depoortere

User manual

Towed flax-baling machine

ZORTRA

For the latest version of the manual and for online web help, visit www.depoortere.be

Depoortere NV
Kortrijkseweg 105
8791 Beveren-Leie
Tel. +32 56 73 51 30
Fax. +32 56 70 41 12
info@depoortere.be
https://www.depoortere.be

Doc. nr. Zortra_2024_EN

Version 20240311

Content

Preface

Preface

You have made the right choice by purchasing a machine from Depoortere NV. This machine is the result of more than 90 years of expertise in the flax sector.

Depoortere NV constantly strives to enhance its products. Depoortere NV also reserves the right to make changes and modifications that the company deems necessary. Depoortere NV is NOT obliged to implement these changes on machines that have already been supplied.

We would like to thank you for the collaboration and for the trust that you have shown in our product.

Depoortere NV wishes you a great deal of satisfaction and success with this machine.

Rik Depoortere

Managing director

Depoortere NV

Use of the user manual

TIP
Consult the website of Depoortere NV for the most recent version of this user manual. This user manual is available as a pdf and as a responsive web help system.

See the MANUALS menu on the website or select https://www.depoortere.be/Support.

Before using the machine, but also when using the machine, it is mandatory to consult this user manual, thoroughly read the information supplied, and to perform the work strictly in accordance with that stated in this user manual.

This user manual is an intrinsic part of the machine and must, as prescribed by the current regulations, remain available for consultation until decomissioning of the machine.

For example, from a safety point of view, it is advisable to ensure that everyone who comes into contact with the machine has immediate access to the user manual at all times. Look for a suitable permanent location for the user manual in the vicinity of the machine. This location for the user manual must be safe, dry, and screened from the sun.

Upon delivery of the machine, all user manuals are also supplied.

In the event of the user manual becoming damaged, you must request a new copy from Depoortere NV.

Support

Support	More information
Local dealer	Look for your local dealer on the map. See https://www.depoortere.be/Service

Support	More information
User manuals	Consult the website of Depoortere NV for the most recent version of the user manual. These user manuals are available as a pdf and as a responsive web help system. See https://www.depoortere.be/Support
Service	Mail de service department via service@depoortere.be
Contact	Contact Depoortere NV via the contact form. See https://www.depoortere.be/Contact

Target group

The objective of this user manual is to provide all users of the machine with all relevant information relating to safe working practices with or on the machine, and also to ensure that the machine is kept in optimal condition.

This user manual is applicable to all circumstances involving work with or on the machine. For example, transporting and storage, installing, using, adjusting, maintaining, taking out of service and decomissioning of the machine.

The target group can be defined as follows:

- Operators
- Hauliers
- Qualified technicians (technical departments, electricians, maintenance technicians)
- Persons who are tasked with the final taking out of service and the decommissioning of the machine

The above-mentioned persons with their specific tasks must possess sufficient demonstrable knowledge and/or level of experience. The machine may only be operated by or under the supervision of a qualified person. The operator must be at least 18 years old.

Symbols used

The following symbols are used in this user manual:

TIP
Provides the user with suggestions and advice for performing a procedure more easily or more conveniently.

NOTE
A general note that possibly provides a greater economic benefit.

ENVIRONMENT
Guidelines that must be followed when using hazardous substances and when recycling products and materials.

CAUTION
Denotes a hazardous situation that, if the safety instructions are not followed, can result in minor to moderate injury and/or damage to the machine or harm to the environment.

WARNING
Denotes a hazardous situation that, if the safety instructions are not followed, can result in serious injury or death and/or damage to the machine or harm to the environment.

DANGER
Denotes a hazardous situation that, if the safety instructions are not followed, can result in serious injury or death.

Abbreviations used

An overview of the abbreviations that are used in the manuals for the harvesting machines is provided below.

Abbreviation	More information
ATEX	**AT**mosphères **EX**plosives This is an explosive environment.
BRS	Binding rope system
DEF	**D**iesel **E**xhaust **F**luid This is another name for AdBlue as used in the United States.
DPA	**D**ébit **P**roportionnel à l'**A**vancement This is the proportional flow rate for driving, with ratio of the speed of the belts in relation to the driving speed.
DPF	**D**iesel **P**article **F**ilter This is a filter that is designed to filter soot from diesel engines.
EAT	**E**xhaust **A**fter **T**reatment Dit is het uitlaatgasnabehandelingssysteem. Bestaat uit een roetfilter (DPF) en een katalysator (SCR).
FMI	**F**ailure **M**ode **I**dentifier Identification of the fault mode.
LS	**L**oad **S**ensing The pressure and the flow rate of the hydraulic oil is adapted to the demand from the system. This ensures more efficient use of energy and less heat generation.
PU	**P**ick**U**p This is the pick-up that is used to collect the product.
PWM	**P**ulse **W**idth **M**odulation This is the pulse width modulation.
SCR	**S**elective **C**atalytic **R**eduction This is a system for the post-treatment of waste gases with the aid of a catalyser.
NSP	**S**uspect **P**arameter **N**umber Number of suspect parameter
PTO	**P**ower **T**ake-**O**ff This is the power take-off of the tractor for mechanically driving coupled machines via a drive shaft.

1 Introduction

1.1 Intended use

The ZORTRA is towed flax-baling machine.

The sole use of the machine is to roll-up fibrous crops (flax, hemp) that have a maximum length of 1,100 mm into bales.

1.2 Prohibited use

It is prohibited to use the machine for purposes other than those stated in this user manual, in safety instructions, or in other safety documents that are supplied with the machine.

It is prohibited to use the machine for transporting goods, animals or people.

Any modification to the machine can affect safety and the guarantee! The removal of parts is also regarded as a modification to the machine.

The machine may not be used in an ATEX zone.

It is prohibited to install parts on the machine that have not been approved by Depoortere NV. These can:

- Adversely affect the operation of the machine
- Endanger the safety of the user or other people
- Shorten the service life of the machine
- Jeopardise conformity with EC directives

It is prohibited to use this machine to process products other than those described in intended use.

1.3 Service life of the machine

The expected service life of the machine is 40 years.

1.4 Type designation

The machine is equipped with an identification plate (1) and a chassis number (2) so that the machine can be identified.

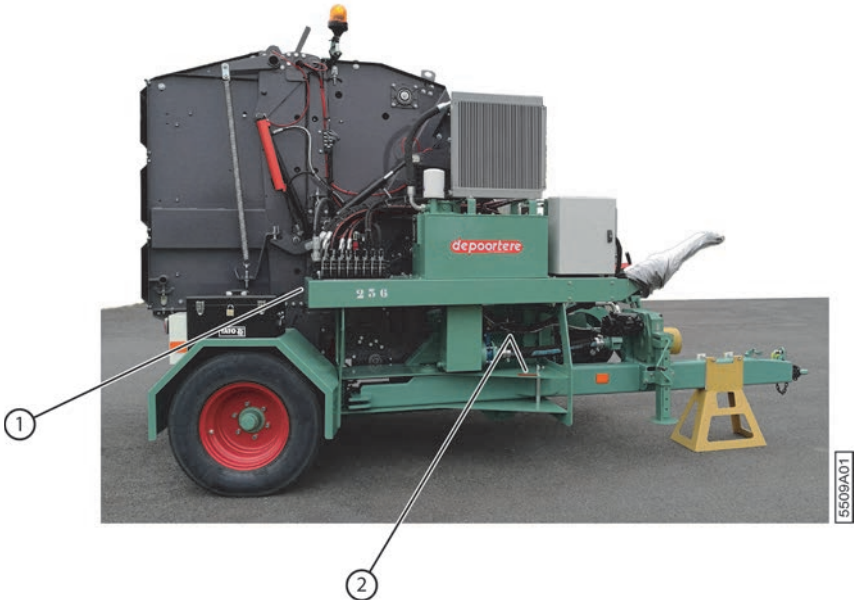


Fig. 1: Location of the identification plate and the chassis number on the machine

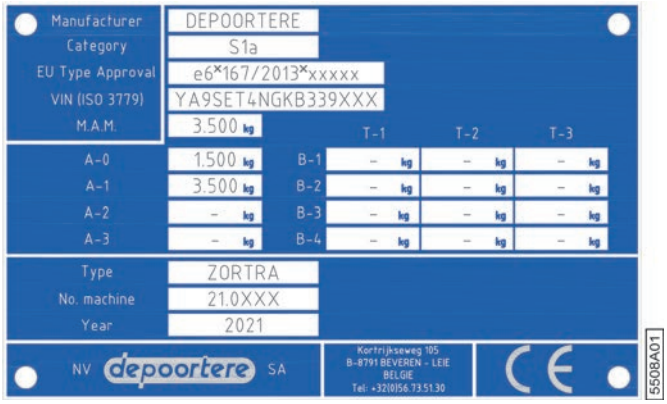


Fig. 2: Example of an identification plate

Label	Value	Additional explanation
Manufacturer	DEPOORTERE	The name of the manufacturer of the machine.
Category	S1a	The category to which the machine belongs in accordance with (EU) regulation nr. 167/2013.
EU Type Approval	e6^{x}167/2013^{x}xxxxx	The number of the regulation.
VIN (ISO 3779)	YA9SET4NGKB339XXX	The chassis number.
M.A.M.	3.500 kg	Maximum Authorised Mass Maximum permissible weight
A-0	1.500 kg	
A-1	3.500 kg	
A-2	- kg	
A-3	- kg	
Type	ZORTRA	The type of machine.
No. machine	21.0XXX	The serial number of the machine.
Year	2021	The year of construction of the machine.

1.5 Layout

The arrow indicates the driving direction of the machine. The machine consists of:

- Pressing chamber (1)
- Dissel (2)
- Pick-up (3)
- Rope cabinet (4)

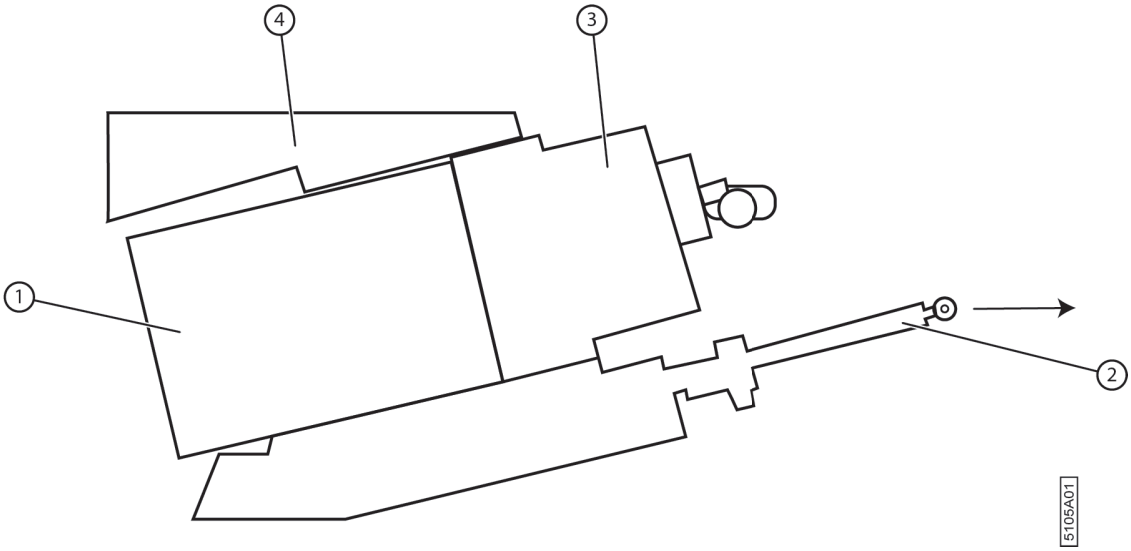


Fig. 3: Top view of machine

1.6 Technical data

1.6.1 Machine data

Data	More information
Type	ZORTRA
Weight	4,340 kg
Height	2,985 mm
Width	2,454 mm
Length	5,124 mm (standard towing arm)
Ambient temperature	0 °C to 40 °C
Relative humidity	0 to 100%
Noise level	> 85 dB
Maximum permissible weight	3,500 kg
Maximum permissible axle load for axle 0	1,750 kg
Maximum permissible axle load for axle 1	3,500 kg

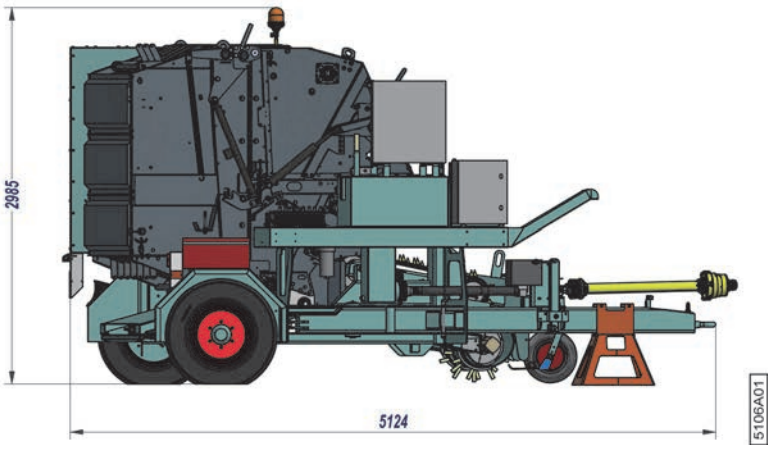


Fig. 4: Dimensions (length and height)

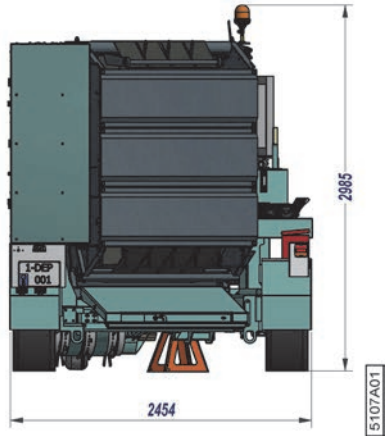


Fig. 5: Dimensions width

1.6.2 Production data

Data	More information
Production speed	The machine can process flax at a maximum speed of 25 km/ hour.

2 Description

2.1 Overview of the machine

2.1.1 Right-hand side view

Fig. 6: Right-hand side view

Nr.	Description
1	Pressing chamber
2	Tool cabinet
3	Right-hand rear wheel
4	Valve block
5	Hydraulic tank
6	Electrical cabinet
7	Support leg
8	Towing arm
9	Hydraulic pump
10	Radiator
11	Flashing light

2.1.2 Left-hand side view

Fig. 7: Left-hand side view

Nr.	Description
12	Pick-up
13	Rope cabinet
14	Left-hand rear wheel

2.2 Layout and names

2.2.1 The flashing light

As soon as the machine is stopped via the stop button on the control console, the flashing light is automatically activated. This enables you to drive safely on a road.

2.2.2 The tool cabinet

Fig. 8: The tool cabinet

The tool cabinet is located above the right-hand rear wheel and can be secured with a padlock. The tool cabinet is supplied with the following tools:

- 1 set of 6-32 flat spanners
- 1 6-piece set of screwdrivers
- 1 right-angled set of Allen keys (Umbraco)
- Gripping pliers (vice-grip)
- 1 hammer

2.2.3 The support leg

The support leg consists of an extendable support (4). You can slide the profile (3) in the holder, and you can use the lever (2) to secure it. After the lever has been secured, you can adjust the height of the towing arm by moving the lever (1) clockwise (to raise the towing arm) or anti-clockwise (to lower the towing arm).

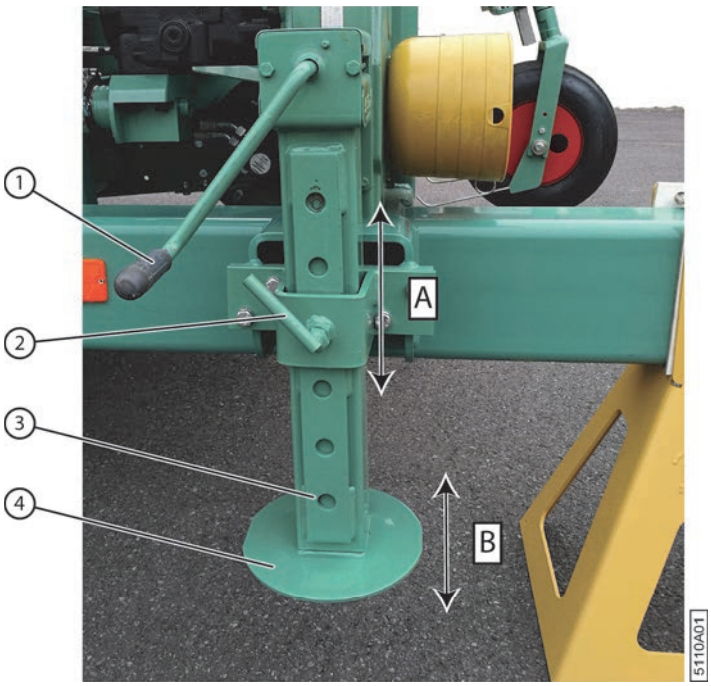


Fig. 9: The support leg

2.2.4 The valve block (PVG)

The valve block (1) consists of various valves that are electrically controlled from the control console. They can also be operated manually via the levers (2).

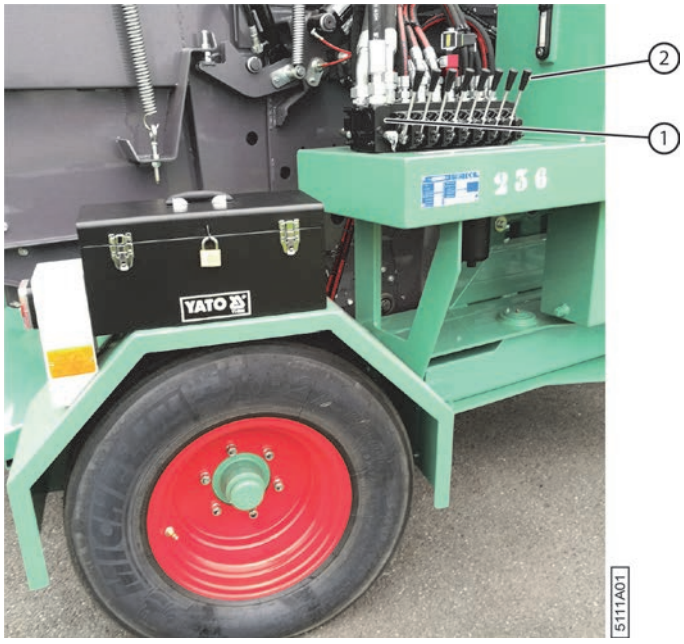


Fig. 10: The valve block

See also

- 8.2.1 Operating the machine manually via the valve block (PVG) on page 80

2.2.5 The tyres

De machine is equipped with 2 rear tyres and 1 tyre at the front on the front guide wheel.

Location	Type	Specification
Front wheel	Trelleborg T-510	16x6.50-8 IMP
At the rear right	MICHELIN XP27	340/65R18 IMP 149A8/137A8 TL
	ALLIANCE 571	340/65R18 148A8
At the rear left	MICHELIN XP27	340/65R18 IMP 149A8/137A8 TL
	ALLIANCE 571	340/65R18 148A8

See also

- 10.2.15 Checking the tyre pressure on page 143
- 10.2.14 Checking the tyre pressure of the front wheel on page 142

2.2.6 The hydraulic pump

The hydraulic pump is driven via the drive shaft of the tractor. A reduction gearbox is installed between the hydraulic pump and the drive shaft. The pump sucks oil from the hydraulic tank and feeds all hydraulic motors and hydraulic cylinders.

The reduction gearbox is filled with 2 litres of TM80W90 transmission oil.

2.2.7 The towing arm

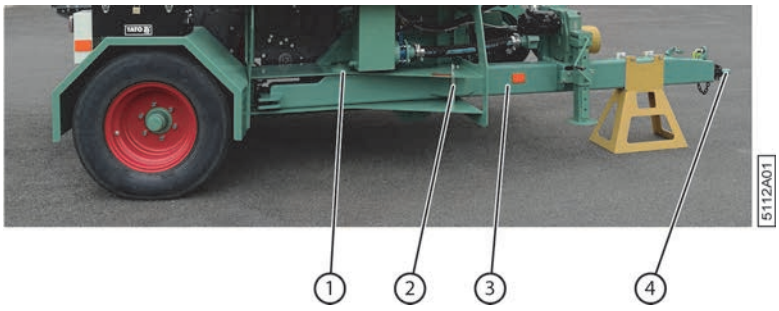


Fig. 11: The towing arm

The towing arm (3) is a hinged arm located between the tractor and the machine. On the tractor end, the towing arm is equipped with a towing eye (4) for connecting the machine to the tractor. On the machine end, a hinge (1) ensures that the tractor can move beside the flax to be rolled-up, while the machine remains in line with the flax. Before this can take place, the locking pin (2) must first be removed. The towing arm is hydraulically-operated via the control console.

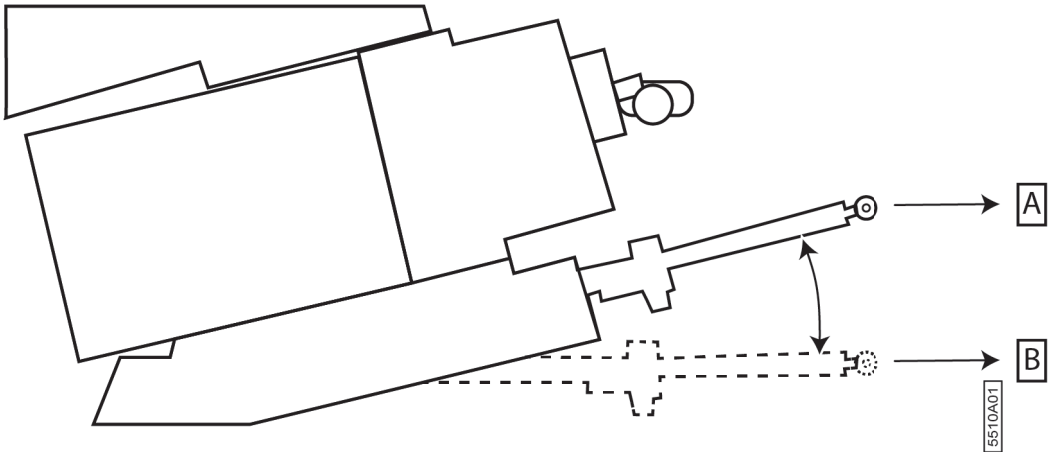


Fig. 12: Towing arm positions

Place the towing arm in position A and lock it before driving on public roads.

Unlock the towing arm and place it in position B, or in a suitable position between A and B, before using the machine to collect flax on the field.

The towing arm is available in 2 lengths:

- 3,400.5 mm (standard length)
- 3,804.3 mm

2.2.8 The control console

Fig. 13: The control console

The control console consists of:

- A horizontal part with a joystick, controls and an emergency stop button

- A vertical part with a control screen, indicator lights, a buzzer
- Two control knobs above

2.2.9 The control screen

The machine is controlled by the control buttons on the control console via the control screen, and via the operating levers on the valve groups in the event of abnormal operation.

Via the control screen, you can:

- View data for the machine (speed in km/h, the length of the rolled-up bale, the thickening percentage, etc.).
- View the inputs and outputs.
- View fault messages.
- ...

The control screen is controlled via the buttons (5) underneath the display (1). The left-hand and right-hand sides of the display are equipped with LED lighting (3). A red lamp (4) on the left-hand and right-hand sides is lit in the event of an alarm. In the event of a fire message, a green lamp (2) is lit on the left-hand and right-hand sides.

Fig. 14: The control screen

2.2.10 Monitor and cameras (optional)

As an option, the machine can be equipped with a monitor and 2 cameras. The camera at the front monitors the input of flax into the pick-up. The camera at the rear monitors the output of the bale from the pressing chamber. The monitor is mounted in the cabin and, by default, displays the image from the camera at the front. The monitor displays the image from the camera at the rear from the moment that the pressing chamber is opened until the pressing chamber is closed.

You can also select the image yourself by pressing the rightmost button on the monitor.

2.2.11 The hydraulic tank

The hydraulic tank is located on the right-hand side of machine and has a capacity of 140 litres. The tank is filled with TOTAL EQUIVIS ZS 68.

Fig. 15: The hydraulic tank

Nr.	Description
1	Return filter
2	Level glass
3	Drain plug
4	Tank
5	De-aerator

When the machine moves, the hydraulic oil sloshes in the tank. An anti-overflow device (6) is installed to prevent hydraulic oil from escaping via the de-aerator (5).

Fig. 16: The de-aerator and the anti-overflow device

See also

- 10.2.26 Replacing the hydraulic oil on page 148
- 12.2.1 Draining the hydraulic tank on page 187

2.2.12 The electrical cabinet

The electrical cabinet is located on the right-hand side of the machine. The electrical cabinet contains several fuses (3), and 2 controllers (1) (2) for the control are mounted on the inside of the door.

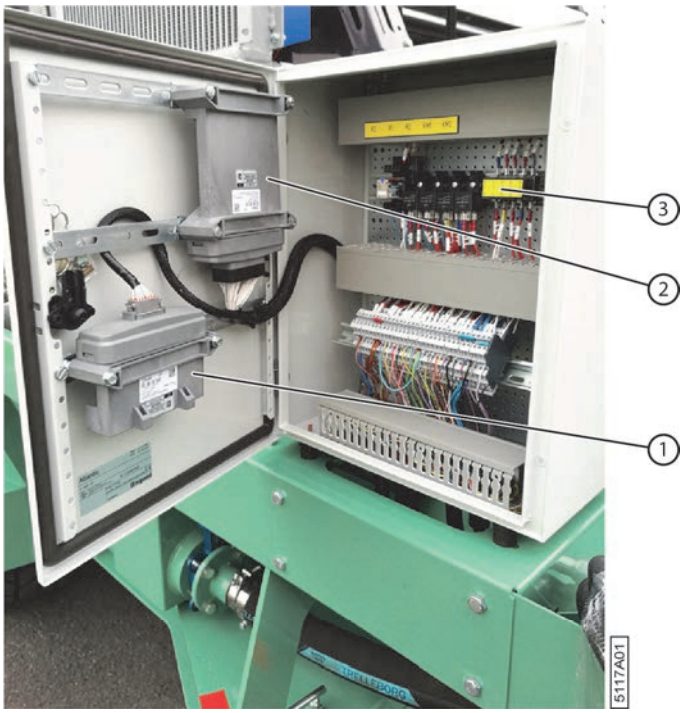


Fig. 17: The electrical cabinet

See also

- 10.3.17 Replacing a fuse on page 174
- 10.3.2 Welding on the machine on page 164

2.2.13 The pick-up

The pick-up collects the flax and transports the flax to the pressing chamber where it is rolled-up.

The pick-up consists of a front wheel (2) whose height can be adjusted via a spindle. The front wheel is equipped with 2 guides (coiled springs) that prevent the flax from springing up after the front wheel has driven over the flax.

3 rows of pick-up teeth (3) collect the flax. Each pick-up drum (3) has 10 teeth. An eccentric shaft ensures that the length of the pick-up teeth is at maximum below the drum when collecting the flax, and at minimum above the drum during the transition to the transporting of the flax by the conveyor belts (12). Below, the flax is guided by guiding arcs (5) and above, by a foldable guide (1). The guiding arcs (5) consist of metal plates that guide the flax from the ground to the guide profiles (8). The foldable guide (1) guides the flax to the conveyor belts. By manually sliding the lever, you can unfold the guide in order to remove blockages.

The conveyor belts consist of plastic belts on which metal attachments are mounted. The conveyor belts are driven by rubber-coated drive pulleys (11) and are suspended at the other end by non-driven pulleys (4). Dirt is removed from the inside of the belts by a plastic scraper (7). The guides (10) at the end of the conveyor belts ensure that the flax is pushed away and remains on the guide profiles instead of continuing further with the conveyor belts. The ends of the guide profiles are equipped with guide strips (9) that bring the flax further to the pressing chamber.

Before driving on public roads, the locking mechanism (6) must be used to lock the pick-up.

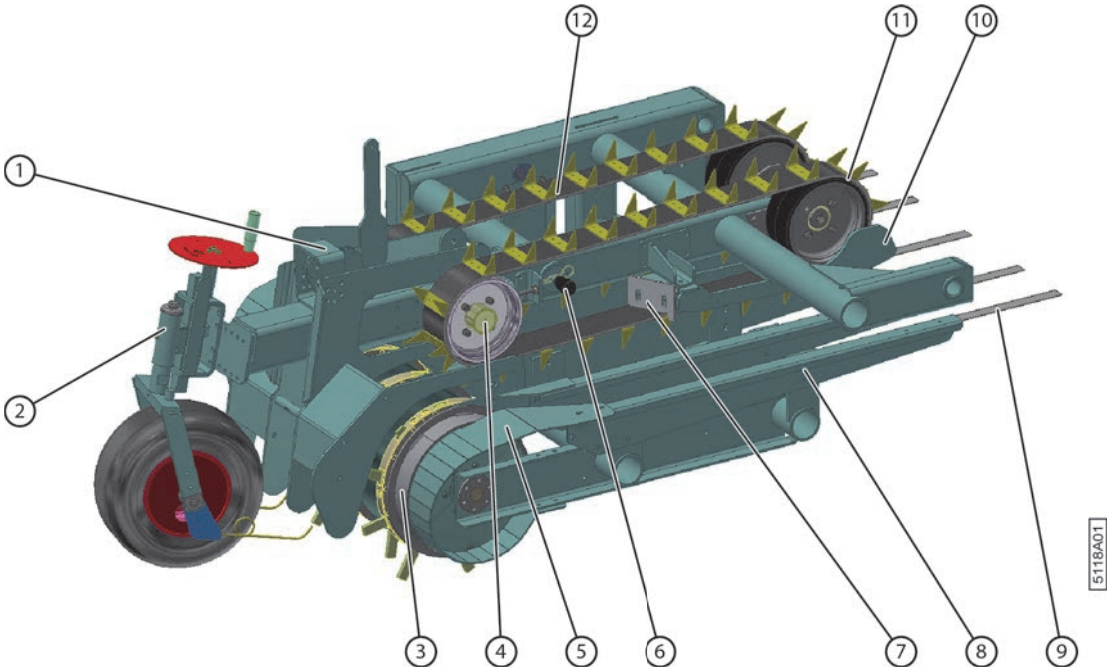


Fig. 18: The pick-up

Nr.	Description
1	Foldable guide
2	Front wheel
3	Pick-up drum
4	Non-driven pulley
5	Guiding arcs
6	Locking mechanism
7	Scraper
8	Guide profile
9	Guide strip
10	Guides

Nr.	Description
11	(Rubber-coated) drive pulley
12	Belt with attachments

See also

- 8.2.34 Raising the pick-up (via the control screen) on page 106
- 8.2.43 Operating the pick-up (via the joystick) on page 109

2.2.14 The rope cabinet

The rope cabinet has 2 doors. Behind the left-hand door, you can find the rope tensioning system (2) and the storage location (3) for a coil. Behind the right-hand door, you can find the remaining stock of coils.

The (Sisal or jute) coils are in cardboard packaging so that they can easily be unrolled. On one end of the coil, you can find the pulling side of the rope that is usually marked with a label. The other end of the rope can be secured to the pulling side of the next coil. You can already join the coils in the rope cabinet together in advance. The ropes are guided by the eye hooks (4). The rope tensioning system is equipped with 2 sensors that check for a rope break. The sensors also check that the rope is cut after binding. The sensors are located on the rear of the inner door (1).

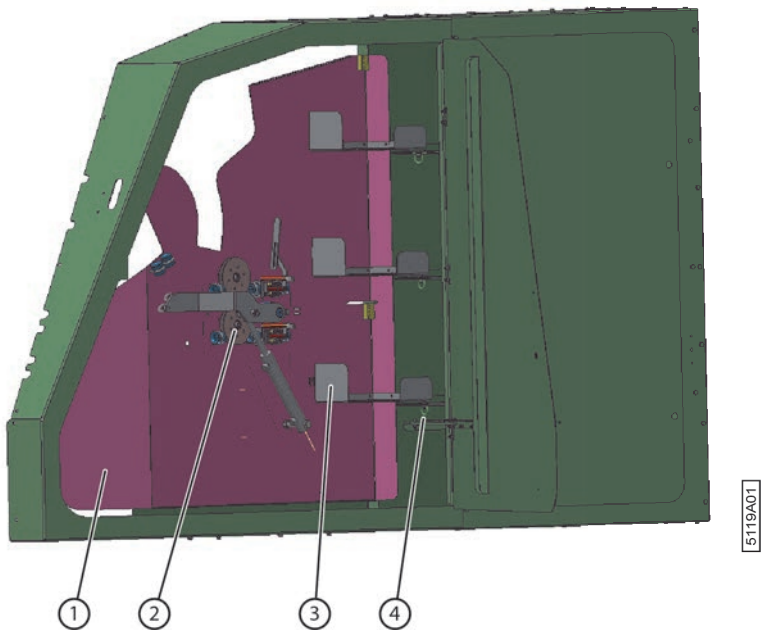


Fig. 19: The rope cabinet at the front

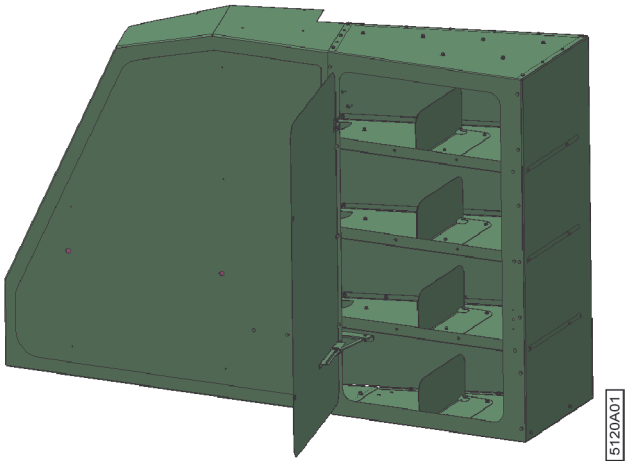


Fig. 20: The rope cabinet at the rear

2.2.15 The binding rope system (version with fingers)

The binding rope system is located immediately behind the conveyor belts of the pick-up. The binding rope system ensures that, during the rolling-up of the flax, the 2 ropes are in the centre of the bale. When rolling-up the final layers of the bale, the binding rope system moves the ropes outwards so that the bale is firmly bound and the ropes are cut. The cutting takes place by clamping the ropes and by moving the ropes against the knives at the same time.

The binding rope system consists of 2 needles (6) that guide the ropes via the metal rope guides (4) in the centre of the bale. When the bale is almost ready, the cylinder (5) pushes the needles open. The ropes are routed from the centre to the outside of the bale, and this results in optimal binding of the bale. In the most open position of the needles, the ropes are clamped between the mushroom (1) and the metal rope guide (4) so that the rope is pushed by the finger (3) against the knives and cut. 2 porcelain rope guides at the front, that have a smaller diameter, ensure that the rope does not spring back after cutting.

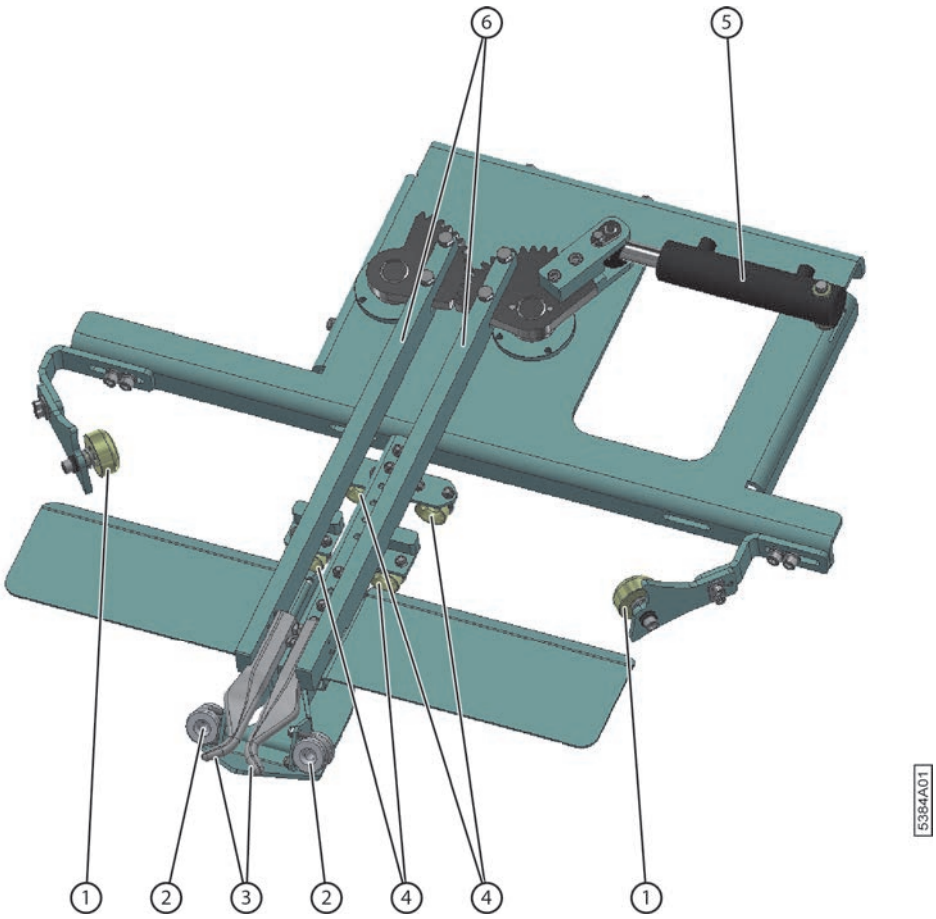


Fig. 21: The binding rope system (bottom view)

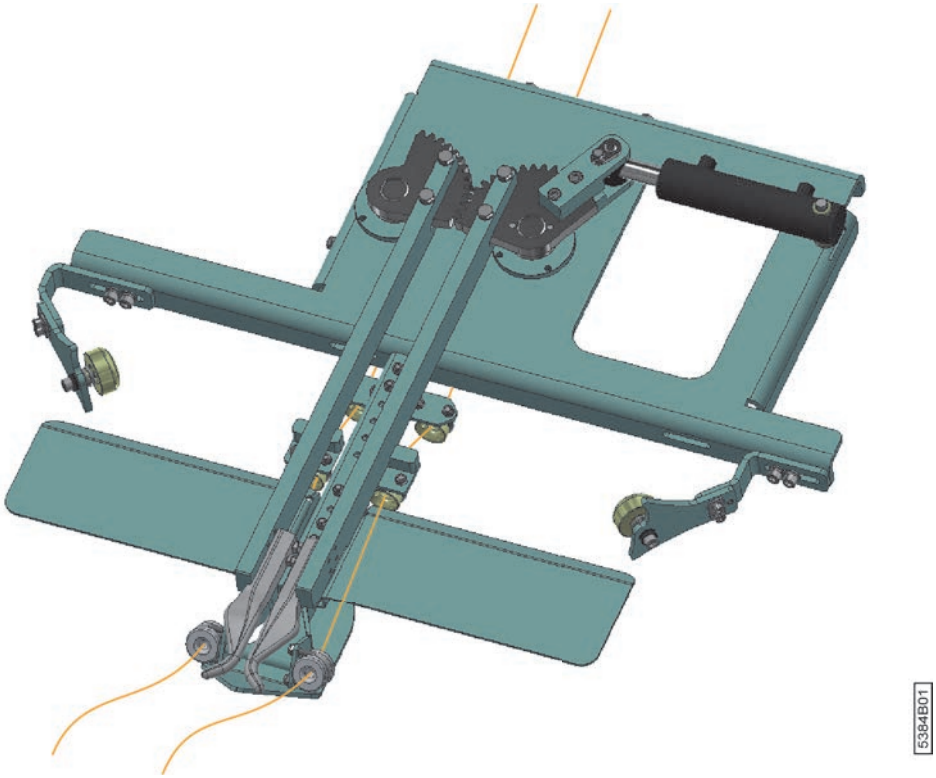


Fig. 22: The binding rope system with ropes in closed position (bottom view)

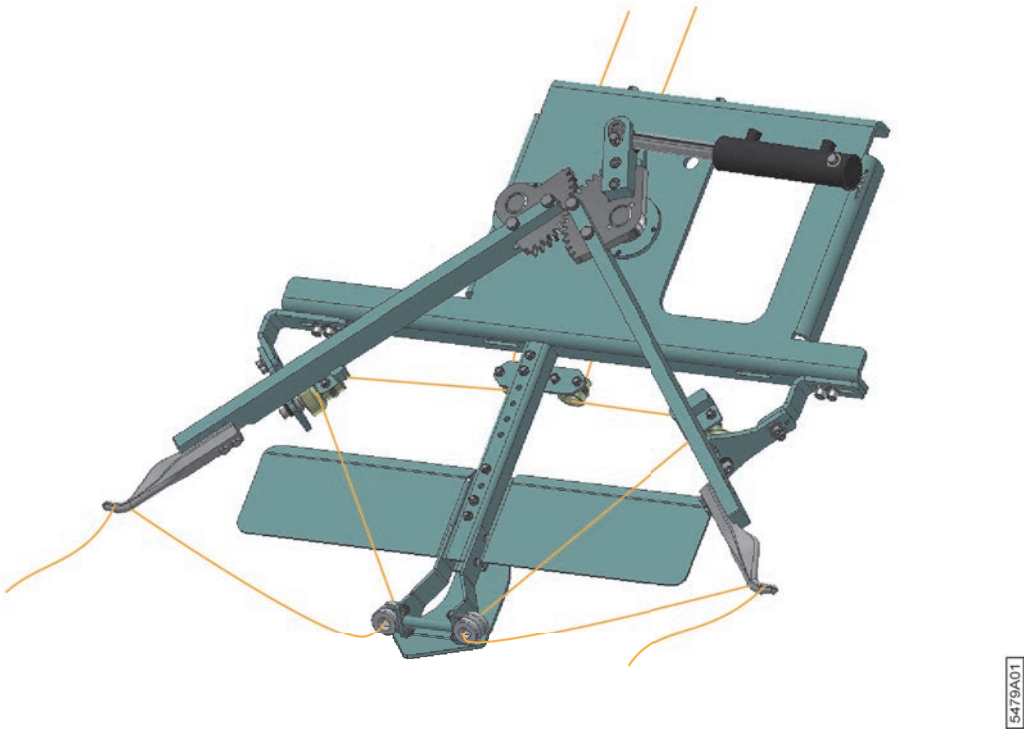


Fig. 23: The binding rope system with ropes in open position (bottom view)

2.2.16 The binding rope system (version with tubes)

The binding rope system is located immediately behind the conveyor belts of the pick-up. The binding rope system ensures that, during the rolling-up of the flax, the 2 ropes are in the centre of the bale. When rolling-up the final layers of the bale, the binding rope system moves the ropes outwards so that the bale is firmly bound and the ropes are cut. The cutting takes place by clamping the ropes and by moving the ropes against the knives at the same time.

