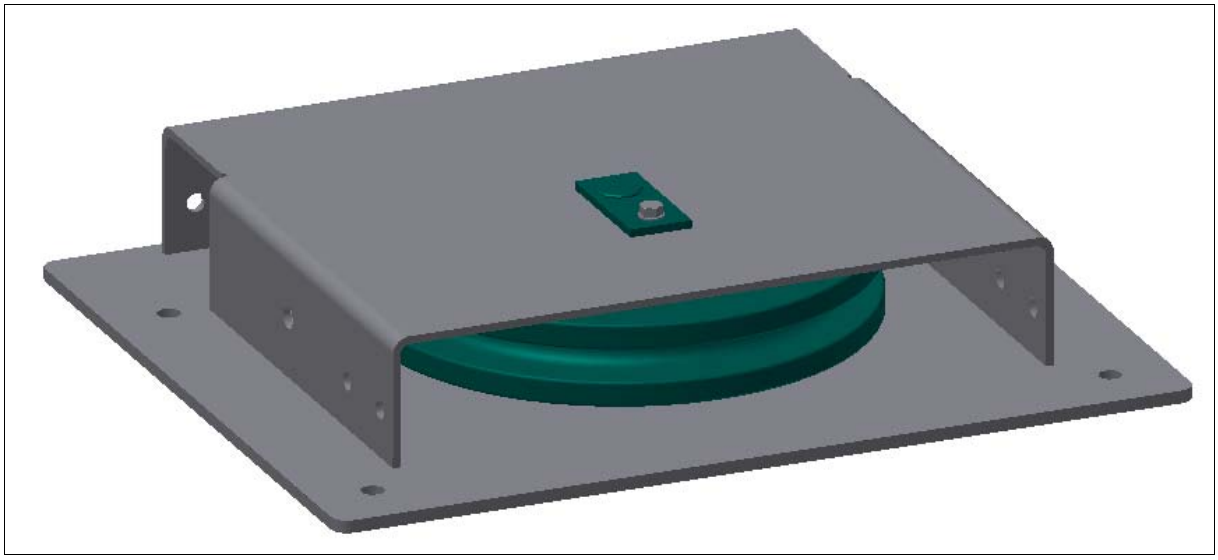


Figure 12

9.7 Disposal of the removed components

Dispose of the replaced materials in accordance with local regulations.

10 Decommissioning

10.1 Special personnel qualifications required for decommissioning

Decommissioning may only be performed by specially qualified personnel in accordance with the safety instructions.

- Electrical disassembly is always carried out by an authorised company.
- mechanical disassembly is always performed by experienced personnel.

Please also refer to the section:
"Personnel Qualifications"

10.2 Safety instructions for decommissioning

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- All of the steps involved in the decommissioning work must be worked through in the order specified.
- First of all, make the operating area for decommissioning completely safe.
- Make sure that operating media are disposed of without harming the environment.

Please read the "Safety" section carefully!

Special dangers involved in decommissioning:

- Components which have not been set down correctly may fall off or twist.
- Open components with sharp edges can cause injury.
- Suspended loads can fall and cause death or serious injury - do not stand under suspended loads!
- Using load suspension devices other than those specified here may result in serious injury to persons and damage to property.
- All electrical component must be disconnected from the power supply before removal.

10.3 Decommissioning

To ensure correct and safe disassembly during decommissioning, proceed as follows:

- Disconnect the entire system from the power supply.
- Thoroughly clean, lubricate and grease the drive station, deflection pulleys, manure scraper and chain.
- Loosen the chain by loosening the chain tensioner completely. Turn the draw-in tube anticlockwise using a size 24 socket.
- Remove the manure scraper from the chain and remove the complete chain.
- If the chain wheel has to be rotated, rotate the V-belt pulley by hand.
- Remove the deflection pulleys.
- Remove the anchor bolts or slat anchors from the base of the drive station. Place the drive on its side. The upper section alone weighs ±100 kg (220 lbs). Suitable lifting equipment must be used!

Warning! Suspended load
These can lead to serious injury with possible fatal consequences.
The upper section weighs ±100 kg and may only be moved using suitable equipment!
Persons are not allowed to stand under suspended loads!

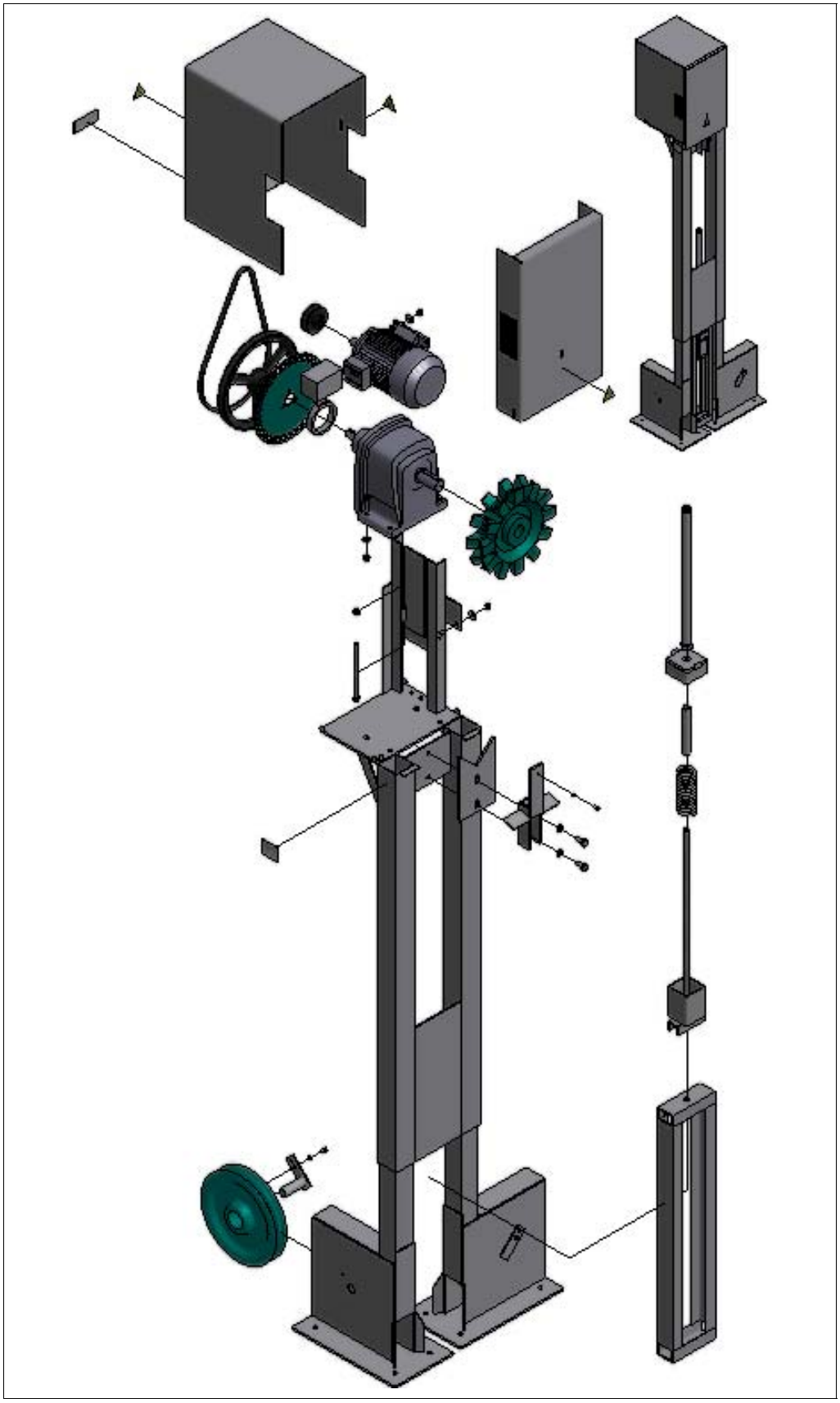
- Open manure pits must be securely covered.