The binding rope system consists of 2 needles (6) that guide the ropes via the metal rope guides (4) in the centre of the bale. When the bale is almost ready, the cylinder (5) pushes the needles open. The ropes are routed from the centre to the outside of the bale, and this results in optimal binding of the bale. In the most open position of the needles, the ropes are clamped between the mushroom (1) and the metal rope guide (4) so that the rope is pushed by the tube (2) against the knives and cut.

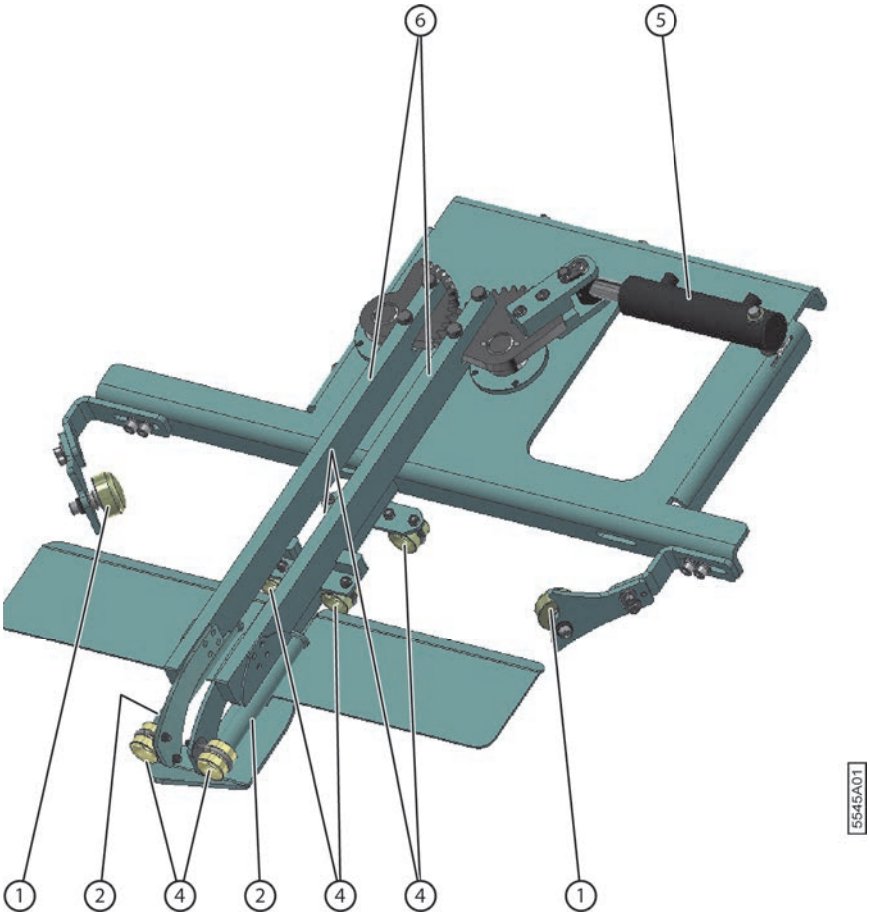


Fig. 24: The binding rope system (bottom view)

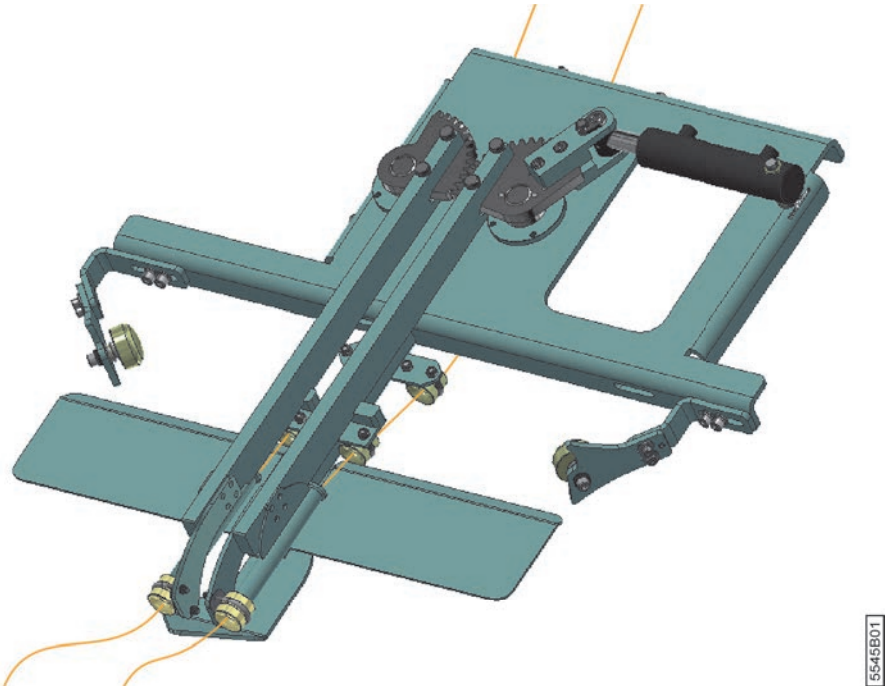


Fig. 25: The binding rope system with ropes in closed position (bottom view)

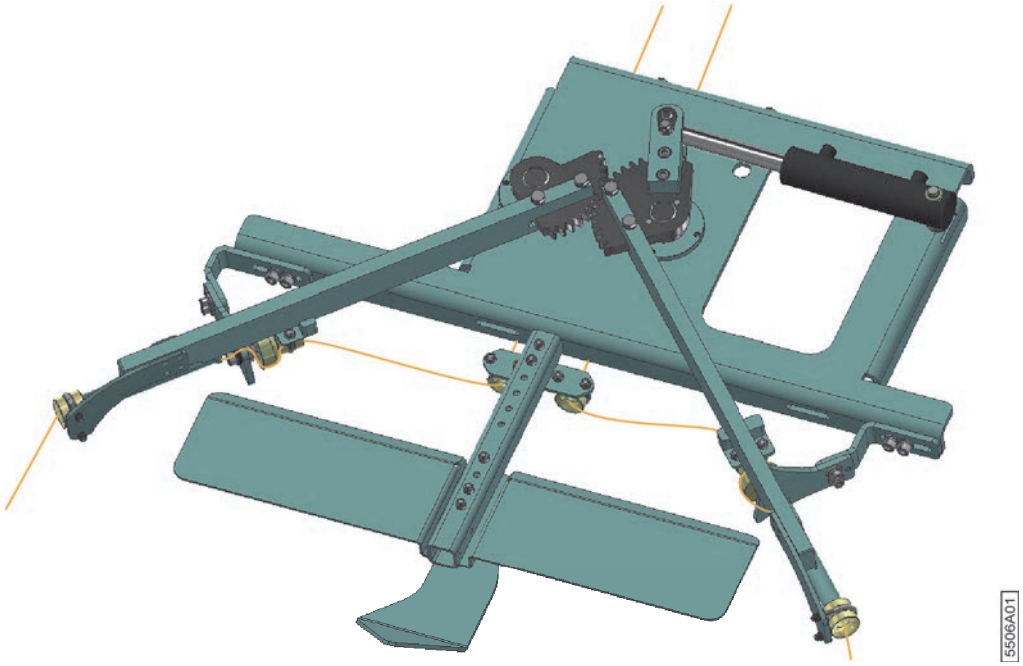


Fig. 26: The binding rope system with ropes in open position (bottom view)

2.2.17 The rope tensioning system

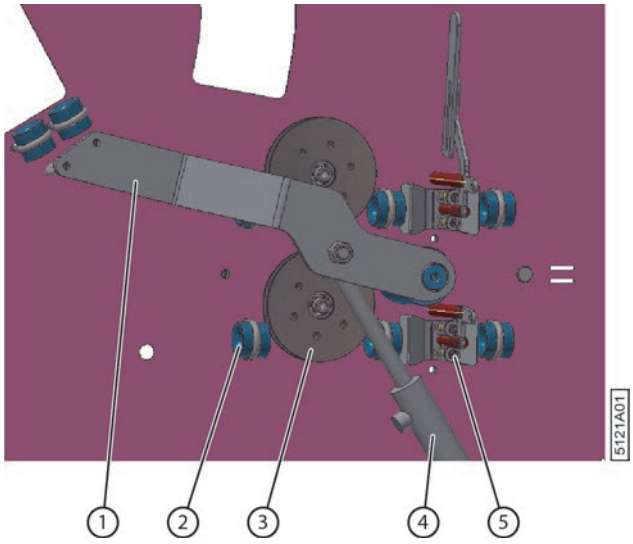


Fig. 27: The rope tensioning system

Nr.	Part	Explanation
1	Lever	At the moment when the ropes are cut, the lever is moved downwards by cylinder (4) and extra rope is released for the start of a new bale.
2	Rope guide	The rope guides ensure that the rope is optimally guided from one point to another point.

Nr.	Part	Explanation
3	Break monitoring tool	The rope is wrapped around the pulleys and drives the pulleys when rolling-up the flax into a bale. The sensor behind the plate sends a signal to the control console each time a screw of the pulley passes in front of the sensor. As soon as the rope breaks, the pulley stops rotating. Signals are no longer sent to the control console. The control console will generate a fault message.
4	Cylinder	This cylinder operates the lever (1) at the moment when the ropes are cut.
5	Rope tensioner	The rope tensioner provides the required tension on the rope, so that pressing force is not lost from the material that has already been pressed. Both rope tensioners are connected by a rod (not shown in illustration) and are detensioned at the moment when the bale exits the pressing chamber. After the bale exits the pressing chamber, the balancing arm moves downwards and the belts in the pressing chamber are retensionsed. The stop that is connected to the balancing arm pushes in the lever of the rope tensioners so that the rope tensioners are detensioned. This is necessary so that tension is not exerted on the bale during the start of the creation of the bale, and so that the ropes are easily taken with the flax. After the core of the bale has been created and the balancing arm is raised, the lever is released and the rope tensioners once again provide the required tension on the rope.

2.2.18 The pressing chamber

The pressing chamber rolls-up the flax and compresses the flax into a cylindrical bale. The bale is formed by rollers and pressing chamber belts. When the bale is the desired size, the binding rope system starts the binding. The size of the bale is determined by the position of the sensor on the guide rail. The pressing chamber then opens and the bale is ejected.

The pressing chamber consists of a fixed part (3) and a movable part (1) or pressing chamber door. The pressing chamber contains the rollers and pressing chamber belts. The pressing chamber is equipped with 2 locking devices (2) on the cylinders of the pressing chamber door. The pressing chamber door must always be locked when performing work on the open pressing chamber so that it cannot descend.

A bottom plate is installed as standard in the pressing chamber. For shorter flax, a top plate can also be installed. For longer flax, both plates can be removed.

Fig. 28: Pressing chamber

See also

- 8.2.36 Allowing the pick-up to rotate forwards (via the control screen). on page 106
- 10.2.43 Lubricating the pressing chamber on page 158

2.2.19 Overview of the sensors

Various sensors are used on the machine. An overview of the sensors is given below.

Some sensors can be disabled via the control screen.

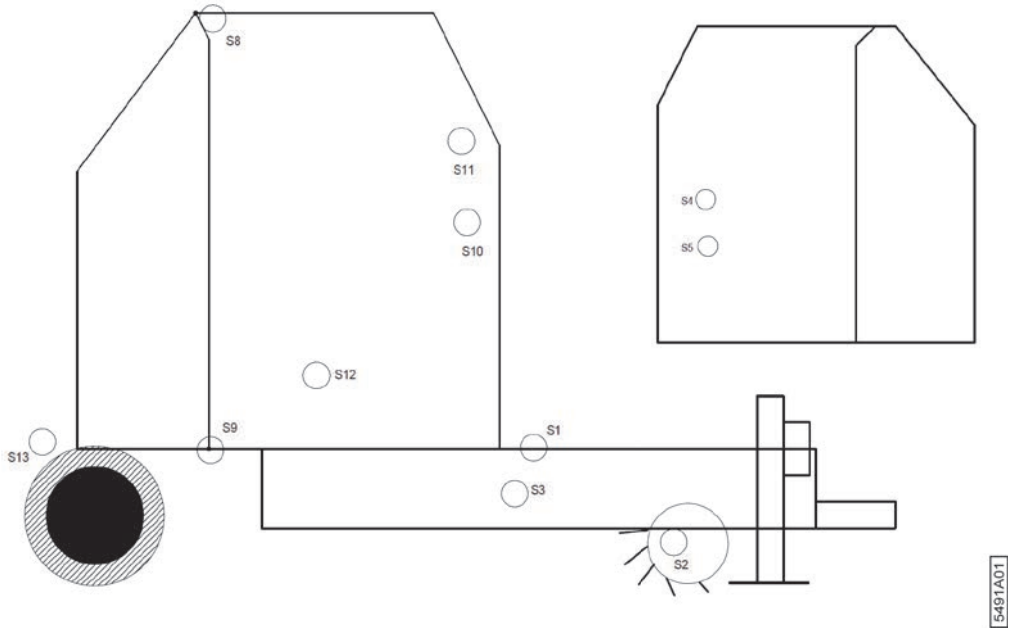


Fig. 29: Schematic overview of the sensors

Nr.	Description
S1	Sensor, position of pick-up
S2	Sensor, driving speed of pick-up

Nr.	Description
S3	Sensor, speed of throughput belts
S4	Sensor, rope-break 1
S5	Sensor, rope-break 2
S8	Sensor, pressing chamber open
S9	Sensor, pressing chamber closed
S10	Sensor, maximum diameter of the bale
S11	Sensor, balancing arm low
S12	Sensor, pressing chamber rotating
S13	Sensor, wheel rotating

See also

- 10.2.32 Testing the operation of the sensors on page 153
- 10.3.16 Replacing a sensor on page 174

2.2.20 The potentiometer of the binding rope system

The potentiometer (1) measures the various positions of the needles. If the positions of the needles are no longer correct, then the potentiometer must be recalibrated via the control screen.

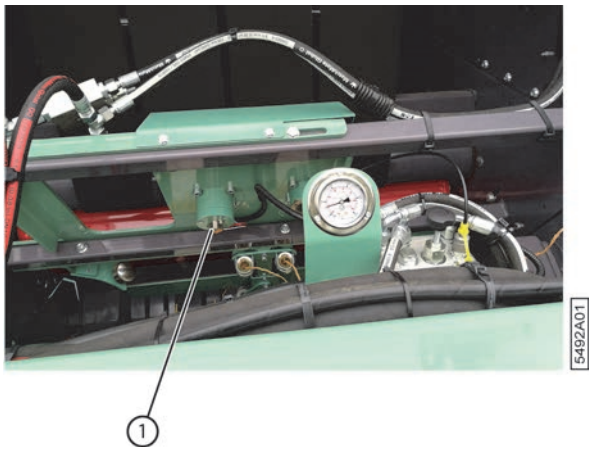


Fig. 30: Potentiometer

See also

- 8.2.49 Setting the positions of the needles of the binding rope system on page 112

2.3 Accessories and options

The possible options for the machine:

Option	More information
Cameras + monitor	The camera at the front monitors the binding rope system and the pick-up. The camera at the rear monitors the ejection of a bale of flax. This enables you to see whether the bale has been optimally ejected. You can also use the camera at the rear as an aid when driving backwards.

Option	More information
Top plate	The top plate is mounted along the side of the top of the flax to make the pressing chamber narrower. This option is recommended for short flax.
Binding rope system with tubular rope guides	Instead of short rope guides, the binding rope system is equipped with long tubular rope guides.

3 Operation

3.1 The rolling-up of the flax

The following mechanical operations take place during the harvesting of the flax:

1. The picking or harvesting of the flax.
2. The turning over of the flax.
3. The rolling-up of the flax.
4. The scutching of the flax.

3.2 The operation of the towed flax-baling machine

The driver drives the machine so that the front wheel is positioned over the centre of the swath. The height of the front wheel (2a) is adjusted so that all of the flax (1) is collected by the pick-up drums (3a). The 2 coiled springs (2b) ensure that the flax after the wheel is not taken upwards. The teeth of the pick-up drums collect the flax and transport it to the conveyor belts (3b). Normally, the conveyor belts rotate slower than the pick-up drums that collect the flax. This causes the flax to end up in a thicker layer underneath the conveyor belts. The conveyor belts transport the flax to the pressing chamber (4). The pressing chamber rotates slower than the conveyor belts, so that the thickness of the flax layer is again increased. The binding rope system, located between the conveyor belts and the pressing chamber, ensures that 2 ropes are taken by the flax. When rolling-up the flax in the pressing chamber, the layers are separated by the 2 ropes that are located in the centre of the bale (5). When the bale has reached the desired diameter, the bale is bound and then ejected from the pressing chamber. The bale can be ejected on its cylindrical side or on its flat side onto the field. The ropes are later used to unroll the bale when scutching the flax.

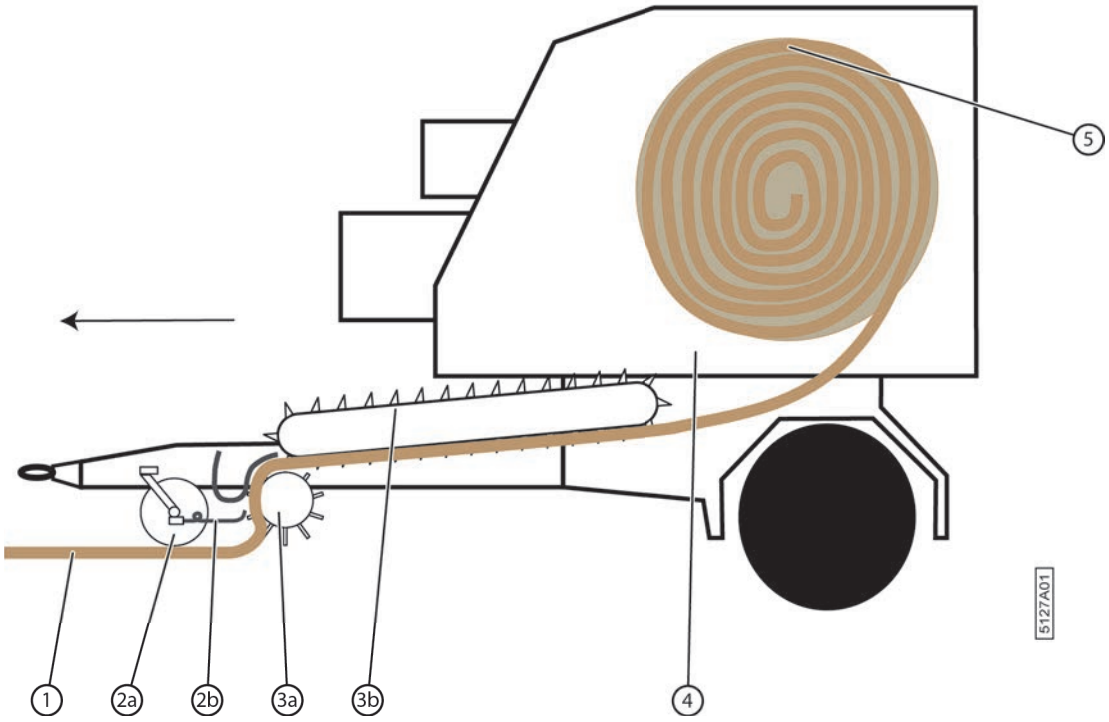


Fig. 31: The operation of the towed flax-baling machine

3.3 The quality of the work

The technical implementation of the rolling-up requires precision in order to achieve quality work.

The objective quality of the work during the rolling-up is determined by:

- The appearance of the bale
- The position of the ropes

The quality of the work is key to guaranteeing the quality of the scutching.

The stalks of the flax must be kept parallel in order to obtain a uniform and sufficiently thick layer of flax. Avoid stones, earth, etc. in as far as this is possible.

During the rolling-up, pay attention to the the following points:

- The alignment of the swath
- The uniform thickness of the swath

The thickening level, between 3 and 5, depends on the yield per hectare. For a large yield, you can remain around a figure of 3, unless a different figure is required for the scutching.

The following criteria determine the quality:

- The position of the ropes
- The operating speed
- The formation of bundles
- The condition of the flax
- The clamping pressure
- The condition of the machine

3.3.1 The position of the ropes

The two ropes (1) must be exactly in the centre of the swath over the entire length of the bale. The two ropes must be slightly apart (gap of approximately 5 centimetres) in order to guarantee optimal unrolling. A rope break must be immediately rectified.

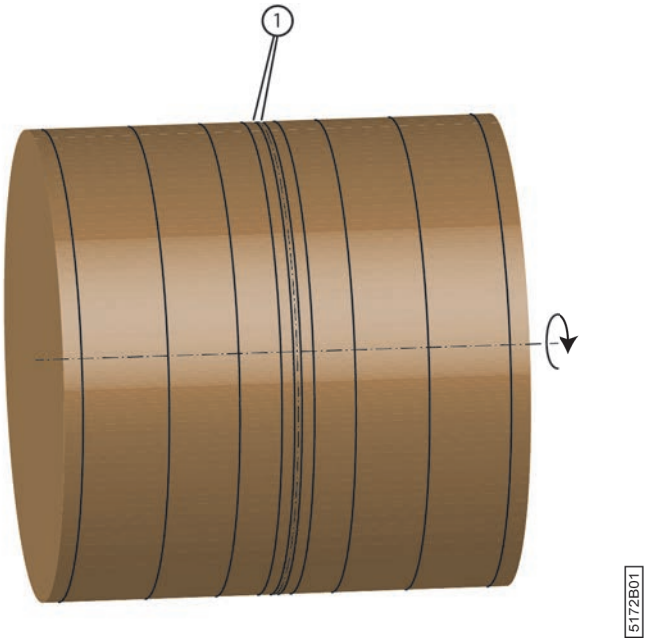


Fig. 32: Position of the ropes

3.3.2 The operating speed

Increased operating speed means that the pick-up is positioned lower and this consequently increases the quantity of earth and the number of stones in the flax. If many stones are present on the field, slow down the machine in order to reduce the number of stones.

3.3.3 The formation of bundles

After turning over the flax, bundles of flax can be present on the swath. It is recommended to spread open these bundles before rolling-up the flax because these bundles can cause problems during the scutching.

3.3.4 The condition of the flax

The flax must be dry before you roll it up. The maximum threshold value is 15% humidity. Pay attention to bundles of flax, because they need more time to dry. Sometimes it will be necessary to lift the flax or to turn it over again in order to speed up the drying process.

3.3.5 The clamping pressure

The clamping pressure can be adjusted. Prevent bales from attaining more than 300 kg. If the bales weigh more than 300 kg, they are more difficult to handle during scutching. The recommended pressure is 130 bar.

See also

- 9.3.1 Adjusting the clamping pressure in the pressing chamber on page 125

3.3.6 The alignment of the swath.

An optimally aligned swath makes the rolling-up easier. Swaths on top of each other, means that the machine has to be constantly stopped in order to move them. Never roll-up two swaths at the same time! Rolling-up two swaths at the same time will result in decreased yield and wasted time.

3.3.7 The condition of the machine

Keep the machine in good condition. Carefully follow the maintenance schedule. Al parts must be in good condition and must not be damaged! The poor condition of these parts can result in blockages.

See also

- 10.2 Preventive maintenance on page 134

4 Safety

4.1 Layout safety systems + safety precautions

4.1.1 Layout of safety systems

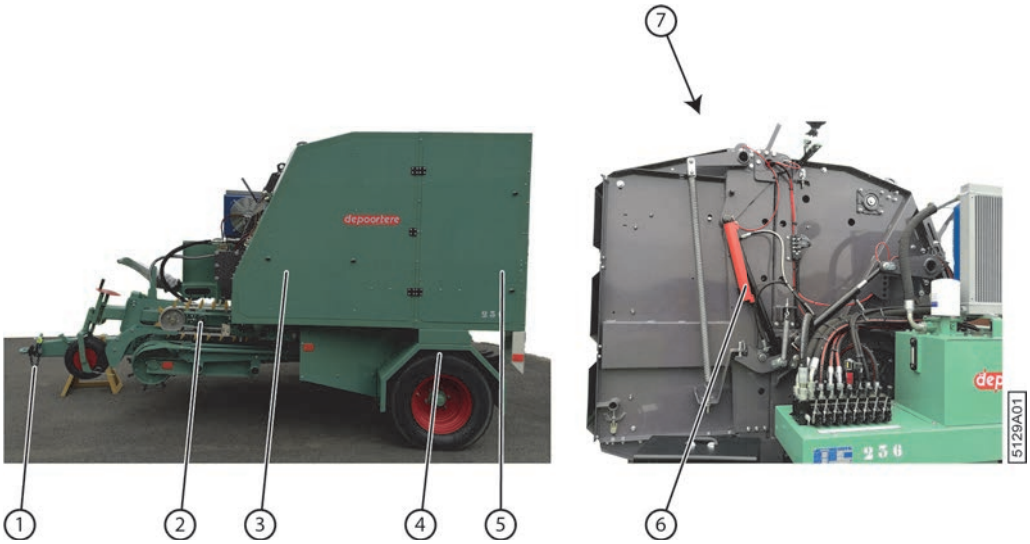


Fig. 33: Layout of safety systems

Nr.	Description
1	Safety chain for connecting machine to the tractor. This chain is also used as an anti-theft system.
2	Mechanical locking device for the pick-up
3	Protective door for rope cabinet
4	Protective panel for the edge of the mudguard
5	Protective door for rope cabinet
6	Mechanical locking device for the right-hand cylinder of the pressing chamber door
7	Mechanical locking device for the left-hand cylinder of the pressing chamber door

Fig. 34: Detailed view of protective panel for the edge of the mudguard

See also
- 4.1.3 Safety precautions on page 46

4.1.2 Location of the emergency stop button

The emergency stop button (10) is located on the control console. If you press the emergency stop button, the electrical power supply is disconnected, so that control is no longer possible. Only the flashing light on the machine is active.

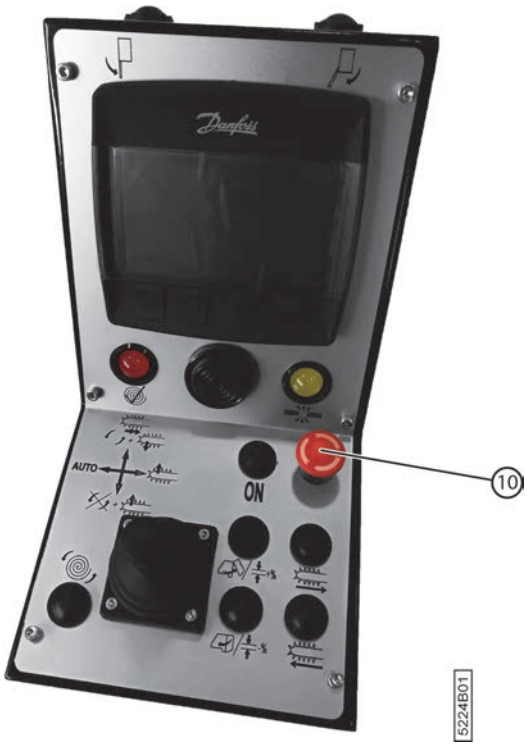


Fig. 35: Location of the emergency stop button

See also
- 4.6.3 Pressing the emergency stop button on page 58

4.1.3 Safety precautions

During the design phase, it was decided to eliminate or minimise the risk. Where risks exist, tangible safety precautions have been implemented, or the users are informed. An overview of the safety precautions that have been implemented is stated below:

- Protective doors for the rope cabinet
- Mechanical locks for the cylinders of the pressing chamber door
- Mechanical lock for the pick-up
- Safety chain for connecting machine to the tractor.
- The safety chain also protects the machine against theft and unauthorised use.
- The mudguards have plastic edges so that the user cannot cut himself on the edges.

See also
- 4.1.1 Layout of safety systems on page 45

4.1.4 Anti-theft system

If you disconnect the machine, you must secure it against theft and unauthorised use.

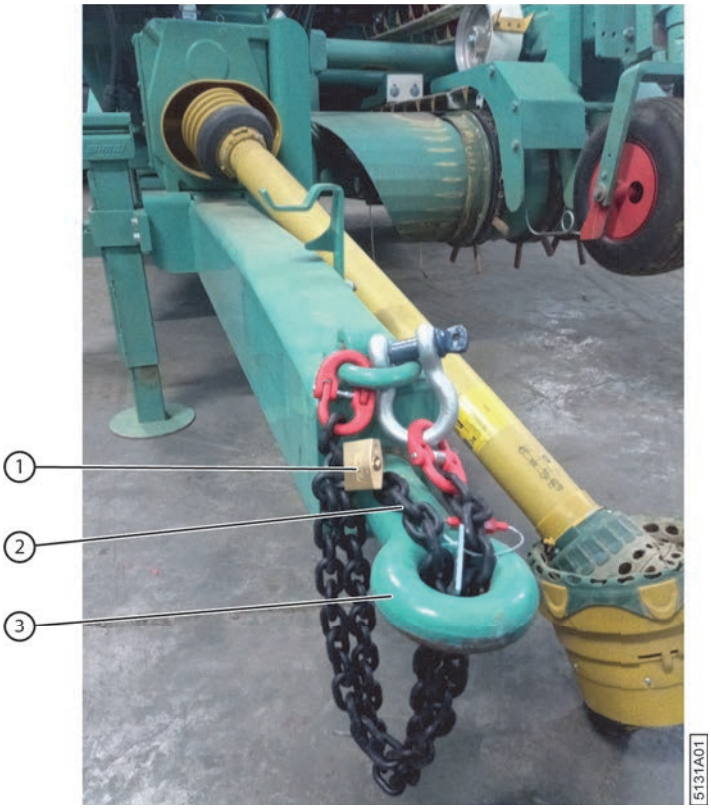


Fig. 36: Securing against theft

1. Disconnect the machine. See 12.1.1 Disconnecting the machine on page 185
2. Insert the chain (2) through the eye of the towing bar (3).
3. Secure the chain with a padlock (1).
   The towing arm can no longer be used and the machine can no longer be connected.

4.2 Meaning of the warning signals

Only an audible signal is given when the bale has reached the desired diameter.

The flashing light is active when the stop button of the control console is pressed.

TIP
Before starting the machine, press the horn of the tractor twice to warn bystanders.

4.3 Safety regulations

This section describes the remaining risks from the risk analysis.

4.3.1 General safety regulations for persons

WARNING
Only use the machine for the purpose for which it was designed.

WARNING
The machine may only be operated by persons who have read the user manual and who are thus adequately informed about the operation, the control, and the maintenance of the machine as described in the user manual.

WARNING

NEVER use your hands to try to seal a hydraulic leak! High-pressure liquid can cause damage to your skin and clothing. Immediately summon a doctor if an accident occurs.

You can use paper or cardboard to easily detect leaks in a hydraulic system!

WARNING
Never stand behind the machine. You can become trapped between the machine and another object.

WARNING
Never leave the driver's seat without taking the ignition key with you.

WARNING
Never allow children, animals, or unauthorised persons to come into the vicinity of the machine.

WARNING
It is strictly prohibited to touch moving parts or to be between moving parts. Keep your body, especially your face, hands and feet far away from moving parts.

WARNING
The zone for the machine is extremely dangerous. You may NEVER use your hands or feet or any other way to feed-in flax.

WARNING
A blockage may NEVER be rectified when the machine is still running.

CAUTION
Hold the steering wheel, without spokes between your fingers.

WARNING

Be aware of the risk of tipping over when you drive the machine on a slope or on hilly terrain!

- Drive slowly!
- Do not turn too abruptly!

WARNING
You may not enter or leave the driver's seat when the machine is operating.

WARNING
Keep away from high-voltage power lines when operating the machine. Contact between a high-voltage power line and the machine, or a discharge between the high-voltage power line and the machine can result in the death of the driver.

WARNING
In the event of lightning, remain in the cabin. Close all windows and doors. Do not touch the chassis of the machine. During lightning, an open field is not a safe location. Keep away from high trees, masts, high-voltage power lines. Stay at least 3 metres away from railings and fences. Bring yourself and your machine in safety. The best protection is a closed building, away from electricity and sanitary facilities.

4.3.2 Specific safety regulations for persons

WARNING

Always mechanically lock the cylinders of the pressing chamber before entering the pressing chamber.

WARNING

Never enter the zone between the tractor and the machine. You can become trapped between the tractor and the machine.

You may only enter the zone between the tractor and the machine to electrically or mechanically connect or disconnect the machine.

WARNING
Never stand behind the machine, and never park behind the machine. The pressing chamber door can open and a bale can be ejected. You can be hit by the pressing chamber door, or end up underneath the bale. Always maintain a safe distance.

4.3.3 Safety regulations for the machine

CAUTION
Ensure that the hydraulic connections are always clean and always fit plastic protective caps after disconnecting a hydraulic connection.

CAUTION
If you wish to close the pressing chamber, first remove the mechanical locks from the pressing chamber. If the mechanical locks for the pressing chamber are not removed, this can result in serious damage to the machine when closing the pressing chamber.

4.3.4 Safety regulations relating to the environment

ENVIRONMENT
For all products that are used in the machine and for all products that are used for the maintenance and the cleaning of the machine, follow the current local statutory regulations.

ENVIRONMENT
Store new and discharged products in accordance with the current local statutory regulations.

ENVIRONMENT
Spilled liquid must be removed in accordance with the regulations for the liquid and in accordance with the current local statutory regulations.

4.4 Personal protection equipment

Item of personal protection equipment	Who?	When?
Safety shoes	Operator Maintenance technician	Always
Helmet	Maintenance technician	If, during the work, objects of parts can fall onto your head.
Safety spectacles	Operator Maintenance technician	For all work where dust- or other particles can end up in your eyes.
Safety gloves	Operator Maintenance technician	For all work on the machine.
Hearing protection	Operator Maintenance technician	If the noise level exceeds 85 dB. This is the case at the side of the machine where the engine is located.
Breathing mask	Operator Maintenance technician	For all work where dust and/or substances that are hazardous to respiration are released.
Reflective clothing	Operator Maintenance technician	For work in the dark.

4.4.1 Safety regulations for personal protection

WARNING
Ensure that work clothing fits well. Do not wear loose clothing or jewellery. If you wear these, you can become trapped by rotating machine parts.

WARNING
Conceal long hair, so that it is not possible for long hair to become trapped.

4.5 Signs and symbols

The machine is equipped with a sticker stating safety instructions.

WARNING
Ensure that safety instructions always remain visible. Regularly clean the safety instructions, and if the safety instructions are damaged or illegible, replace them. The safety instructions can be ordered from Depoortere NV.

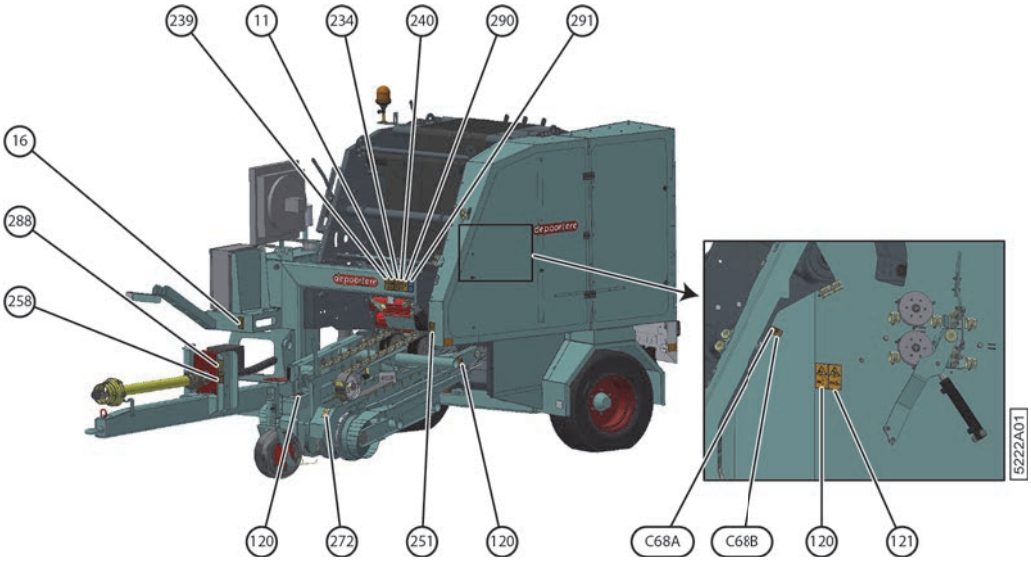


Fig. 37: Front view

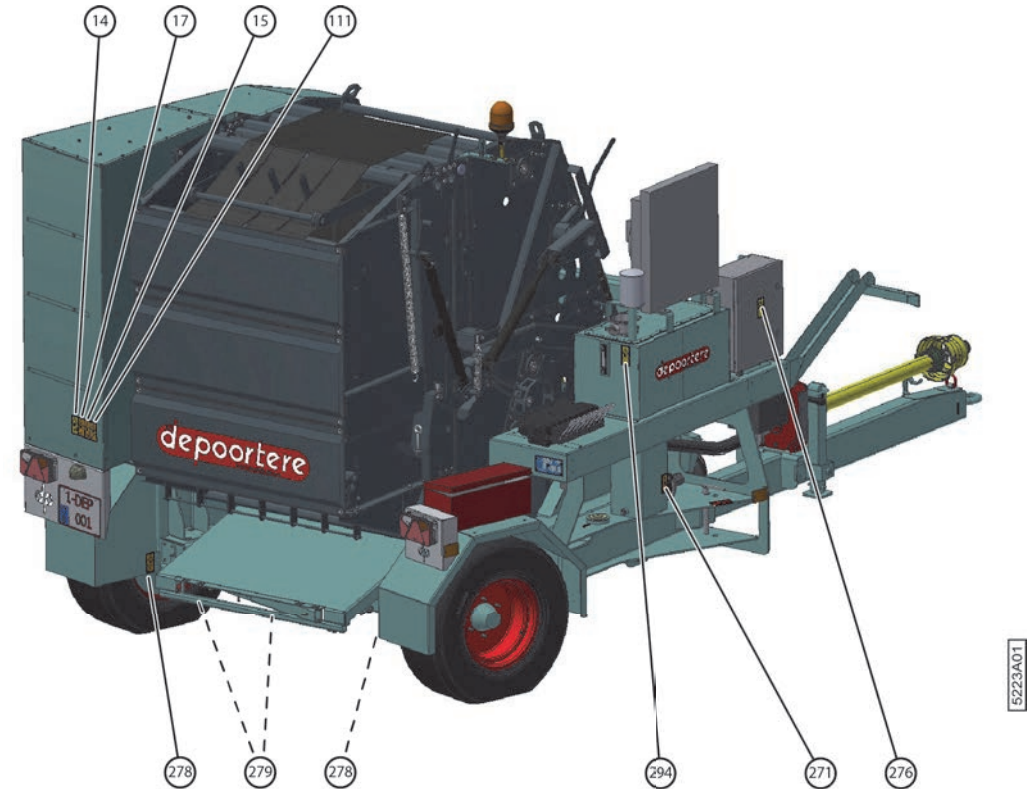


Fig. 38: Rear view

Nr.	Figure	Description	Name
11		Caution! Read the user manual before using the machine.	PICTO11
14		Risk of bumping into object Always maintain sufficient distance from the machine.	PICTO14
15		Risk of crushing Risk of becoming trapped between the pressing chamber and a fixed object when opening the pressing chamber.	PICTO15
16		Risk of crushing Do not enter the zone between the tractor and the machine.	PICTO16

Nr.	Figure	Description	Name
17		Risk of crushing Risk of crushing between the pressing chamber door and the machine.	PICTO17
111		Risk of bumping into object Risk of ending up underneath the door of the pressing chamber. Always install a red safety device to block the door cylinder of the pressing chamber before you perform work on the pressing chamber.	PICTO111
120		Risk of crushing Never reach into the machine. Risk due to moving objects	PICTO120
121		Risk of crushing Keep limbs away from rotating parts.	PICTO121

Nr.	Figure	Description	Name
234		Caution! Before performing maintenance work: switch off the engine, remove the ignition key and read the operating instructions and the safety instructions.	PICTO234
239		Risk of electrocution. Risk due to electrical power! Keep an adequate distance away from electrical high-voltage cables.	PICTO239
240		Risk of perforation Never place your hands near to a leak in a hydraulic pipe. Consult the user manual before performing work on the hydraulic system of the machine.	PICTO240
251		Risk of crushing Never reach into the machine You can be dragged into the machine and crushed.	PICTO251

Nr.	Figure	Description	Name
258		Keep limbs away from rotating parts.	PICTO258
271		Caution! No access to unauthorised persons	PICTO271
272		Risk of cuts Maintain sufficient distance from the machine.	PICTO272
276		Risk of electrocution The cabinet contains live electrical components.	PICTO276

Nr.	Figure	Description	Name
278		Caution! Indication of the place where the machine can be lifted.	PICTO278
279		Caution! Indication of the place where the machine can be jacked up.	PICTO279
288		Caution! The drive must rotate at 540 revs./ min.	PICTO288
290		Caution! Tighten bolted connections.	PICTO290

Nr.	Figure	Description	Name
291		Check the tyre pressure. Consult the user manual.	PICTO291
294		The hydraulic tank	PICTO294
C68A		Location for lubricating.	C68A
C68B		Location for lubricating with grease gun.	C68B

4.6 Emergencies

4.6.1 Switching OFF the electrical power

You can switch OFF the electrical power to the machine by pressing the emergency stop button.

See also

- 4.6.3 Pressing the emergency stop button on page 58

4.6.2 Switching OFF the hydraulic pump

The hydraulic pump is connected to the tractor via a drive shaft. By disconnecting the drive shaft from the tractor, you also switch OFF the hydraulic pump.

NOTE
Disconnect the drive shaft from the tractor to prevent someone restarting the hydraulic pump from the tractor.

4.6.3 Pressing the emergency stop button

In the event of an emergency, you can press the emergency stop button in the cabin of the tractor. Control via the control console is disabled. Only the flashing light on the machine is active. All movements are stopped, however the hydraulic pump is still driven via the drive shaft.

NOTE
Via the levers on the PVG valve block, you can still move parts of the machine, as long as the drive shaft drives the hydraulic pump.

See also
- 4.6.1 Switching OFF the electrical power on page 57
- 4.1.2 Location of the emergency stop button on page 46

4.6.4 Fire: the bale can catch fire

WARNING
In the event of a fire, do not expose yourself to danger.

1. Raise the pick-up.
2. Drive the machine away from the flax still to be collected and from other flammable materials.
3. Immediately remove the bale from the pressing chamber and keep the door of the pressing chamber open.
4. Drive away from a bale that has caught fire.
5. Contact the emergency services.
6. If the machine has caught fire, disconnect the tractor and drive away from the machine.
7. Extinguish the fire using a fire extinguisher. See 6.2 What must the machine be equipped with? on page 65.

4.7 Hazardous substances

The user must request the latest Safety Information Sheets from the supplier for the following products:

- Hydraulic oil
- Lubricating grease

4.8 Safety zone

For your own safety, do not enter the zone outlined below. Only maintenance technicians may enter this zone when the machine is safely switched OFF. See 10.1.1 Switching OFF the machine safely on page 134.

WARNING
Never enter the zone between the tractor and the machine!

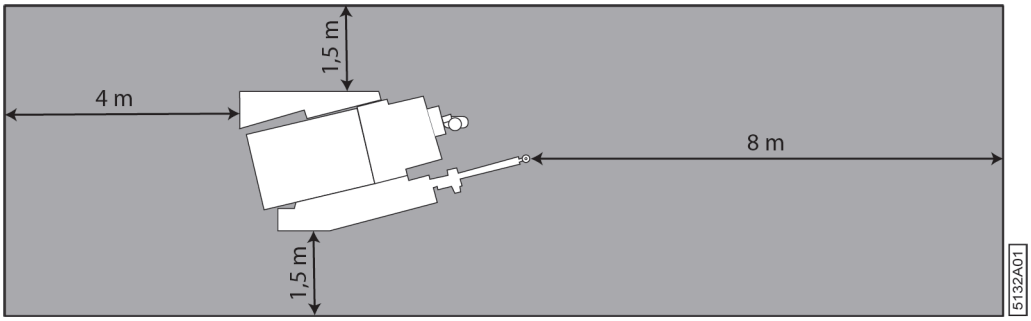


Fig. 39: Safety zone

5 Transport and storage

5.1 Moving the machine

5.1.1 Loading the machine onto the lorry

1. Select a completely level zone for loading the machine.
2. Fence off the zone where the machine will be loaded onto the lorry. Ensure that the safety zone is large enough, so that if the machine tips over, sufficient space exists to run away from a tipping load.
3. Keep unauthorised persons away from this safety zone.
4. Secure the chains to the 2 rearmost loading eyes (7) (8) of the pressing chamber.
5. Place a lifting sling (6) around the towing arm, at the location shown in the illustration. Secure the lifting sling via a chain to the hook of the lifting aid.

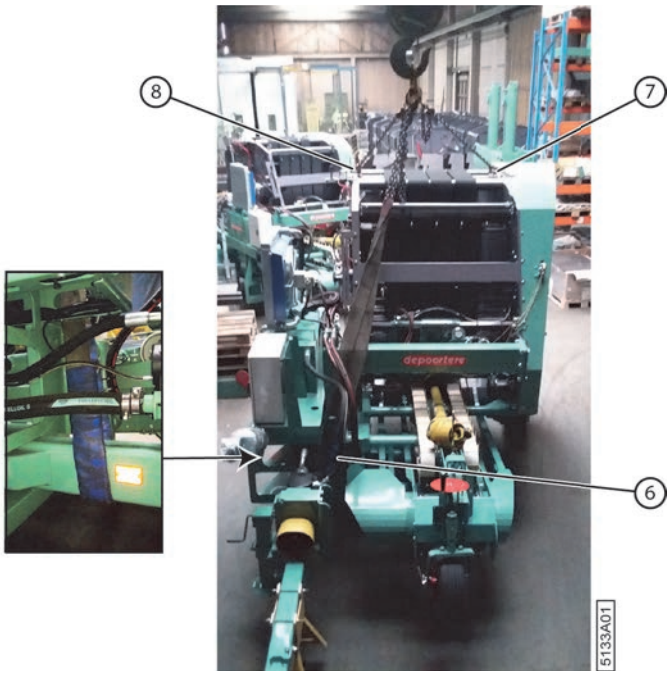


Fig. 40: Securing the machine to the lorry (front)

6. Secure the transport support (2) under the towing bar. Install plastic protectors everywhere between the towing arm and the transport support to prevent damage. Tighten the 2 bolts at the top.
7. Use a lifting aid with a minimum load capacity of 5 tons to place the machine onto the loading platform of the lorry.

CAUTION
Only use suitable and approved aids for loading the machine onto and unloading the machine from the lorry.

8. Use chains or tension straps to secure the machine at the front:
   - Secure via a chain or tension strap to the towing eye at the front (3).
   - Secure via a tension strap to the towing arm at the front (1).

Fig. 41: Securing the machine to the lorry (front)

9. Secure the machine via 2 crossed chains or tension straps to the towing eyes at the rear (4) (5).

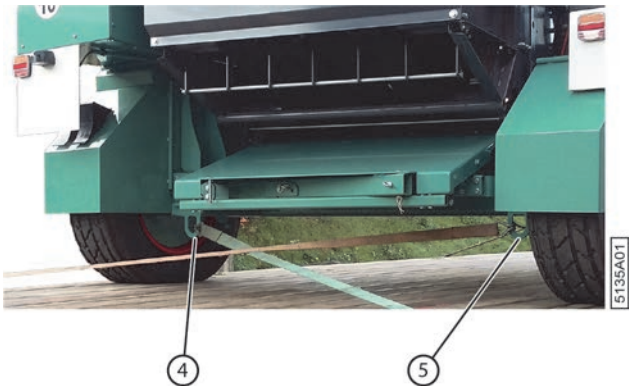


Fig. 42: Securing the machine to the lorry (rear)

10. Secure the tyres.

Fig. 43: Secure the tyres

5.1.2 Unloading the machine from the lorry

1. Select a completely level zone for unloading the machine.
2. Fence off the zone where the machine will be unloaded from the lorry. Ensure that the safety zone is large enough, so that if the machine tips over, sufficient space exists to run away from a tipping load.
3. Keep unauthorised persons away from this safety zone.
4. Disconnect the machine at the front.
   1 Disconnect the chain or tension strap to the towing eye (3) at the front.
   2 Disconnect the tension strap on the towing arm (1) at the front.

Fig. 44: Securing the machine to the lorry (front)

5. Release the tyres.
6. Disconnect the machine from the towing eyes (4) (5) at the rear.

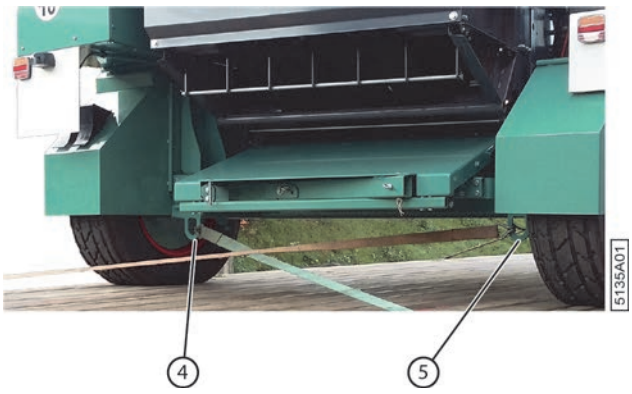


Fig. 45: Securing the machine to the lorry (at the rear)

7. Lift the machine using a lifting aid with a minimum load capacity of 5 tons, from the loading platform of the lorry and place the machine on the ground.

CAUTION
Only use suitable and approved lifting aids to unload the machine from the lorry.

8. Disconnect the chains from the lifting aid.
9. Place the support leg, so that the transport support is released from the ground.
10. Remove the transport support.

5.2 Storing the machine

Check the machine very carefully so that it is ready to start in the next season. A thorough check and maintenance of the machine can save extra costs, minimise downtime, and enhance the operational reliability of your machine.

When storing the machine, perform the points in the following checklist:

1. Check that the machine no longer contains flax or a bale.
2. Remove all coils from the rope cabinet and store them in closed boxes in a dry location. Store the boxes at a location where access is impossible for vermin.
3. Follow the maintenance plan. See 10.2.1 Maintenance schedule for the operator on page 135 and 10.2.2 Maintenance schedule for the maintenance technician on page 136.
4. Follow the lubrication plan. See 10.2.41 The lubrication schedule on page 157.
5. Place the machine in an area:
   - Where access is prohibited to unauthorised persons.
   - That is dry, and where the machine is protected against the effects of the weather. For example: sunlight has a negative impact on rubber.
   - Where fertilisers containing ammonia are not stored. When humidity is present, ammonia reacts with certain metals.
   - Where there is no access for vermin.
6. Clean all hydraulic cylinders, lubricate them with grease, and fully retract them.
7. Lubricate all threaded rods, adjusting bolts, and bare machine parts using grease or oil to prevent rust.
8. Jack up the machine and place it on supports in order to relieve the load on the tyres.
9. Check the full operation of the machine. Replace worn parts.
10. Check the bolted connections. See 10.2.9 on page 139.

See also

- 10.2.8 Cleaning the machine using a pressure washer on page 138

6 Assembly and installation

6.1 What is supplied with the machine?

Check that the following items have been supplied; if not supplied, contact your distributor.

- 2 keys for opening the electrical cabinets
- 2 keys for opening the tool cabinet
- User manual for the machine
- User manual for the optional camera monitors
- Spare parts list
- Electrical diagrams
- Hydraulic diagrams
- EC declaration

6.2 What must the machine be equipped with?

Supply a fire extinguisher, a warning triangle and a full First aid kit on the machine.

6.3 Mounting the control console

Mount the control console in the tractor.

Use the supplied mounting plate.

NOTE
Ensure that the control console does not obstruct the view. Ensure that the stop button is easily accessible. Ensure an ergonomic position.

7 Putting into service

7.1 Checklist for putting into service

After receipt of your machine, carefully check the list below.

Item	Check	OK?
Wheels	10.2.15 Checking the tyre pressure on page 143	
	10.2.16 Tightening the wheel nuts on page 143	
Hydraulic system	10.2.24 Checking te level of the hydraulic oil on page 147	
	10.2.27 Checking the hydraulic system for leaks on page 150	
Electrical system	10.2.28 Checking electrical system on page 150	
Lubrication	Check that all lubrication points are optimally lubricated. See the lubrication plan 10.2.41 The lubrication schedule on page 157.	

After all items on the checklist are OK, the machine can be used in accordance with the instructions stated in this user manual.

7.1.1 Checking that the user manuals are present

1. Check whether the following user manuals are present:
   - User manual for the machine
   - User manual for the optional camera monitors
2. If a user manual is not present, ask your distributor for a new copy.

7.2 Loading the rope

For optimal operation of the binding rope system, it is recommended to use Sisal rope or jute rope that has a ratio of 500 or 750 metres per kg.

The rope is loaded in 3 steps:

1. 7.2.1 Loading and connecting the rope coils on page 68.
2. 7.2.2 Inserting the rope into the rope tensioning system on page 69.
3. 7.2.3 Inserting the rope into the binding rope system. on page 69.

7.2.1 Loading and connecting the rope coils

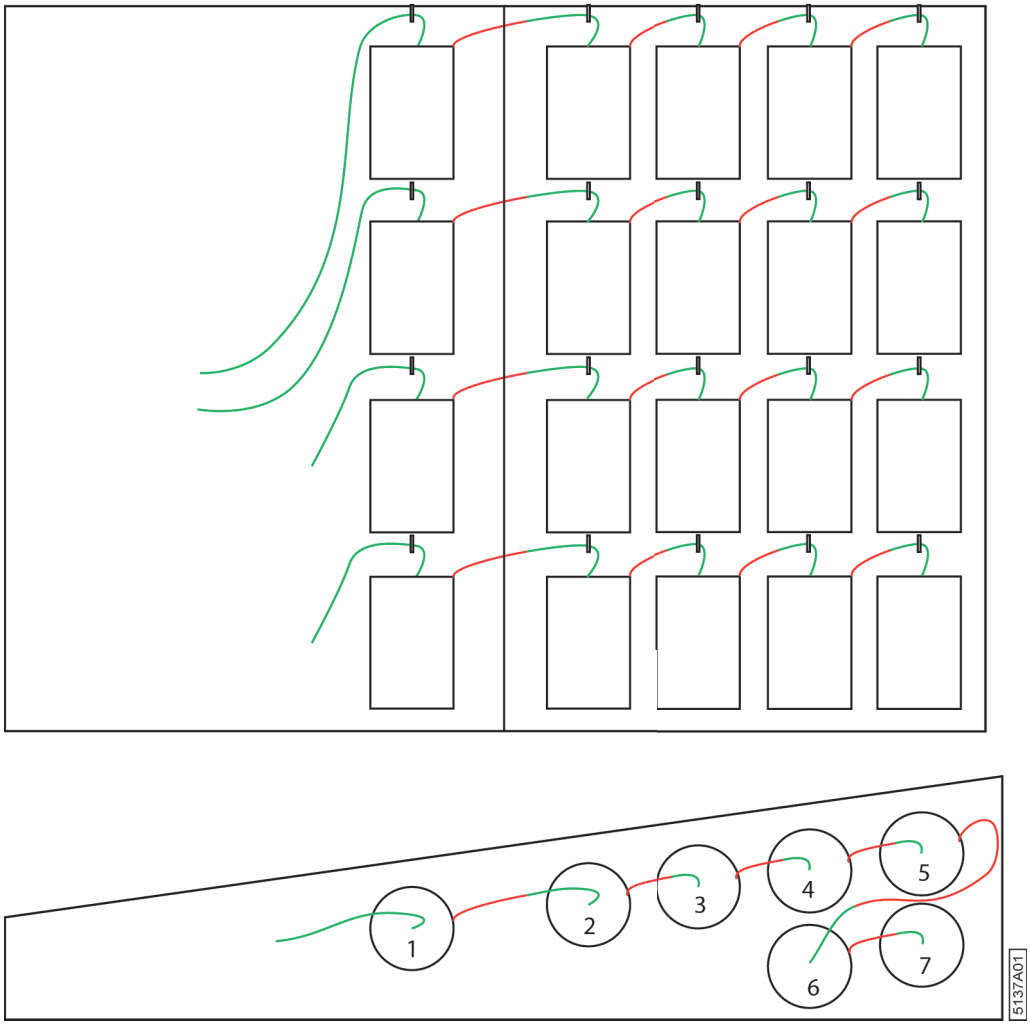


Fig. 46: Loading and connecting the rope coils

1. Open the doors of the rope cabinet.
2. Place the rope coils in the trays of the cabinet.
3. Thread the start of rope coil 7 through the ring, and connect it to the end of rope coil 6 by tying a square knot.

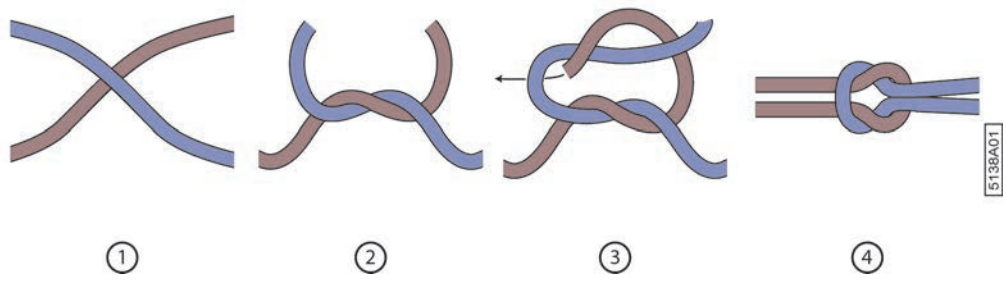


Fig. 47: Tying a square knot

4. Connect the start of rope coil 6 to the end of rope coil 5 by tying a square knot.
5. Thread the start of rope coil 5 through the ring, and connect it to the end of rope coil 4 by tying a square knot.
6. Repeat step 5 for the other rope coils.
7. Repeat from step 3 for the other levels.

8. Pull the ends of the 2 ropes from the uppermost levels or from the lowermost levels to the rope tensioning system.
9. Feed the rope to the rope tensioning system.

7.2.2 Inserting the rope into the rope tensioning system

Ensure beforehand that the rope coils are optimally loaded and connected. See 7.2.1 Loading and connecting the rope coils on page 68.

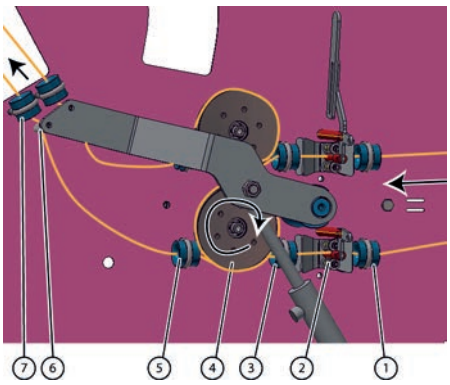


Fig. 48: Inserting the rope into the rope tensioning system

1. Insert the end of the lowermost rope through the rope guide (1).
2. Pull the threaded rod of the rope tensioners towards you and insert the rope through the rope guide (2).
3. Insert the rope through the rope guide (3).
4. Wind the rope once around the break monitoring tool (4).
5. Insert the rope through the rope guide (5).
6. Insert the rope through the eye-bolt (6).
7. Pull the rope through the rope guide (7) and pull it through the opening in the cabinet.
8. Insert the uppermost rope through the rope tensioning system in the same way.
9. Insert the rope into the binding rope system.

7.2.3 Inserting the rope into the binding rope system.

Ensure beforehand that the rope is optimally inserted into the rope tensioning system. See 7.2.2 Inserting the rope into the rope tensioning system on page 69.

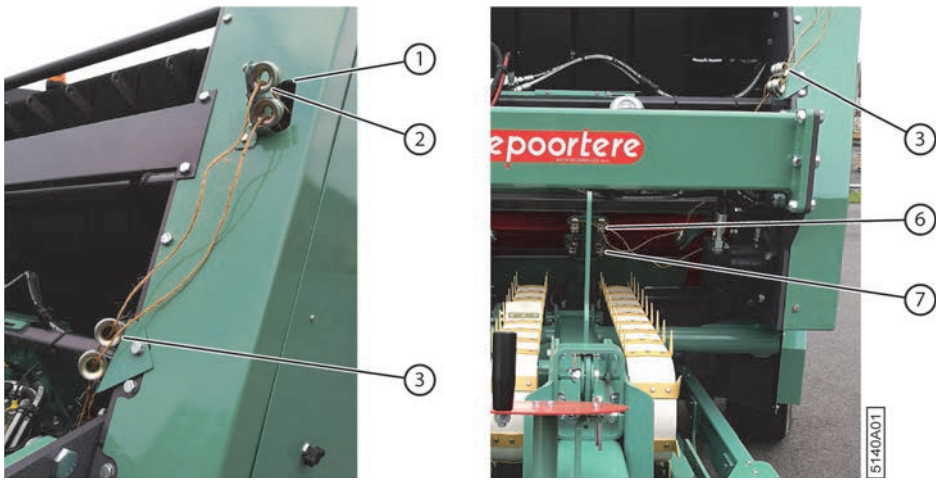


Fig. 49: Inserting the rope from the cabinet into the binding rope system

1. Pull the uppermost rope from the opening in the cabinet (1) through the rope guide (2).
2. Pull the rope through the rope guide (3).
3. Thread the rope into the binding rope system through each of the rope guides in turn (6), (7) and (8).

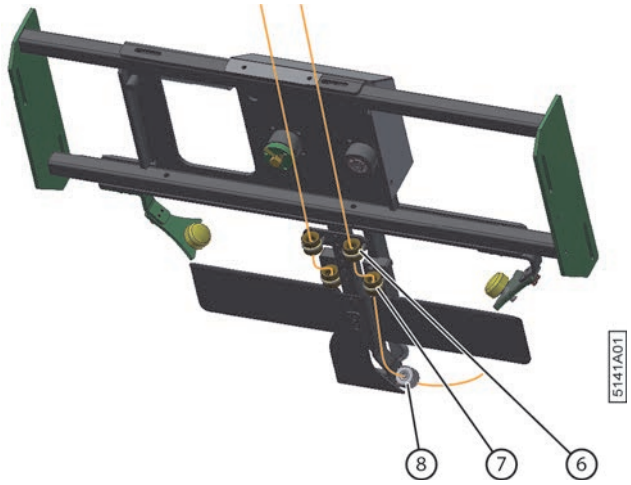


Fig. 50: Inserting the rope into the binding rope system.

4. Pull the rope approximately 10 cm further out of the last rope guide (8).
   The rope is taken by the flax.
5. Use the same procedure to insert the other rope into the binding rope system.

7.3 Connecting the machine

The machine is connected in 2 steps:

1. Connecting the machine mechanically, see 7.3.2 Connecting the machine mechanically on page 71.
2. Connecting the machine electrically, see 7.3.2 Connecting the machine mechanically on page 71.

7.3.1 Requirements for the tractor

The tractor must at least conform to the following specifications in order to operate optimally.

- At least 120 HP

- A PTO that must be used at 540 revs./min.
- Connection for the lighting and for the power supply for the machine. See 7.3.3 Connecting the machine electrically on page 72.
- An operational horn that is audible in the danger zones of the machine.

An ISO 11786 connection is provided for measuring the speed of the tractor.

7.3.2 Connecting the machine mechanically

WARNING

- When connecting, ensure that the tractor and the machine cannot move forwards or backwards.
- When connecting the machine, switch OFF the engine of the tractor and remove the key from the ignition.
- Always use a hinged lower tow bar.

1. Remove the hydraulic arms from the tractor.

   This prevents the hydraulic arms from damaging the machine when turning.
2. Drive the tractor near to the machine.
3. Via the support leg, bring the machine to a suitable height.
4. Connect the tractor to the machine.

WARNING
Always use a hinged lower tow bar to prevent the tractor from touching and damaging the machine during tight turns.

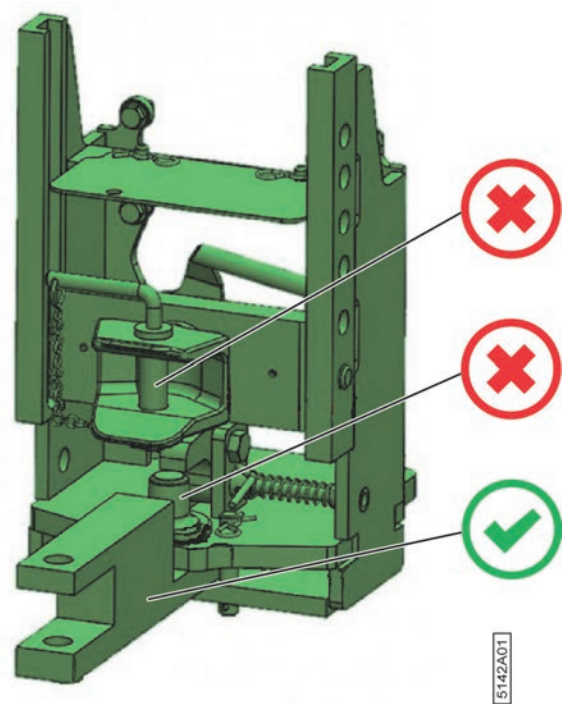


Fig. 51: Connection with tractor only via hinged lower tow bar

5. Connect the drive shaft to the tractor.

WARNING
Always use the drive shaft supplied. The drive shaft must have adequate protection and a protective cap. The drive shaft must be covered by a cap or a cover when the protective cap of the tractor is removed.

6. Secure the safety chains for the drive shaft on one side of the tractor, and on the other side of the machine.

The protection cannot rotate.

7. Connect the safety chain to the fixed part of the tractor.
   This provides additional security if the machine becomes disconnected from the tractor.
8. Retract the supporting leg and move it to its highest position.
   This ensures that the support leg does not come into contact with the ground.

7.3.3 Connecting the machine electrically

WARNING

- When connecting, ensure that the tractor and the machine cannot move forwards or backwards.
- When connecting the machine, switch OFF the engine of the tractor and remove the key from the ignition.
- Ensure that the electrical cables are neatly installed in the cable conduit before connecting to the tractor.

Connect the machine mechanically beforehand, see 7.3.2 Connecting the machine mechanically on page 71.

1. Switch OFF the engine of the tractor.
2. Remove the key from the ignition.
3. Install the electrical cables in the cable conduit (5).

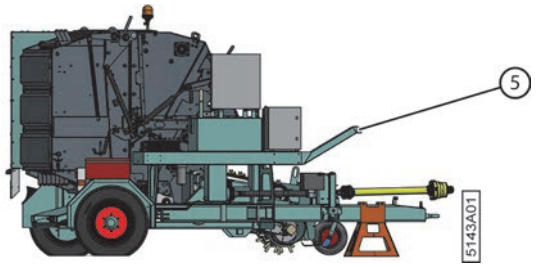


Fig. 52: Cable guide

4. Connect the various cables.
   - Plug (1): ISO 11786 (driving speed of the tractor)
   - Plug (2): connect this plug to the control console
   - Plug (3): 12 V power supply of the machine
   - Sheet (4): lighting of the machine

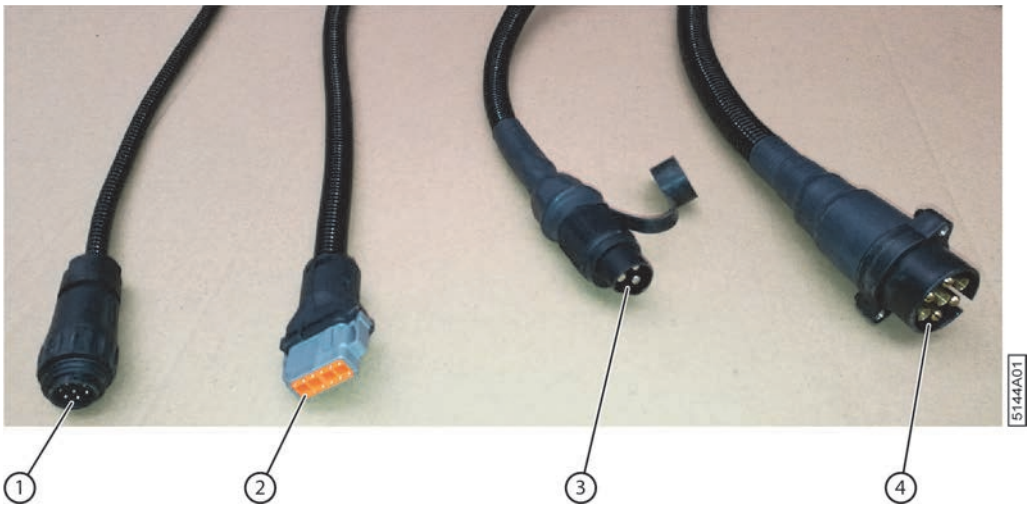


Fig. 53: Connections

5. Switch ON the ignition of the tractor and check that all connections are OK.

7.3.4 Retracting the support leg

You may only retract the support leg when the machine is mechanically connected to a tractor, or when the machine is supported in a different way.

1. Turn the handle (1) anti-clockwise.
   The lowermost part of the supporting leg (4) is raised from the ground (B).
2. Release the handle and move the profile (3) upwards (A).
3. Lock the handle in the opening to ensure that the supporting leg is raised enough above the ground.

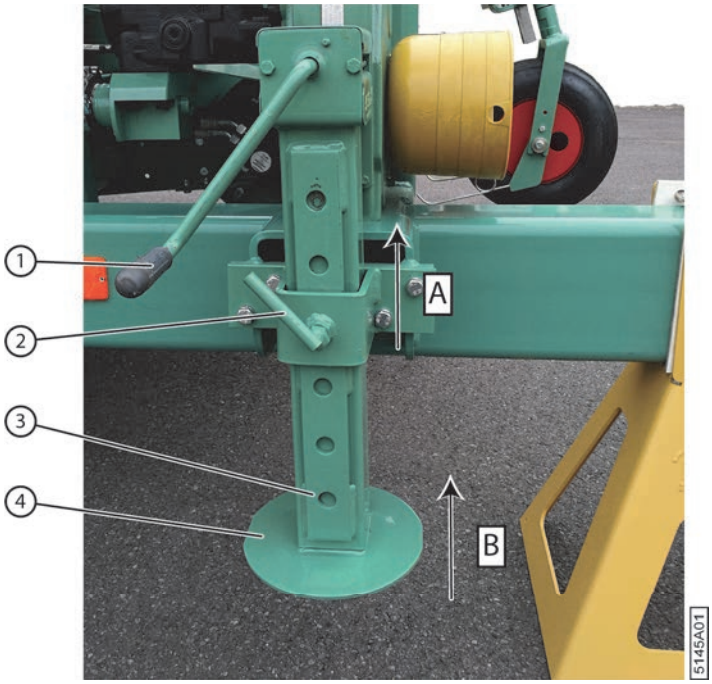


Fig. 54: Retracting the support leg

7.3.5 Opening the hydraulic valve

The hydraulic valve must always be open. You may only close the hydraulic valve when performing maintenance on the hydraulic pump.

WARNING
Starting the machine with the valve closed will result in irreparable damage to the hydraulic pump, and can also result in the hydraulic pipe becoming detached and injuring bystanders.

Fig. 55: The hydraulic valve

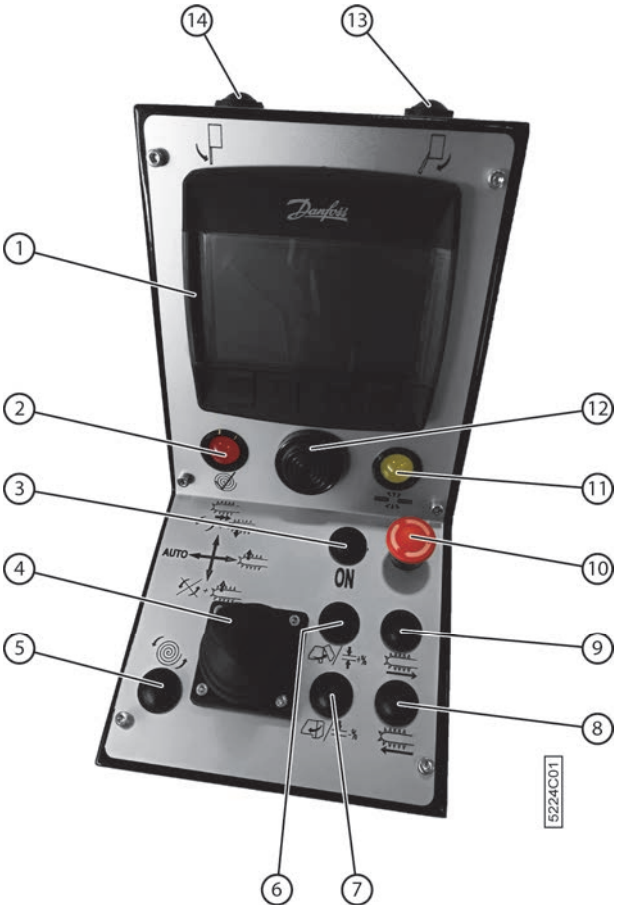
1. Check that the lever (4) of the hydraulic valve is in line with the hydraulic pipe (2).
   - When the lever is in line with the pipe, the hydraulic valve is open. Continue to step 4.
   - If the lever is NOT in line with the pipe, the hydraulic valve is closed. Continue to the next step.
2. Take the lever in your hand, and press in the locking mechanism (3).
3. Turn the lever until it is in line with the pipe.
4. Place a padlock through the opening (1) of the locking mechanism.
   The locking mechanism can no longer be pressed in, and the valve can thus no longer be turned. The valve remains open, and is thus protected against inadvertent closing of the valve.

8 Control

8.1 Control elements

8.1.1 The control console

Control console



Nr.	Description
1	Control console
2	Indicator light, diameter of bale reached
3	Start button for switching ON the machine
4	Joystick
5	Start button binding.
6	Open pressing chamber door
7	Close pressing chamber door
8	Unblocking, conveyor belts forwards
9	Unblocking, conveyor belts backwards
10	Stop / Emergency stop: for switching OFF the machine

Nr.	Description
11	Rope break indicator light
12	Buzzer
13	Moving the towing arm to the harvesting position
14	Moving the dissel to the driving position

8.1.2 The joystick

The joystick is located on the control console.

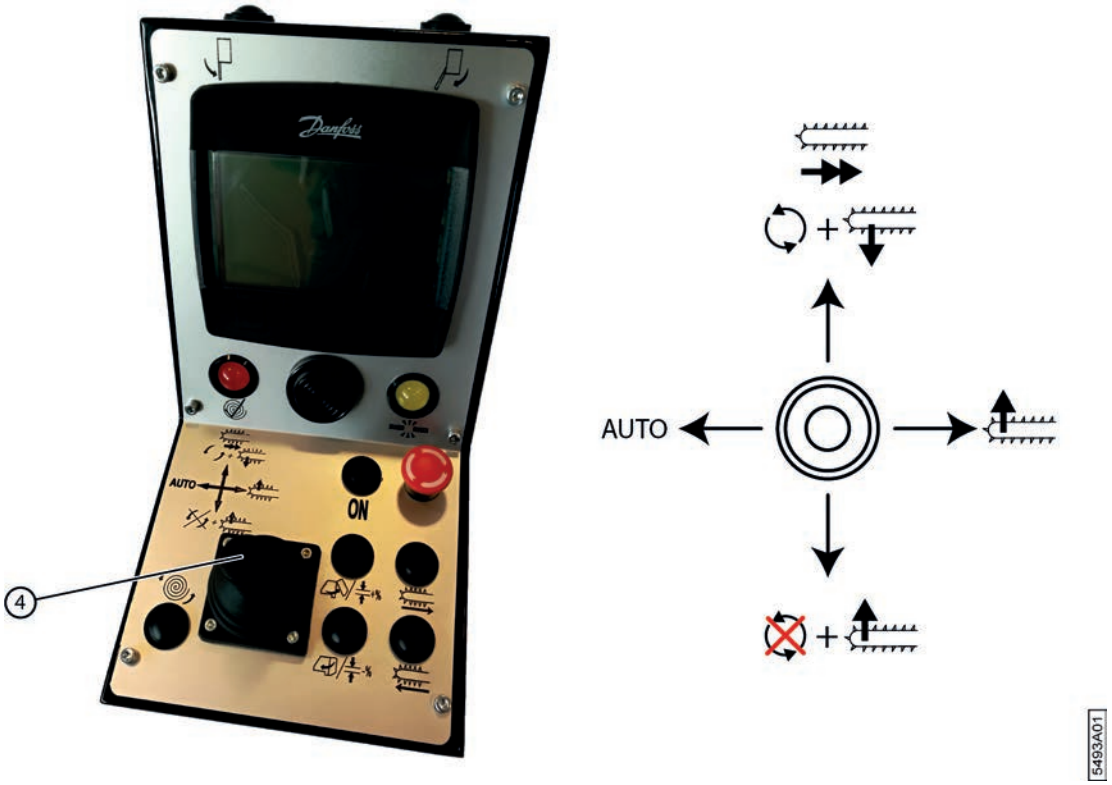


Fig. 56: Joystick

Movement of joystick	More information
Forwards	Starting work cycle + lowering pick-up
Backwards	Stopping work cycle + raising pick-up
Left	1 x to the left: automatic mode active / not active
Right	Raising pick-up

8.1.3 The control screen

The control screen is controlled via the buttons (5) underneath the display (1). The left-hand and right-hand sides of the display are equipped with LED lighting (3). A red lamp (4) on the left-hand and right-hand sides is lit in the event of an alarm. In the event of a fire message, a green lamp (2) is lit on the left-hand and right-hand sides.

Fig. 57: The control screen

8.1.4 The control via the control screen

On the pages of the control screen, you can use the 4 rubber keys to control the following functions.

Function	More information
	Fault message key You can use this key to: • Retrieve the current fault messages • Move to the next fault message
	Option key. You can use this key to go to the option screen.
ESC	Escape key. You can use this key to: • Return to the start window • Delete an entered value
	Cursor control keys. You can use these keys to: • Move the selection horizontally • Configure the desired value • Display the previous or next window
OK	OK key. You can use this key to: • Confirm the selection • Save the entered value • Confirm a fault message (if there are several fault messages, the next fault message is displayed). For example: if you have selected the parameters icon  , and you press OK, then the window with parameters is displayed.

Function	More information
	Cursor control keys. You can use these keys to: • Move the selection vertically • Configure the desired value
RTZ	You can use this key to reset the values to zero.
RES	You can use this key to reset the values.

8.1.5 The start window

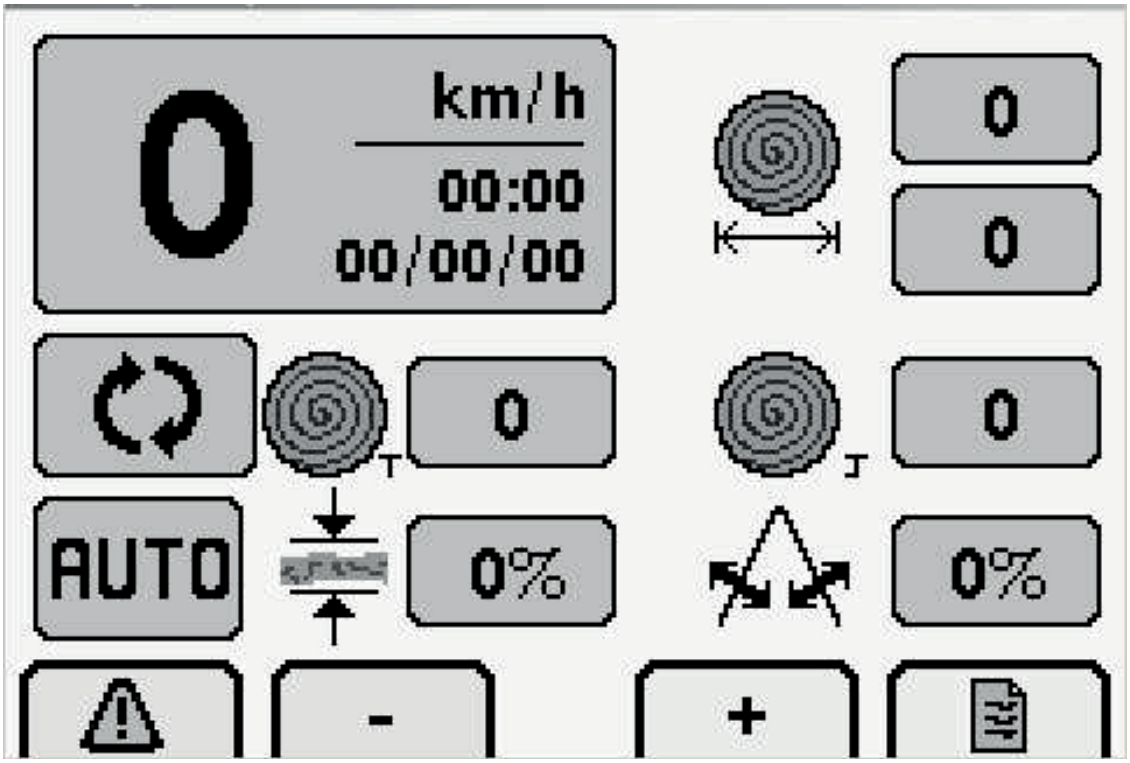
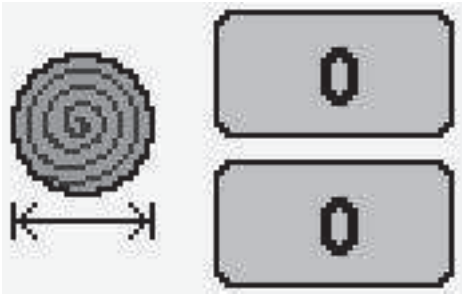
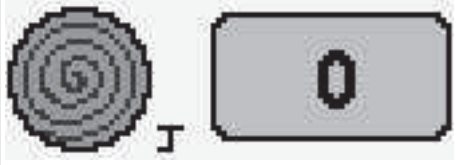


Fig. 58: The start window

Item	More information
	The driving speed in kilometres per hour (km/hour). The current time and date.
	The length of the rolled-up flax. Length above: the length of the rolled-up flax in the current bale (in metres). Length below: the length of the rolled-up flax in the previous bale (in metres).