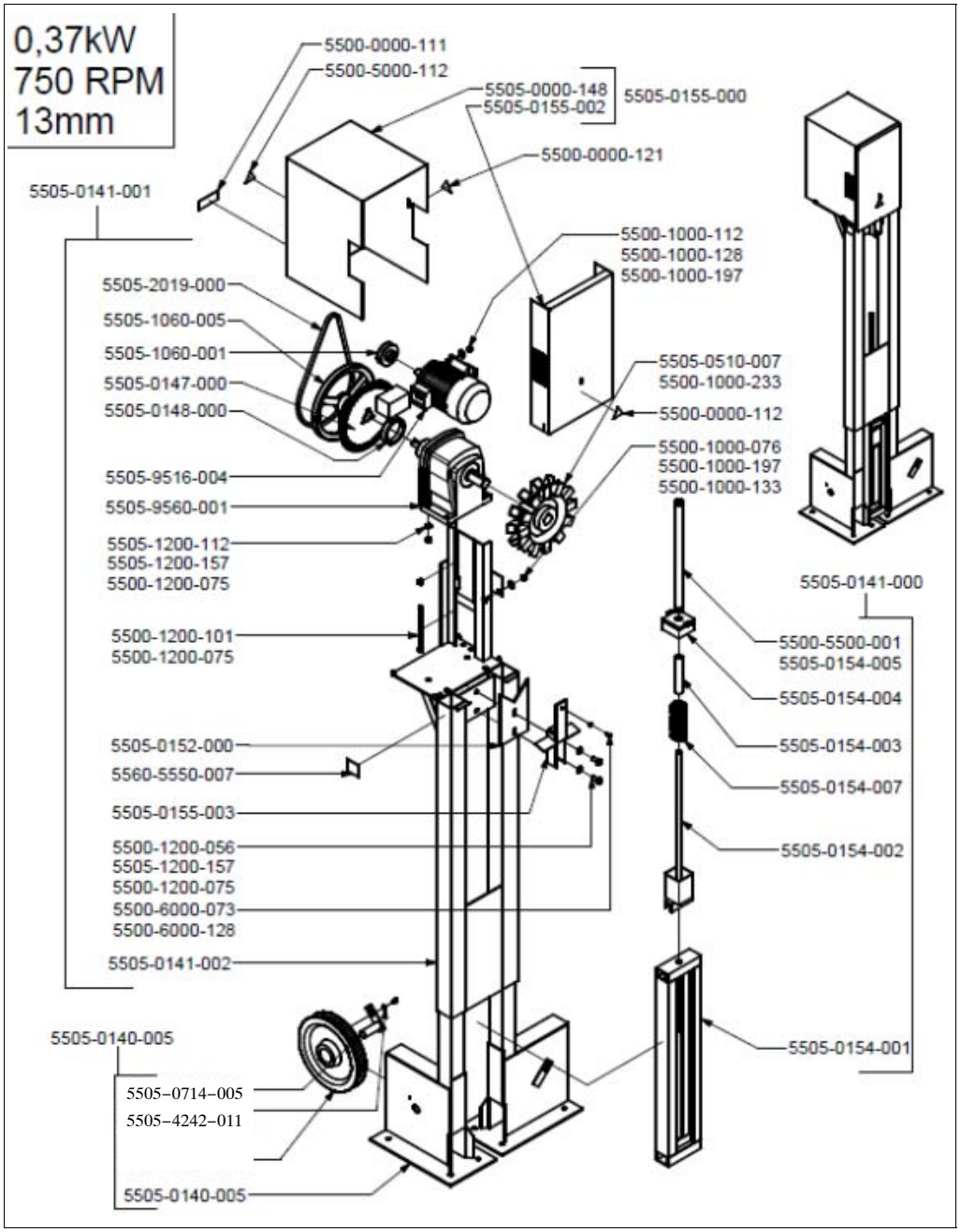
After final decommissioning, handle all components properly and dispose of them in accordance with your valid local rules and regulations on waste disposal. Recycle if possible.