Item	More information
	Indicates whether the automatic mode is active (black) or non-active (grey). This function only works when the work cycle is active. After reaching the desired diameter in automatic mode: • there is a light signal on the control console and an audible signal, • the machine waits until the operator stops, • the binding of the bale is automatically started, • the bale is automatically ejected from the pressing chamber. • an audible signal is sounded via the control console to indicate that the balancing arm is in the lowest position, • the operator starts again with the rolling-up of the flax. If the automatic mode is non-active, you must manually start the binding yourself.
	Indicates whether the work cycle is active (black) or non-active (grey). If the work cycle is active, the functions and the actions for harvesting are controlled according to the movement of the machine. If the work cycle is non-active, then you can drive the machine without the machine performing functions.
	Bale counter. The counter can be used to count the bales on a field. The counter can be reset.
	Bale counter. The counter can be used to count the bales during the entire season. The counter can be reset.
	This enables you to enter the layer thickness. At 100%, the layer is rolled-up as deposited on the field. The default value is 300%. This enables you to roll-up the flax using a layer that is 3 times thicker than the layers deposited on the field.
	Displays the position of the needles of the binding rope system as a percentage.
	Fault message key You can use this key to: • retrieve the current fault messages, • move to the next fault message.
	To decrease the value for the layer thickness or the thickening level.

Item	More information
	To increase the value for the layer thickness or the thickening level.
	Option key. You can use this key to go to the option screen.

8.1.6 Text message in the start window

Sometimes, text messages (1) can be displayed in the start window to inform you about certain statuses of the pressing chamber during the binding.

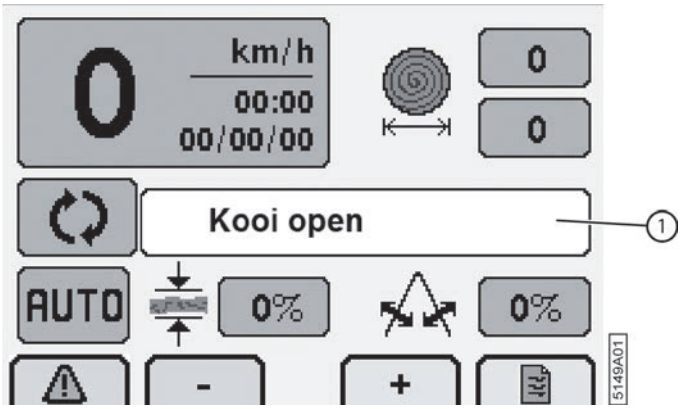


Fig. 59: The start window with text message

The text messages that can be displayed are:

Text message	More information
Pressing chamber open	The pressing chamber door has been detected as open.
Pressing chamber closed	The pressing chamber door has been detected as closed.
Balancing arm low	The balancing arm has been detected in the lowest position.
Position of pressing chamber door unknown	The pressing chamber door has NOT been detected as open, and has NOT been detected as closed. If the pressing chamber has been opened and closed in the correct manner, you will have to adjust the position of the sensors.

8.2 Control instructions

8.2.1 Operating the machine manually via the valve block (PVG)

WARNING
Operation via the valve block is only allowed for testing purposes and when performing maintenance tasks. All other types of operation must always take place using the control console from the tractor.

The machine must not be in the operating cycle or in AUTO when the control is via the valves.

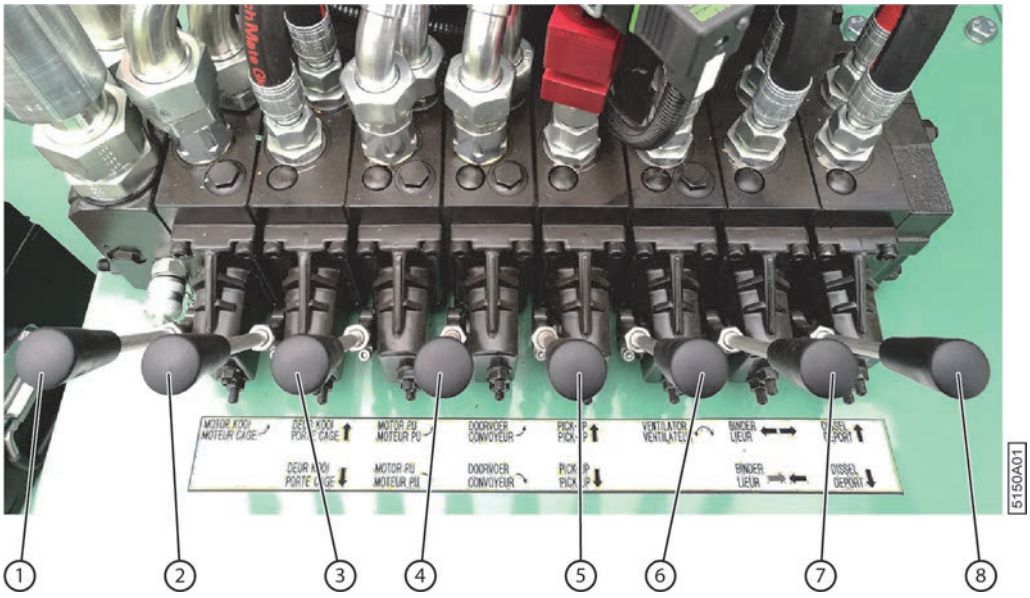


Fig. 60: Valve block

Perform one of the following actions:

Nr.	Forwards (towards the machine)	Backwards (away from the machine)
1	Allowing the pressing chamber to rotate forwards.	No action.
2	Open the pressing chamber door.	Close the pressing chamber door
3	Allowing the pick-up to rotate backwards.	Allowing the pick-up to rotate forwards.
4	Allowing the conveyor belts to rotate forwards.	Allowing the conveyor belts to rotate backwards.
5	No action	Raise the pick-up.
6	The fan sucks air through the radiator.	The fan blows air through the radiator.
7	Opening the needles of the binding rope system	Closing the needles of the binding rope system.
8	Moving the towing arm to the harvesting position.	Moving the towing arm to the driving position.

See also

- 2.2.4 The valve block (PVG) on page 24

8.2.2 Placing the towing arm in the harvesting position or driving position

When driving on public roads, the towing arm must be placed in the driving position, so that the machine remains in line with the tractor. When rolling-up the flax, the towing arm must be placed in the harvesting position so that you do not drive over the flax with the wheel of the tractor.

TIP
If necessary, the driving position can be used for the rolling-up of the flax during the first circuit at the edges of the field.

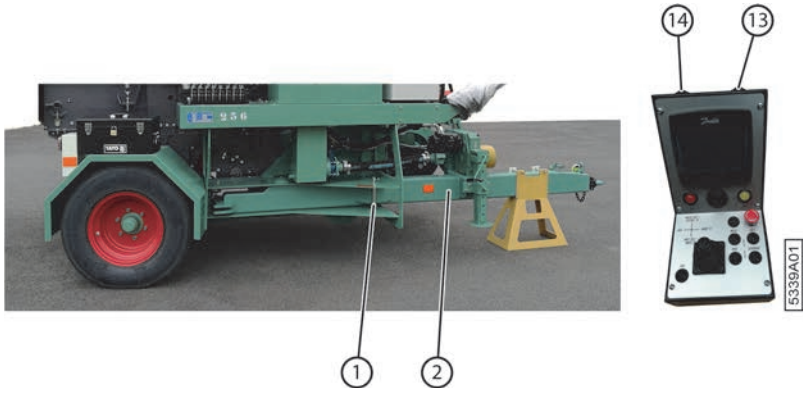


Fig. 61: The operation of the towing arm

1. Remove the locking pin (1) from the towing arm (2).
2. Perform one of the following actions:
   - Press the right-hand button (13) to open the towing arm, i.e. move it to the harvesting position.
   - Press the left-hand button (14) to close the towing arm, i.e. move it to the driving position.
3. Lock the towing arm, if the towing arm must remain in the driving position.

   For example: if you drive with the machine on public roads.

   You can also open or close the towing arm via the valve block. See 8.2.1 Operating the machine manually via the valve block (PVG) on page 80.

8.2.3 Starting the machine

WARNING

- The machine may only be operated by persons who have the requisite experience.
- The machine may not be operated by persons who are intoxicated by alcohol or under the influence of other substances.

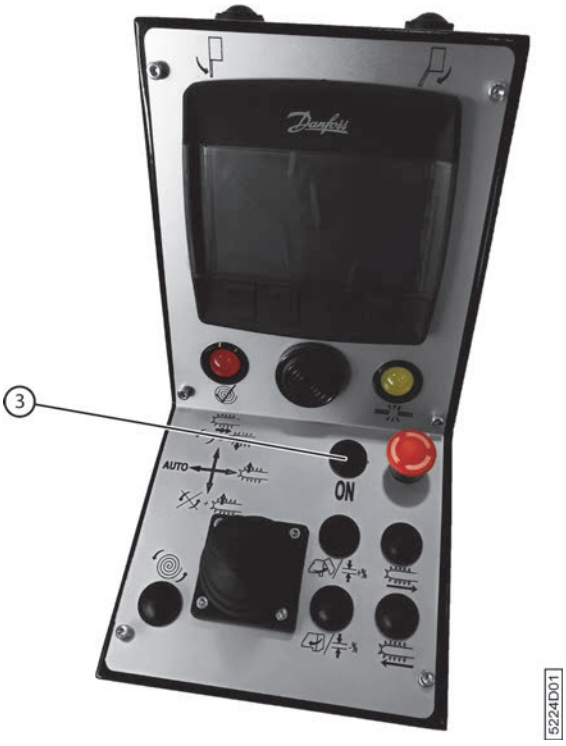


Fig. 62: Starting the machine

1. Check whether the hydraulic valve is open. See 7.3.5 Opening the hydraulic valve on page 73.
2. Check that persons or animals are not in the vicinity of the machine, and check that the machine does not exhibit any abnormalities (oil leak, damaged pipe, open protective panel, etc.).
3. Briefly sound the horn, so that persons around the machine are informed that the engine will be started. Give them enough time to leave the danger zone.
4. Start the machine by pressing button 3.
5. Start the PTO of the tractor (540 revs./min.).

NOTE
Never press your foot hard down on the accelerator pedal during a cold start! Give the hydraulic oil time to warm up. During a cold start, the oil is still thick, and this can block the filter.

8.2.4 Stopping the machine

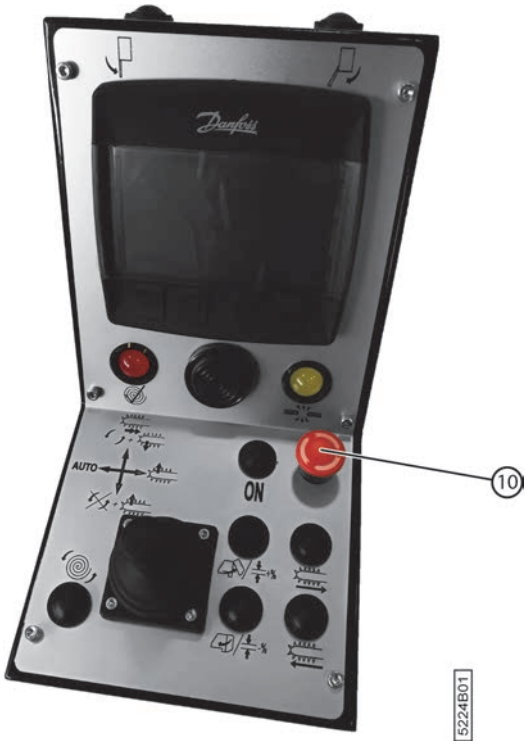


Fig. 63: Stopping the machine

Stop the machine by pressing button 10.
All electrical power is isolated, and all control is disabled. The flashing light on the machine is active.

8.2.5 Selecting an item from the submenu

Fig. 64: Selecting an item from the submenu

1. Using the  arrows, select the item from the submenu (1).
2. Select **OK**.
3. Using the  arrows, select the item from the submenu (2).

4. Select **OK**.

8.2.6 Setting the language of the control screen

1. Select  in the start window.
2. Select  **language** on the 2nd page.
3. Select **OK**.
4. Select the desired language.
   A box is displayed around the selection.
5. Press **ESC**.
   The control is displayed in the selected language.

8.2.7 Adjusting the brightness of the control screen

It is recommended to adjust the control screen brighter in the **Day** mode, and dimmed in the **Night** mode.

1. Select  in the start window.
2. Select  **screen**.
3. Select **OK**.
4. Select the value next to  in the **Day** or **Night** column.
5. Select **OK**.
6. Use the  and  arrows to adjust the brightness, and press **OK**.

See also

- 8.2.10 Setting the control screen in day / night mode on page 86

8.2.8 Setting the contrast of the control screen

It is recommended to adjust the control screen brighter in the **Day** mode, and dimmed in the **Night** mode.

1. Select  in the start window.
2. Select  **screen**.
3. Select **OK**.
4. Select the value next to  in the **Day** or **Night** column.
5. Select **OK**.
6. Use the  and  arrows to set the contrast, and press **OK**.

8.2.9 Setting the date and time on the control screen

1. Select  in the start window.
2. Select  **screen**.
3. Select **OK**.
4. Select the value next to **Day**.
5. Select **OK**.
6. Use the  and  arrows to set the day, and press **OK**.
7. Select the value next to **Month**.
8. Use the  and  arrows to set the month, and press **OK**.
9. Select the value next to **Year**.
10. Use the  and  arrows to set the year, and press **OK**.

8.2.10 Setting the control screen in day / night mode

It is recommended to adjust the control screen brighter in the **Day** mode in the daytime, and dimmed in the **Night** mode at night. To optimally achieve this, the brightness and the contrast must be correctly adjusted in the day mode and in the night mode.

1. Select  in the start window.
2. Select  **screen**.
3. Select **OK**.
4. Select **Day** or **Night**.
5. Select **OK**.
6. Use the  and  arrows to adjust the brightness, and press **OK**.

See also

- 8.2.7 Adjusting the brightness of the control screen on page 85

8.2.11 Raising / lowering the pick-up

Perform one of the following actions:

To...	Move the joystick
raise the pick-up	to the right.
to raise the pick-up and stop the work cycle.	backwards
to lower the pick-up and start the work cycle	forwards

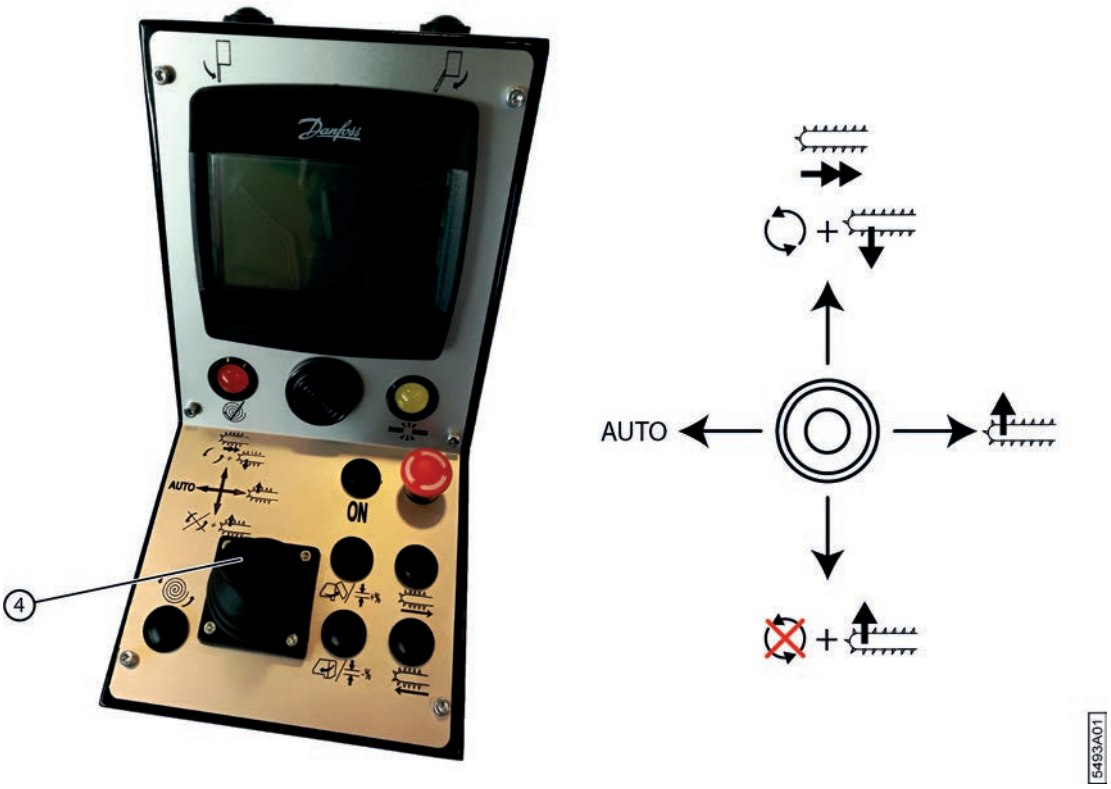


Fig. 65: Raising / lowering the pick-up via the joystick

8.2.12 Collecting flax and rolling-up into a bale (rolling-up mode)

The rolling-up mode ensures that the flax layer is collected from the ground, is thickened, and is rolled-up into a round bale. To bind the bale and eject it, you must either activate the automatic mode or give a manual bind or eject command.

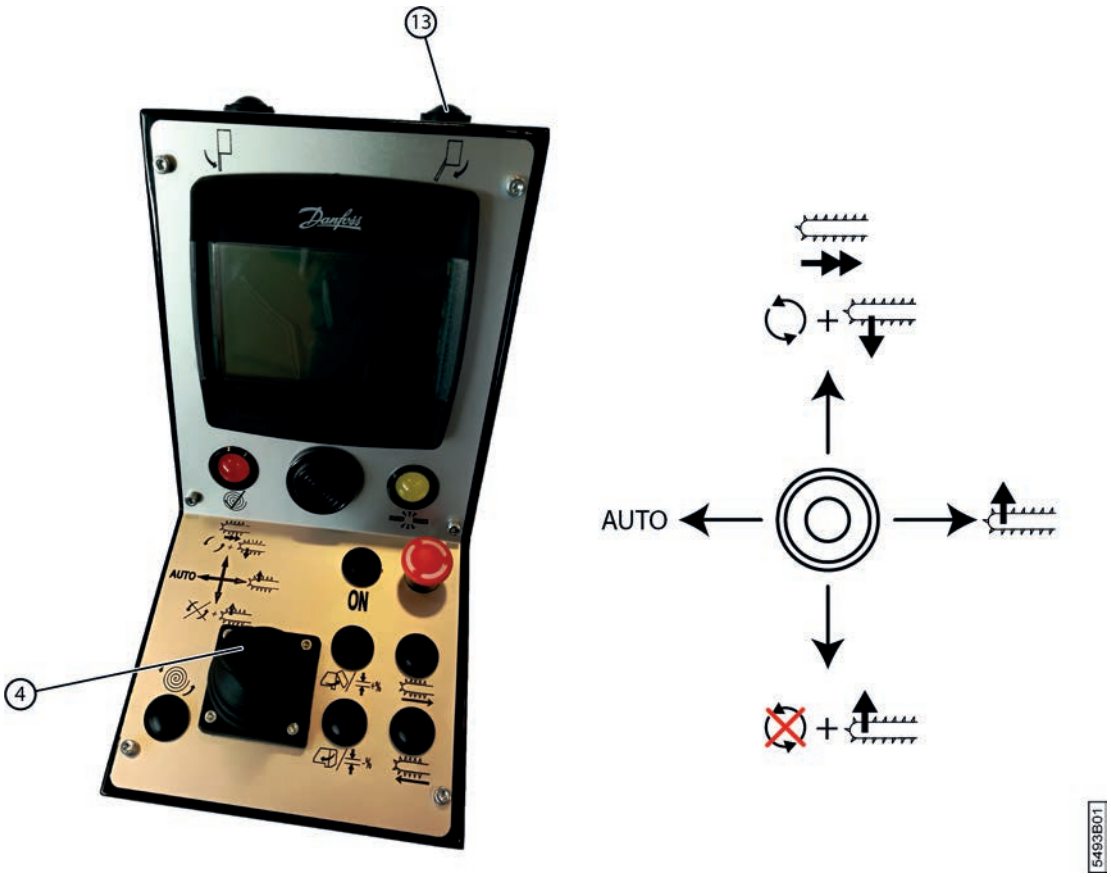


Fig. 66: Collecting flax and rolling-up into a bale (rolling-up mode)

1. Press button (13) to place the towing arm in the harvesting position.
2. Drive the machine to the swath and ensure that the swath is centered in relation to the pick-up drum.
3. Press the joystick (4) forwards to lower the pick-up and start the work cycle

   The  symbol is displayed on the screen.
4. Raise the pick-up at locations where there is no flax on the ground (joystick to the right), and then lower the pick-up again (joystick forwards).

See also

- 8.2.13 Binding and ejecting a bale (automatic mode) on page 88

8.2.13 Binding and ejecting a bale (automatic mode)

The automatic mode ensures that the flax is automatically bound and ejected as a bale.

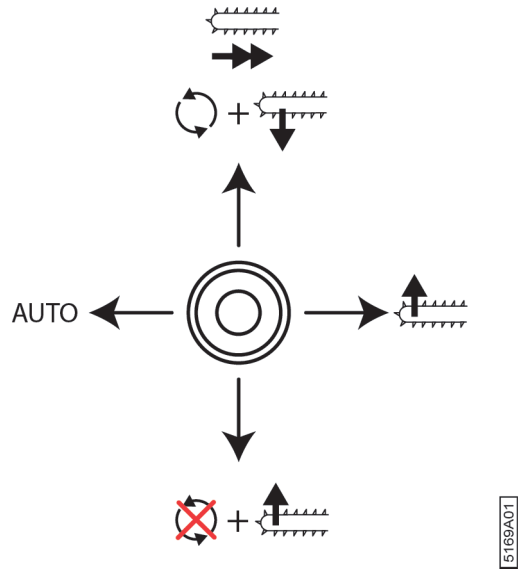


Fig. 67: Automatic binding and ejecting

The automatic binding and ejection only works when the rolling-up mode is active.

1. Push the joystick to the left to place the binding in automatic mode.
   The AUTO symbol is displayed on the screen.
2. Stop the machine when the bale diameter has been attained. The diameter is attained when the red lamp on the control console is lit and when the buzzer provides an audible signal.
   As soon as the machine is stopped, the binding commences.
3. Raise the pick-up (joystick to the right) and drive the machine diagonally backwards. This ensures that the bale that is ejected onto the round side, does not obstruct the collection of the next swath.
   The pressing chamber opens, the bale is ejected, and the pressing chamber closes again.
4. Lower the pick-up (move joystick forwards), and drive the machine back to the swath.

NOTE

- When 5 metres of flax is left to collect, and you have received the signal that the bale will be bound, you can temporarily disable the automatic mode when collecting the remaining flax. Then you can reset the machine to automatic mode, or you can use the buttons on the joystick to bind the bale, and to open or close the pressing chamber.
- You can also temporarily deactivate the automatic mode in order to eject the bale at another location.

See also

- 8.2.12 Collecting flax and rolling-up into a bale (rolling-up mode) on page 87
- 8.2.14 Binding and ejecting a bale (manually) on page 90

8.2.14 Binding and ejecting a bale (manually)

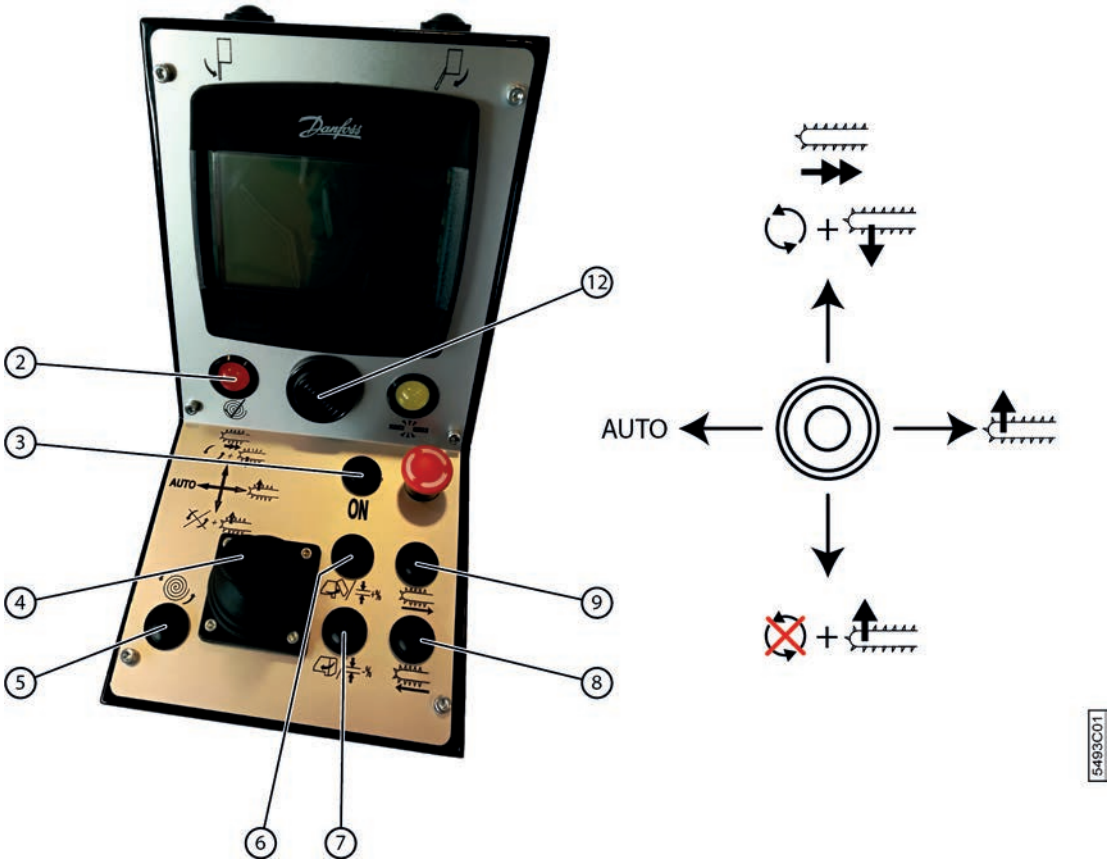


Fig. 68: Manual binding and ejecting

1. Place the machine in Manual mode. If the AUTO symbol is displayed on the screen, push the joystick (4) to the left to automatically disable binding.

   The AUTO symbol is no longer displayed on the screen.
2. Stop the machine when the bale diameter has been attained. The diameter is attained when the red lamp (2) on the control console is lit and when the buzzer provides an audible signal.
3. Press button 5 to start the binding.
4. Raise the pick-up (joystick to the right) and drive the machine diagonally backwards, so that the bale that is ejected on the round side, and does not obstruct the collection of the next swath.
5. Press button 6 to open the pressing chamber.
6. As soon as the bale is ejected, press button 7 to close the pressing chamber.
7. Lower the pick-up (joystick forwards) and drive the machine back to the swath.

See also

- 8.2.13 Binding and ejecting a bale (automatic mode) on page 88

8.2.15 Removing a blockage by machine

Before removing the blockage, you must look for the cause and eliminate the cause.

WARNING
Check that nobody is in the vicinity of the machine.

The unblocking takes place by continually moving the belts forwards and backwards.

Fig. 69: Removing a blockage by machine

1. Briefly push the joystick (4) forwards.
   The work cycle stops and the pick-up is raised slightly.
2. Press the button.
   - (8): the pick-up drum and the conveyor belts rotate in the opposite direction.
   - (9): the pick-up drum, the conveyor belts and the pressing chamber belts rotate in the normal direction.
3. Repeat step 2 until the blockage has been removed. If the blockage is still not removed, try the remove the blockage manually in accordance with the 8.2.16 Removing a blockage manually on page 91 procedure.

8.2.16 Removing a blockage manually

Combine this task with the 8.2.17 Looking for and eliminating cause of blockage on page 92 task.

DANGER
It is prohibited to manually remove the blockage if the machine is still switched ON!

WARNING
Wear safety gloves when removing the blockage.

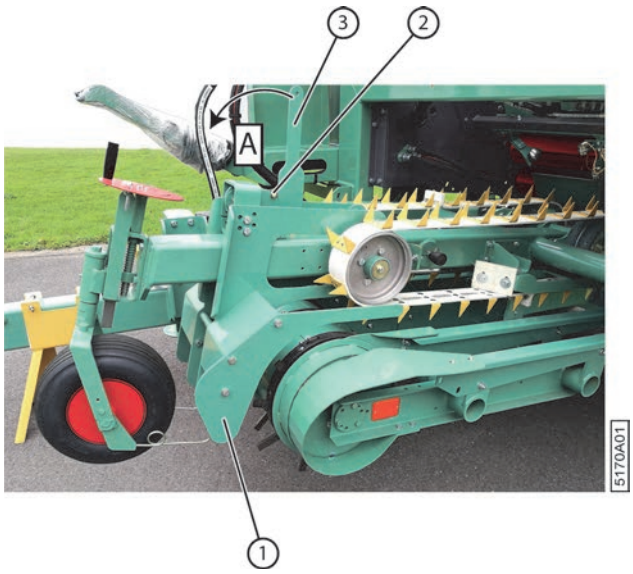


Fig. 70: Open the foldable guide

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Remove the pipe locking pin (2).
3. Pull the handle (3) towards you (A).
   If necessary, use a pipe over the handle to provide more leverage when opening the guide (1).
4. Remove the blockage.
5. Push the handle back to its original position.
6. Install the pipe locking pin.

See also

- 8.2.44 Adjusting the thickness of the flax layer (via the control screen) on page 109

8.2.17 Looking for and eliminating cause of blockage

WARNING
It is prohibited to look for and eliminate the cause of the blockage if the machine is still switched ON.

Always look for the cause of the blockage and eliminate the cause.

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Check the cause of the blockage and eliminate the cause:

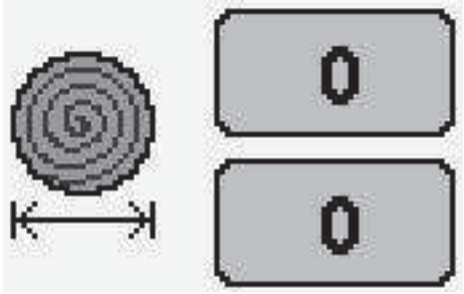
Cause	Solution
The thickness of the flax layer has not been correctly set.	See 8.2.44 Adjusting the thickness of the flax layer (via the control screen) on page 109.
The flax layer is locally too thick.	Spread out the flax in a uniform manner.
A stone is present between the flax.	Remove the stone.
A coiled spring has broken off, been moved, or has disappeared.	Remove the broken coiled spring. Move the coiled spring, check the alignment and resecure it. Install a new coiled spring, check the alignment and resecure it.

Cause	Solution
A guide has been moved.	Move the guide back to its original position and check the alignment.
A guide is bent or damaged.	Straighten the guide or replace the guide.
Dirt has accumulated.	Remove all of the dirt.
An attachment on a conveyor belt is damaged.	Repair or replace the attachment. See 10.3.15 Replacing an attachment on the conveyor belt on page 173.
A tooth is damaged.	Replace the tooth. See 10.3.8 Replacing the tooth of the pick-up drum on page 169.
The guide of the pick-up drum is too much open.	Adjust the guide (1) so that it is a tight-fit on the pick-up drum (2).
2 flax layers are on top of each other.	Separate the flax layers. Correctly centre the pick-up drum again in relation to the machine.
2 flax layers are collected at the same time.	Separate the flax layers. Correctly centre the pick-up drum again in relation to the machine.

Fig. 71: Pick-up drum guide

8.2.18 Reading the counters of the start window

1. Go to the start window on the control screen.
2. Read the data for the following pictograms:

Item	More information
	2 counters measure the length of the rolled-up flax: Field above: the length of the rolled-up flax in the current bale (in metres). Field below: the length of the rolled-up flax in the previous bale (in metres).

Item	More information
	Bale counter. The counter can be used to count the bales on a field. The counter can be reset.
	Bale counter. The counter can be used to count the bales during the entire season. The counter can be reset.

8.2.19 Reading all counters

3 counters are provided for counting the number of bales. 2 counters that can be reset: the day counter (J) and the year counter (T), and 1 fixed counter that cannot be reset.

1. Select  in the start window.
2. Select  **counters**.
3. Select **OK**.
4. Read the data for the following pictograms:

Item	More information
	Bale counter. The counter can be used to count the bales on a field. The counter can be reset.
	Bale counter. The counter can be used to count the bales during the entire season. The counter can be reset.
	Bale counter. The counter displays the total number of bales that have already been created by the machine. The counter cannot be reset.

NOTE

The number of bales is counted on the basis of the number of times that the pressing chamber is opened.

Please be aware of the fact that a bale is counted every time you open the pressing chamber for maintenance.

8.2.20 Resetting a counter

1. Select  in the start window.

2. Select  **counters**.
3. Select **OK**.
4. Use the  and  arrows to select the counter that you wish to reset.
5. Select **RTZ**.
   RTZ is briefly lit and the counter is reset to 0.

8.2.21 Entering the numerical code

Certain windows are locked. The windows are only displayed after you have entered a numerical code. After entering the correct numerical code, the information remains unlocked for as long as the control screen is switched ON. After switching OFF the control screen, you must re-enter the numerical code so that you can see the locked windows. The numerical code consists of 4 numbers.

By default, the numerical code is: 1508 The customer can change this code himself.

1. Select **OK**.
   The page for entering the numerical code is displayed.
2. Use the  and  arrows to move the selection on the numerical screen.
3. Press OK to confirm the selection.
   A star * is displayed. To delete the number, select  .
4. Repeat steps 2 and 3 until the entire numerical code has been entered.
   When entering the 4th number and if the entered numerical code is correct, the locked window is displayed.

See also

- 8.2.33 Setting the numerical code for the customer on page 105

8.2.22 Deleting a fault message

A fault message is accompanied by a pop-up window, and red lamps are lit at the edge of the screen.

1. Carefully read the fault message and solve the problem.
2. Press  to delete the fault message.
   The fault message is logged and can later be retrieved. If several fault messages exist, each fault message is displayed in turn after you press **OK**.

See also

- 8.2.28 Viewing the history of the fault messages on page 99

8.2.23 Checking the operation of the joystick

1. Select  in the start window.
2. Select  **inputs / outputs** and select **OK**.
3. Select **inputs** and select **OK**.
4. Place the joystick in the various positions and check that the value changes to 1.

Push the joystick ...	Check the value next to ...
forwards	**Lower pick-up button**
backwards	**Raise pick-up button**
to the right.	**Cycle button**
to the left	**Auto button**

8.2.24 Checking the operation of the buttons on the control console

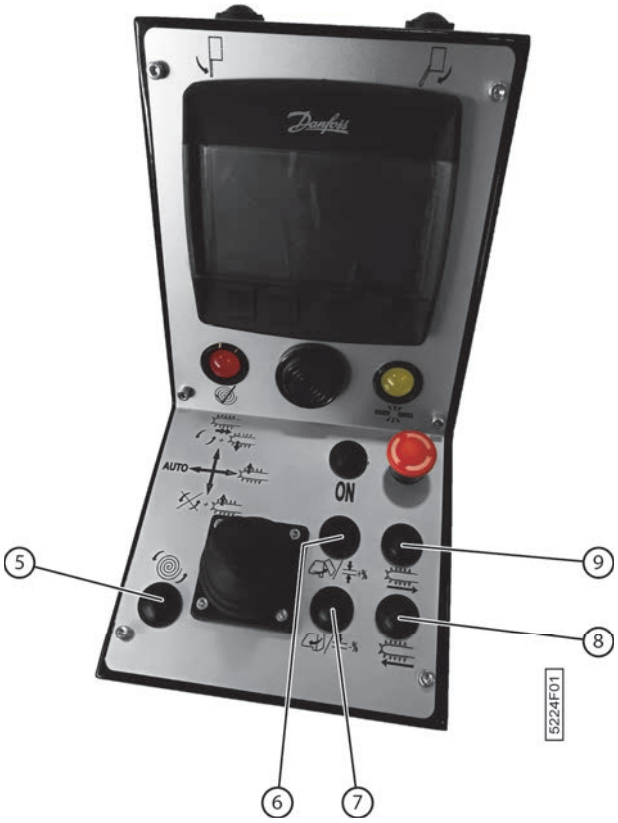


Fig. 72: Checking operation buttons control console

1. Select  in the start window.
2. Select  **inputs / outputs** and select **OK**.
3. Select **inputs** and select **OK**.
4. Press the various buttons on the control console and check that the value changes to 1:

Press the button ...	Check the value next to ...
9	**Remove blockage at front button**
8	**Remove blockage at rear button**
6	**Pressing chamber open button**
7	**Pressing chamber close button**
5	**Start binding button**

8.2.25 Viewing the inputs

You can view the input values in order to solve problems.

1. Select  in the start window.
2. Select  **inputs / outputs** and select **OK**.
3. Select **inputs** and select **OK**.
4. Use the  and  arrows to view the next inputs.

Item	More information
Remove blockage at front button	Button on the control console used to rotate the pick-up drum and the conveyor belts in the normal direction.
Remove blockage at rear button	Button on the control console used to rotate the pick-up drum and the conveyor belts in the opposite direction.
Cycle button	Joystick to the right. To raise the pick-up without deactivating the work cycle.
Raise pick-up button	Joystick backwards. To raise the pick-up and stop the work cycle.
Lower pick-up button	Joystick forwards. To lower the pick-up and start the work cycle
Start binding button	Button on the control console for starting the binding.
Pressing chamber open button	Button on the control console for opening the pressing chamber.
Pressing chamber close button	Button on the control console for closing the pressing chamber.
Auto button	Button on the control console for activating/ deactivating the automatic mode.
Pressing chamber open sensor	Sensor that detects when the pressing chamber is fully open.
Pressing chamber closed sensor	Sensor that detects when the pressing chamber is fully closed.
Diameter of bale sensor	Sensor that detects when the diameter of the bale has been attained.
Balancing arm low sensor	Sensor that detects when the balancing arm is completely low.
Pick-up raised sensor	Sensor that detects when the pick-up is fully raised.
Open binder	Sensor that detects when the needles of the binding rope system are fully open.
Pressing chamber speed	Sensor that measures the speed of the pressing chamber belts.
Throughput speed	Sensor that measures the speed of the conveyor belts.
Pick-up speed	Sensor that measures the speed of the pick-up drum.
Speed rope 1	Sensor that measures the speed of break monitoring tool 1.

Item	More information
Speed rope 2	Sensor that measures the speed of break monitoring tool 2.
Driving Speed	Sensor that measures the speed of the machine via the speed of the rear wheels.
Temperature hydraulic oil	Not applicable.
Ct relay ISO 11786	If the value is 1, this means that the speed of the tractor is used via the ISO 11786 cable.

5. View the value of the input. Some inputs are 1 if they are used; other inputs are assigned a value in Hz, mA, mV or ohms.

8.2.26 Viewing the outputs

You can view the output values in order to solve problems.

1. Select  in the start window.
2. Select  **inputs / outputs** and select **OK**.
3. Select **outputs** and select **OK**.
4. Use the  and  arrows to view the next outputs:

Item	More information
Power supply PVG pick-up	The power supply from the PVG that controls the pick-up.
Power supply PVG throughput	The power supply from the PVG that controls the throughput.
Power supply PVG pressing chamber	The power supply from the PVG that controls the pressing chamber.
Set value PVG pick-up	The current control value from the PVG for the pick-up.
Set value PVG throughput	The current control value from the PVG for the throughput.
Set value PVG pressing chamber	The current control value from the PVG for the pressing chamber.
Raising pick-up	This value is 1 if you raise the pick-up via the joystick.
Lowering pick-up	This value is 1 if you lower the pick-up via the joystick.
Pressing chamber open	This value is 1 if the pressing chamber opens (manually as well as automatically).
Pressing chamber closed	This value is 1 if the pressing chamber closes (manually as well as automatically).
Open binder	This value is 1 if the binding rope system is fully open You can only see this in automatic mode
Close Binder	This value is 1 if the binding rope system closes. You can only see this in automatic mode
Fan direction 1	This value is 1 if the fan rotates in direction 1.
Fan direction 2	This value is 1 if the fan rotates in direction 2.

Item	More information
Blockage lower pick-up	This value is 1 if you lower the pick-up via the joystick.
Buzzer	This value is 1 if the buzzer is active. For example, upon attaining the bale diameter.
Belt tension	Not applicable.
Power supply Relay ISO 11786	This value is 1 if the ISO 11786 cable is connected and if this option is activated on the screen. See 8.2.30 Setting a parameter on page 100.

5. View the value of the output. Some outputs are 1 if they are used; other outputs are assigned a value in %.

8.2.27 Viewing the software version

When contacting your distributor, it is recommended to state the software version of the various programs.

1. Select  in the start window.
2. Select  **inputs / outputs** and select **OK**.
3. Select **progr. codes**.
   The overview of the software versions of the various modules is displayed in the lowermost group box.

8.2.28 Viewing the history of the fault messages

There are 4 fault message groups, and the last 10 fault messages are logged for each group.

1. Select  in the start window.
2. Select  **faults** and select **OK**.
3. Select one of the following fault message groups:
   -  **General**
   -  **CAN**
   -  **Engine** (is not used)
   -  **Power supply**
4. Select **OK**.
5. Use the  and  arrows to view the previous and next screen with fault messages.

See also

- 8.2.22 Deleting a fault message on page 95

8.2.29 Deleting the history of the fault messages

There are 4 fault message groups, and for each group, the last 10 fault messages are logged. You can delete the entire history of the fault messages. For this, you need a secret code. All fault messages from the selected fault message group are deleted.

1. Select  in the start window.
2. Select  **faults** and select **OK**.
3. Select one of the following fault message groups:
   -  **General**
   -  **CAN**
   -  **Engine** (is not used)
   -  **Power supply**
4. Select **OK**.
   After 3 seconds, the **RES** button is displayed.
5. Select **RES**.
6. Entering the numerical code
   All fault messages from the selected fault message group are deleted.

See also

- 8.2.33 Setting the numerical code for the customer on page 105

8.2.30 Setting a parameter

You can fine-tune the machine to the use by modifying certain parameters. Follow the recommendations of the distributor or the manufacturer.

For example: the rotating speed of the pressing chamber during the binding, the minimum speed of the pick-up when starting to drive.

1. Select  in the start window.
2. Select  **parameters** and press **OK**.
3. Select the **harvesting** parameter group and press **OK**.
4. Use the arrows
   Use  and  to select a parameter, and press **OK**.
5. Use the
    and  arrows to change the value of the parameter, and press **OK**.

Parameter	Possible values.	More information
delay autobinding	0 to 999 s	The bale has attained its diameter. The set time ensures a delay between attaining the diameter and starting the automatic binding. This provides time for you to, if necessary, cancel the binding.
speed start autobind	0 to 20 km/h	When the speed of the machine is lower than the set speed, then the binding will start automatically.
early opening pressing chamber	• **Yes** • **No**	**Yes**: allows the pressing chamber to open earlier, at the end of the binding cycle. **No**: does not allow the pressing chamber to open earlier, at the end of the binding cycle.
speed fault sensor	0 to 20 km/h	The driving speed that will be used by the steering system in the event of a defective driving speed sensor.
commence start-up time	0 to ?	Setting the lead time for starting.
delay close pressing chamber	0 to 30 s	The time that is assigned for the bale to exit the pressing chamber before the pressing chamber starts closing again.
delay rope break	0 to 100 m	To give the ropes enough time to rotate with the bale. During this time, the rope-break alarms are generated. The time is based on the distance travelled by the machine. For example: 20 metres. During the 20 metres travelled by the machine, a rope-break alarm will not be generated.
throughput speed emptyiing	0 to 100%	Speed of the throughput during emptying before starting the binding.
unblocking speed	0 to 100%	This speed is used for: • manually moving the throughput forwards and backwards • unblocking
pressing chamber speed binding	0 to 100%	The speed at which the binding process is performed.
pressing chamber speed cutting ropes	0 to 100%	It is recommended to slow down the speed in order to cut better. Slow down the speed of the ropes.
pressing chamber speed opening	0 to 100%	The speed of the pressing chamber during the ejection of the bale. By default, is set to 0. The bale will still roll out of the pressing chamber. Setting this is actually a waste of time.
stop binding rope break	• **Yes** • **No**	**Yes**: in the event of a rope-break, the binding cycle is stopped. The pressing chamber stops and the binding system remains in the present position. **No**: in the event of a rope-break, the binding cycle is not stopped. You must manually bind the bale yourself.

Parameter	Possible values.	More information
emptying pick-up	• **Yes** • **No**	**Yes**: the pick-up is emptied before the binding cycle starts. The pick-up is emptied at the set speed. See **throughput speed emptyiing** parameter. **No**: the pick-up stops as soon as the machine stops and the binding starts.
sealing throughput	0 to 100% (per 5%)	The ratio of the density of the flax between the throughput and the pressing chamber. 50% is a recommended value. In humid conditions, 40% is recommended.
minimum speed start pick-up	0 to 20 km/h	The minimum speed at which the pick-up must rotate when starting to drive. This prevents the pick-up from starting-up irregularly.
graph calculation driving speed	0 to ? s	The lead time is calculated according to the driving speed.
calculate driving speed ON	• **0** • **1**	**0**: the calculation of the lead time according to the driving speed is disabled. **1**: the calculation of the lead time according to the driving speed is enabled.
frequency rope open pressing chamber	0 to 15 Hz	Enter the frequency in Hertz. The sensors on the rope-break wheels measure the frequency of these rope-break wheels. As soon as the frequency decreases below the set value, a signal is given so that the pressing chamber may be opened. This parameter is for saving time, i.e. not having to wait for the rope-break wheels to become stationary so that the pressing chamber can be opened.
delay open pressing chamber	0 to 5 s	You can still set an additional delay after the **frequency rope open pressing chamber** parameter has been reached.
sealing step	1 to 100%	This parameter is currently non-active This is the step that is used to set the **sealing throughput** parameter. Here, you can enter 10%, so that you can change the **sealing throughput** parameter in steps of 10%.
speed pick-up diameter OK	• **0** • **1**	**0**: the pick-up does NOT rotate at a very low speed during the binding. **1**: the pick-up rotates at a very low speed during the binding. You can use the **throughput speed emptyiing** parameter to adjust the speed at which the pick-up rotates during binding.

Parameter	Possible values.	More information
pick-up stop for binding	• **0** • **1**	**0**: does NOT stop the pick-up during binding. **1**: stops the pick-up during binding.
max. speed pick-up	6 to 20 km/h	The maximum permissible pick-up speed.
coefficient speed pick-up/driving	0 to 100%	The ratio of the pick-up speed in relation to the driving speed (=DPA).
select frequency ISO 1786	• **Yes** • **No**	**Yes**: uses the measured speed of the tractor via the ISO 11786 connection. **No**: uses the measured speed of its own sensor for the driving speed of the machine.
Frequency coefficient ISO 11786	number	The coefficient for adjusting the measured speed that is received via the ISO 11786 connection. By default, this is 130 (+/- 5%). If your tractor does not provide 130 pulses per metre, you must enter the modified value here. You can check the value by comparing the value for the tractor with the value on the control screen of the machine. Adjust this coefficient so that the difference between the values is negligible.

See also

- 8.2.31 Enabling or disabling a sensor on page 103
- 8.2.44 Adjusting the thickness of the flax layer (via the control screen) on page 109
- 8.2.45 Adjusting the thickness of the flax layer (via the control console) on page 109

8.2.31 Enabling or disabling a sensor

In the event of a sensor no longer being operational, you can temporarily disable the sensor so that the machine is in a safe state. The sensor must be repaired as soon as possible. No other actions may be performed with a defective sensor.

Contact your distributor.

For example: the sensor for detecting a break in rope 1 is no longer operational. Disable the sensor. Note: if rope 1 breaks, a message will no longer be displayed!

If you disable a sensor, the **Sensors disabled** fault message will be displayed. This fault message will also be displayed after the machine is restarted.

1. Select  in the start window.
2. Select  **parameters** and press **OK**.
3. Select the **disable sensors** parameter group and press **OK**.
4. Use the

    and  arrows to select a parameter, and press **OK**.
5. Use the

 and  arrows to change the value of the parameter, and press **OK**.

Parameter	More information	Result
driving speed sensor OFF	Enabling or disabling the sensor that measures the driving speed. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	The machine can still be operated. The speed will be calculated by another means.
pressing chamber speed sensor OFF	Enabling or disabling the speed sensor for the pressing chamber. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	The machine can still be operated. The speed will be calculated by another means.
belt speed sensor OFF	Enabling or disabling the speed sensor for the conveyor belts. The sensor is disabled. **No**: de sensor is enabled.	The machine can still be operated. The speed will be calculated by another means.
pick-up speed sensor OFF	Enabling or disabling the speed sensor for the pick-up. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	The machine can still be operated. The speed will be calculated by another means.
pressing chamber open sensor OFF	Enabling or disabling the sensor that detects when the pressing chamber is open. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	The automatic cycle of the pressing chamber can still take place, but is now time-based. The pressing chamber is automatically closed after a certain time. Whether or not the pressing chamber door opens fully is not checked.
pressing chamber closed sensor OFF	Enabling or disabling the sensor that detects when the pressing chamber is closed. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	The automatic cycle for the pressing chamber can still take place. Whether or not the pressing chamber door closes is not checked.
balancing arm low sensor OFF	Enabling or disabling the sensor that detects when the balancing arm is in the lowest position. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	The automatic cycle for the pressing chamber can still take place. The lowest position of the balancing arm is not checked. The user does not receive an audible signal (beep) when the balancing arm is in the lowest position.
rope 1 sensor OFF	Enabling or disabling the sensor that detects a break in rope 1. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	A rope-break in the uppermost rope is no longer detected. Whether or not the rope is taken during the rolling-up of a new bale is no longer detected. The cutting is no longer detected.
rope 2 sensor OFF	Enabling or disabling the sensor that detects a break in rope 2. **Yes**: the sensor is disabled. **No**: de sensor is enabled.	A rope-break in the lowermost rope is no longer detected. Whether or not the rope is taken during the rolling-up of a new bale is no longer detected. The cutting is no longer detected.

The **Sensors disabled** or **Sensors enabled** fault message is displayed.

See also

- 8.2.30 Setting a parameter on page 100
- 10.2.33 Testing the rope-break sensors on page 153
- 10.2.34 Testing the pressing chamber sensors on page 153
- 10.2.35 Testing the speed sensors on page 154

8.2.32 Setting the delay for a fault message

You can set a delay to ensure that a fault message is not immediately displayed in the event of a brief disruption. The fault message thus only appears after the set delay has elapsed. However, if the fault disappears before the set delay has elapsed, a fault message will not be displayed.

1. Select  in the start window.
2. Select  **parameters** and press **OK**.
3. Select the **disable sensors** parameter group and press **OK**.
4. Use the arrows

   Use and  to select a parameter, and press **OK**.
5. Use the  and  arrows to change the value of the parameter, and press **OK**.

Parameter	More information
time fault pressing chamber speed	The delay before displaying the speed fault for the pressing chamber.
time fault belt speed	The delay before displaying the speed fault for the conveyor belts.
time fault pick-up speed	The delay before displaying the speed fault for the pick-up.
time fault driving speed	The delay before displaying the speed faults.
minimum revs. pressing chamber -> incorrect	Minimum revs./min. for the pressing chamber before displaying the speed faults.
minimum revs. belt -> incorrect	Minimum revs./min. for the conveyor belts before displaying the speed faults.
minimum revs. pick-up -> incorrect	Minimum revs./min. for the pick-up before displaying the speed faults.

8.2.33 Setting the numerical code for the customer

You can choose and set the numerical code for the customer yourself.

1. Select  in the start window.
2. Select  **parameters** and press **OK**.
3. Select **secret code** and press **OK**.
4. Choose the number that you wish to change and press **OK**.

5. Use the  and  arrows to change the value.
6. Press **OK**.

See also
- 8.2.21 Entering the numerical code on page 95
- 8.2.29 Deleting the history of the fault messages on page 100

8.2.34 Raising the pick-up (via the control screen)

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.

   As soon as you release the button, the movement stops.

See also
- 2.2.13 The pick-up on page 30

8.2.35 Lowering the pick-up (via the control screen)

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.

   As soon as you release the button, the movement stops.

8.2.36 Allowing the pick-up to rotate forwards (via the control screen).

The pick-up drum, the conveyor belts and the pressing chamber belts rotate in the normal direction (forwards).

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.

   As soon as you release the button, the movement stops.

See also
- 2.2.18 The pressing chamber on page 37

8.2.37 Allowing the pick-up to rotate backwards (via the control screen).

The pick-up drum and the conveyor belts rotate in the opposite direction (backwards). The pressing chamber belts do not rotate.

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.
   As soon as you release the button, the movement stops.

8.2.38 Opening the pressing chamber (via the control screen)

Check that nobody is present at the rear of the pressing chamber, and check that there is enough room to open the pressing chamber.

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.
   As soon as you release the button, the movement stops.

8.2.39 Closing the pressing chamber (via the control screen)

Check that nobody is in the vicinity of the pressing chamber.

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.
   As soon as you release the button, the movement stops.

8.2.40 Opening and/or closing the pressing chamber (via the control console)

Check that nobody is present at the rear of the pressing chamber, and check that there is enough room to open the pressing chamber.

Fig. 73: Opening and/or closing the pressing chamber via the control console

Perform one of the following actions:

- Press button 6 to open the pressing chamber.
- Press button 7 to close the pressing chamber.

8.2.41 Opening the needles of the binding rope system (via the control screen)

1. Select  in the start window.
2. Select  **manual control**.
3. Select  .
4. Press **OK**.

   As soon as you release the button, the movement stops.

8.2.42 Closing the needles of the binding rope system (via the control screen)

1. Select  in the start window.
2. Select  **manual control**.

3. Select  .
4. Press **OK**.

   As soon as you release the button, the movement stops.

8.2.43 Operating the pick-up (via the joystick)

Use the joystick to perform one of the following actions:

To	Action
raise the pick-up and leave the machine in rolling-up mode	Push the joystick to the right.
raise the pick-up and disable the rolling-up mode	Pull the joystick backwards.
lower the pick-up	Push the joystick forwards.

See also

- 2.2.13 The pick-up on page 30

8.2.44 Adjusting the thickness of the flax layer (via the control screen)

You can adjust the thickness of the flax layer by increasing or decreasing the percentage. The thinner the flax layer, the slower the conveyor belts must rotate in relation to the travel of the machine in order to to create a thicker layer. At 100%, the conveyor belts rotate at the same speed as the machine travels. By default, a value of 300% is set. The value is:

- Decreased: if the flax layer to be collected is thick
- Increased: if the flax layer to be collected is thin

As a rule of thumb, the thickness of the flax layer must be adjusted as follows: a bale must contain a layer of approximately 70 metres of flax, unless the company that scutches the flax requires a different length. If the bale must contain 100 metres of rolled-up flax, then the thickness of the flax layer must be increased. Conversely, if the bale must contain a layer of less than 70 metres of rolled-up flax, the thickness of the flax layer must be decreased.

1. Select the start window.
2. Press + or - to adjust the thickness of the flax layer in the field beside  .

   By default, a value of 300% is set. If the flax on the field is thinner, this requires a higher percentage to be set.

   After a few seconds, the modifications are automatically saved.

See also

- 8.2.16 Removing a blockage manually on page 91
- 8.2.30 Setting a parameter on page 100

8.2.45 Adjusting the thickness of the flax layer (via the control console)

You can adjust the thickness of the flax layer by increasing or decreasing the percentage. The thinner the flax layer, the slower the conveyor belts must rotate in relation to the travel of the machine in order to to create a thicker layer. At 100%, the conveyor belts rotate at the same speed as the machine travels. By default, a value of 300% is set. The value is:

- Decreased: if the flax layer to be collected is thick
- Increased: if the flax layer to be collected is thin

Fig. 74: Adjusting the thickness of the flax layer via the control console

Perform one of the following actions:

- Press button (6) to increase the thickness of the flax layer (+%). The conveyor belts rotate slower.
- Press button (7) to decrease the thickness of the flax layer (-%). The conveyor belts rotate faster.

By default, a value of 300% is set. If the flax on the field is thinner, this requires a higher percentage to be set.

After a few seconds, the modifications are automatically saved.

See also

- 8.2.30 Setting a parameter on page 100

8.2.46 Temporarily increasing the throughput speed

If a thick layer of flax has to be collected, you can activate the boost function so that the throughput speed is increased. This reduces the thickness of the flax layer.

This action can only be performed in the automatic mode.

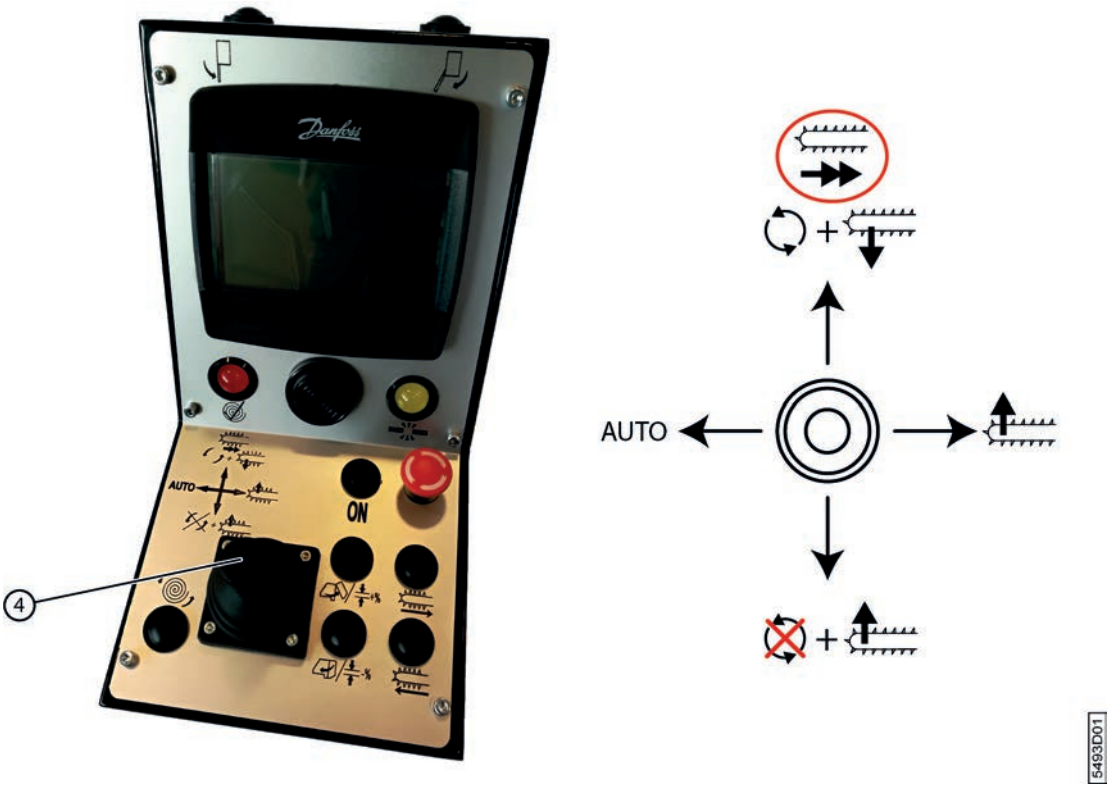


Fig. 75: Boost function

Push the joystick forwards.
The flax thickness goes to 100%, and the conveyor belts rotate faster. As soon as you release the joystick, the value reverts to the set value.

8.2.47 Reading the bale counters

The number of bales is recorded. There are 2 counters that can be reset, and 1 fixed counter that cannot be reset.

1. Go to the start window on the control screen.
2. Press # to go to the next window.
3. Select  and press OK.
4. Read the data for the following pictograms:

Item	More information
	The counter can be used to count the bales on a field. The counter can be reset.
	The counter can be used to count the bales during the entire season. The counter can be reset.

Item	More information
	The counter displays the total number of bales that have already been created by the machine. The counter cannot be reset.

NOTE

The number of bales is counted on the basis of the number of times that the pressing chamber is opened.

Please be aware of the fact that a bale is counted every time you open the pressing chamber for maintenance.

8.2.48 Resetting a bale counter

There are 2 bale counters that can be reset.

1. Select  in the start window.
2. Select  **counters** and select **OK**.
3. Select one of the following counters:

Day counter	More information
	The counter can be used to count the bales on a field.
	The counter can be used to count the bales during the entire season.

4. Press **RTZ**.

8.2.49 Setting the positions of the needles of the binding rope system

You can set the various positions for the rope around the bale. Initially, start the rope in the centre of the bale (S). To bind the bale, the rope is transported to 3 intermediate positions (0, 1 and 2), and finally to the cutting position (F). In addition to the position, you also set the number of revolutions that must be made. Usually, 1 to 3 revolutions per position.

The values can be adjusted according to your own experience. The values to be set depend on:

- The set pressure
- The type of rope

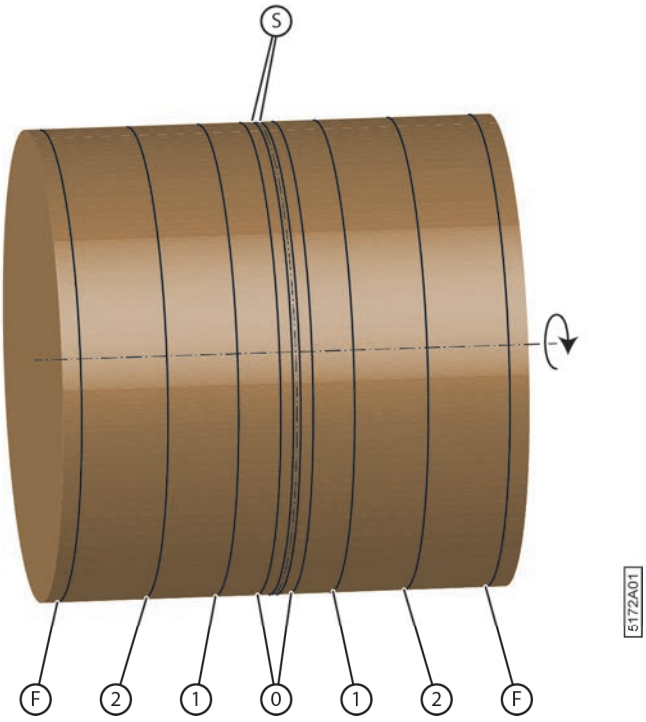


Fig. 76: Positions of the rope during binding

1. Go to the start window on the control screen.
2. Select  in the start window.
3. Select  **adjust binding**.
4. Select **OK**.
5. Select  **settings**.
6. Select **OK**.
7. Use the  and  arrows to select the percentage.
8. Select **OK**.
9. Use the  and  arrows to set the percentage.
   It is recommended that the percentages entered per position differ by at least 10%.
10. Select **OK** to confirm the setting.
11. Use the  and  arrows to select the number of revolutions.
12. Use the  and  arrows to set the number of revolutions.
    Between 0 and 50 revolutions. Can be set per half revolution.
13. Select **OK** to confirm the setting.
14. Set position 1, position 2, and the cutting position in the same way.

    It is recommended that the percentages entered per position differ by at least 10%. Values:

Position	Percentage (default value)	Revolutions (default value)
Position 0	5%	1.5 revs.

Position	Percentage (default value)	Revolutions (default value)
Position 1	25%	2 revs.
Position 2	55%	4.5 revs.
Cutting position	90%	1.5 revs.

See also

- 2.2.20 The potentiometer of the binding rope system on page 39

8.2.50 Testing the open position and closed position of the needles of the binding rope system

By setting the needles of the binding rope system in the open position and closed position, you can quickly see whether calibration is required.

1. Fully open the needles of the binding rope system. See 8.2.41 Opening the needles of the binding rope system (via the control screen) on page 108.
2. Check that 100% is displayed on the screen.
3. Fully close the needles of the binding rope system. See 8.2.42 Closing the needles of the binding rope system (via the control screen) on page 108.
4. Check that 0% is displayed on the screen.
5. If the values at 100% or 0% deviate, then you must recalibrate the binding rope system. See 8.2.52 Calibrating the positions of the needles of the binding rope system on page 115.

8.2.51 Testing the set positions of the needles of the binding rope system

CAUTION
Ensure that nobody is in the vicinity of the machine when you perform this test.

1. Select  in the start window.
2. Select  **adjust binding**.
3. Select **OK**.
4. Select  **settings**.
5. Select **OK**.
6. Use the  and  arrows to select the position.
7. Select **GO**.
   The needles go to the selected position.
8. Check that this position corresponds with the set value. If the position deviates, then the positions of the needles must be recalibrated.
9. Repeat from step 6, to test the other positions in the same way.

See also

- 8.2.52 Calibrating the positions of the needles of the binding rope system on page 115

8.2.52 Calibrating the positions of the needles of the binding rope system

Problems with the binding rope system can often be solved by performing the calibration again. If the calibration does not solve the problem, contact your distributor.

1. Close the needles. See 8.2.42 Closing the needles of the binding rope system (via the control screen) on page 108.
2. Select  in the start window.
3. Select  **adjust binding**.
4. Select **OK**.
5. Select  **calibration**.
6. Select **OK**.
7. Select the closed position of the needles  .
8. Select **CAL**.
   The closed position of the needles is calibrated.
9. Open the needles. See 8.2.41 Opening the needles of the binding rope system (via the control screen) on page 108.
10. Select  in the start window.
11. Select  **adjust binding**.
12. Select **OK**.
13. Select  **calibration**.
14. Select **OK**.
15. Select the open position of the needles  .
16. Select **CAL**.
    The open position of the needles is calibrated.

See also

- 8.2.51 Testing the set positions of the needles of the binding rope system on page 114

8.3 Driving on public roads

8.3.1 Before you drive on public roads

CAUTION
Ensure that you have fulfilled the administrative requirements for driving on public roads. Adhere to the current local regulations.

1. Empty the machine.

The machine must not contain flax residues or a bale in the pressing chamber!

2. Clean the machine.
3. Check that the pressing chamber is closed,
4. Check that the support leg is fully upwards.
5. Fold in the exiting profiles. See 8.3.4 Folding the exiting profiles on page 117.
6. Close all protective doors.
7. Check the visibility from the cabin of the tractor.
8. If necessary, switch ON the road lighting and check that it works.
9. Check the operation of the flashing light and the indicators.
10. Lock the pick-up.

8.3.2 Placing the towing arm in the driving position

When driving on public roads, the towing arm must be placed in the driving position, so that the machine remains in line with the tractor.

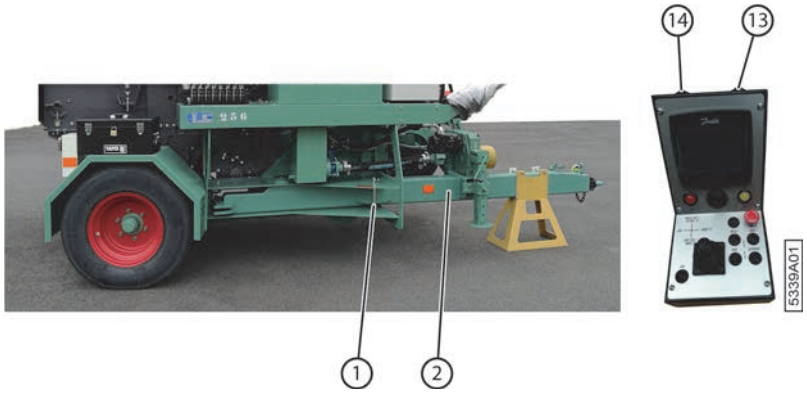


Fig. 77: The towing arm in driving position

1. Remove the locking pin (1) to unlock the towing arm (2).
2. Press the left-hand button (14) to close the towing arm, i.e. move it to the driving position.
   The machine is aligned with the tractor.
3. Insert the locking pin (1) to lock the towing arm (2).

8.3.3 Driving on public roads

Ensure that all safety precautions have been taken. See 8.3.1 Before you drive on public roads on page 115.

1. Place the towing arm in the driving position. See 8.2.2 Placing the towing arm in the harvesting position or driving position on page 81.
2. Drive the machine on public roads.

CAUTION

- Always maintain a safe speed when making journeys on public roads. Be vigilant when passing through built-up areas, encountering poor visibility on bends, poor visibility in bad weather, wet or muddy roads, etc.
- Summon assistance when your field of vision is restricted, especially when reversing.

8.3.4 Folding the exiting profiles

The exiting profiles must be folded before you drive the machine on a public road.

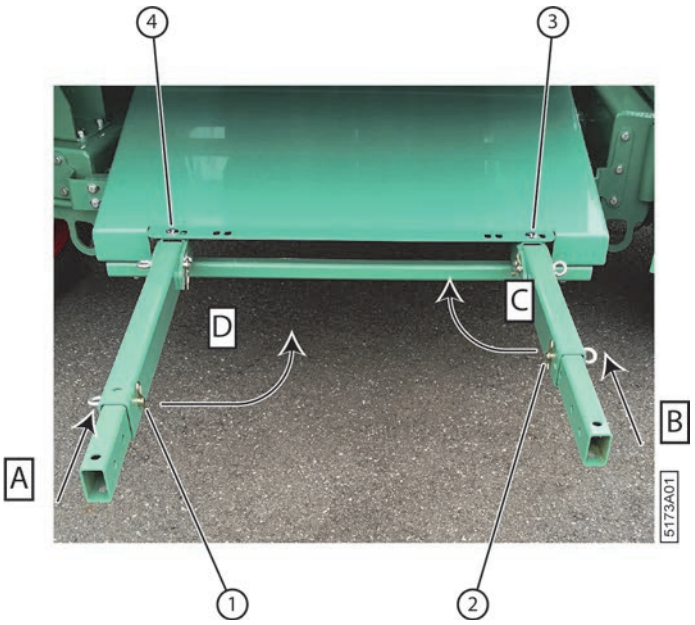


Fig. 78: Folding exiting profiles

1. Slide the left-hand profile inwards (A). Refit the eye-bolt and the locking pin with washer (1) into the profile.
2. Slide the right-hand profile inwards (B). Refit the eye-bolt and the locking pin with washer (2) into the profile.
3. Remove the bolt (3) from the right-hand pofile.
4. Fold the right-hand profile inwards (C).
5. Remove the bolt (4) from the left-hand profile.
6. Fold the left-hand profile inwards (D).
7. Insert the bolt (3) through the opening and through the end of the left-hand folded profile.
8. Refit the bolt (4) in the opening.

See also

- 9.3.3 Adjusting the exiting of the bale on page 126

9 Adjustment

9.1 Adjusting the pick-up

9.1.1 Adjusting the height of the pick-up

The pick-up must be adjusted so that the teeth are at the same height as the ground. If the pick-up is adjusted too low, stones and earth can be fed in with the flax, causing increased wear on the pick-up. If the pick-up is adjusted too high, flax ends up underneath the pick-up, and remains there.

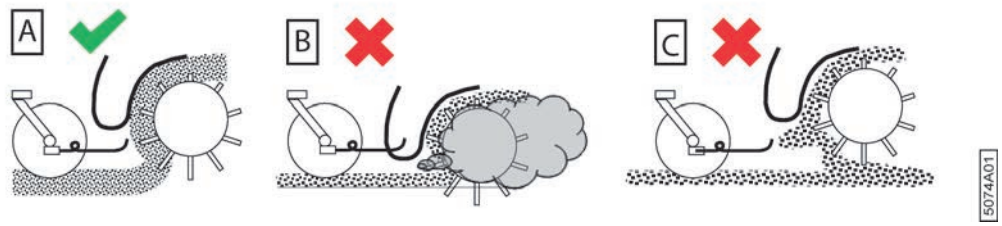


Fig. 79: Possible adjustments for the height of the pick-up

Nr.	Description	More information
A	OK	The pick-up is correctly adjusted. The flax is optimally fed in.
B	NOT OK	The pick-up is adjusted too low. The flax brings earth with it. The pick-up wears quickly.
C	NOT OK	The pick-up is adjusted too high. The flax ends up underneath the pick-up and forms bundles.

Fig. 80: Adjusting the height of the pick-up

Executor: operator

1. Read the safety instructions and observe them.
2. Remove the split pin (1) from the handwheel.
3. Turn the handle (2):
   - Clockwise, to lower the pick-up
   - Anti-clockwise, to raise the pick-up
4. Refit the split pin into the handwheel.

9.1.2 Adjusting the tyre pressure of the front wheel

A low tyre pressure for the front wheel prevents the pick-up from springing upwards, and also ensures that the flax is collected more optimally.

Adjust the tyre pressure to 2.5 - 3 bar. If necessary, decrease the tyre pressure.

9.1.3 Adjusting the guides of the front wheel

The two guides (springs) on both sides of the front wheel are indispensable. They hold back the swath that is thrown forwards by the pick-up, in order to guide the swath back to the belts. If these guides are not adjusted optimally, this results in the formation of bundles. If these guides are not installed, this can result in a delay from the top or bottom of the flax that, in turn, can result in obstruction of of the swath.

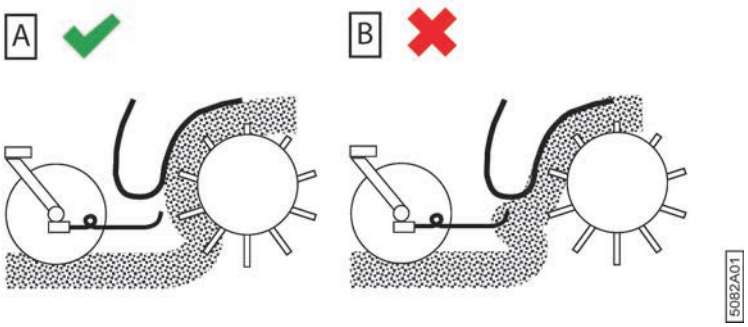


Fig. 81: Possible adjustments to the front wheel

Nr.	Description	More information
A	OK	The end of the coiled spring reaches the foldable guide. The flax is optimally fed in.
B	NOT OK	The end of the coiled spring does not reach the foldable guide. The flax accumulates and forms a bundle.

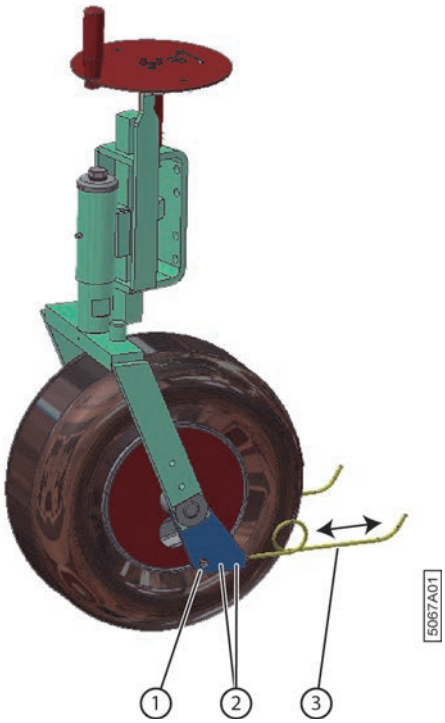


Fig. 82: Possible adjustments to the front wheel

1. Switch OFF the machine safely.
2. Undo the socket screws (2)
3. Slide the guide (3) until the end is flush with the metal block (1).
4. Tighten the socket screws.

9.1.4 Adjusting the tension of the conveyor belts

The tension on the conveyor belt is obtained by moving the non-driven pulley. If the conveyor belts slip, the tension must be increased.

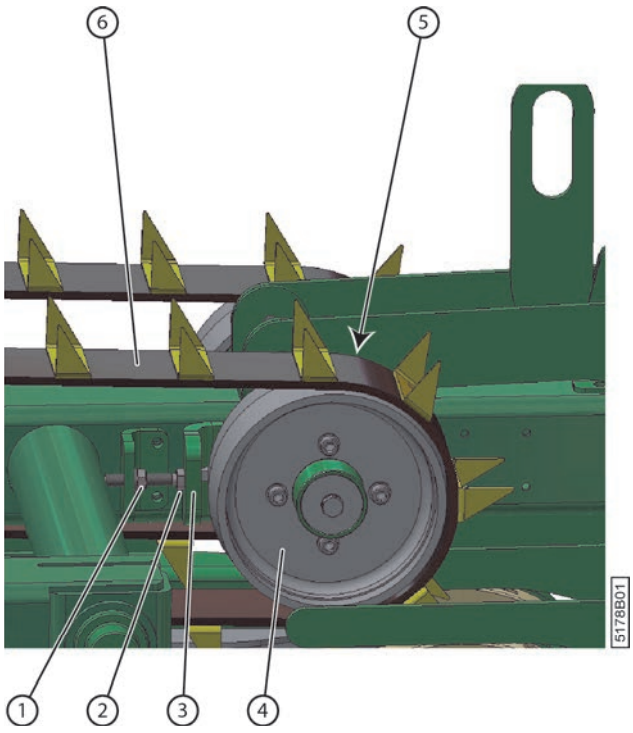


Fig. 83: Adjusting the tension of the belts

1. Switch OFF the machine safely.
2. Undo the 4 nuts (5) of the non-driven pulley.

   The 4 nuts are located between the non-driven pulley and the chassis of the pick-up. The part (3) on which the non-driven pulley is mounted, is equipped with slotted holes, and is secured by the 4 nuts.
3. Loosen the lock nut (1) the required distance.
4. Turn the bolt (2):
   - anti-clockwise to tension the conveyor belt
   - clockwise to loosen the conveyor belt
5. Tighten the lock nut.
6. Tighten the 4 nuts of the non-driven pulley.

See also

- 9.1.5 Shortening the conveyor belts on page 122
- 10.2.11 Checking the tension of the conveyor belts on page 140
- 10.2.21 Check the condition and the alignment of the conveyor belts on page 145
- 9.1.6 Adjusting the scraper of the conveyor belt on page 123

9.1.5 Shortening the conveyor belts

If increasing the tension does not stop the slipping, the belts must be shortened.

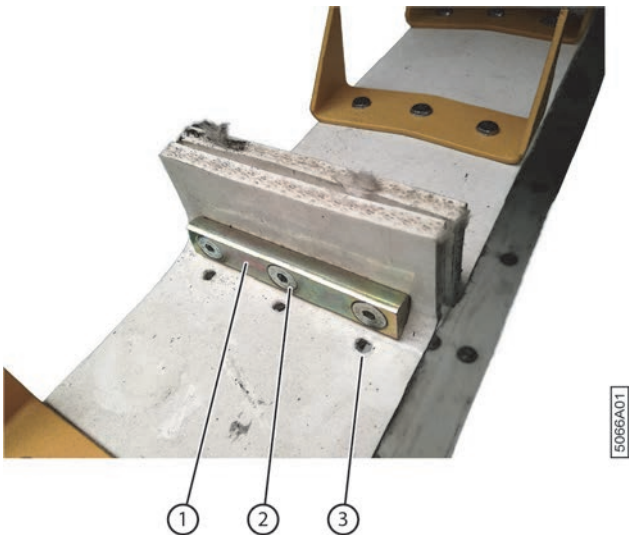


Fig. 84: Shortening the conveyor belts

1. Switch OFF the machine safely.
2. Loosen the conveyor belts, see 9.1.4 Adjusting the tension of the conveyor belts on page 121.
3. Loosen the connection (1) for the belts by unscrewing the 3 socket-screws (2).
4. Move the connector for the belts to the 3 adjacent holes (3).
   You do not have to make holes yourself. The holes already exist in the belt.
5. Secure the connector.

See also

- 9.1.4 Adjusting the tension of the conveyor belts on page 121

9.1.6 Adjusting the scraper of the conveyor belt

Before adjusting the scraper, you must first check the tension of the conveyor belts.

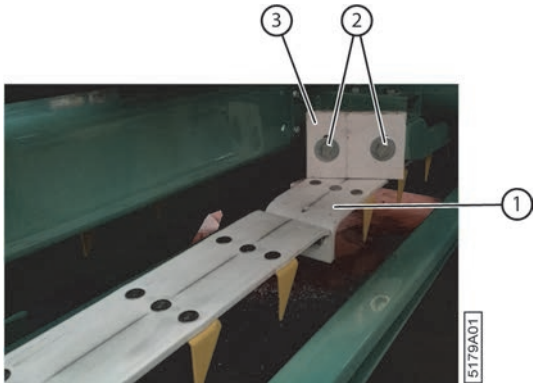


Fig. 85: Adjusting the scraper

1. Switch OFF the machine safely.
2. Undo the bolts (2).
3. Place the scraper (3) so that it fully touches the belt (1).

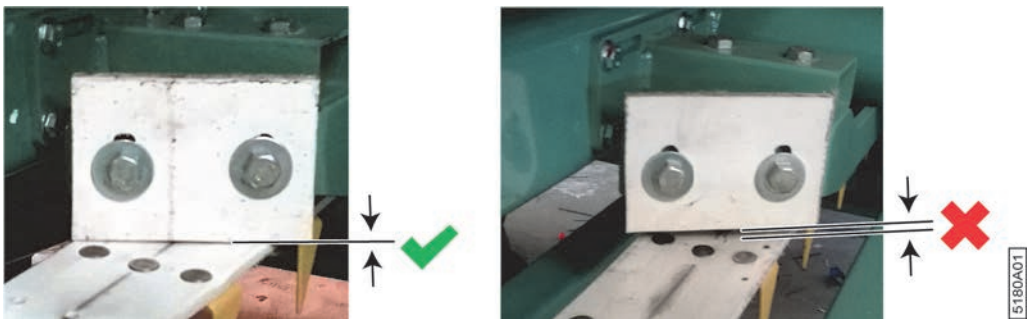


Fig. 86: Scraper OK or NOT OK

4. Retighten the bolts.

See also

- 9.1.4 Adjusting the tension of the conveyor belts on page 121

9.2 Adjusting the binding rope system

9.2.1 Adjusting the rope tensioning system

The rope tensioners (1) determine the tension on the ropes. The rope tension varies as the bale is created. The tension on the ropes is controlled by the lever (7) that is operated by the control stop (6) of the pressing chamber. The stop initially pushes the lever fully in so that when beginning to create a bale, less tension is applied to the rope tensioners than during the end of bale creation. The larger the bale is, the higher the stop is lifted, and the greater the pressure that is applied to the rope tensioners.