11 Spare Parts

11.1 Drive station components

11.1.1 Drive station 0,37kW



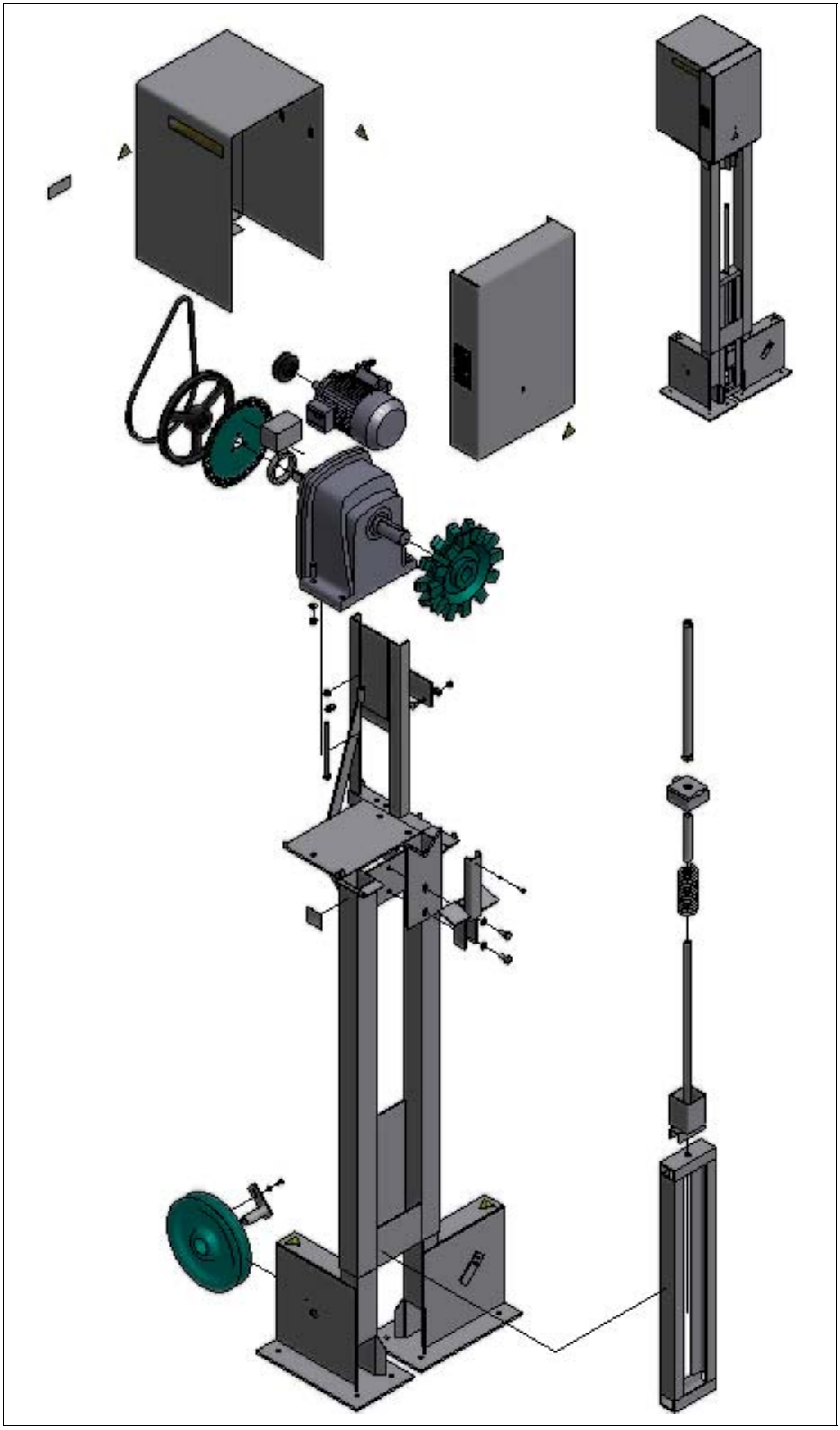


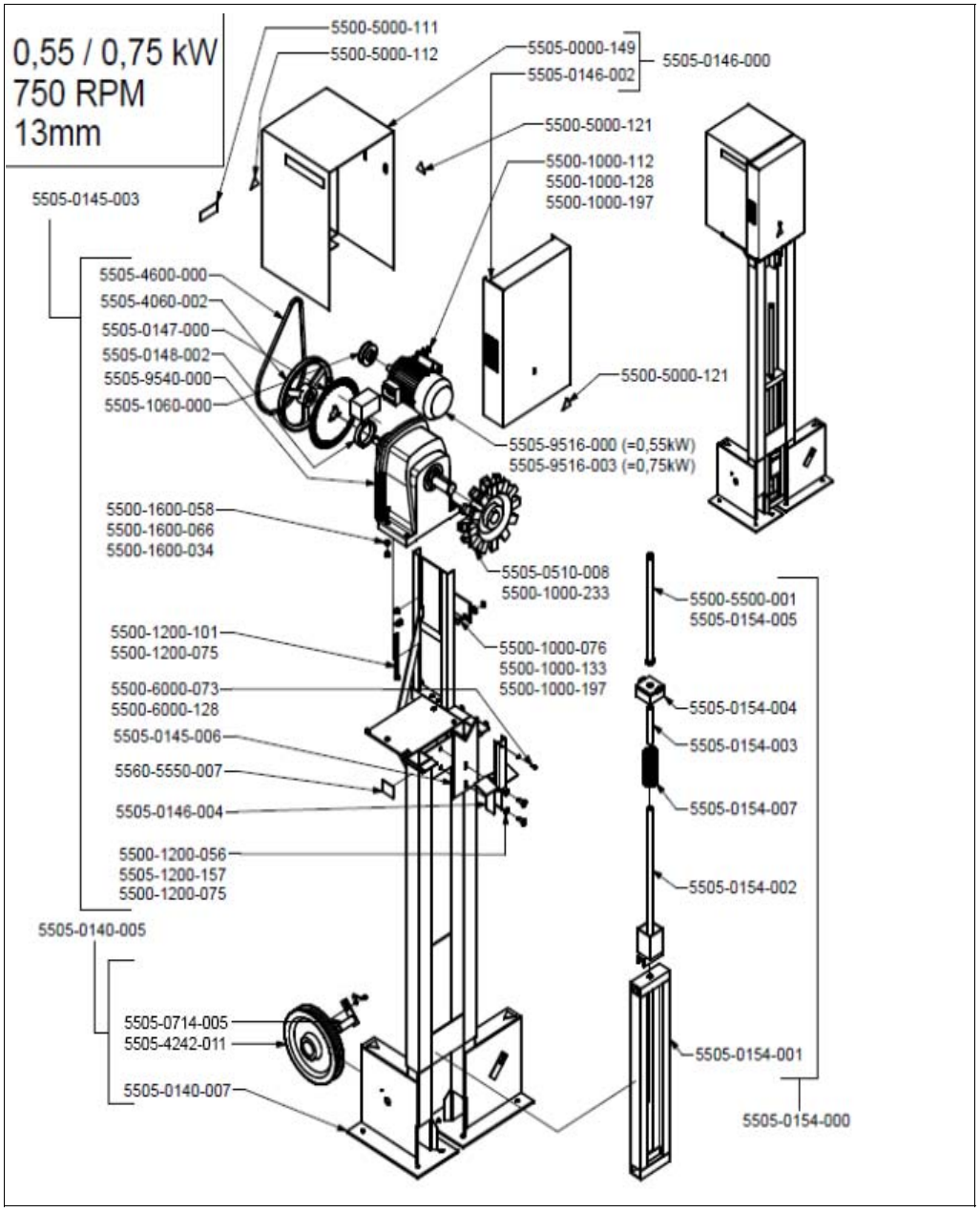
Part No.		Description	
5505-0140-003		Chain-driven drive station	13mm 0.37 kW Solid Floor
5505-0170-010		Chain-driven drive station	13mm 0.37 kW Slatted Floor
5500-5000-111		Unigrease 400 lubricating grease, cream-coloured	1 box = 12 units
5500-5000-112		Teflon spray tf089	
5500-5000-121		Package of 2 welding strips	Optrel Comfort Nr. 5004.073, Zwa
5585-1310-020		Saucer-head screw with nut	M10x 20mm duplex 4.6
5585-2510-030		Hexagonal thread screw	M10x 30mm duplex 8.8
5585-0910-005		Hexagonal nut	M10 duplex
5585-1110-005		Hexagon lock nut	M10 duplex
5585-2810-005		Large washer	M10 duplex 4.6
5500-1000-233		Locking screw with square head	M10x40 mm Black
5585-2512-030		Hexagonal thread screw	M12x 30mm duplex 8.8

5585-0912-005		Hexagonal nut	M12 duplex
5585-0112-200		Hexagonal screw	M12x200mm duplex
5500-5000-112		Decals	5 x 5 x 5 cm, illustration, hand in machine
5500-5500-001		Stop	For ID.14mm
5585-2506-016		Hexagonal thread screw	M 6x 16mm duplex 8.8
5585-2806-005		Large washer	M 6 duplex
5585-2508-014		Hexagonal thread screw	M 8x 14mm duplex
5585-3008-005		Washer	M 8 duplex
5505-0000-148		Manure removal system drive station end cap	0,37 kW 0,25 kW CE
5505-0140-005		Chain-driven drive station base	13mm
5505-0141-000		upper section	0.37 kW
5505-0141-001		Drive station upper section	0.37kW 10mm wit Stepcounter
5505-0141-002		Frame for drive station upper section	0.37kW
5505-0147-000		Sensor disc	
5505-0148-000		Sensor holder + sensor, complete	Dsg33 0.37kW
5505-0152-000		Wiper for drive station	13mm 0.37kW
5505-0154-001		Ball joint base for tensioner	
5505-0154-002		Threaded rod for drive station tensioner	
5505-0154-003		Guide spring for tensioner	
5505-0154-004		Pressure element for tensioner	
5505-0154-005		Draw-in tube for tensioner	
5505-0154-007		Compression spring for tensioner	Lo=140 d=14 Dm=56
5505-0155-000		Cowling	0,25 + 0.37 kW set
5505-0155-002		Drive wheel cover	0.25/0.37kW
5505-0155-003		Fastening element for the end cap	0.37kw Manurescraper 13mm
5505-0714-005		shaft	For Cornerwheel 13-16mm
5505-0510-007		Chain drive wheel, cast iron	13mm ID. 40, D.310 Green
5505-1060-001		V-belt pulley	71-1-spz Axle 24mm
5505-1060-005		V-belt pulley	315-1-spz Axle 22mm
5505-2019-000		V-belt	Xpz 1202 Gates
5505-4242-011		Deflection pulley with bearings, complete	For 13/16mm Chain
5505-9516-004		Electric motor	0.37kW 750RPM
5505-9560-001	**v**	Gears	Bege DSG33 I=47,55:1
5560-5550-007		CE name plate, generic	

v	**Gears, see section "Speed reducer components"**
	Subassembly, for further breakdown please refer to the corresponding parts list.

11.1.2 Drive station 0,55kW - 0,75kW





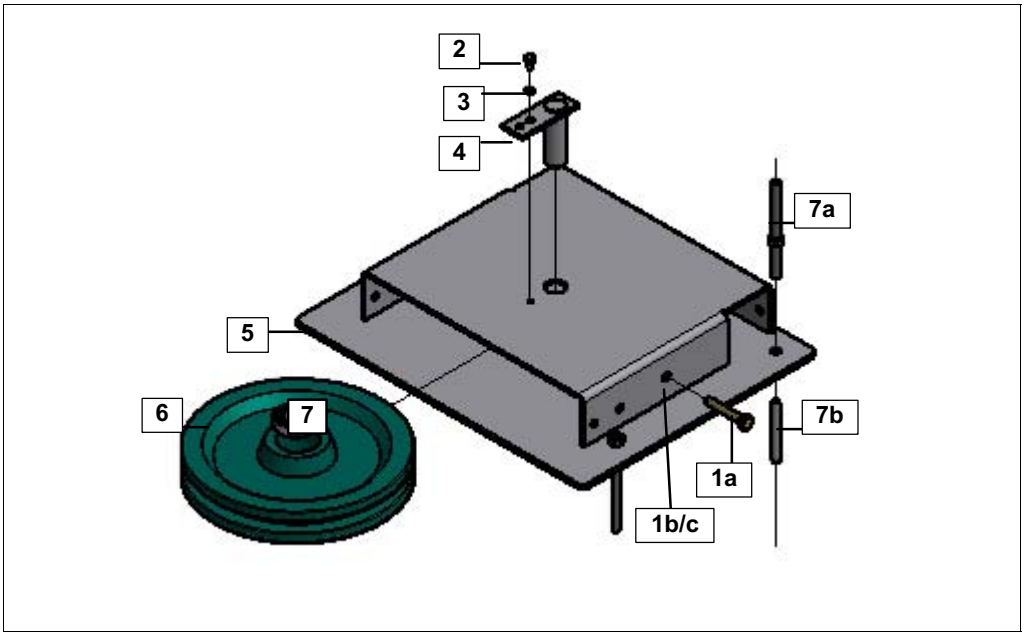
Part No.		Description	
5505-0144-000		Chain-driven drive station	13mm 0.55 kW Solid Floor
5505-0174-000		Chain-driven drive station	13mm 0.55 kW Slatted Floor
5505-0145-000		Chain-driven drive station	13 mm, 0.75 kW, for concrete floors
5505-0175-000		Chain-driven drive station	13 mm, 0.75 kW, for slatted floors
5585-1310-020		Saucer-head screw with nut	M10x 20mm duplex 4.6
5585-0910-005		Hexagonal nut	M10 duplex
5585-1110-005		Hexagon lock nut	M10 duplex
5585-2810-005		Large washer	M10 duplex 4.6
5500-1000-233		Locking screw with square head	M10x40 mm black
5585-2512-030		Hexagonal thread screw	M12x 30mm duplex 8.8
5585-0912-005		Hexagonal nut	M12 duplex
5585-0112-200		Hexagonal screw	M12x200mm duplex
5585-0916-005		Hexagonal nut	M16 duplex

5585-0116-070		Hexagonal screw	M16x 70mm duplex 8.8
5585-3016-005		Washer	M16 duplex
5500-5000-111		Decal with text: Warning. Automatic start-up!	5x12cm
5500-5000-112		Decals	5 x 5 x 5 cm, illustration, hand in machine
5500-5000-121		Warning sticker, 5 x 5 x 5 cm	Text: High voltage!
5500-5500-001		Stop	For ID.14mm
5585-2506-016		Hexagonal thread screw	M6x 16mm duplex 8.8
5585-2806-005		Large washer	M6 duplex
5585-2508-014		Hexagonal thread screw	M8x 14mm duplex
5585-3008-005		Washer	M8 duplex
5505-0000-149		Manure removal system drive station end cap	0,75kW 0,55kW CE
5505-0140-005		Chain-driven drive station base	13mm
5505-0140-007		Frame for drive station base	13mm chain
5505-0145-003		upper section	0.75 kW
5505-0145-006		Wiper for drive station	13mm 0.75kW
5505-0146-000		Cowling	0.75 kW set
5505-0146-002		Drive wheel cover	0.55 - 0.75 kW + decal
5505-0146-004		Fastening element for the end cap	0,75kW
5505-0147-000		Sensor disc	
5505-0148-002		Sensor holder + sensor, complete	Dsg44 0.55 + 0.75kW
5505-0154-000		Drive station tensioner	Chain/rope
5505-0154-001		Ball joint base for tensioner	
5505-0154-002		Threaded rod for drive station tensioner	
5505-0154-003		Guide spring for tensioner	
5505-0154-004		Pressure element for tensioner	
5505-0154-005		Draw-in tube for tensioner	
5505-0154-007		Compression spring for tensioner	Lo=140 d=14 Dm=56
5505-0714-005		shaft	For cornerwheel 13-16mm
5505-0510-008		Chain drive wheel, cast iron	13mm ID. 50, D.310 green
5505-1060-000		V-belt pulley	80-1-b axle 24mm
5505-4060-002		V-belt pulley	300-1-b axle 28mm
5505-4242-011		Deflection pulley with bearings, complete	For 13/16mm chain
5505-4600-000		V-belt	B-46 profile 17x11, l=122cm
5505-9516-000		Electric motor	0.55kW 750RPM type 7aa90l8
5505-9516-003		Electric motor	0.75kW 750RPM type 7aa90l8v
5505-9540-000	**v**	Gears	Bege DSG44 I=47,63:1
5560-5550-007		CE name plate, generic	

v	**Gears, see section "Speed reducer components"**
	Subassembly, for further breakdown please refer to the corresponding parts list.

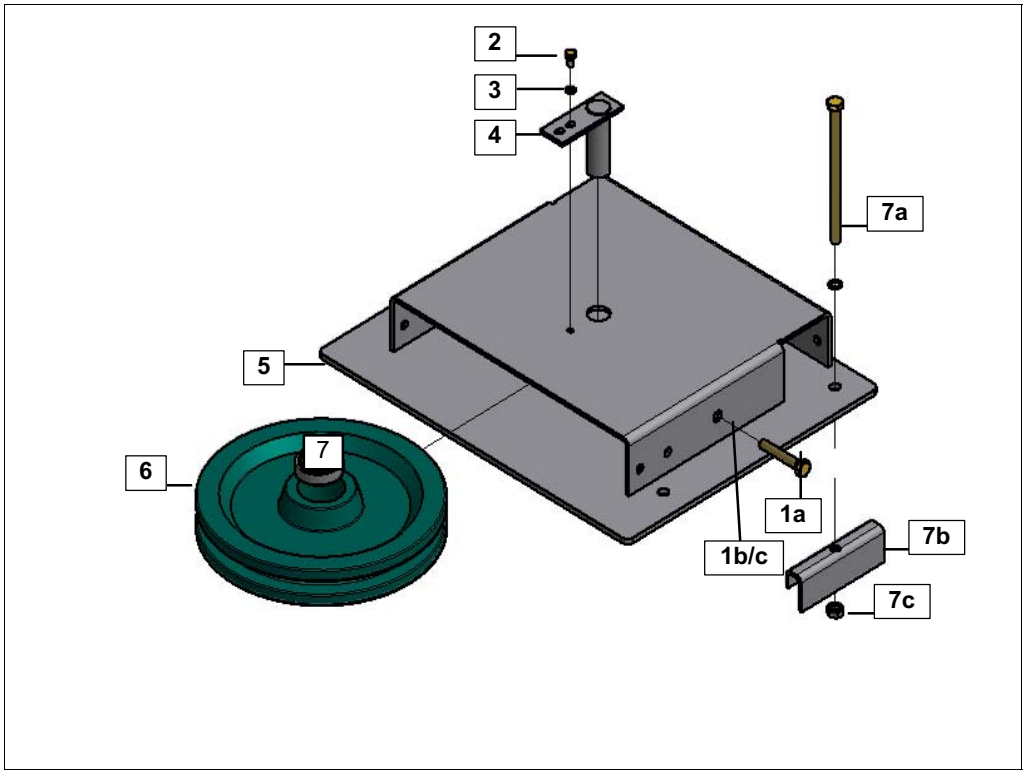
11.2 Deflection pulley components

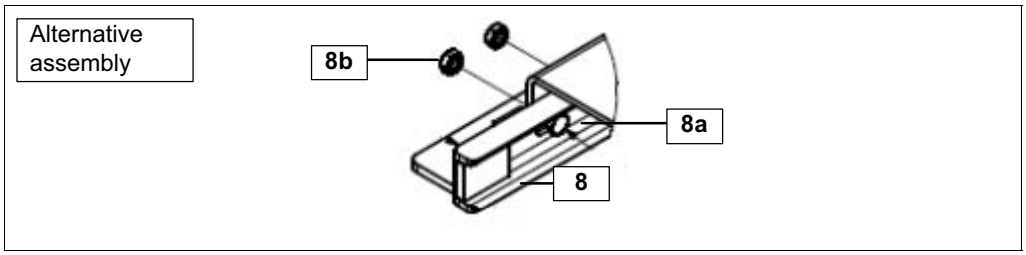
11.2.1 Deflection pulley for chain on concrete floors



Pos.	Part No.	Description	
	5505-0233-006	Deflection pulley for concrete floors	ø32cm Chain 13mm Hgalv.
7a	5580-4502-002	Anchor rod for chemical reaction anchors	M12x160mm Hgalv.
7b	5580-4502-001	Glass capsule for chemical reaction anchors	M12
1a	5585-2512-070	Hexagonal thread screw	M12x 70mm
1b	5500-1200-075	Hexagonal nut	M12 Duplex
1c	5500-1200-157	Washer	M12 Duplex
5	5505-0234-008	Deflection pulley housing, large, floor-mounted	13mm Hgalv.
2	5585-2508-014	Hexagonal thread screw	M 8x 14mm Duplex
3	5585-3008-005	Washer	M 8 Duplex
4	5505-0714-005	Deflection pulley shaft	30mm
6	5505-4242-011	Deflection pulley with bearings, complete	For 13/16mm Chain
7	5560-3206-000	Angular ball bearing	Double-row
7	5560-0213-005	Oil seal with spiral spring	