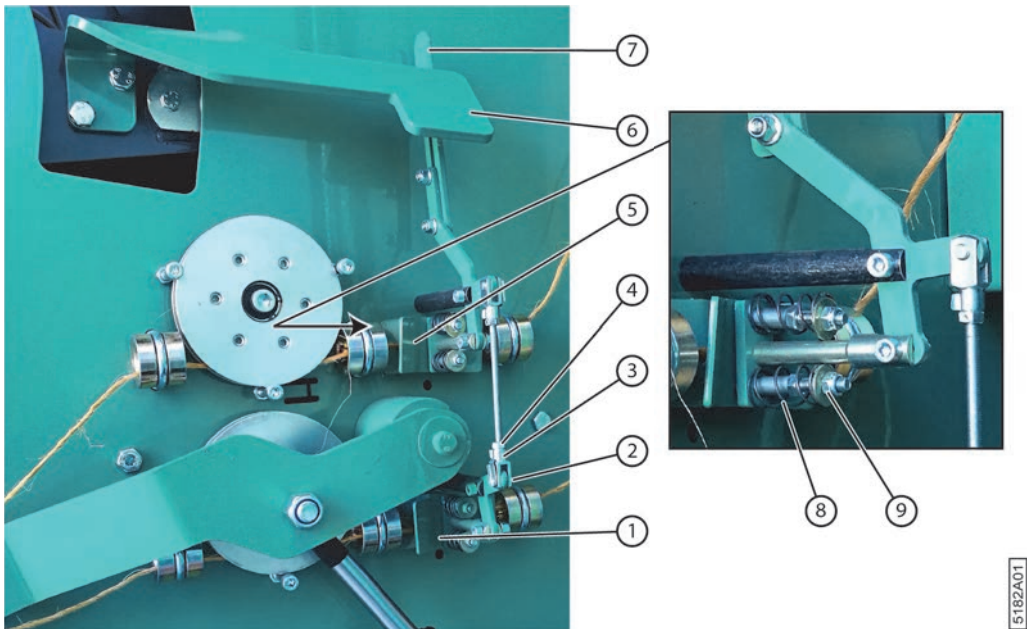


Fig. 87: Adjusting the rope tensioners

1. Adjust the rope tension by the tightening or loosening the nut (9). This results in the spring (8) applying more or less pressure to the rope tensioner (1). The optimal desired tension must be found by trial and error.
   - The tension must not be too high, so that initially, the ropes are taken by the flax in the cage.
   - The tension must not be too low, so that the ropes do not oscillate too much. If the ropes oscillate too much, they can snag on part of the machine, and this can result in a rope break.

2. Press the lever (7) fully in, and check that both rope tensioners are under the same amount of tension.
3. If this is not the case, adjust the tension via the threaded rod. To do this, undo the clip (3), loosen the locknut (4) and rotate the holder (2) on the threaded rod to the desired position. Retighten everything and repeat step 2.

9.3 Adjusting the pressing chamber

9.3.1 Adjusting the clamping pressure in the pressing chamber

Fig. 88: Adjusting the clamping pressure in the pressing chamber

The clamping pressure for creating the bale can be adjusted. The clamping pressure must be read when the bale is half rolled-up, or at the end just before the bale is ejected. The recommended clamping pressure is 120 bar. The clamping pressure depends on the rope used. The clamping pressure is lower at the start of the rolling-up.

1. Check the clamping pressure on the manometer (2).
2. Turn the handwheel (1):
   - clockwise to increase the pressure
   - anti-clockwise to decrease the pressure

See also
- 3.3.5 The clamping pressure on page 43

9.3.2 Installing a top plate

If a shorter type of flax is harvested, a top plate must be installed in the pressing chamber. One part is installed in the fixed part of the pressing chamber. The other part is installed in the movable part of the pressing chamber.

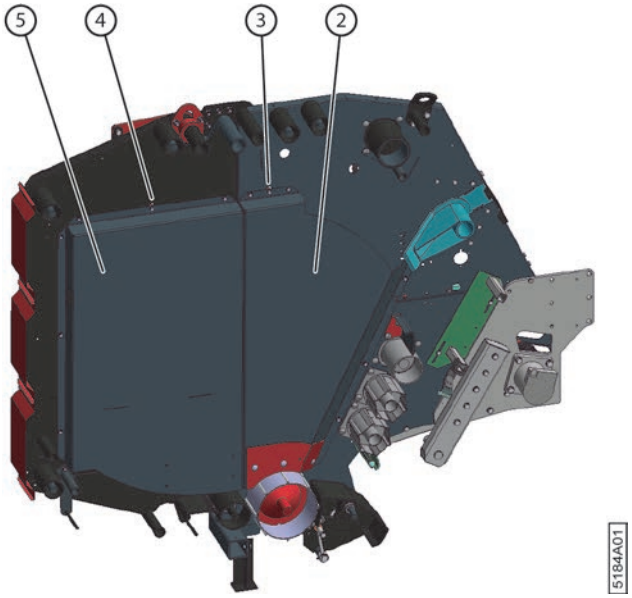


Fig. 89: Installing a top plate

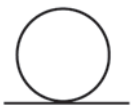
Perform this assignment with 2 persons!

1. Fully open the pressing chamber.
2. Switch OFF the machine safely.
3. Install the mechanical lock on both cylinders.
4. Hang the top plate (2) in the fixed part of the pressing chamber using the fixed bolt (3) in the keyhole.
5. Install all bolts.
6. Hang the top plate (5) in the movable part of the pressing chamber using the fixed bolt (4) in the keyhole.
7. Install all bolts.

9.3.3 Adjusting the exiting of the bale

You can select how the bale exits onto the field:

- On the round side of the bale
- On the flat side of the bale

Exiting bale	Explanation	Advantage	Disadvantage
	The bale is rolled out of the pressing chamber.	The round side of the bale is more able to withstand rain. For example: if the bale is not immediately loaded.	The bale can roll away on sloping fields. Each time, the bale must be tilted before it can be loaded.
	The bale is rolled out of the pressing chamber and is tilted.	The bale is ready to be loaded.	If the bale is not immediately loaded, then rain can penetrate the entire bale.

At the rear of the machine, you can adjust the exiting profiles. The exiting profiles help the bale to roll far enough out of the pressing chamber and also tilt the bale.

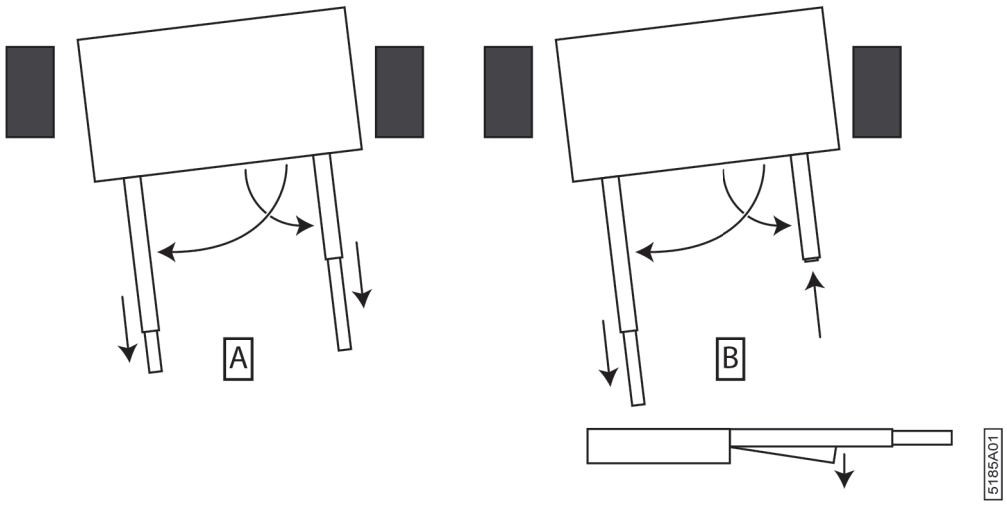


Fig. 90: Adjusting the exiting of the bale

1. Switch OFF the machine safely.
2. Fully extend the left-hand exiting profile and secure it using the bolt.
3. Fully extend the right-hand exiting profile and secure it using the bolt.
4. Depending on the desired exiting of the bale, you adjust the following:
   - upright (A): slide the right-hand exiting profile out the same distance as the left-hand exiting profile. If necessary, lower both exiting profiles so that the bale easily rolls out of the pressing chamber.
   - flat (B): slide the left-hand exiting profile out and slide the right-hand exiting profile in. If necessary, lower the right-hand exiting profile so that the bale tilts more easily.

NOTE
In the case of a towed baling machine where the tractor track (distance between the wheels) exceeds 2,350 mm, you must briefly drive backwards when ejecting the bale, if the previous bales have not yet been moved or collected.

See also
- 8.3.4 Folding the exiting profiles on page 117

9.3.4 Adjusting the automatic chain tensioner

Some chains are automatically tensioned by spring tensioners. Regularly check the correct chain tension and, if necessary, adjust the tension.

Executor: qualified technician

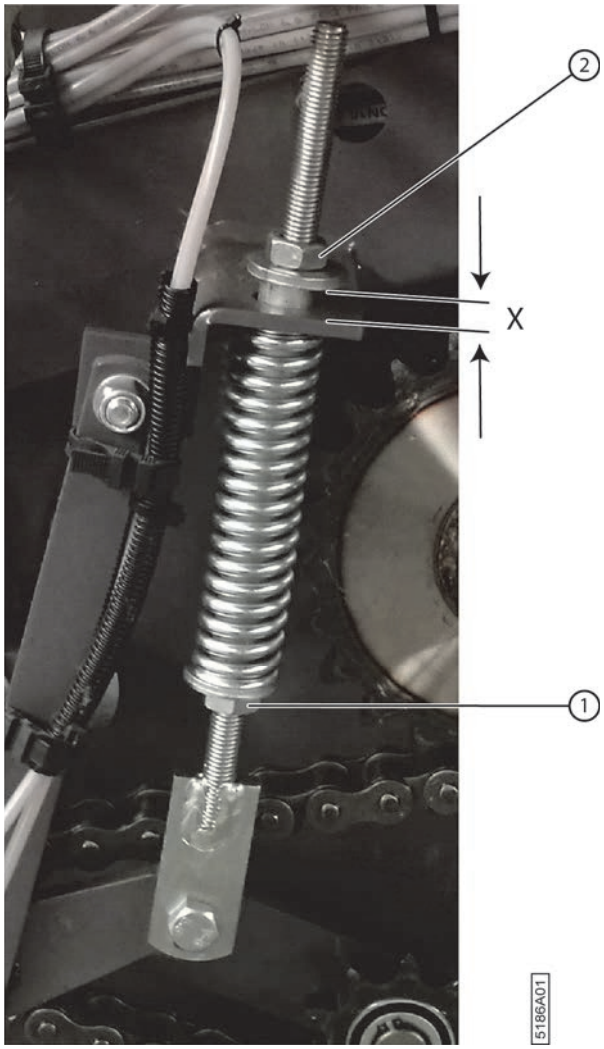


Fig. 91: Adjusting the automatic chain tensioner

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Open the front rope cabinet.
4. Undo the 2 bolts (5) and (6) and swing open the protective panel.

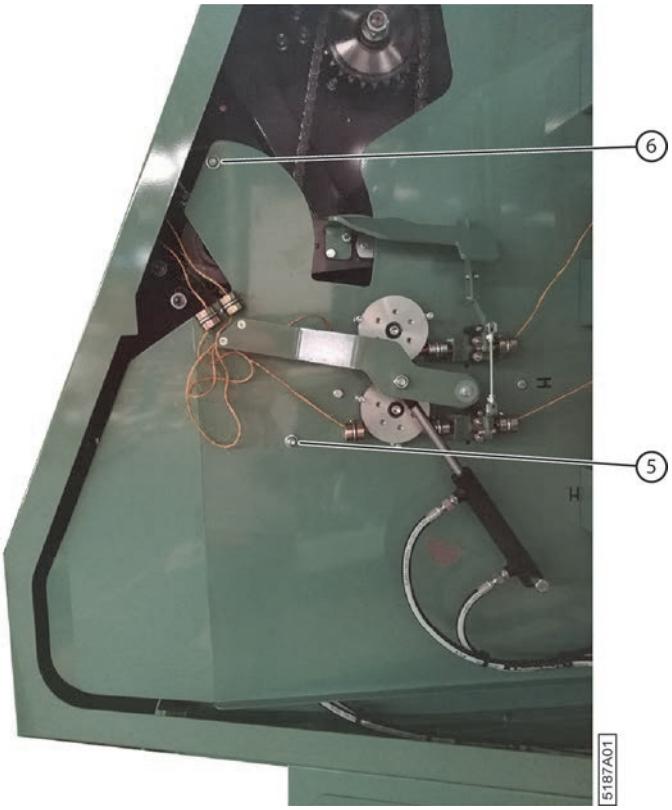


Fig. 92: Protective panel rope cabinet

5. Undo nut (2).
6. Turn nut (1) until distance X is between 10 and 15 mm.
7. Retighten nut (2).
8. Repeat step 4 for all automatic chain tensioners.
9. Close the protective panel and secure it using the 2 bolts.
10. Close the cabinet door.

See also

- 9.3.5 Adjusting the manual chain tensioner on page 129
- 10.2.30 Checking the chain tension on page 150

9.3.5 Adjusting the manual chain tensioner

Some chains are tensioned by manually adjustable chain tensioners. Regularly check the correct chain tension and, if necessary, adjust the tension.

Executor: qualified technician

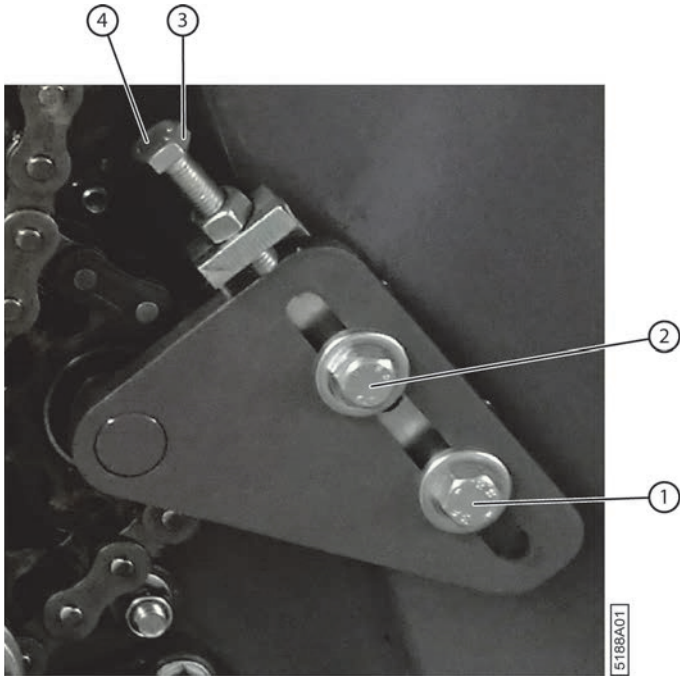


Fig. 93: Adjusting the manual chain tensioner

1. Switch OFF the machine safely.
2. Open the front rope cabinet.
3. Undo the 2 bolts (5) and (6) and swing open the protective panel.

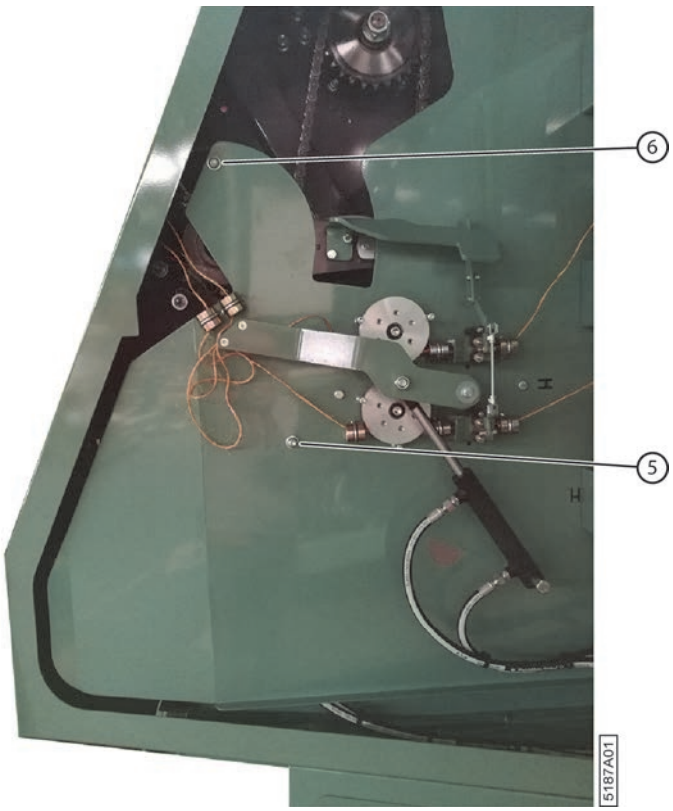


Fig. 94: Protective panel rope cabinet

4. Undo the bolts (1) and (2).
5. Release the nut (3).
6. Use bolt (4) to adjust the tension in the chain.

7. Tighten the nut (3).
8. Tighten the bolts (1) and (2).
9. Repeat from step 4 for all manual chain tensioners.
10. Close the protective panel and secure it using the 2 bolts.
11. Close the cabinet door.

See also

- 9.3.4 Adjusting the automatic chain tensioner on page 127

10 Maintenance

10.1 Safety regulations before starting the maintenance

The design of the machine enables maintenance to be kept to a minimum.

WARNING
Clean the machine.

WARNING
Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.

WARNING
After performing maintenance, ensure that all protective panels are correctly fitted.

WARNING
Use wheel chocks to prevent the machine from rolling away.

WARNING
Ensure that the surface is clean, safe and solid.

WARNING
Post a warning sign and inform the personnel that the machine may NOT be started.

WARNING
Work underneath a hoisted machine or hoisted parts may only take place when the machine or part is safely supported.

WARNING
Wear suitable personal protective equipment (safety shoes, safety gloves, hearing protection, safety goggles, etc.) and wear work clothing that fits well.

WARNING
Never open a reservoir before it has cooled down. Hot pressurised liquid can be released when a reservoir is opened.

WARNING

NEVER use your hands to try to seal a hydraulic leak! High-pressure liquid can cause damage to your skin and clothing. Immediately summon a doctor if an accident occurs.

You can use paper or cardboard to easily detect leaks in a hydraulic system!

WARNING
Ensure that all cylinders are fully extended or retracted so that they cannot move in an uncontrolled manner.

WARNING
Only use original spare parts.

WARNING
The maintenance may only be performed by qualified personnel.

WARNING
Use suitable appliances to perform work above head height. Climbing onto the machine is prohibited.

10.1.1 Switching OFF the machine safely

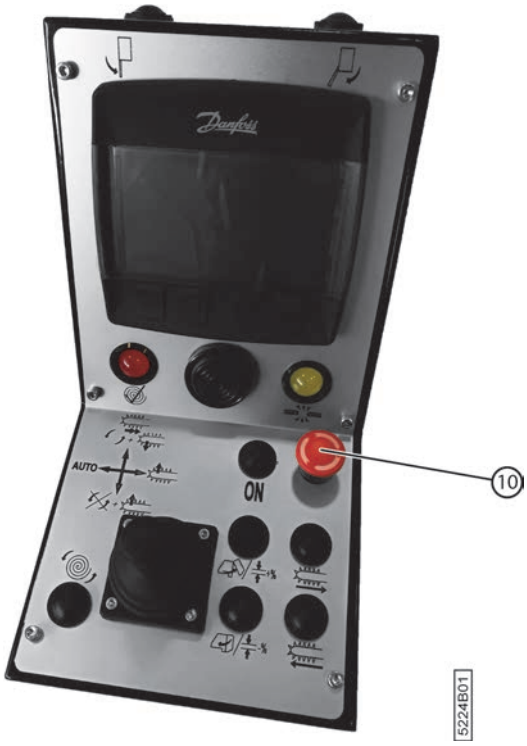


Fig. 95: Stopping the machine

1. Stop the tractor.
2. Stop the machine by pressing button 10.
   All electrical power is isolated, and all control is disabled.
3. Remove the ignition key.
4. Disconnect all electrical connections between the tractor and the machine.
5. Disconnect the drive shaft between the tractor and the machine.

10.2 Preventive maintenance

See also
- 3.3.7 The condition of the machine on page 44

10.2.1 Maintenance schedule for the operator

Item	Action	Interval	Unit	Instruction
Hydraulic system	Check the oil level in the hydraulic tank.	1	day	10.2.24 on page 147
Reduction gearbox	Check the oil level in the reduction gearbox	1	day	10.2.22 on page 145
Pressing chamber	Lubricate the pressing chamber.	1	day	10.2.43 on page 158
Pressing chamber	Lubricate the chains.	1	day	10.2.44 on page 160
Pressing chamber	Check the tension of the chains.	1	day	10.2.30 on page 150
Pressing chamber	Check the play in the crankshaft.	1	day	10.2.29 on page 150
Pressing chamber	Check the condition and alignment of the pressing chamber belts.	1	day	10.2.39 on page 156
Machine	Clean the radiator for the hydraulic oil.	1	day	10.2.13 on page 141
Machine	Use compressed air to clean the machine.	1	day	10.2.6 on page 138
Machine	Clean the spray suppression devices.	1	day	10.2.7 on page 138
Pick-up	Check the condition and alignment of the conveyor belts.	1	day	10.2.21 on page 145
Pick-up	Lubricate the front wheel.	1	day	10.2.42 on page 157
Pick-up	Check the alignment and wear of the scraper.	1	day	10.2.10 on page 139
Pick-up	Check the tension of the conveyor belts.	1	day	10.2.11 on page 140
Pick-up	Check the teeth of the pick-up drum.	1	day	10.2.17 on page 143
Pick-up	Check the play in the front wheel.	1	day	10.2.18 on page 144
Pick-up	Check the rubber on the drive rollers.	1	day	10.2.19 on page 144
Pick-up	Check the guides and guiding arcs of the pick-up.	1	day	10.2.20 on page 145
Machine	Check all bolted connections.	After 1st 50	hours	10.2.9 on page 139
Drive shaft	Lubricate the drive shaft.	100	hours	10.2.47 on page 163
Towing arm	Lubricate the hinge point, towing eye and cylinder.	1	week	10.2.45 on page 161
Binding rope system	Check the cutting of the knives.	1	week	10.2.36 on page 154
Binding rope system	Check the rope guides for wear.	1	week	10.2.37 on page 155
Binding rope system	Check the binding rope system for deformation and wear.	1	week	10.2.38 on page 156
Electrical system	Test the pressing chamber sensors.	1	week	10.2.34 on page 153
Electrical system	Test the speed sensors.	1	week	10.2.35 on page 154
Electrical system	Test the rope break sensors.	1	week	10.2.33 on page 153
Hydraulic system	Check the hydraulic system for leaks.	1	week	10.2.27 on page 150
Front wheel	Check the tyre pressure.	1	week	10.2.15 on page 143
Wheels	Check the tyre pressure.	1	week	10.2.15 on page 143

Item	Action	Interval	Unit	Instruction
Support leg	Lubricate the support leg.	1	year	10.2.46 on page 162
Machine	Using a pressure cleaner, clean the machine.	1	year	10.2.8 on page 138

10.2.2 Maintenance schedule for the maintenance technician

In the event of 2 intervals being displayed, the instruction must only be performed for the interval that is mentioned first.

Item	Action	Interval	Unit	Instruction
Hydraulic system	Replacing the hydraulic high-pressure filter	After 1st 50	hours	10.2.12 on page 141
Wheels	Tighten the wheel nuts	1	week	10.2.16 on page 143
Hydraulic system	Replacing the hydraulic high-pressure filter	200 1	hour years	10.2.12 on page 141
Hydraulic system	Replacing the hydraulic return filter	1	year	10.2.31 on page 151
Hydraulic system	Replacing the hydraulic oil	2,000	hours	10.2.26 on page 148
Electrical system	Check the electrical system	1	year	10.2.28 on page 150
Pressing chamber	Replace the connecting pin and pressing chamber belts	1	year	10.3.9 on page 170
Pick-up	Replace the teeth of the pick-up drum	2	years	10.3.8 on page 169
Reduction gearbox	Replace the oil	3	years	10.2.23 on page 146
Binding rope system	Replace the fingers of the binding rope system	3	years	10.3.14 on page 173
Pressing chamber	Replace the wear plates of the top- and/or bottom plates	4	years	10.3.11 on page 171
Pressing chamber	Replace the chains and the sprocket wheels	4	years	10.3.10 on page 171
Hydraulic system	Replace the hydraulic hoses	6	years	10.3.5 on page 167

10.2.3 Permitted additives

Additive	Quantity	Brand	Type	For more information
Hydraulic oil	140 l	TOTAL	EQUIVIS ZS 68	
Oil reduction gearbox	2 l	TOTAL	TM80W90	
Lubricant		TOTAL	Grease Marson EPL (Multis EP, LICAL EP2)	See 10.2.41 The lubrication schedule on page 157

10.2.4 Locking or unlocking the pressing chamber

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

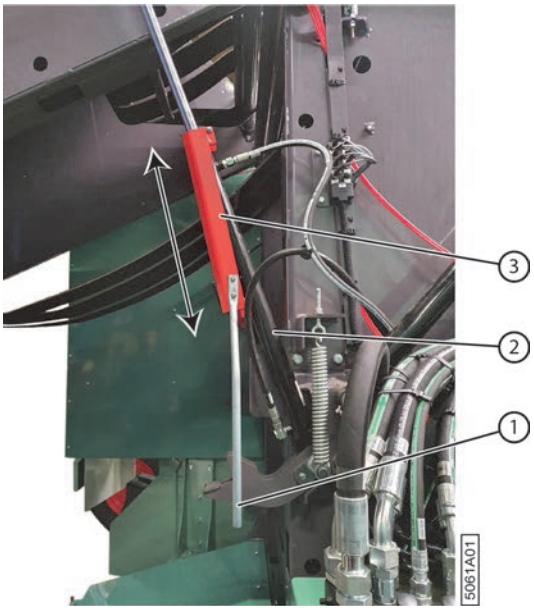


Fig. 96: Locking the pressing chamber

1. Open the pressing chamber.
2. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.

WARNING
Risk of crushing You can become trapped between the pressing chamber door and the pressing chamber. Before you can enter the pressing chamber, it must first be locked on both sides. During the locking/ unlocking of the pressing chamber door, you may NOT be present in the pressing chamber, and you must remain outside the movement zone of the pressing chamber door.

3. Slide the lever (1) for the locking device (3) on the right-hand side of the pressing chamber upwards, and allow the locking device to rest on the end of the cylinder housing (2).
4. Then slide the locking device on the left-hand side of the pressing chamber upwards, and allow the locking device to rest on the end of the cylinder housing (2).
5. To unlock: slide the locking device slightly upwards, and allow the locking device to drop down over the cylinder housing. First perform this on the left-hand side, and then on the right-hand side.

10.2.5 Warnings when cleaning the machine

WARNING
Always consult the Safety Information Sheet from the manufacturer or other product information before you use a cleaning product.

WARNING
Never clean an aluminium part using solvents that react with aluminium. For example: methylene chloride, 1,1,1-trichloroethane, perchlorethylene,...

WARNING
Do not light a fire, generate sparks or use a naked flame. Observe all explosion prevention regulations.

WARNING
Never use a naked flame to clean the machine or parts thereof.

WARNING
Only use cleaning agents that have been developed for the intended use.

WARNING
Pay attention to the flashpoint of the solvent.

WARNING
Ensure adequate ventilation of the spaces in order to guarantee the removal of the vapours. Avoid prolonged inhalation of these vapours.

See also
- 10.2.6 Using compressed air to clean the machine on page 138

10.2.6 Using compressed air to clean the machine

Executor: operator

CAUTION
Where possible, it is recommended to use suction to prevent dangerous dust emissions.

1. Switch OFF the machine safely by using the LoToTo procedure.
2. Use compressed air to blow dirt off the machine.

   CAUTION
   Never use your hands or feet to remove dirt!
3. After cleaning, check that all pictograms are still legible.

See also
- 10.2.5 Warnings when cleaning the machine on page 137

10.2.7 Cleaning the spray-suppression devices

CAUTION
Never use your hands or feet to remove dirt!

Executor: operator

1. Read the safety instructions and observe them.
2. Remove all dirt from the spray-suppression devices and all dirt between the wheel and the chassis.
   Dirt accumulation between the wheel and the chassis can result in the wheel becoming hot and damage to the wheel.

10.2.8 Cleaning the machine using a pressure washer

CAUTION
Never use your hands or feet to remove dirt!

TIP
Clean the machine using a pressure washer on a sunny day. This allows the machine to dry quickly after the cleaning.

Executor: operator

1. Read the safety instructions and observe them.
2. Use plastic to cover electronic valves, electrical cabinets, etc.
3. Clean the machine and pay attention to the following points:

- Do not spray in the vicinity of bearings. If you spray onto bearings, the dirt is driven inwards and this can result in the bearings seizing or being subject to abnormal or excessive wear.
- Do not spray in the vicinity of electrical cabinets, hydraulic components, etc. This can result in dirt being driven inwards and causing excessive wear.
- Spray using a wide jet of water.
- Maintain a minimum distance of 60 cm between the sprayhead and the machine.
- Spray using a pressure of less than 100 bar.
- Spray using water whose temperature does NOT exceed 70 °C.
- Do NOT use any detergents or aggressive products to remove oils from the machine.

4. After cleaning, check that all pictograms are still legible.
5. Place the machine in the sun for several hours so that it can dry, and allow the machine to run in-situ for 15 minutes.

See also

- 5.2 Storing the machine on page 64

10.2.9 Checking the bolted connections

Executor: qualified technician

1. Switch OFF the machine safely by using the LoToTo procedure.
2. Use a torque wrench to check the tension of the bolted connections in accordance with the table.

A	SW	Ma (Nm)		
		Steel grade		
		8,8	10,9	12,9
M4	7	3.1	4.4	5.25
M5	8	6.15	8.65	10.4
M6	10	10.5	18	18
M7	11	17.5	25	29
M8	13	26	36	43
M10	15-16-17	51	72	87
M12	18-19	89	125	150
M14	22	141	198	240
M16	24	215	305	365
M18	27	295	420	500
M20	30	420	590	710
M22	32	570	800	960
M24	36	725	1,020	1,220
M27	41	1,070	1,510	1,810
M30	46	1,450	2,050	2,450

The table includes target values.

- A = diameter screw thread
- SW = spanner size
- Ma = tightening torque (Nm)

10.2.10 Checking the alignment and wear of the scraper

Before performing this instruction, first check the tension of the conveyor belts.

Executor: operator

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Check that the scraper (3) is mounted so that it completely touches the conveyor belt (1).

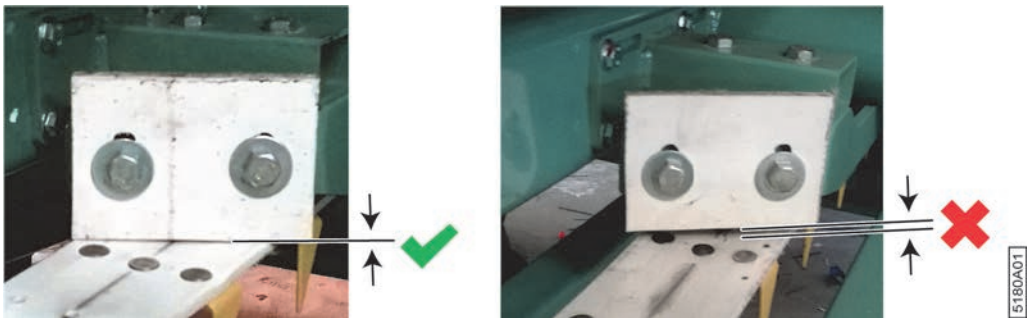


Fig. 97: Scraper OK or NOT OK

4. Undo the bolts (2).

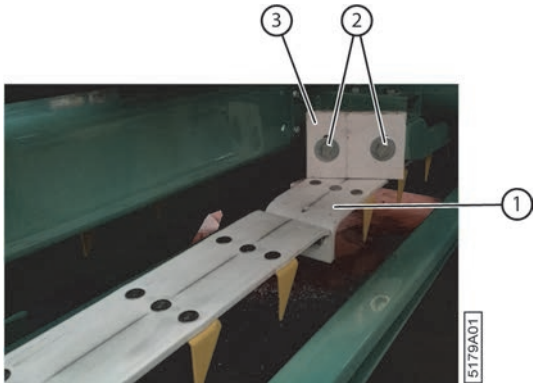


Fig. 98: Scraper OK

5. Move the scraper (3) so that it completely touches the conveyor belt (1).

   If the scraper cannot be installed so that it completely touches the conveyor belt, because it is worn too much, you can install the scraper the other way around. If both sides are worn, you must replace the scraper.
6. Tighten the bolts (2).

10.2.11 Checking the tension of the conveyor belts

Executor: operator

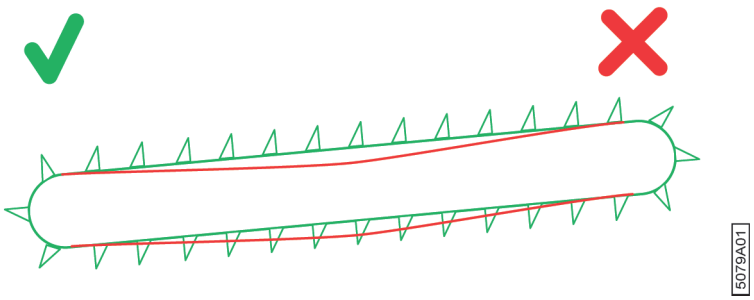


Fig. 99: Checking tension conveyor belt

1. Read the safety instructions and observe them.
2. Visually check the tension of the conveyor belts.

See also

- 9.1.4 Adjusting the tension of the conveyor belts on page 121

10.2.12 Replacing the high-pressure filter

Each time the hydraulic oil is replaced, the high-pressure filter must also be replaced.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

Fig. 100: Replacing the high-pressure filter

1. Switch OFF the machine safely.
2. Clean the area around the connection to the high-pressure filter (1).
3. Place a drain tray underneath the filter.
4. Use a hexagonal wrench to unscrew the filter.
5. Remove the filter and the seal.
6. Clean the area where the filter must be installed.
7. Use grease to lubricate the seal of the new filter.
8. Install the new filter.

10.2.13 Cleaning the radiator for the hydraulic oil

The fan for the hydraulic cooler runs every 5 minutes for 30 seconds in the opposite direction in order to remove as much dust as possible from the cooler. In addition, you must also clean the radiator (1) every day. If you do not clean the radiator every day, then dust particles will stick to the radiator as a result of cooling down and condensation. This will decrease the efficiency of the radiator. This can heat up the oil and cause leaks.

Fig. 101: Cleaning the radiator for the hydraulic oil

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

1. Switch OFF the machine safely.
2. Use compressed air to clean the radiator for the hydraulic oil.

10.2.14 Checking the tyre pressure of the front wheel

The optimal tyre pressure depends on the surface. The tyre pressure on the front wheel must prevent shocks that affect the height of the pick-up.

Executor: operator

1. Switch OFF the machine safely.
2. Check the tyre pressure when the machine is cold.

Tyre	Pressure (bar)
Front wheel	2.5 - 3 bar

3. Adapt the pressure according to the type of surface. If the front wheel feels every shock, you must decrease the tyre pressure. If the pressure is too low, pump up the tyre via the valve.

WARNING
When pumping up the tyres, keep far enough away and keep bystanders at a safe distance. If the pressure is too high, the tyre can burst or explode.

NOTE
Keep oil and grease away from the tyres.

See also
- 2.2.5 The tyres on page 25

10.2.15 Checking the tyre pressure

NOTE
New tyres must always be the same tyre size.

Executor: operator

1. Switch OFF the machine safely.
2. Check the tyre pressure when the machine is cold.

Location	Type	Specification	Weight (kg)	Pressure (bar)
At the rear right	MICHELIN XP27	340/65R18 IMP 149A8/137A8 TL	1,460	1.50
	ALLIANCE 571	340/65R18 148A8	1,860	2.00
At the rear left	MICHELIN XP27	340/65R18 IMP 149A8/137A8 TL	1,460	1.50
	ALLIANCE 571	340/65R18 148A8	1,860	2.00

3. If the pressure is too low, pump up the tyre via the valve to the pressure stated in the table.

WARNING
When pumping up the tyres, keep far enough away and keep bystanders at a safe distance. If the pressure is too high, the tyre can burst or explode.

NOTE
Keep oil and grease away from the tyres.

See also
- 2.2.5 The tyres on page 25

10.2.16 Tightening the wheel nuts

Executor: qualified technician

1. Use wheel chocks to prevent the machine from rolling away.
2. Use a torque wrench to tighten the dry wheel nuts.

Position of tyres	Tightening torque (Nm)
Rear	460 Nm

3. Retighten the wheel nuts after 1 hour or after 25 kilometres.
   Do this when first used and after replacement of a wheel.

10.2.17 Checking the teeth of the pick-up drum

Frequent visual checking of the teeth can prevent damage to the entire pick-up drum. If a tooth is deformed or exhibits signs of excessive wear, the tooth can get stuck in the drum when the pick-up drum rotates, and damage the next pick-up drum.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

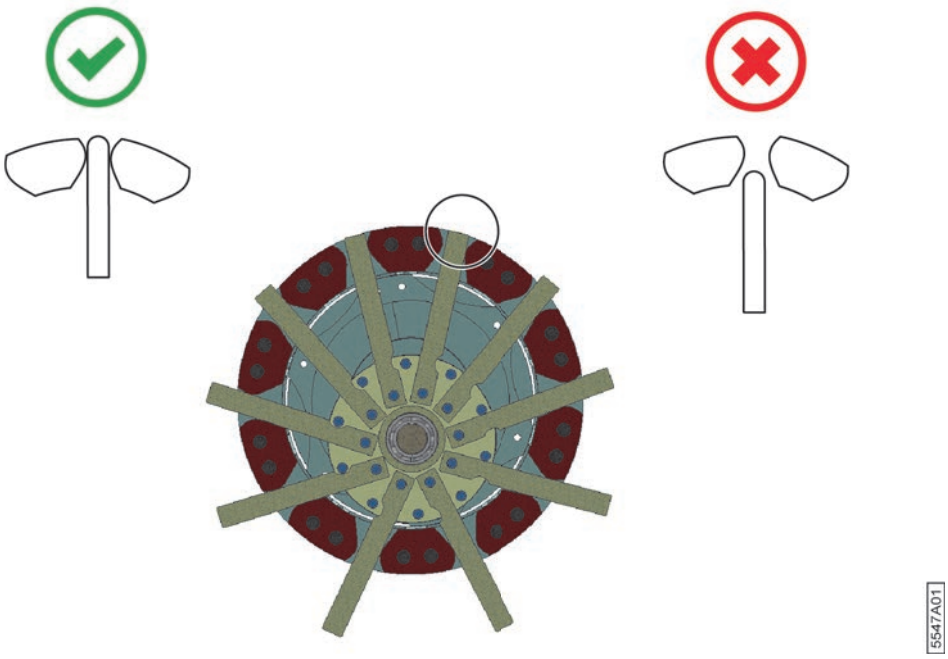


Fig. 102: The teeth of the pick-up

1. Switch OFF the machine safely.
2. In the uppermost position of the pick-up drum, check that the teeth protrude enough.
3. Check the play in the teeth that fully protrude.
4. Check the teeth for deformation.

See also

- 10.3.8 Replacing the tooth of the pick-up drum on page 169

10.2.18 Checking the play in the front wheel

Perform this procedure at the same time as lubricating the front wheel.

Executor: operator

1. Read the safety instructions and observe them.
2. Move the front wheel back and forth.
   If the play is excessive, the guide bushes must be replaced.

10.2.19 Checking the rubber on the drive rollers

Damage to or the reduction of rubber on the drive rollers can cause the conveyor belts to slip.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

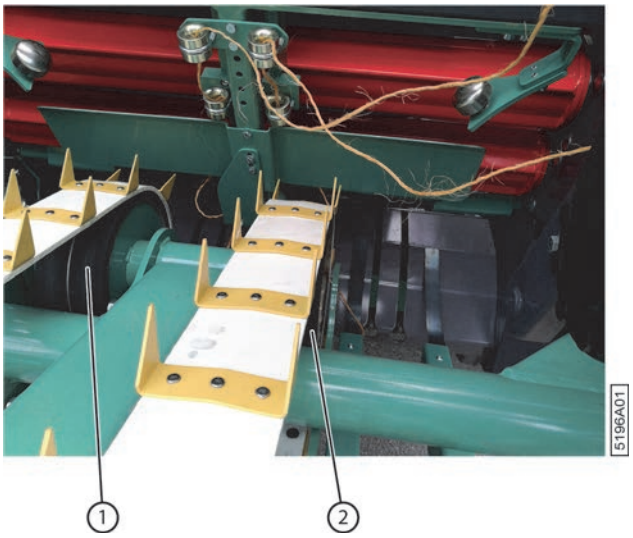


Fig. 103: Checking drive rollers

1. Switch OFF the machine safely.
2. Check the rubber on the drive rollers (1) (2).
3. If the rubber is damaged or worn, instruct a maintenance technician to replace the drive roller. You can send the drive roller to Depoortere NV so that it can be repaired and used later as a replacement.

10.2.20 Checking the guides for wear

Damage to the guides can obstruct the flax and cause a blockage.

Executor: operator

1. Read the safety instructions and observe them.
2. Check that indentations are not present in the guides and that they are not damaged.

10.2.21 Check the condition and the alignment of the conveyor belts

This task must be performed from the cabin by the driver, without other persons in the vicinity of the machine.

1. Allow the conveyor belts to rotate.
2. Check the attachments on the conveyor belts.
   Ensure that all attachments are perpendicular. Where attachments are missing, new attachments must be fitted.
3. Check the alignment of the conveyor belts.