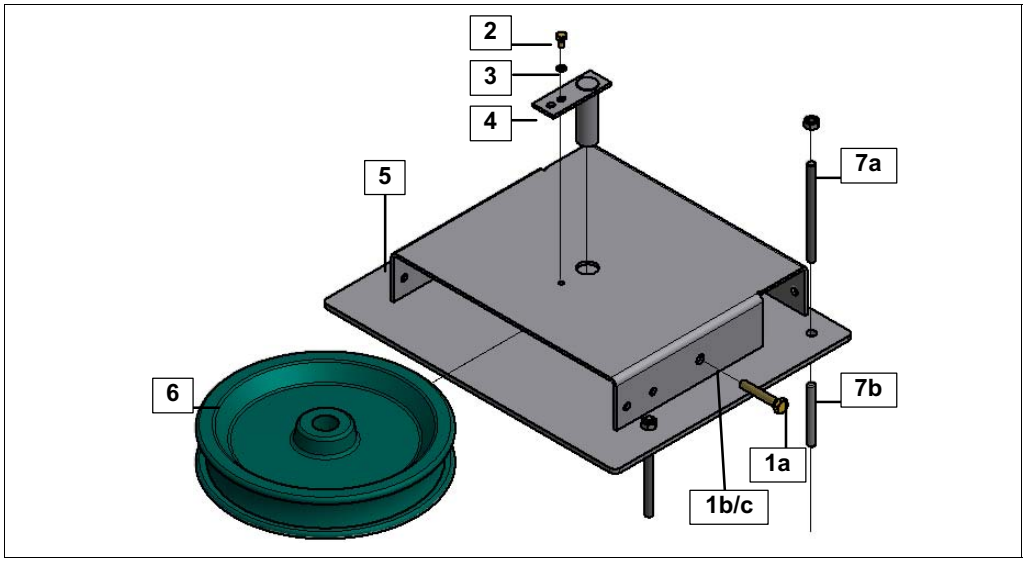
11.2.2 Deflection pulley for chain on slatted floors





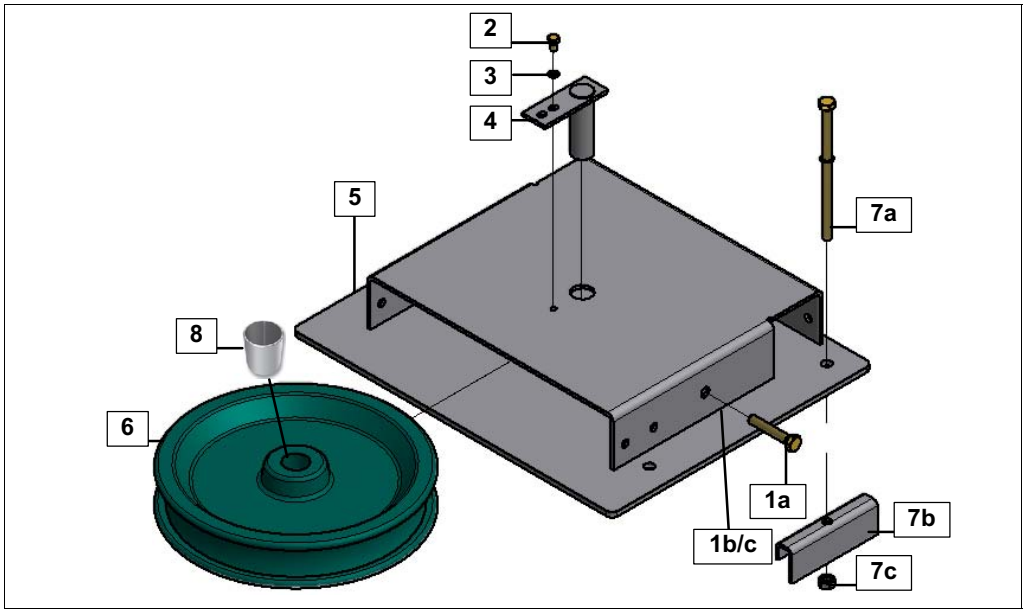
Pos.	Part No.	Description	
	5505-0233-007	Deflection pulley for slatted floors	Ø 32 cm, 13-mm chain, galv.
7a	5500-1200-049	Hexagonal thread screw	M12x200mm
7b	5550-1925-001	Tread element for slat anchor	
7c	5500-1200-075	Hexagonal nut	M12 Duplex
1a	5585-2512-070	Hexagonal thread screw	M12x 70mm
1b	5500-1200-075	Hexagonal nut	M12 Duplex
1c	5500-1200-157	Washer	M12 Duplex
5	5505-0234-008	Deflection pulley housing, large, floor-mounted	13mm Hgalv.
2	5585-2508-014	Hexagonal thread screw	M 8x 14mm Duplex
3	5585-3008-005	Washer	M 8 Duplex
4	5505-0714-005	Deflection pulley shaft	30mm
6	5505-4242-011	Deflection pulley with bearings, complete	For 13/16mm Chain
8	5505-0234-009	Deflection pulley stop for slatted floor scraper	
8a	5500-1000-109	Hexagonal thread screw	M10x 25mm Zincr. 8.8
8b	5500-1000-133	Hexagon lock nut	M10 Zincr.
7	5560-3206-000	Angular ball bearing	Double-row
7	5560-0213-005	Oil seal with spiral spring	

11.2.3 Deflection pulley for cable on concrete floors



Pos.	Part No.	Description	
	5505-0713-000	Deflection pulley for concrete floors	ø32cm Cable-rope Coated
	5505-0713-003	Deflection pulley for concrete floors	ø32cm Cable-rope Hgalv.
7a	5580-4502-002	Anchor rod for chemical reaction anchors	M12x160mm Hgalv.
7b	5580-4502-001	Glass capsule for chemical reaction anchors	M12
1a	5585-2512-060	Hexagonal thread screw	M12x 60mm Duplex
1b	5585-0912-005	Hexagonal nut	M12 Duplex
1c	5585-3012-005	Washer	M12 Duplex
5	5505-0234-006	Deflection pulley housing, large, floor-mounted	13/16mm Coated
5	5505-0234-008	Deflection pulley housing, large, floor-mounted	13mm Hgalv.
2	5585-2508-014	Hexagonal thread screw	M 8x 14mm Duplex
3	5585-3008-005	Washer	M 8 Duplex
4	5505-0714-005	Cable deflection pulley shaft	Chromed
6	5505-0714-002	Deflection pulley shaft with plain bearing	OD.350mm
6a	5505-0714-003	Deflection pulley shaft without plain bearing	OD.50mm Green
8	5505-0183-000	Plain bearing	30x36x60 SKF Glasfiber

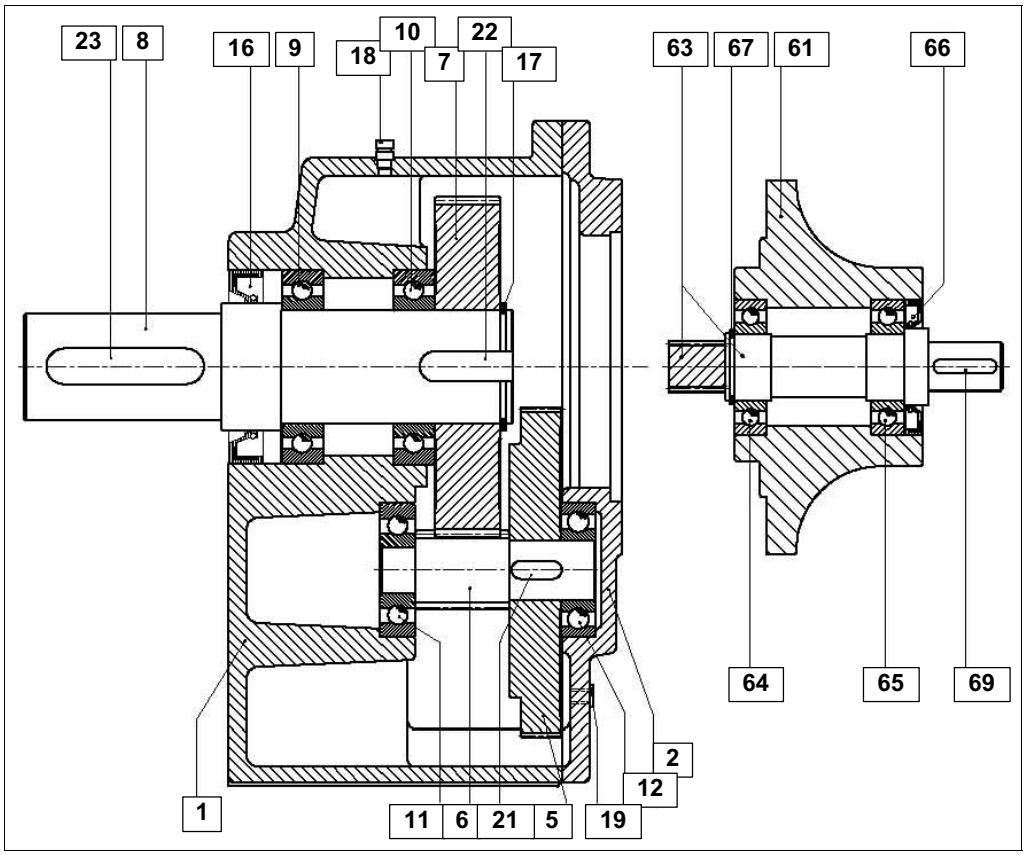
11.2.4 Cable deflection pulley for slatted floors



Pos.	Part No.	Description	
	5505-0713-004	Deflection pulley for slatted floors	Ø 32 cm (12.6"), for cable, coated
	5505-0713-007	Deflection pulley for slatted floors	Ø 32 cm (12.6"), for cable, galv.
7a	5500-1200-049	Hexagonal thread screw	M12x200mm
7b	5550-1925-001	Tread element for slat anchor	
7c	5500-1200-075	Hexagonal nut	M12 Duplex
1a	5585-2512-060	Hexagonal thread screw	M12x 60mm Duplex
1b	5585-0912-005	Hexagonal nut	M12 Duplex
1c	5585-3012-005	Washer	M12 Duplex
5	5505-0234-006	Deflection pulley housing, large, floor-mounted	13/16mm Coated
5	5505-0234-008	Deflection pulley housing, large, floor-mounted	13mm Hgalv.
2	5585-2508-014	Hexagonal thread screw	M 8x 14mm Duplex
3	5585-3008-005	Washer	M 8 Duplex
4	5505-0714-005	Cable deflection pulley shaft	Chromed
6	5505-0714-002	Deflection pulley shaft with plain bearing	OD.350mm
6a	5505-0714-003	Deflection pulley shaft without plain bearing	OD.50mm Green
8	5505-0183-000	Plain bearing	30x36x60 SKF Glasfiber

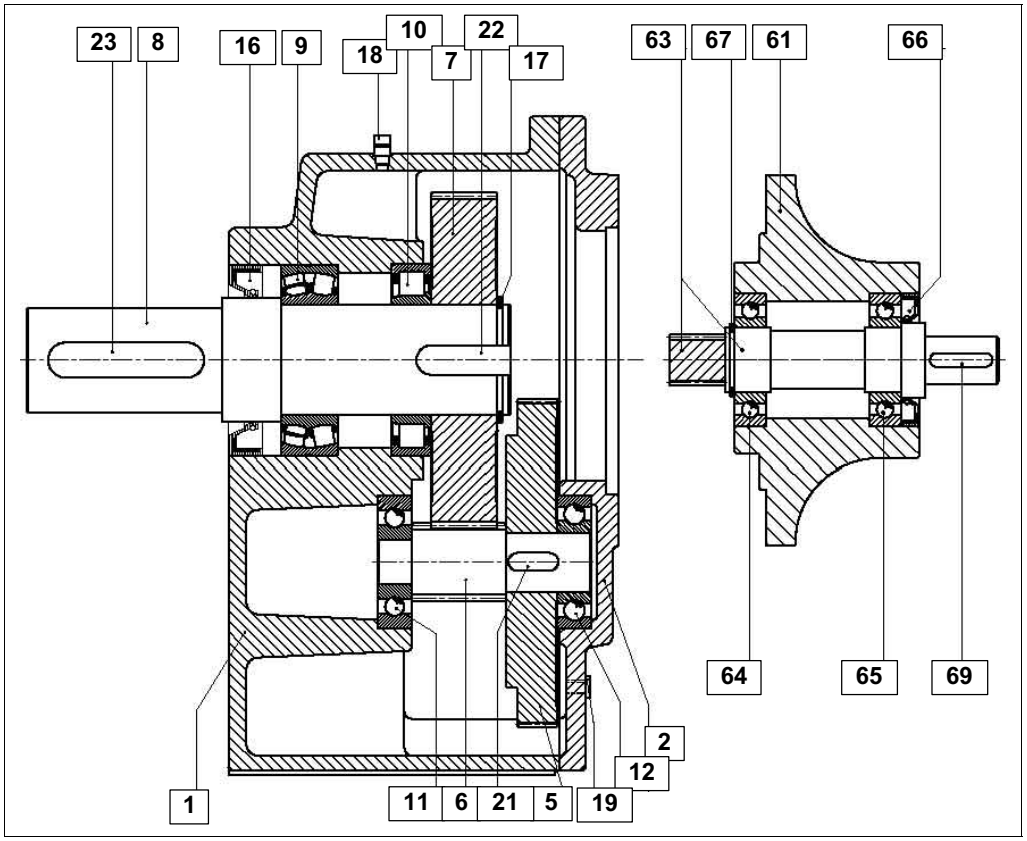
11.3 Speed reducer components

11.3.1 DSG33 - 0,37kW



Pos.	Part No.	Description	
	5505-9560-001	Gears	Bege DSG33 I=47,55:1
1		Base	
2		Housing	
5	5505-9411-000	Intermediate gearwheel	G33, 101 Teeth, Keyshaft 8mm
6	5505-9401-000	Intermediate shaft	G33, 8 Teeth
7	5505-9474-000	Output gearwheel	G33, 49 Teeth
8	5505-9414-000	Output shaft	G33, 40mm
9	5560-0163-001	ball bearing	6208 ZZ
10	5560-0163-000	ball bearing	6208
11	5560-0163-004	ball bearing	6304
12	5560-0163-004	ball bearing	6304
16	5505-0214-000	Oil seal	48X80X10 BA
17	5560-0234-000	Snap ring	For Shaft 40mm
18	5505-9499-000	Vent screw	1/8
19		Locking screw	
21	5505-9415-000	Feather key	8x7x26
22	5560-2011-003	Feather key	12X8X28 regtangular
23	5505-0510-004	Feather key	12x8x80
61		Housing	
63	5505-9411-002	Output shaft	G33, 13 Teeth
64	5560-0162-000	Warehouse	6205
65	5560-0162-000	Warehouse	6205
66	5560-0212-001	Oil seal	30X52X7
67	5560-0232-000	Retaining ring	A25 Steel
69	5505-9415-002	Feather key for output shaft	6X6X45 mm

11.3.2 DSG44 - 0.55 kW / 0.75 kW



Pos.	Part No.	Description	
	5505-9540-000	Gears	Bege DSG44 I=47.63:1
1		Base	
2		Housing	
5	5505-9472-000	Intermediate gearwheel	G44, 101 Teeth
6	5505-9473-000	Intermediate shaft	G44, 8 Teeth
7	5505-9474-000	Output gearwheel	G33, 49 Teeth
8	5505-9475-000	Output shaft	G44, 50mm
9	5560-0120-001	Warehouse	22210 E
10	5560-0119-000	Warehouse	Nj210 Ecp
11	5560-0163-006	Warehouse	6305
12	5505-0162-001	Ball bearing, sealed on both sides	6206 Ddu, Greasefilled
16	5505-0215-000	Oil seal	55x90x10 With Dustcap
17	5560-0235-000	Snap ring	For Shaft 50mm
18	5505-9499-000	Vent screw	1/8
19			
21	5505-9475-001	Feather key for intermediate shaft	8X7X30
22	5505-9475-002	Feather key for output gearwheel	14X9X33
23	5560-2011-004	Feather key	14X9X100
61		Housing	
63	5505-9471-000	Output shaft	G44, 13 Teeth
64	5505-0162-000	Ball bearing	6207 2RS
65	5505-0162-000	Ball bearing	6207 2RS
66	5560-0214-001	Oil seal	40x72x10 B2
67	5560-0233-000	Retaining ring	A35
69	5505-9475-003	Feather key for input gearwheel	8X7X50 G44