See also

- 9.1.4 Adjusting the tension of the conveyor belts on page 121

10.2.22 Checking the oil level in the reduction gearbox

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

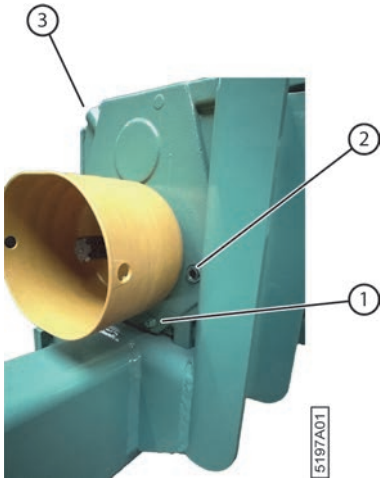


Fig. 104: Checking oil level in reduction gearbox

1. Switch OFF the machine safely.
2. Check the oil level in the reduction gearbox via the viewing glass (2).
   - The oil level must be visible in the viewing glass.
   - If oil is not visible in the viewing glass, then there is not enough oil in de reduction gearbox.
   - If the viewing glass is filled with oil, then there is too much oil in de reduction gearbox.

10.2.23 Replacing the oil in the reduction gearbox

If, due to a technical problem, the oil has overheated, then it is recommended to replace all of the hydraulic oil, because the quality of the oil is no longer optimal.

Required:

- Oil receptacle for at least 2 litres.
- 2 litres of TM80W90 transmission oil.

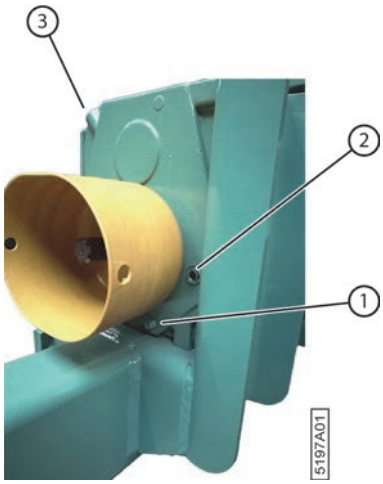


Fig. 105: Replacing the oil in the reduction gearbox

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Open the filler cap (3).

3. Drain the reduction gearbox by removing the drain plug (1).
   Use a receptacle that has a minimum capacity of 5 litres.
4. Install the drain plug.
5. Fill the reduction gearbox with oil.
6. Check the level of oil in the reduction gearbox via the viewing glass (2).

   The level of oil must be visible in the viewing glass. If oil is not visible in the viewing glass, then there is not enough oil in de reduction gearbox. If the viewing glass is filled with oil, then there is too much oil in de reduction gearbox.
7. Install the drain plug.

10.2.24 Checking te level of the hydraulic oil

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Check the level of the hydraulic oil via the level meter (1) mounted on the hydraulic tank.
3. The level must be between the lowermost red line and the uppermost blue line.

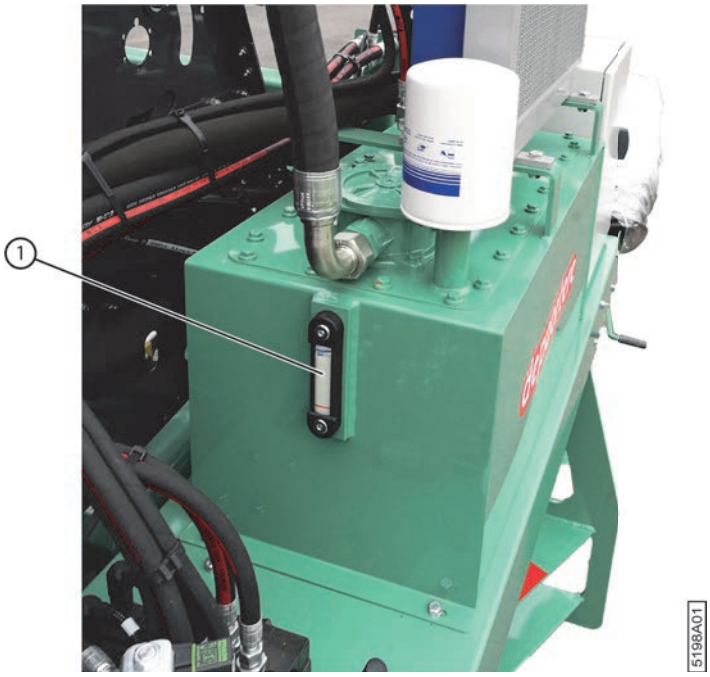


Fig. 106: Hydraulic oil level

10.2.25 Analysing the hydraulic oil

Instead of changing the oil, you can analyse the oil in order to guarantee the optimal operation of the hydraulic system.

Required equipment:

- 1 completely clean glass recipient or bottle with minimum capacity of 0.5 litre

Executor: qualified technician

1. Read the safety instructions and observe them.
2. Ensure that the hydraulic oil is still hot, so that it is more runny.

CAUTION
Risk of burns from hot oil. Ensure that the temperature is not too high, use appropriate personal protection equipment and perform work with care.

3. Clean the area around the coupling of the hydraulic pipe where you collect the oil.
4. Disconnect the hydraulic pipe.
5. Collect 0.5 litre in the recipient or bottle.
6. Reconnect and tighten the hydraulic pipe.
7. After several hours, check the condition of the oil.
   - Is the oil turbid?
   - Has the oil thickened?
   - Are there small copper particles and/or rubber particles at the bottom of the recipient?
   - Is the oil milky due to condensation in the tank?
   - As a result of heating, does the oil have a smell that is different from new oil?
8. If the answer is “yes" to 1 or more of the above questions, replace the oil.

TIP
In the case of doubt, allow the oil to be checked by a hydraulic systems specialist.

10.2.26 Replacing the hydraulic oil

If, due to a technical problem, the oil has overheated, then it is recommended to replace all of the hydraulic oil, because the quality of the oil is no longer optimal. If the hydraulic pumps have encountered problems, and copper particles are present in the oil, then the oil must be filtered.

When replacing the oil, all filters and the aerator must also be replaced.

- 10.2.12 Replacing the high-pressure filter on page 141
- 10.2.31 Replacing the return filter for the hydraulic oil on page 151

Required:

- At least 140 litres of TOTAL EQUIVIS ZS 68
- Aerator

Fig. 107: Replacing the hydraulic oil

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Drain the hydraulic tank. See 12.2.1 Draining the hydraulic tank on page 187.
3. Unscrew the aerator (3) from the tank in order to provide access to the filler hole (2).
4. Fill the tank with hydraulic oil up to the blue line on the level meter (1).
   It can take a while before the level meter indicates the actual level of oil in the tank.

   TIP
   Therefore, fill the last part of the tank gradually in stages, and allow the enough time for the oil to adapt, via the level meter, to the level in the tank.

5. Check the level of hydraulic oil again, and top up as required.
6. Screw a new aerator onto the filler opening.

See also

- 2.2.11 The hydraulic tank on page 28

10.2.27 Checking the hydraulic system for leaks

CAUTION
Carefully read the Safety Information Sheet about hydraulic oil.

Executor: qualified technician

1. Read the safety instructions and observe them.
2. If the machine is not used for a prolonged period, check whether oil is present underneath the machine.
3. Check all hydraulic components for leaks.

10.2.28 Checking electrical system

1. Check the operation of the emergency stop button.
2. Check the operation of every other function.
   In the event of a fault message, first look on the control screen for the cause, before using the machine in a field or driving on public roads.

10.2.29 Checking the play in the crankshaft

Executor: qualified technician

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Position yourself underneath the machine and move the compactor up and down.
4. Check that there is no play.
   If the play is excessive, the bearings must be replaced.

10.2.30 Checking the chain tension

Executor: qualified technician

1. Read the safety instructions and observe them.
2. Open the pressing chamber.
3. Lock the pressing chamber.
4. Switch OFF the machine safely.
5. Open the front rope cabinet.
6. Undo the 2 bolts and swing open the protective panel.
7. Undo the 2 bolts (5) and (6) and swing open the protective panel.

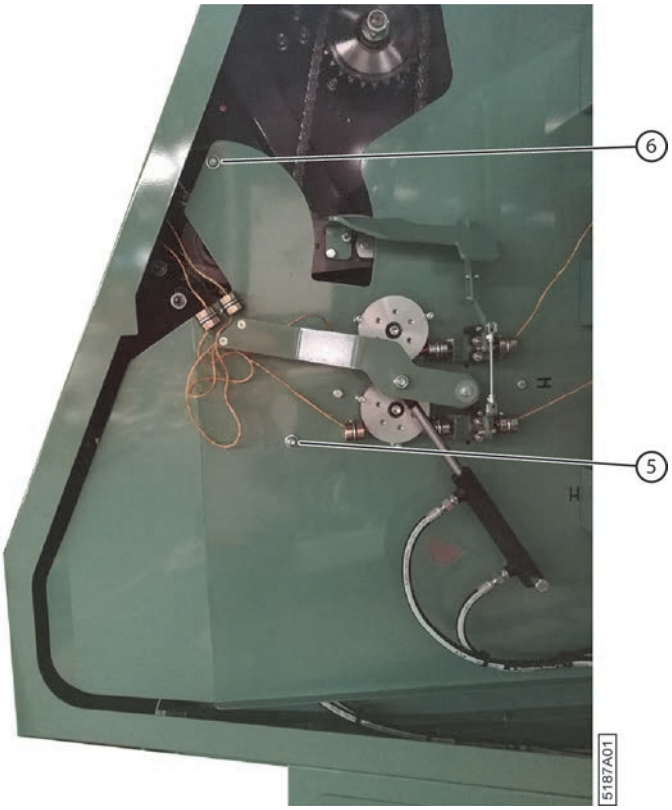


Fig. 108: Protective panel rope cabinet

8. Check that the chain tension (T) is between 5 and 10 mm.

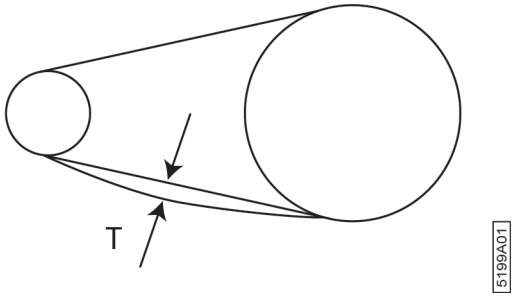


Fig. 109: Chain tension

9. If necessary, adjust the chain tension via the automatic and/or manual chain tensioners.
10. Close the protective panel and secure it using the 2 bolts.
11. Close the cabinet door.

See also

- 9.3.4 Adjusting the automatic chain tensioner on page 127

10.2.31 Replacing the return filter for the hydraulic oil

Only use the prescribed return filter from Depoortere NV.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Required spare parts:

- Return filter 25µ. Reference Depoortere NV: 1213100200
- Drain tray

Fig. 110: Return filter hydraulic tank

Executor: qualified technician

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Partially unscrew the bolts for the cover of the return filter (1).
3. Raise the cover slightly so that air can enter.
   This enables the oil from the radiator to flow back into the hydraulic tank.
4. Completely unscrew the bolts for the cover, and remove the cover.
5. Remove the filter element.

   NOTE
   Carefully inspect the dirty filter element. Shreds of rubber indicate that a seal has been damaged, and metal particles indicate excessive wear.

6. Install a new filter element.
7. Install the cover.

10.2.32 Testing the operation of the sensors

You can test the operation of the sensors by activating the sensor and checking whether a signal is received at the inputs. You can temporarily disable a number of sensors. Before disabling the sensor, it is recommended to test the operation of the sensor. It is recommended to reactivate the sensor as soon as possible!

The following sensors can be disabled via the control screen:

- Sensor that detects whether the pressing chamber is open.
- Sensor that detects whether the pressing chamber is closed.
- Sensor that detects whether the balancing arm is low
- Sensor that detects when a rope-break is evident on rope 1
- Sensor that detects when a rope-break is evident on rope 2
- Sensor that detects the speed of the pressing chamber.
- Sensor that detects the driving speed.

See also

- 2.2.19 Overview of the sensors on page 38
- 11.1 Performing tests on page 177

10.2.33 Testing the rope-break sensors

To perform this test, 2 persons are required: the driver and a maintenance technician.

1. Switch ON the machine.
2. Select  in the start window.
3. Select  **inputs / outputs** and select **OK**.
4. Select **inputs** and select **OK**.
5. The maintenance technician opens the rope cabinet and rotates the break monitoring tools (= aluminium pulleys). The inputs **Rope break 1** and **Rope break 2** are assigned the value 1 when optimal operation is evident.

See also

- 8.2.31 Enabling or disabling a sensor on page 103

10.2.34 Testing the pressing chamber sensors

To test the sensor that measures when the bale diameter has been attained, you need an entire bale. To test the sensor of the balancing arm, the pressing chamber must be empty. You can also test the sensors by manually activating them (passing by the sensor with a piece of iron).

1. Switch ON the machine.
2. Select  in the start window.
3. Select  **inputs / outputs** and select **OK**.
4. Select **inputs** and select **OK**.
5. Activate the pressing chamber sensors. The following inputs have a value of 1, and become 0 in the event of optimal operation:

Activate the sensor ...	Select the value next to the input ...
that detects the opening of the pressing chamber.	**Pressing chamber open sensor**
that detects the closing of the pressing chamber.	**Pressing chamber closed sensor**
that detects when the diameter has been attained.	**Diameter of bale sensor**
that detects an empty pressing chamber.	**Balancing arm low sensor**

See also

- 8.2.31 Enabling or disabling a sensor on page 103

10.2.35 Testing the speed sensors

You can test the operation of the sensors that measure the speed of the pressing chamber belts, the conveyor belts, the pick-up drum, the break monitoring tools (aluminium pulleys in the rope cabinet), the rear wheels.

1. Switch ON the machine.
2. Select  in the start window.
3. Select  **inputs / outputs** and select **OK**.
4. Select **inputs** and select **OK**.
5. Driving and working with the machine. The following inputs have a value of 1, and become 0 in the event of optimal operation:

Sensor ...	Check the value next to the input ...
that measures the speed of the pressing chamber belts.	**Pressing chamber speed**
that measures the speed of the conveyor belts.	**Throughput speed**
that measures the speed of the pick-up drum.	**Pick-up speed**
that measures the speed of break monitoring tool 1.	**Speed rope 1**
that measures the speed of break monitoring tool 2.	**Speed rope 2**
that measures the speed of the rear wheels.	**Driving Speed**

See also

- 8.2.31 Enabling or disabling a sensor on page 103

10.2.36 Checking the cutting of the knives

WARNING
This procedure must be performed by the operator and the maintenance technician. This procedure requires extremely precise monitoring of the steps and optimal communication between these 2 people. If the steps are not monitored extremely precisely, or miscommunication occurs, this can result in serious injury or even in death.

1. The operator sits in the cabin of the tractor, the maintenance technician keeps a safe distance away from the machine.
2. The operator opens the pressing chamber.
3. The maintenance technician mechanically locks the pressing chamber.
4. The maintenance technician takes the ends of the ropes and pulls them towards himself, until he is outside the pressing chamber and then takes the ropes in his hands.

5. The operator fully opens the needles of the binding rope system.
   The ropes are clamped between the mushrooms and are transported by the fingers of the needles to the knives.
6. The maintenance technician then tensions both ropes.
   The ropes must be easily cut.
7. If the knives do not cut properly, check and rectify the possible cause.
   - The bar is deformed.
   - The knives are blunt.
   - The knives are not correctly positioned.
8. The maintenance technician releases the ropes and unlocks the mechanical protection for the pressing chamber.
9. The maintenance technician keeps a safe distance away from the machine and within the field of vision of the operator.
10. The operator closes the pressing chamber.

10.2.37 Checking the rope guides for wear

Rope guides that are excessively worn no longer perform their function optimally, and can cause a rope break.

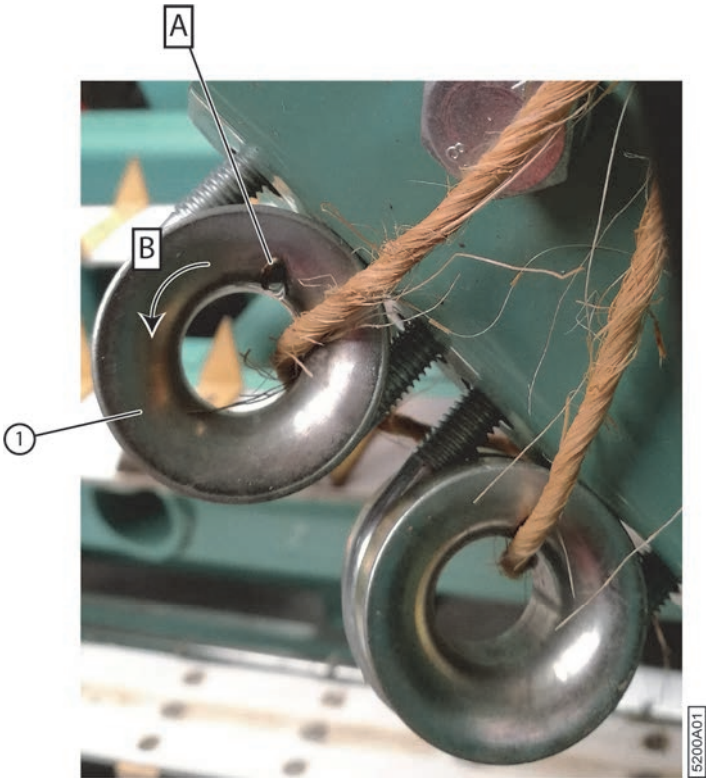


Fig. 111: Wear on a rope guide

Executor: operator

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Open the rope cabinet and check all rope guides from here for signs of wear (A).
   Follow the route of the ropes to ensure that you check all rope guides. Only in the event of excessive wear, proceed as follows:
4. Loosen the rope guide (1).
5. Turn (B) the rope guide so that the rope is guided at a new location.
6. Secure the rope guide.

10.2.38 Checking the binding rope system for deformation and wear

Deformed arms and worn fingers in the binding rope system can cause problems when cutting the ropes.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: operator

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Check that the needles of the binding rope system are straight (not deformed).
3. Check that the fingers are not worn.

10.2.39 Checking the condition and the alignment of the pressing chamber belts

WARNING
This procedure must be performed by 2 qualified technicians. This procedure requires extremely precise monitoring of the steps and optimal communication between the 2 qualified technicians. If the steps are not monitored extremely precisely, or miscommunication occurs, this can result in serious injury or even in death.

Person 1 operates the PVG-block, and person 2 checks the condition and the alignment of the pressing chamber belts on the same side of the machine.

The machine must not be in the operating cycle or in AUTO when performing control via the valves.

Fig. 112: Valve block

1. Person 1: Allow the pressing chamber belts to rotate slowly. Gently press lever 1 forwards (towards the machine)
2. Person 2: Check the alignment of the conveyor belts.
3. Person 2: Check that the belts are intact and do not exhibit indentations.
4. Person 2: Check the belt links.

10.2.40 Important points to note when lubricating

Important points to note when lubricating grease points

- ONLY use the recommended lubricating greases. Less well-known lubricating greases are often inferior in quality, and can shorten the service life of parts.
- Remove dirt from the grease nipples before lubricating.
- Carefully lubricate all grease points in accordance with the lubrication plan.
- Remove excess grease after lubricating.

Important points to note when replacing oil

NOTE
Always use oil for topping up that is the same type as the oil that already exists in the part. The mixing of different types of oil usually has an adverse effect on the lubrication, and results in the service life of the part being shortened.

CAUTION
Replace the oil when the oil is lukewarm. It is important to note that the oil can reach high temperatures. You must therefore be careful not to sustain burns.

10.2.41 The lubrication schedule

h = work hours

y = years

Item	Frequency	Lubricant	Executor	Instruction
Front wheel	8 h	Multis EP 2	Operator	10.2.42 on page 157.
Front wheel - spindle	8 h	Multis EP 2	Operator	10.2.42 on page 157.
Central lubrication system	8 h	Multis EP 2	Operator	10.2.43 on page 158.
Chains	8 h	WD-40 Lubricant dry PTFE Reference number: 553 3394	Operator	10.2.44 on page 160.
Towing arm	8 h	Multis EP 2	Operator	
Drive shaft	100 h	Lithium grease NL-GI2	Operator	10.2.45 on page 161.
Support leg	1 y	Multis EP 2	Operator	

10.2.42 Lubricating the front wheel

Executor: operator

1. Switch OFF the machine safely.
2. Place the manual pump onto the lubricating nipple (1) and pump 5 times.
3. Remove any excess grease.
4. Use lubricating grease and a brush to lubricate the spindle (2).

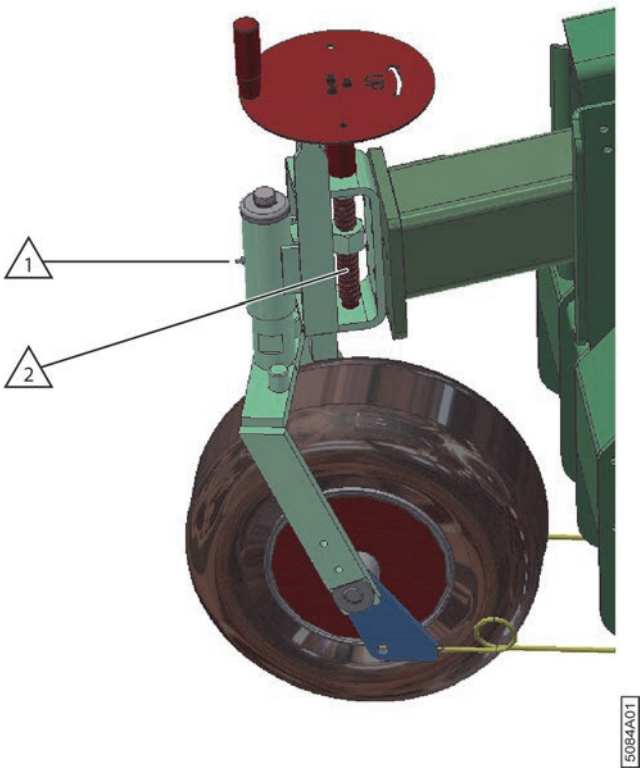


Fig. 113: Lubricating front wheel

10.2.43 Lubricating the pressing chamber

The pressing chamber is equipped with a central lubrication system. This system lubricates all required lubricating points of the pressing chamber. The chains must be lubricated separately.

NOTE
Lubricate the pressing chamber every morning before starting the work, and also lubricate the pressing chamber in the evening at the end of the season, before putting the machine into storage.

Required: manual grease pump that supplies 0.86 grams of grease per stroke.

Executor: operator

1. Read the safety instructions and the important points to note during lubrication and observe them.
2. Switch OFF the machine safely.
3. Open the front rope cabinet.
4. Open the inner door of the rope cabinet.
5. Place the manual pump on the grease nipples of the central lubrication system (3) and pump as follows:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
3x	5x	5x	3x	3x	3x	3x	5x	3x	3x	5x	3x	5x	5x	3x	3x	3x

WARNING

- If resistance is not encountered when lubricating the nipple, then the lubrication pipe is ruptured. Look for the cause and repair the pipe.
- If too much resistance is encountered when lubricating the nipple, then the lubrication pipe is blocked. Look for the cause and repair the pipe.

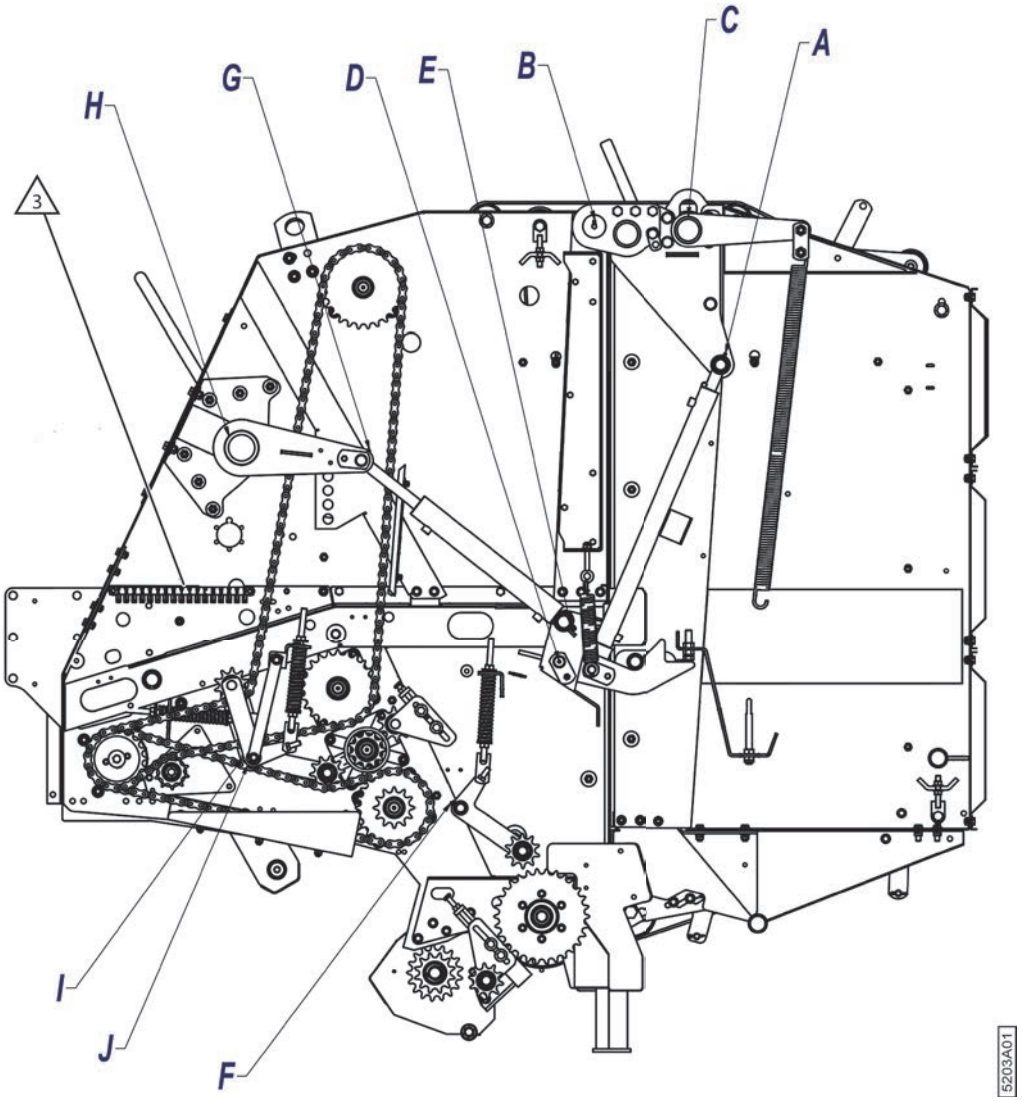


Fig. 114: Overview of the lubrication points on the left-hand side of the pressing chamber.

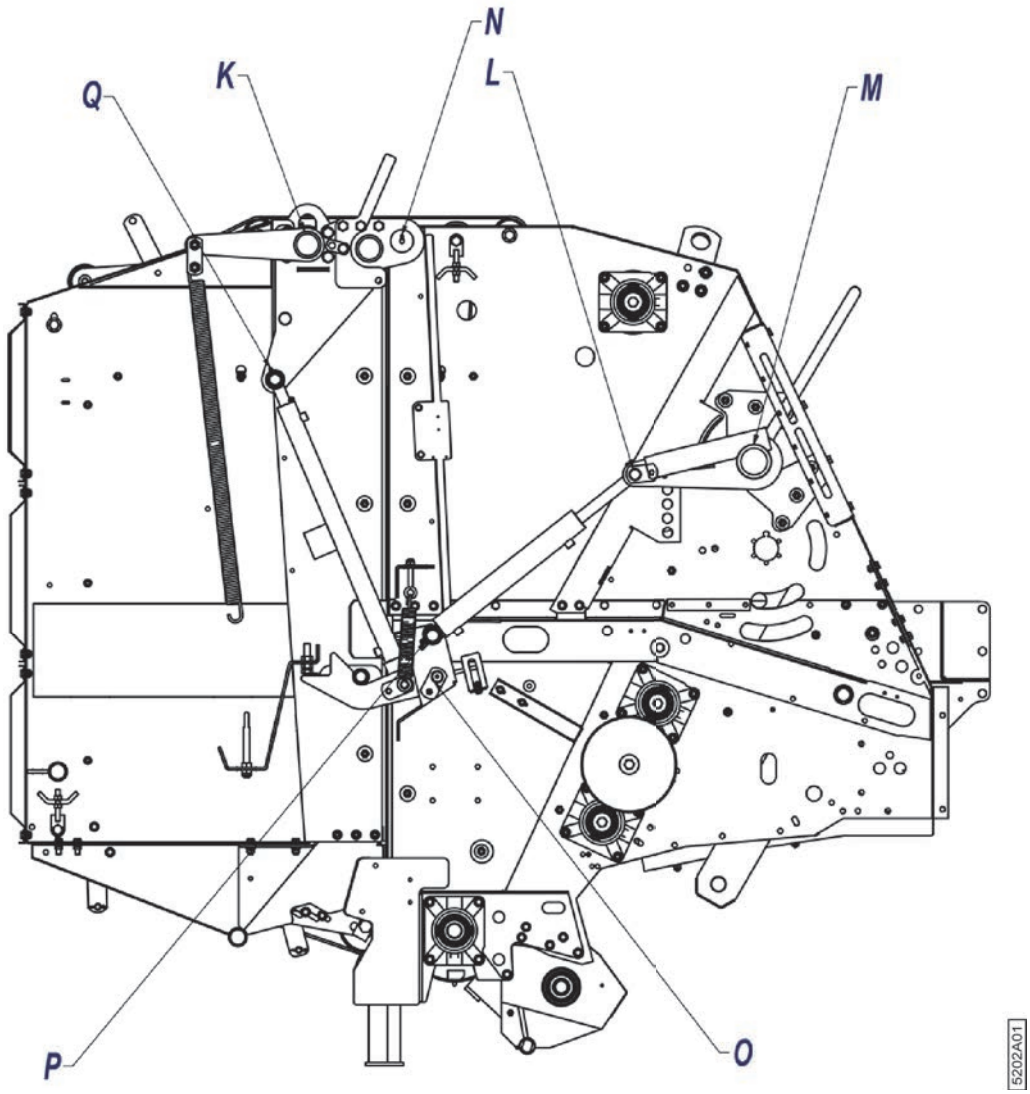


Fig. 115: Overview of the lubrication points on the right-hand side of the pressing chamber.

See also

- 2.2.18 The pressing chamber on page 37
- 10.2.44 Lubricating the chains on page 160

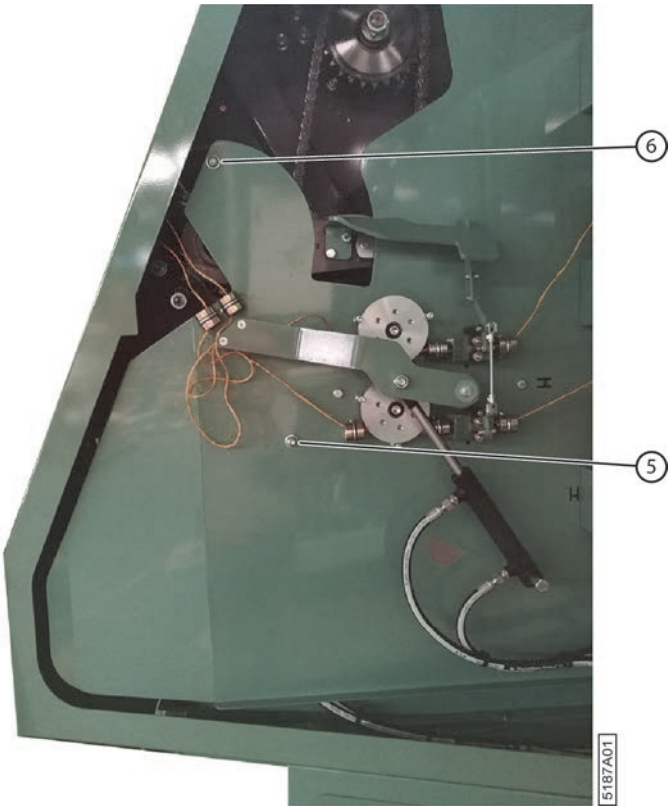
10.2.44 Lubricating the chains

Required:

- Dry PTFE spray (for example: WD-40 Lubricant dry PTFE with reference number: 553 3394)

Executor: operator

1. Read the safety instructions and the important points to note during lubrication and observe them.
2. Switch OFF the machine safely.
3. Open the front rope cabinet.
4. Undo the 2 bolts (5) and (6), and open the protective panel.



5. Use dry PTFE spray to lubricate the chains.
6. Close the protective panel and tighten the bolts.
7. Close the front rope cabinet.

See also

- 10.2.43 Lubricating the pressing chamber on page 158
- 10.3.10 Replacing the chains and sprocket wheels on page 171

10.2.45 Lubricating the towing arm

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133 and 10.2.40 Important points to note when lubricating on page 157.

Required: manual grease pump

Executor: operator

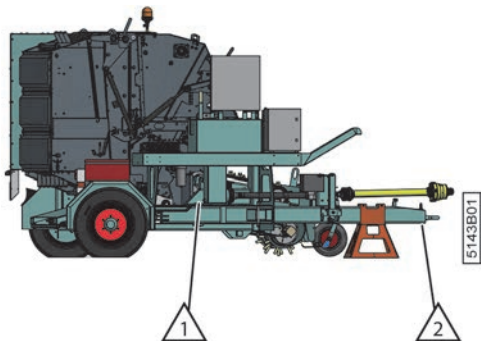


Fig. 116: Lubricating the towing arm

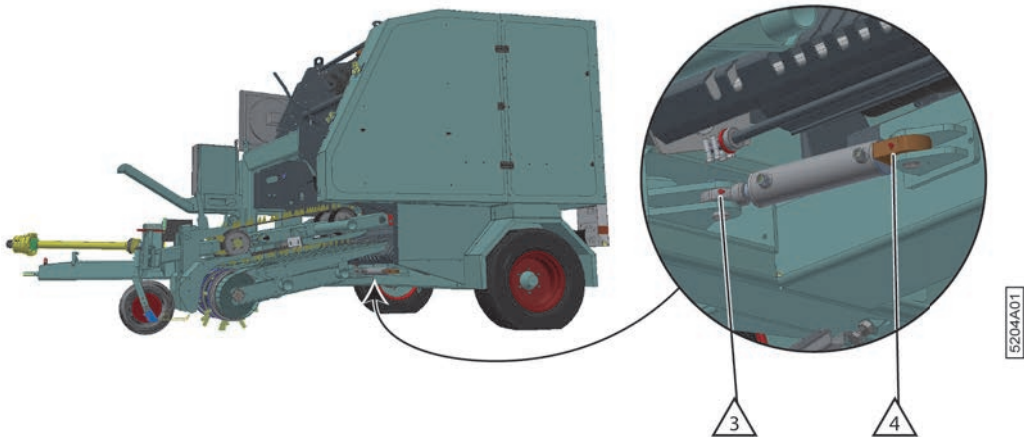


Fig. 117: Lubricating the towing arm

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Lubricate the lubricating nipples (1), (2), (3), (4).
3. Remove any excess grease.

10.2.46 Lubricating the support leg

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133 and 10.2.40 Important points to note when lubricating on page 157.

Required: manual grease pump

Executor: operator

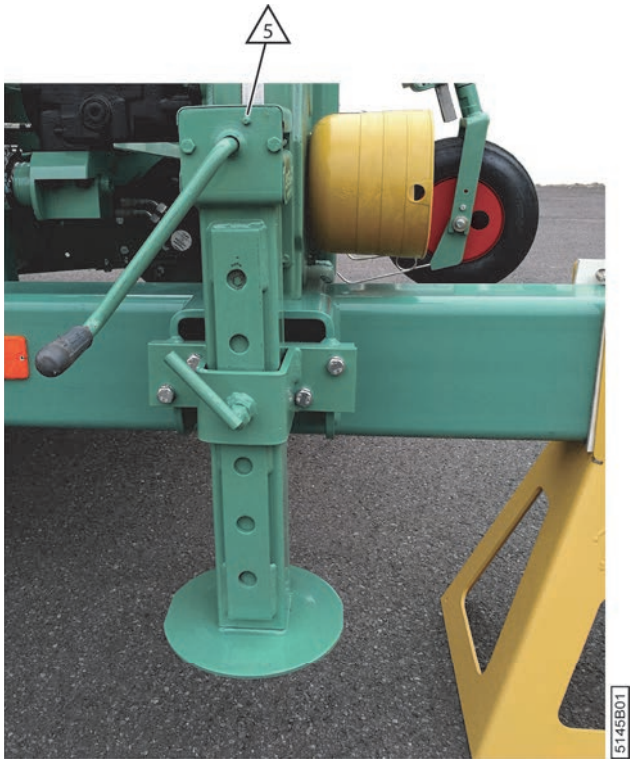


Fig. 118: Lubricating support leg

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.

2. Use the manual grease pump to lubricate the lubricating nipple (5).
3. Remove any excess grease.

10.2.47 Lubricating the drive shaft

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133 and 10.2.40 Important points to note when lubricating on page 157.

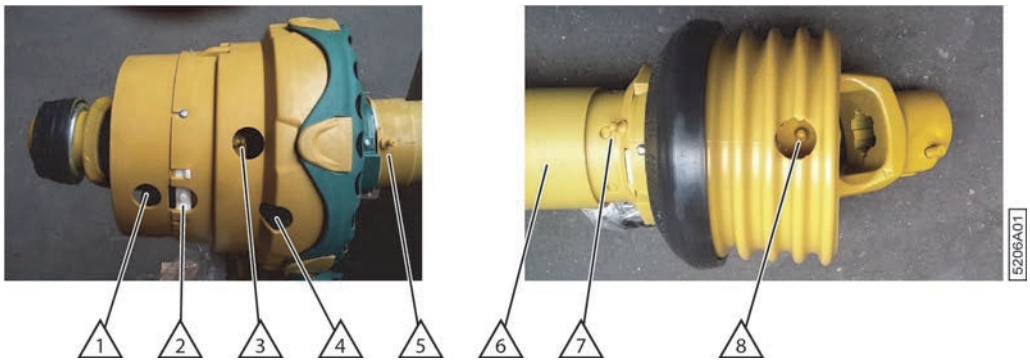


Fig. 119: Lubricating the drive shaft

Required: manual grease pump

Executor: operator

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Lubricate the lubricating nipples of the drive shaft in accordance with the maintenance instructions for the drive shaft.
3. Repeat for the other side of the machine.
4. Disconnect the drive shaft from the drive.
5. Pull the drive shaft apart.
6. Lubricate the innermost profile of the shaft.
7. Slide the profiles of the shaft back together.
8. Secure the drive shaft to the drive.
9. Install all protective covers.

10.3 Corrective maintenance

10.3.1 Jacking up the machine

You can jack up the machine to replace a wheel or perform maintenance work. Use a serviceable jack that has a minimum load-bearing capacity of 5 tons.

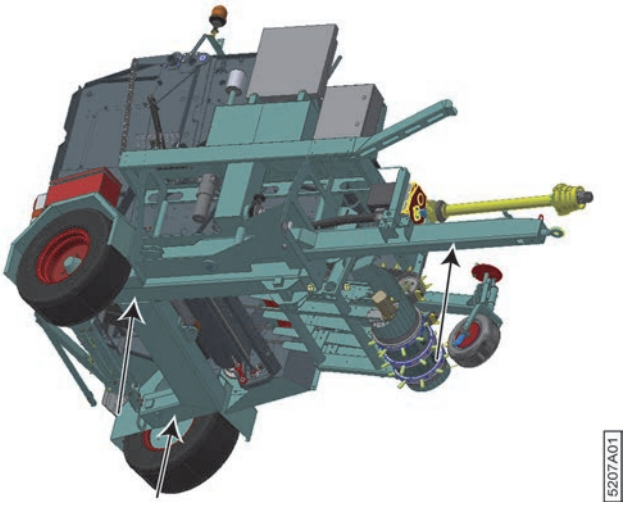


Fig. 120: Support points

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Leave the machine mechanically connected to the tractor.
   This ensures that the machine is supported at the front and cannot move forwards or backwards.

   WARNING
   If the machine is not connected to the tractor, you must provide extra support for the towing arm of the machine. The support leg may not be used for performing maintenance activities. The towing arm must always be provided with extra support.
3. Install wheel chocks on the wheel that will remain on the ground.
4. Ensure that the surface underneath the support points is stable and flat.
5. Place a jack underneath one of the support points.
6. Jack up the machine. Ensure that the machine will not tip over.
7. Install robust supports when working on top of, underneath, or on the machine.
8. Perform the required maintenance.
9. Remove the supports.
10. Slowly lower the machine.

10.3.2 Welding on the machine

WARNING

Do not perform welding work on the machine if there is still a bale in the pressing chamber!

Never weld in the vicinity of materials that can catch fire or melt. For example: belts, hydraulic pipes, wheels.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. Disconnect the 2 controllers (1) and (2). The controllers are located on the inside of the door of the electrical cabinet.