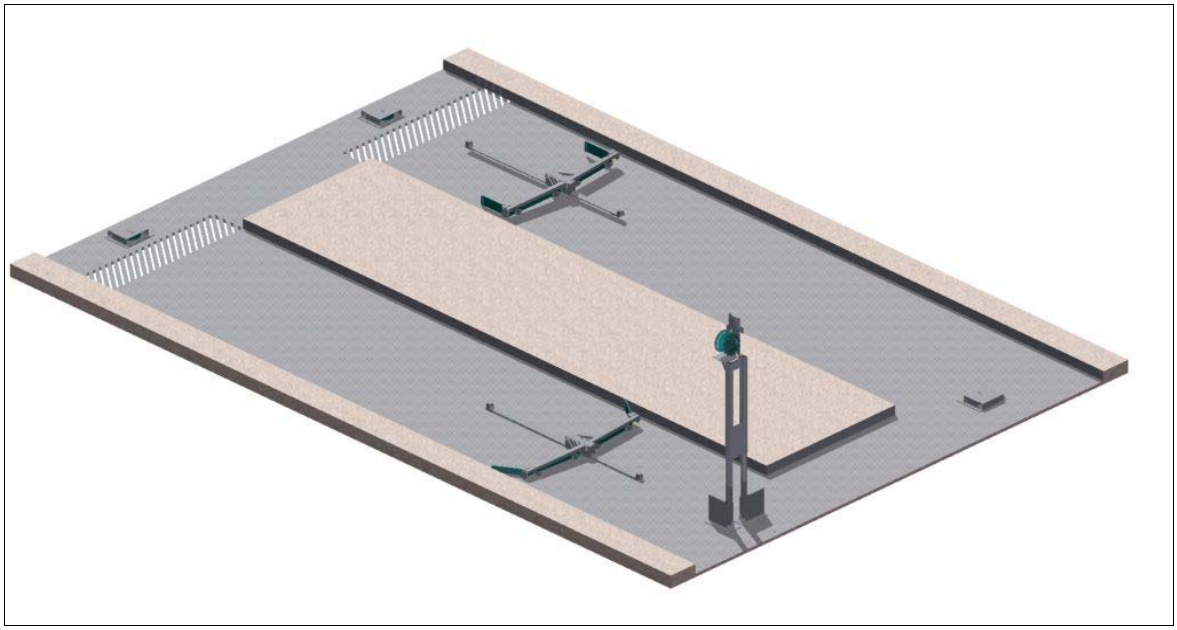
12 Appendix

12.1 Abbreviations

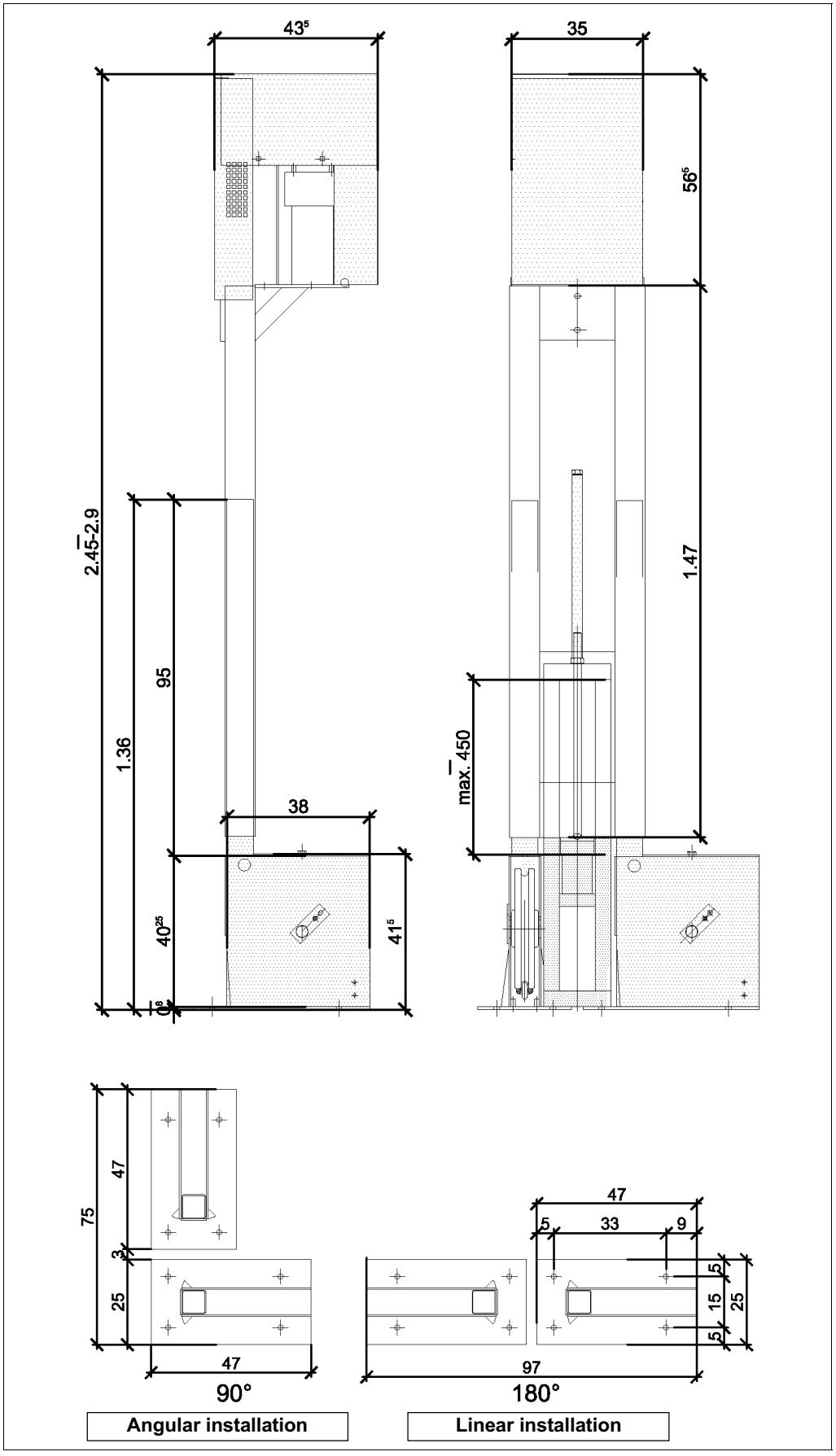
Term	Explanation
Ø	Diameter

Units	
°	Degrees (angles)
°C	Degrees Celsius/Centigrade
s	Seconds
min	Minutes
” (in)	Inches (= 25.4 mm)
mm	Millimetres
cm	Centimetres
m	Metres
mm^2	Square millimetres
mm^3	Cubic millimetres
g	Gramme
kg	Kilogram
kPa	kilo Pascal
kW	Kilowatt
A	Amp (current)
V	Volt (voltage)
I	Current (amp)
P	Output (kilowatt)
N	Speed/revolutions (revolutions per minute)
Ω	Ohm (resistance)
RPM	Revolutions per minute (speed/revolutions)
Δ	Delta connection
Y	Y connection
Cos φ	Cosine phi (power factor of the motor)
±	Plus/minus

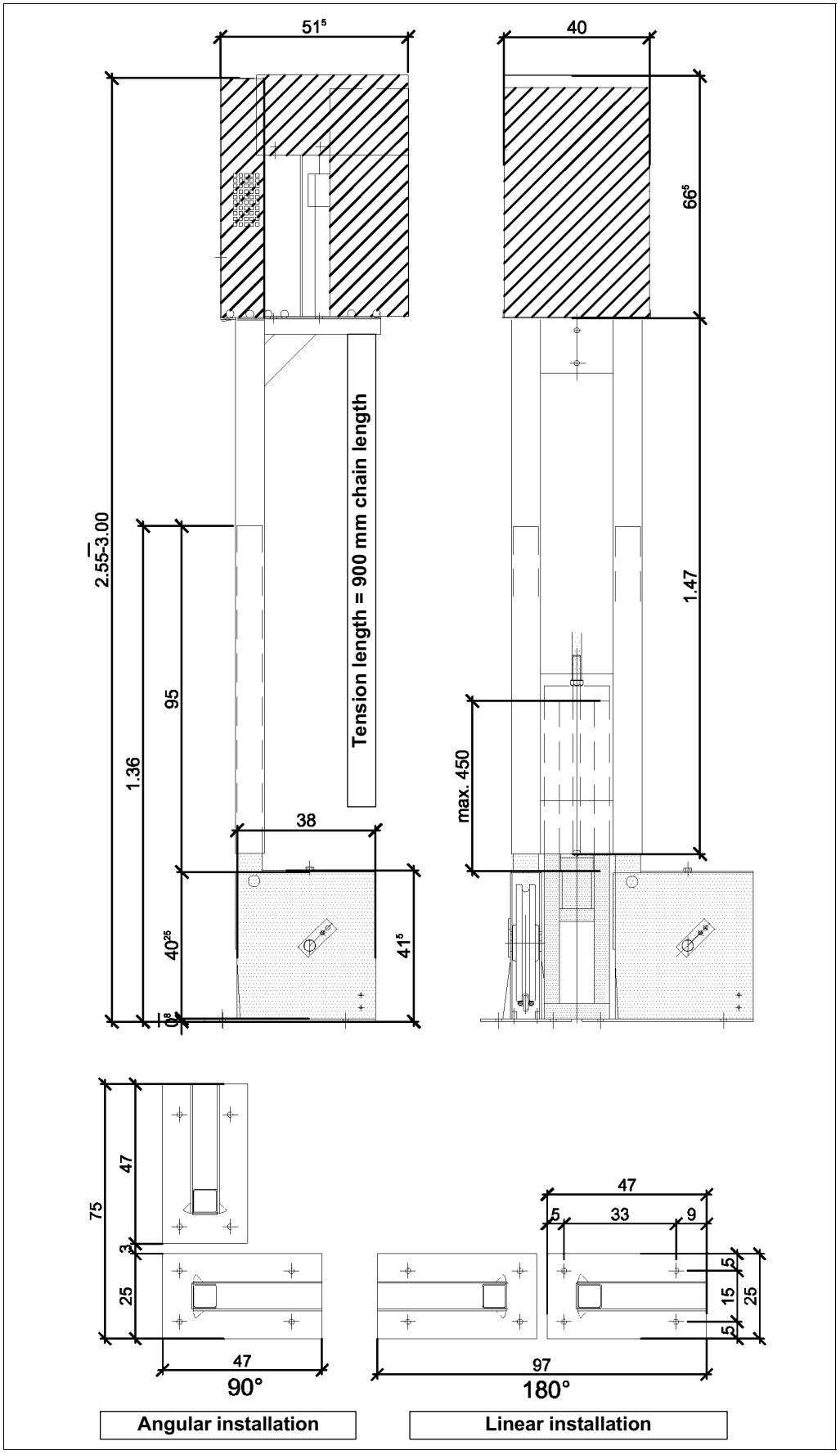
12.2 Manure removal system



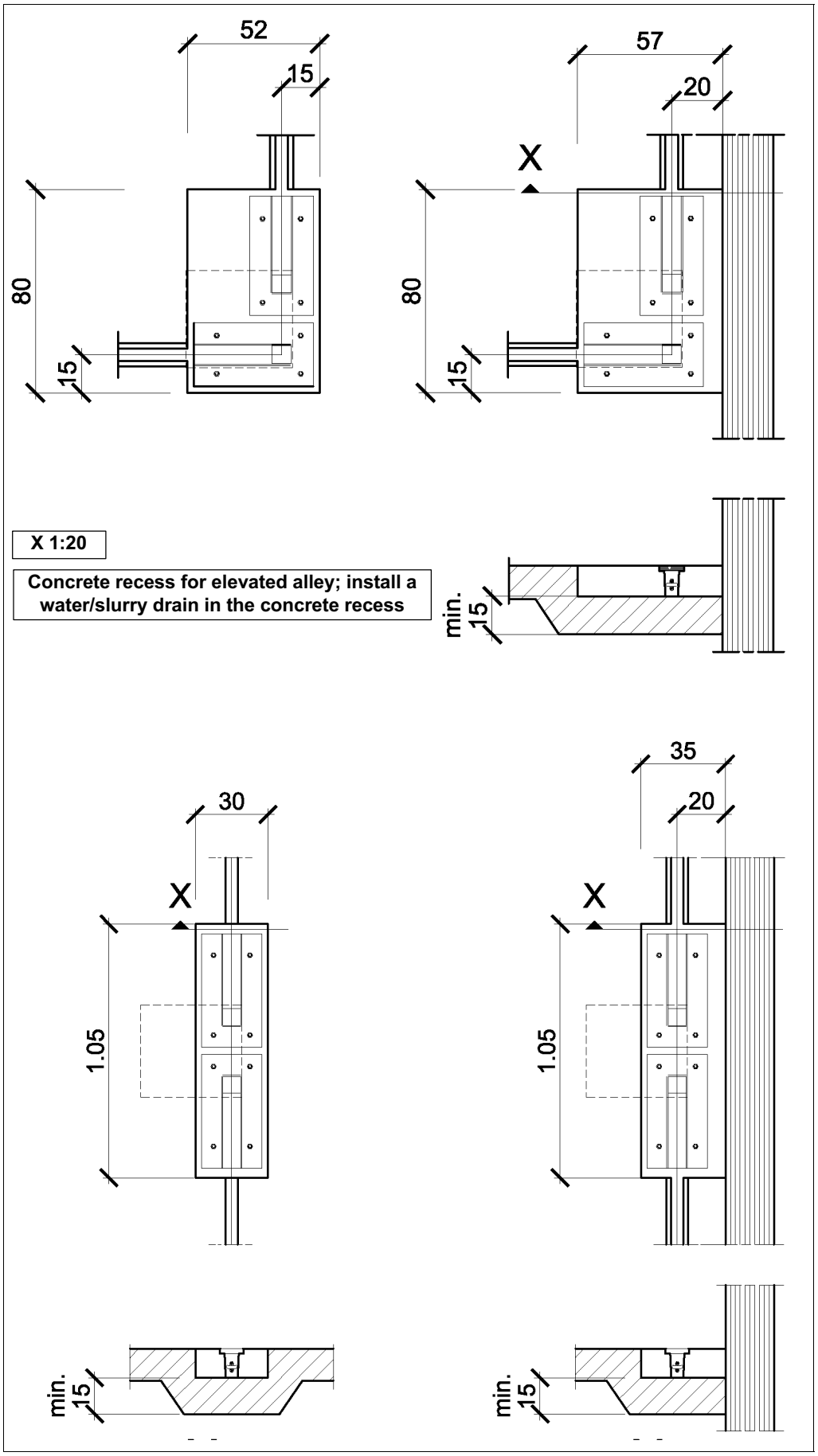
12.3 Dimensions of drive station (0.37 kW)



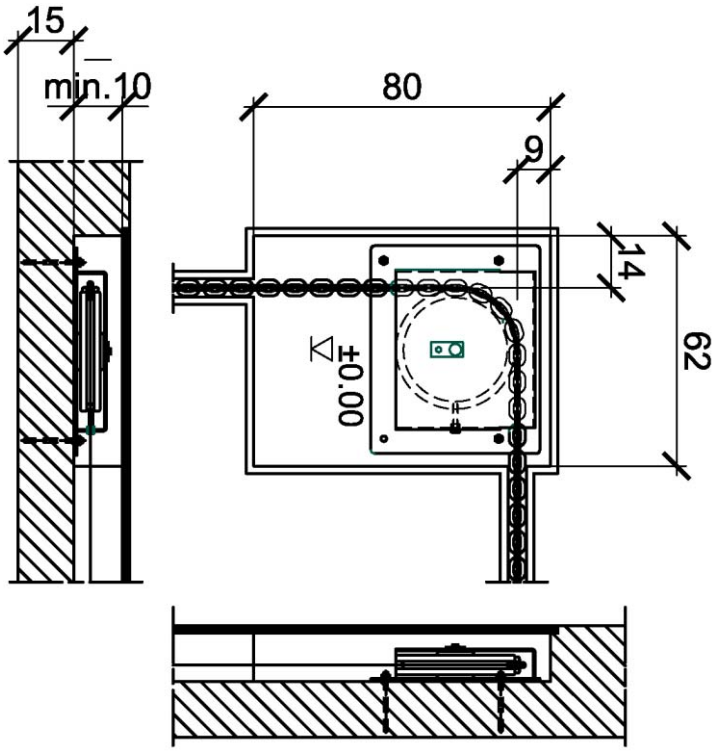
12.4 Dimensions of drive station (0.55 kW -0.75 kW)



12.5 Dimensions of the drive station in an angular installation



12.6 Concrete work dimensions for deflection pulleys



1:20

Concrete recess for elevated alley; install a water/slurry drain in the concrete recess

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