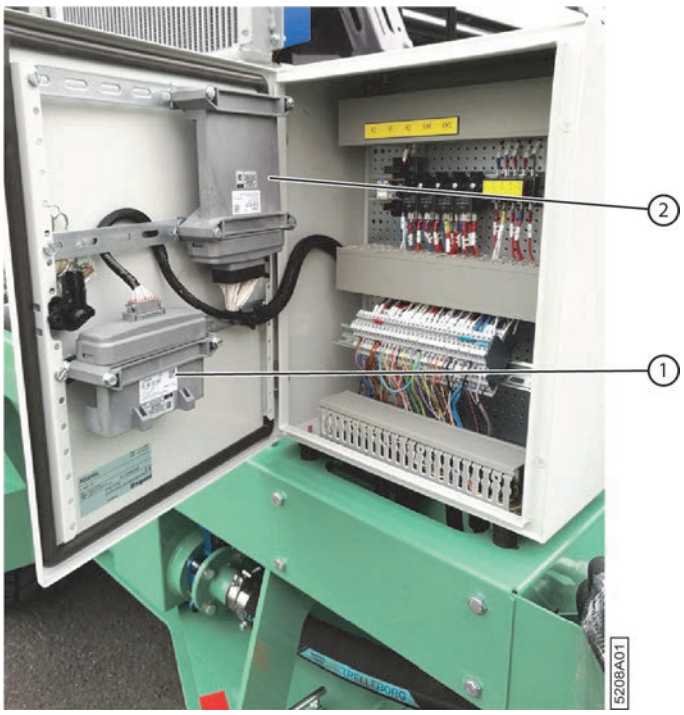


Fig. 121: Location of controllers

3. Remove all flammable products from the vicinity of the machine.
4. Remove all flax residues from the machine.
5. Completely disconnect the machine from the tractor.
   - 12.1.2 Disconnecting the machine electrically on page 185
   - 12.1.3 Disconnecting the machine mechanically on page 186
6. Place the negative clamp of the welding device as close as possible to the welding location in order to prevent damage to the electrical system.
7. Keep the fire extinguisher within easy reach.
8. Never weld in the vicinity of materials that can catch fire or melt.

   For example: belts, hydraulic pipes, wheels, etc.

See also

- 2.2.12 The electrical cabinet on page 29

10.3.3 Replacing a scraper

Executor: qualified technician

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Undo the bolts (2).

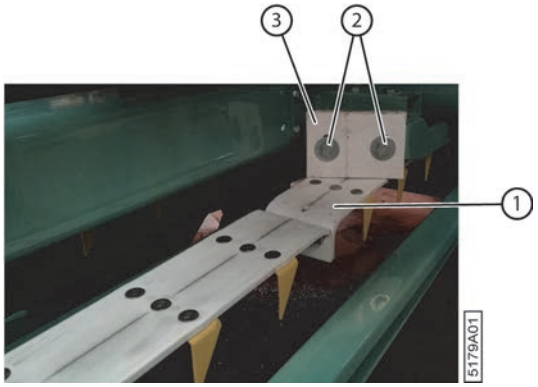


Fig. 122: Removing scraper

4. Replace the scraper (3) and install the new scraper so that the scraper touches the conveyor belt (1).

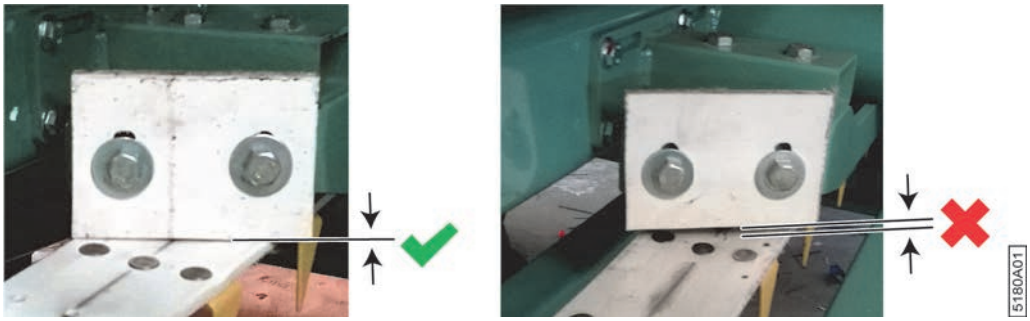


Fig. 123: Scraper OK or NOT OK

10.3.4 Replacing a conveyor belt

Executor: qualified technician

1. Switch OFF the machine safely.
2. Loosen the conveyor belts.
3. Loosen the connection (1) for the belts by unscrewing the 3 socket-screws (2).

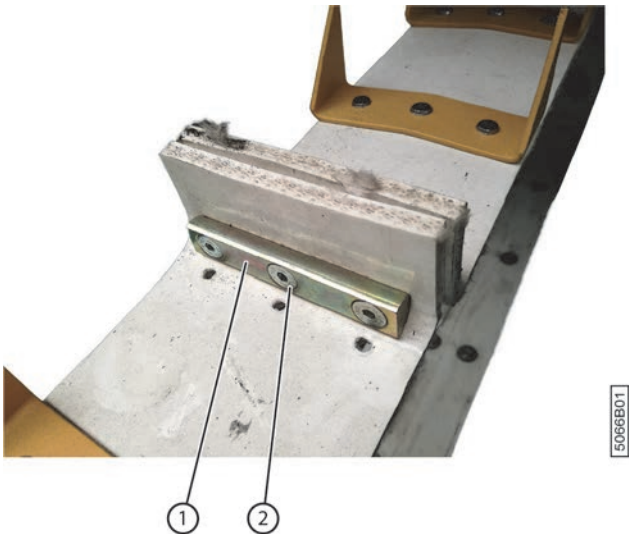


Fig. 124: Replacing a conveyor belt

4. Remove the conveyor belt.
5. Install a new conveyor belt. Pay attention to the mounting direction.

6. Retighten the connection.
7. Tension the conveyor belts.

10.3.5 Replacing a hydraulic component

NOTE
Hydraulic hoses are subject to a natural aging process and must be regularly replaced, even when no defects are visible externally. The maximum period of use for hydraulic hoses must usually not exceed 6 years, including a possible storage period of 2 years. However, situations can arise where, depending on the use (low load, indoor installations), the period of use can be extended.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

1. Switch OFF the machine safely. See 10.1.1 Switching OFF the machine safely on page 134.
2. If necessary, turn the valve for the hydraulic tank fully clockwise to close the hydraulic tank.

TIP
This prevents the entire contents of the tank draining away towards hydraulic components that are located lower! For example, in the case of hydraulic valves that are located higher than the hydraulic tank, you do not have to close the valve.

3. Use a drain tray to catch the oil that is released.
4. Clean the area directly surrounding the connections for the hydraulic component.
5. Remove the component.
6. Clean the connections and ensure that dirt does not enter the hydraulic circuit.
7. Install the new component.
8. Open the hydraulic valve again.
9. Check the oil level of the hydraulic tank.
10. Switch ON the machine again.
11. Check the pressure values.

10.3.6 Replacing a pressing chamber belt (preventive)

If the picking belt exhibits too much damage or excessive wear, you can replace it as preventive maintenance.

Executor: qualified technician

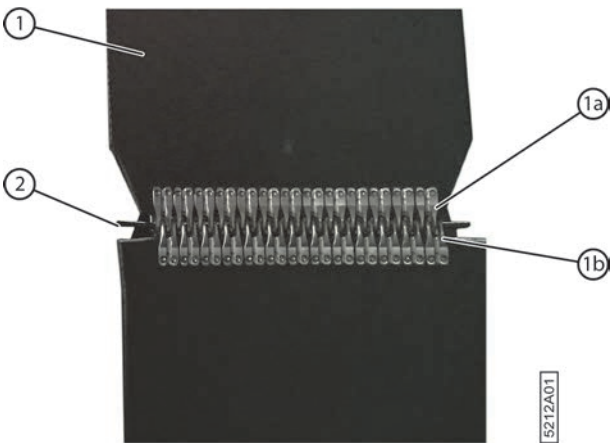


Fig. 125: Replacing a pressing chamber belt

1. Read the safety instructions and observe them.
2. Rotate the pressing chamber belts until the connection of the pressing chamber belt to be replaced is visible at the rear of the pressing chamber.
3. Open the pressing chamber.
4. Switch OFF the machine safely.
5. Mechanically lock the pressing chamber.
6. Remove the connecting pin (2) from the pressing chamber belt.
7. Connect the new pressing chamber belt (end with the cut corners (1a)) to the end of the old pressing chamber belt (1b) via the connecting pin.
8. Switch ON the machine.
9. Allow the pressing chamber belts to rotate until the new pressing chamber belt has completed one full revolution.
10. Switch OFF the machine safely.
11. Disconnect the old pressing chamber belt from the new pressing chamber belt by removing the connecting pin.
12. Use the connecting pin to connect the ends of the new pressing chamber belt to each other.
13. Switch ON the machine again.
14. Allow the pressing chamber belts to rotate a few revolutions, and check whether the new pressing chamber belts operate optimally and are correctly aligned.

10.3.7 Replacing a broken pressing chamber belt

Executor: qualified technician

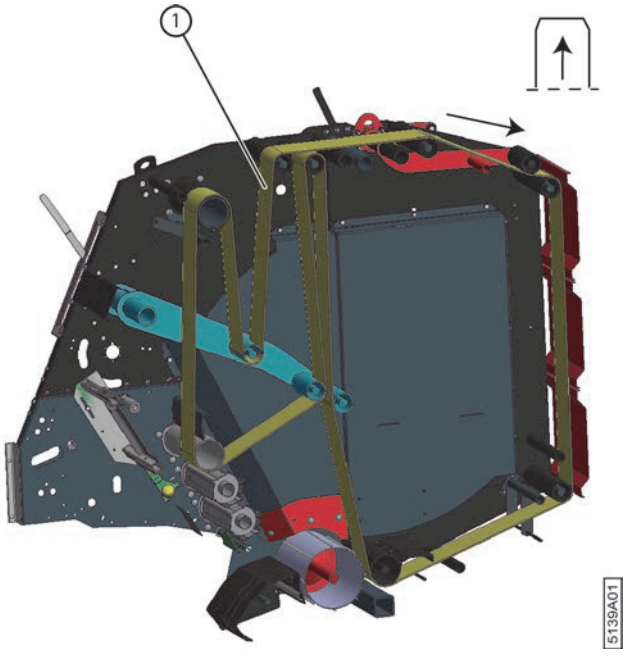


Fig. 126: Replacing a broken pressing chamber belt

1. Read the safety instructions and observe them.
2. Open the pressing chamber.
3. Switch OFF the machine safely.
4. Mechanically lock the pressing chamber.
5. Remove the broken pressing chamber belt.
6. Connect a rope to the connection (side with cut corners) of the new pressing chamber belt.

7. Pull the rope through the pressing chamber in the direction of rotation. The direction of rotation is shown on the figure.
8. Disconnect the rope and use the connecting pin to connect the ends of the new pressing chamber belt to each other.
9. Switch ON the machine again.
10. Allow the pressing chamber belts to move a few revolutions, and check through the rear window of the cabin of the tractor, whether the new pressing chamber belt operates optimally and is correctly aligned.

10.3.8 Replacing the tooth of the pick-up drum

The teeth of the pick-up drum come into contact with earth and stones and are subject to wear or can break. Regularly check the condition of the teeth and, if necessary, replace the teeth.

When replacing the teeth, the nylon guides for the teeth must also be replaced.

Read beforehand: 10.1 Safety regulations before starting the maintenance on page 133.

Executor: qualified technician

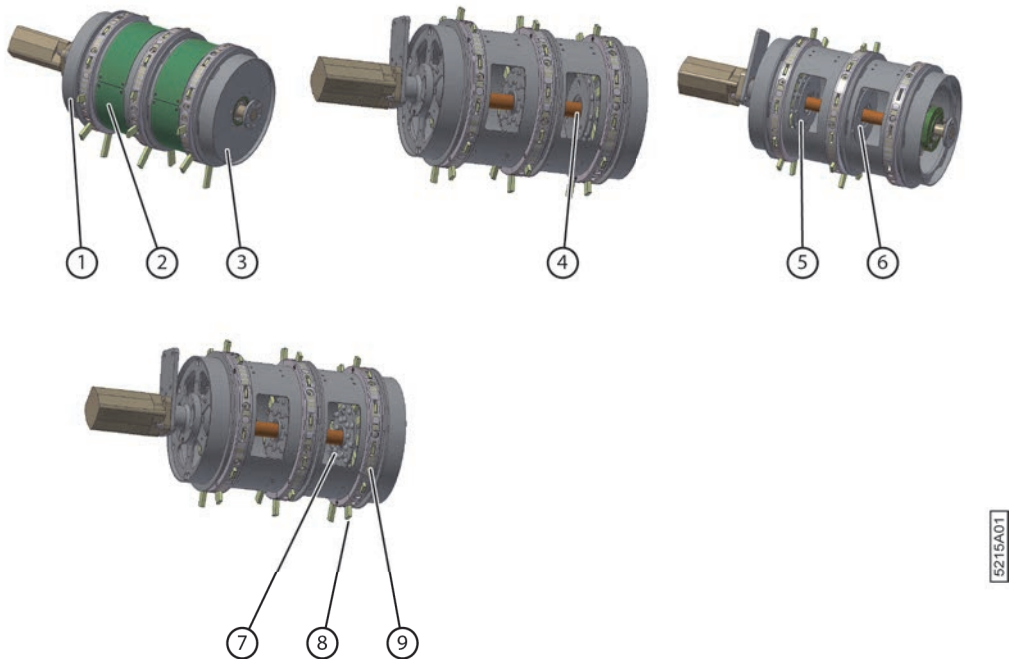


Fig. 127: Replacing the tooth of the pick-up drum

1. Remove the required protective panels (1), (2) and (3) from the pick-up drum.
2. Remove the necessary panels 4), (5) and/or (6), and slide them so that the pins are released.
3. Remove the rivets (7) from the tooth to be replaced.
4. Remove the tooth.
5. If the nylon guides (9) are worn, the nylon guides must also be replaced.
6. Install a new tooth, and install new rivets.

CAUTION

Pay attention to the position of the recess in the tooth!

Viewed from the side of hydraulic drive motor for the pick-up drum. The arrow indicates the normal direction of rotation of the pick-up drum.

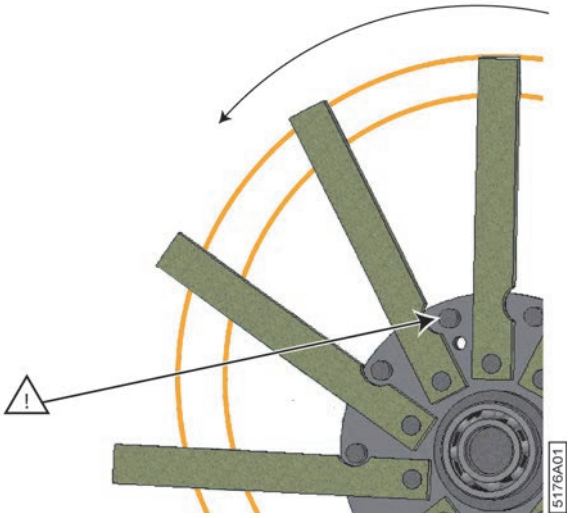


Fig. 128: Installing a new tooth

See also

- 10.2.17 Checking the teeth of the pick-up drum on page 143

10.3.9 Replacing the connecting pin of the pressing chamber belts

Executor: qualified technician

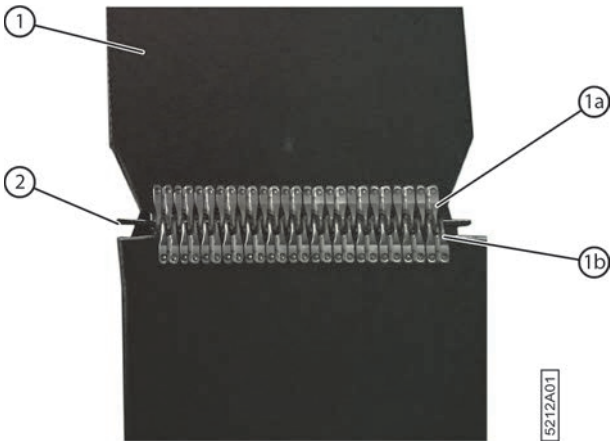


Fig. 129: Replacing a pressing chamber belt

1. Read safety instructions and observe them.
2. Rotate the pressing chamber belts until the connection is located at the rear of the pressing chamber.
3. Open the pressing chamber.
4. Switch OFF the machine safely.
5. Mechanically lock the pressing chamber.
6. Remove the connecting pin (2).
7. Install a new connecting pin.
8. Repeat for all pressing chamber belts.

9. Only allow the pressing chamber belts to move a few revolutions, and check through the rear window of the cabin of the tractor whether the pressing chamber belts with the new connecting pins operate optimally and are correctly aligned.

10.3.10 Replacing the chains and sprocket wheels

The chains must always be replaced together with the sprocket wheels.

Required:

- Dry PTFE spray (for example: WD-40 Lubricant dry PTFE with reference number: 553 3394)
- Chains and sprocket wheels (see spare parts list).

Executor: operator

1. Read the safety instructions and observe them.
2. Press button 1 on the joystick to open the pressing chamber. Continue to hold this button until a message is displayed on the screen stating that the balancing arm is low.
3. Switch OFF the machine safely.
4. Open the front rope cabinet.
5. Undo the 2 bolts and open the protective panel.
6. Undo the connecting links to uninstall the chains.
7. Replace all sprocket wheels.
8. Install a new chain.
9. Lubricate all chains.

See also

- 10.2.44 Lubricating the chains on page 160

10.3.11 Replacing the wear plates of the top- and/or bottom plates

Executor: qualified technician

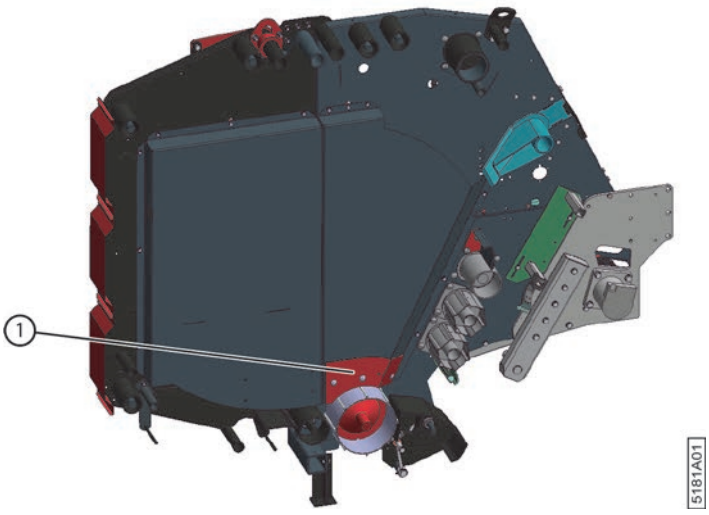


Fig. 130: Replacing wear plate

1. Open the pressing chamber.
2. Switch OFF the machine safely.

3. Mechanically lock the pressing chamber.
4. Remove the wear plate.
5. Install a new wear plate.

10.3.12 Replacing a knife of the binding rope system

Executor: qualified technician

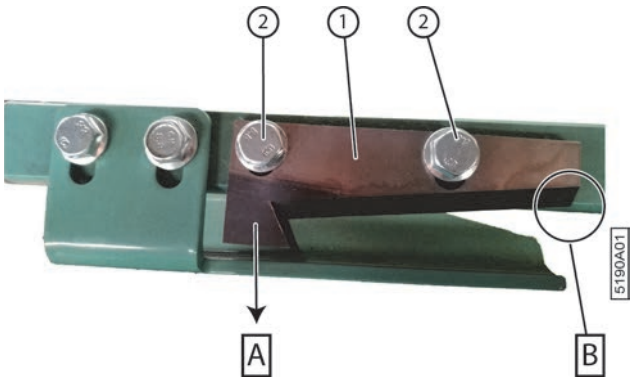


Fig. 131: Replacing a knife

1. Read the safety instructions and observe them.
2. Open the pressing chamber.
3. Switch OFF the machine safely.
4. Mechanically lock the pressing chamber.
5. Loosen the 2 bolts (2) and remove the knife (1).
6. Install a new knife.

   The knife must be correctly positioned. One side (B) must be installed so that it completely touches the profile. This enables the rope to be optimally guided. The other side (A) must be installed as far as possible in the direction of the arrow.

10.3.13 Checking the position of a knife of the binding rope system

Executor: qualified technician

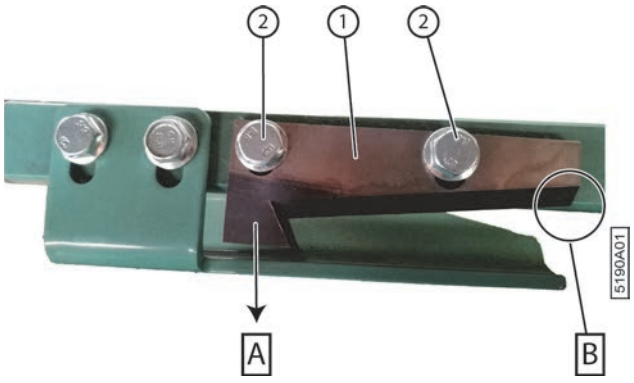


Fig. 132: Replacing a knife

1. Read the safety instructions and observe them.
2. Open the pressing chamber.

3. Switch OFF the machine safely.
4. Mechanically lock the pressing chamber.
5. Check that the knife (1) is correctly installed.

   - Side (B) must be installed so that it fully touches the profile. This enables the rope to be optimally guided.
   - Side (A) must be installed as far as possible in the direction of the arrow.

   If the knife is not correctly installed, then loosen the bolts (2), move the knife to the correct position, and retighten the bolts that secure the knife.

10.3.14 Replacing the fingers of the binding rope system (type 1)

Executor: qualified technician

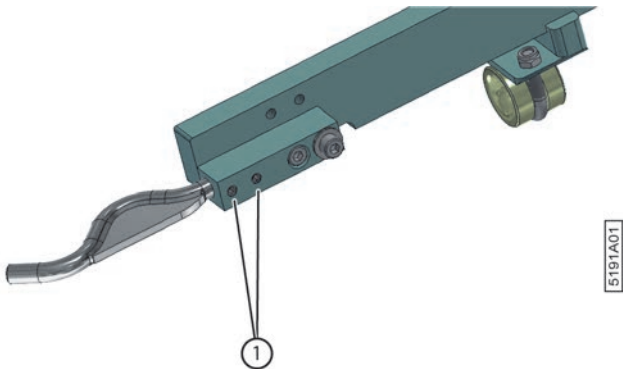


Fig. 133: Replacing fingers of binding rope system

1. Open the binding rope system.
2. Open the pressing chamber.
3. Switch OFF the machine safely.
4. Mechanically lock the pressing chamber.
5. Loosen the 2 socket screws (1) until you can pull the finger out of the holder.
6. Place a new finger in the holder.
7. Tighten the 2 socket screws to secure the finger.

10.3.15 Replacing an attachment on the conveyor belt

Executor: qualified technician

Required:

- Attachment See the spare parts list for the correct reference.
- Special bolts M6 x 20. See the spare parts list for the correct reference.

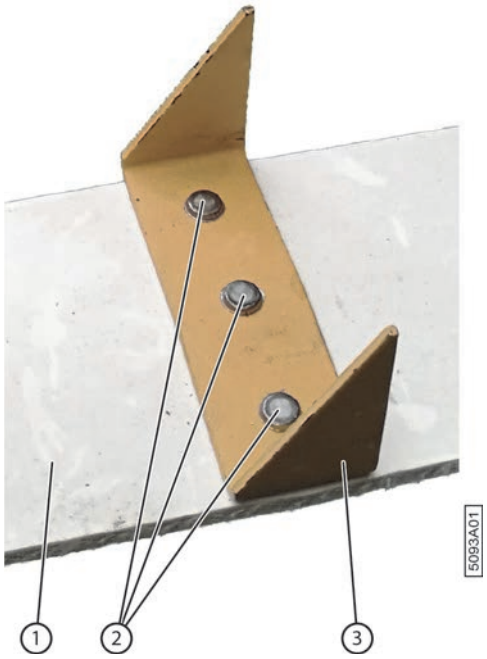


Fig. 134: Replacing attachment

1. Switch OFF the machine safely.
2. Grind off the rivets (2) on the side of the attachment (3).
   This prevents damage to the belt (1).
3. Install the attachment on the belt and secure it using the 3 bolts.
   You install the flat head of the bolt in the belt. On the other side of the belt, you install the attachment with lock nuts.
4. Select the start window.

10.3.16 Replacing a sensor

Executor: qualified technician

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Measure and note the present position of the sensor.
4. Also measure and note the distance between the sensor and the material to be detected.
5. Replace the sensor and install the new sensor in the same position as the removed sensor.
6. Switch OFF the machine safely.
7. Test the operation of the sensor.

See also

- 2.2.19 Overview of the sensors on page 38

10.3.17 Replacing a fuse

The fuses are located in the electrical cabinet. For more information: see the electrical diagram.

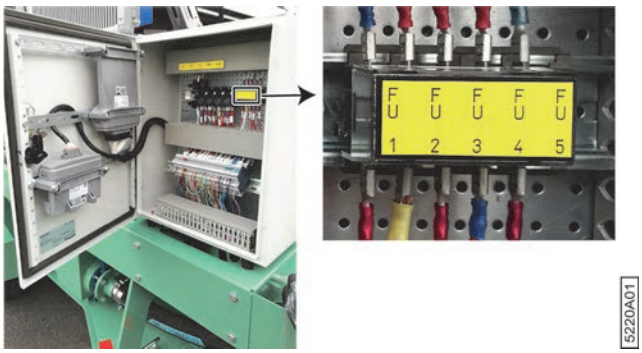


Fig. 135: Replacing a fuse in the electrical cabinet

1. Use the supplied key to open the electrical cabinet.
2. Replace the fuse (FU 1 - FU 5).

Nr.	Explanation	Value
FU 1	Control console + control screen	10A
FU 2	Module MC50 en 0X12	10A
FU 3	Sensors	10A
FU 4	Movement of the towing arm	5A
FU 5	Flashing light	10A

3. Close the electrical cabinet.
4. Check the operation of the machine.

See also

- 2.2.12 The electrical cabinet on page 29

11 Troubleshooting

11.1 Performing tests

Perform a few tests to ascertain what does work and what does not work.

1. Perform the following tests:
   - Does everything work when driving forwards?
   - Does everything work when driving backwards?
   - Does everything work when the machine is stationary?
   - Can the conveyor belts rotate?
   - Can the pick-up be raised or lowered?
2. Check the optimal operation of all sensors.

See also
- 10.2.32 Testing the operation of the sensors on page 153

11.2 Troubleshooting

For the fault messages that are displayed on the control screen, see 11.3 Troubleshooting table messages on the control screen on page 178. For problems relating to the creation of the bale, see 11.4 Troubleshooting table creating the bale on page 180.

Fault	Possible cause	Solution
A rope-break message has been received, but a rope-break did not occur.	The break monitoring tool (aluminium disk) still rotates, but all metal socket-screws have vibrated loose. A socket-screw has vibrated loose and is impeding the break monitoring tool so that it no longer rotates. The break monitoring tool no longer rotates and does not move due to fibres and dirt. The original socket-screws have been replaced by non-conducting socket-screws. The sensor does not detect movement of the break monitoring tool.	Screw new socket-screws into the break monitoring tool, and secure them using Loctite. Unscrew the socket-screw so that the break monitoring tool can once again freely rotate. Screw the socket-screw in again and secure it using Loctite. Remove the break monitoring tool, clean everything and resecure the break monitoring tool. Check that the break monitoring tool can once again freely rotate. Replace all socket-screws with the correct conducting socket-screws. Secure the socket-screws using Loctitie.
The ropes are tensioned too tightly at the beginning of the cycle.	The tension has not been corrrectly adjusted. The stop of the rope tensioning system is deformed.	See 9.2.1 on page 124. See 11.7 on page 182.

11.3 Troubleshooting table messages on the control screen

The table below provides an overview of the messages as well as the fault messages. Additional explanation is given for the messages. The possible cause and the possible solution are stated beside the fault messages.

Message / Fault	Possible cause	Solution
DPA saturated	The machine drives faster than the belts can rotate for the set level of thickness.	Drive slower.
Fault CAN K100 - ECU Engine	ECU module not detected.	Check the power supply and the CAN cabling.
Fault CAN K100 - I100	I100 module not detected.	Check the power supply and the CAN cabling.
Fault CAN K100 - K200	K200 module not detected.	Check the power supply and the CAN cabling.
Open pressing chamber fault	The pressing chamber is not fully open. The signal has not been received.	Check if something is obstructing the opening. Close the pressing chamber and open it again. Check the sensor and the cabling. Test the sensor. See 10.2.34 on page 153. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor. See 10.3.16 on page 174.
Relay frequency fault ISO 11786	There is a problem with relay R3. The activation of relay R3 has not been detected by the system. This can cause the driving speed to be incorrectly displayed.	Check the cabling to the relay.
Throughput speed sensor fault	The speed is not measured, or the speed measured is too low.	Test the sensor. See 10.2.35 on page 154. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor as soon as possible. See 10.3.16 on page 174.
Pressing chamber speed sensor fault	The speed is not measured, or the speed measured is too low.	Test the sensor. See 10.2.35 on page 154. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor as soon as possible. See 10.3.16 on page 174.
Pick-up speed sensor fault	The speed is not measured, or the speed measured is too low.	Test the sensor. See 10.2.35 on page 154. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor as soon as possible. See 10.3.16 on page 174.

Message / Fault	Possible cause	Solution
Close pressing chamber fault	The pressing chamber is not fully closed. The pressing chamber has not closed within the programmed time. The signal has not been received.	Check that something is not obstructing the closure. Open the pressing chamber, then close it again. Check the sensor and the cabling. Test the sensor. See 10.2.34 on page 153. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor. See 10.3.16 on page 174.
Speed sensor fault	The speed is not measured, or the speed measured is too low.	Test the sensor. See 10.2.35 on page 154. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor as soon as possible. See 10.3.16 on page 174.
Temperature probe fault	Not applicable.	Not applicable.
I100 power supply fault	In most cases, the voltage of the machine is too low. • When starting, because the battery is not fully-charged. • Or continuously, because the alternator is defective.	Check the voltage to the module. Check the cabling to the module. Check the battery. Check the alternator.
K100 power supply fault	In most cases, the voltage of the machine is too low. • When starting, because the battery is not fully-charged. • Or continuously, because the alternator is defective.	Check the voltage to the module. Check the cabling to the module. Check the battery. Check the alternator.
K200 power supply fault	In most cases, the voltage of the machine is too low. • When starting, because the battery is not fully-charged. • Or continuously, because the alternator is defective.	Check the voltage to the module. Check the cabling to the module. Check the battery. Check the alternator.
Pressing chamber not locked	The balancing arm is not in the start position.	Check that something is not obstructing the balancing arm. Check the sensor and the cabling. Test the sensor. See 10.2.34 on page 153. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor. See 10.3.16 on page 174.

Message / Fault	Possible cause	Solution
	The pressing chamber is not closed.	Check that something is not obstructing the closure. Open the pressing chamber, then close it again. Check the sensor and the cabling. Test the sensor. See 10.2.34 on page 153. Temporarily disable the sensor. See 8.2.31 on page 103. Replace the sensor. See 10.3.16 on page 174.
Oil temperature high	Not applicable.	Not applicable.
Sensor(s) deactivated	Indicates that one or more sensors have been disabled.	Find out which sensor has been temporarily disabled. See 8.2.31 on page 103. Replace the sensor. See 10.3.16 on page 174.
Rope break	Rope break	Repair the rope. See 11.5 on page 181.
Ropes not cut	The rope has not been cut.	Cut the rope yourself as close as possible to the bale. If this occurs often, you must check the knives, or perform a calibration of the binding rope system. See 10.2.36 on page 154. See 8.2.52 on page 115. Check that the fingers of the binding rope system are correctly positioned. See 11.6 on page 182.
Delay pressing chamber	If the speed of the pressing chamber deviates by more than 20% from the calculated theoretical speed.	Check the operation of the speed sensor. Check the effective operating speed of the pressing chamber.

11.4 Troubleshooting table creating the bale

Fault	Cause	Solution
Insufficient density of the bale.	Clamping pressure is too low in the pressing chamber	Increase the clamping pressure. See 9.3.1 on page 125.
	Irregular feeding-in of the flax.	Ensure that the flax is fed-in uniformly.
	Pressing chamber belts have different lengths.	Remove the pressing chamber belts and check whether they are the same length. If necessary, adjust the length.
The pressing chamber belts have broken	A foreign object was present in the flax.	Check and, if necessary, repair or replace the pressing chamber belts.
	The pressing chamber belts are not correctly aligned.	Correctly adjust the guides for the pressing chamber belts.
	The bale has exceeded the maximum diameter.	Check the sensor.

Fault	Cause	Solution
	Pressing chamber belts have different lengths.	Remove the pressing chamber belts and check whether they are the same length. If necessary, adjust the length.
The chain jumps over a tooth.	The chain tensioners are too loose.	Adjust the chain tensioners. 9.3.4 on page 127. 9.3.5 on page 129
	The chain or sprocket wheels are worn.	Replace the chain and sprocket wheels. See 10.3.10 on page 171
The ropes are not cut.	The knives are worn.	See 10.3.12 on page 172.
	The knife is not optimally positioned.	See 10.3.13 on page 172.
The ropes are not taken by the bale.	Ropes are not long enough.	Pull the ropes at least 20 cm into the pressing chamber.
	The tension on the ropes is too high.	Change the tension on the rope tensioners and/or check the entire path of the ropes. See 9.2.1 on page 124.
	The ropes were not correctly cut.	Manually cut the ropes and place the ropes in the correct position.
	The rope is unsuitable for binding the flax.	For optimal operation of the binding system, it is recommended to use Sisal or jute rope that has a ratio of 500 to 750 metres per kg.
The bale is not bound or incorrectly bound on one side.	A rope-break occurred during the binding and the fault message was disabled.	Adjust the **stop binding rope break** parameter to **Yes**. See 8.2.30 on page 100.

11.5 Rectifying a rope break

We can distinguish between 2 types of rope break:

- In most cases, one end of the broken rope will already be transported with the bale.
- Both ends are still visible in the machine and accessible.

Executor: operator

1. Switch OFF the machine safely.
2. Feed the broken rope through all rope guides.
3. Perform one of the following actions:
   - In the event of one end of the rope no longer being visible because it has already been transported in the bale: provide enough rope and place it onto the flax, so that the rope can be transported by the flax. During the scutching, this will result in a delay during the unrolling of the flax.
   - In the event of both ends of the broken rope still being visible and accessible, tie the ends of the ropes together using a square knot.

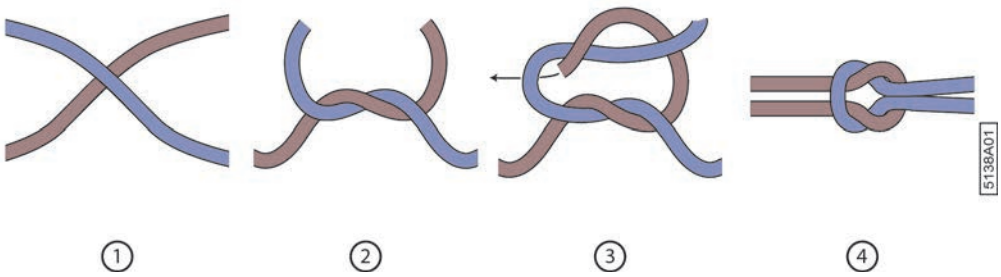


Fig. 136: Tying a square knot

11.6 Checking the position of the finger

Fig. 137: Checking the position of the block of the finger

1. Check that the block is installed in the lowermost position.
2. Check that the block optimally seals with the edges of the needle.
3. Check that one of the blocks is equipped with a longer bolt (1) that acts as a stop, so that the needles do not hit each other when they close.

11.7 Checking the stop for deformation

The stop (6) monitors the size of the bale and thus controls the tension of the rope tensioning system. Initially, this stop is fully down (small amount of tension on the rope tensioners) and as the bale becomes larger, this stop is raised (large amount of tension on the rope tensioners). When the bale is ejected from the pressing chamber, this stop moves downwards against the lever of the rope tensioning system. In the course of time, this stop (6) can become deformed. This causes incorrect tension on the rope tensioners, and problems with the rope.

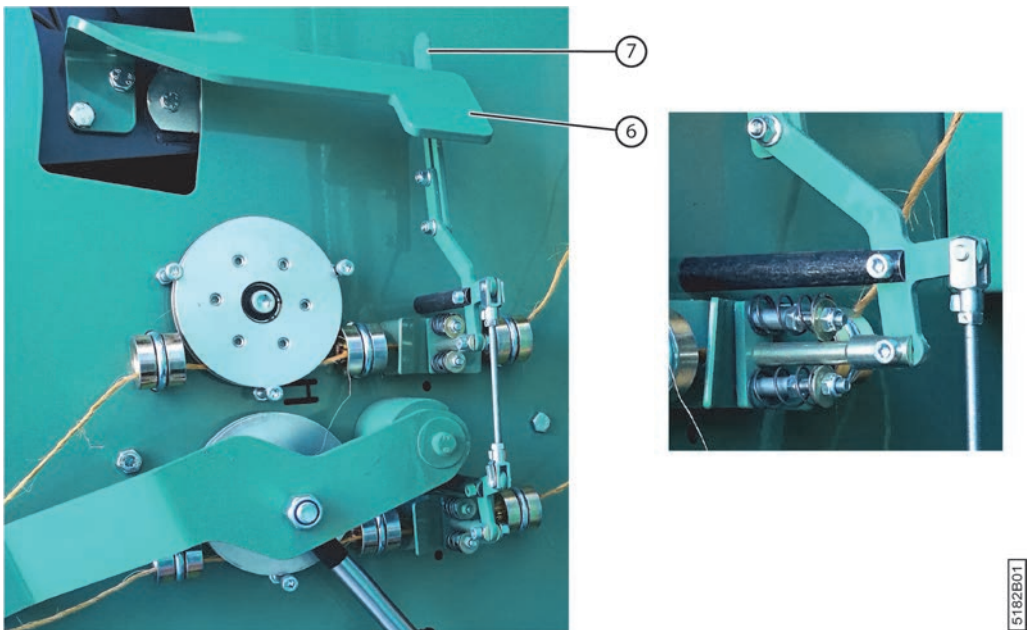


Fig. 138: The lever of the rope tensioning system

1. Read the safety instructions and observe them.
2. Switch OFF the machine safely.
3. Open the door of the front rope cabinet.
4. Check that the stop (6) is not deformed.

   If the stop is deformed, this causes incorrect tension on the rope tensioners. The stop can also be so deformed that the lever (7) no longer moves behind the stop, but instead moves in front of the stop.
5. If the stop is deformed, correct the deformation or install a new stop.

12 Taking out of service and scrapping

12.1 Taking the machine out of service

12.1.1 Disconnecting the machine

The machine is connected in 2 steps:

1. Disconnecting the machine electrically, see 12.1.2 Disconnecting the machine electrically on page 185.
2. Disconnecting the machine mechanically, see 12.1.2 Disconnecting the machine electrically on page 185.

12.1.2 Disconnecting the machine electrically

1. Switch OFF the engine of the tractor, and remove the key from the ignition.
2. Disconnect the various plugs:
   - Plug (1): to record the speed of the tractor
   - Plug (2): disconnect this plug from the control console
   - Plug (3): 12 V power supply of the machine
   - Plug (4): lighting of the machine

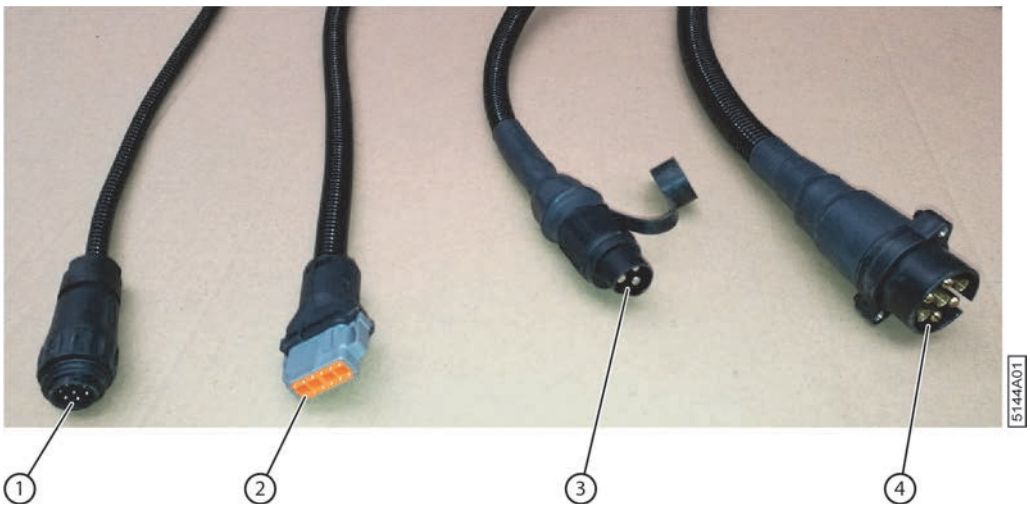


Fig. 139: Connections

3. Install the electrical cables in the cable conduit (5).

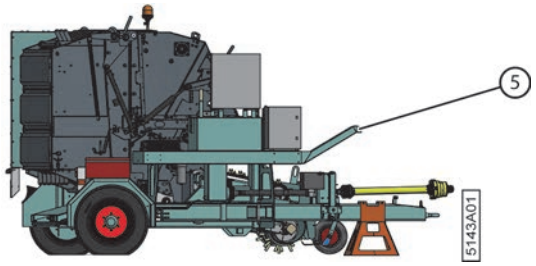


Fig. 140: Cable guide

Ensure that the disconnected plugs do not fall onto the ground. The presence of dirt and humidity can result in oxidisation of the plugs, and this can cause incorrect operation. Ensure that the cables cannot become snagged.

12.1.3 Disconnecting the machine mechanically

WARNING
NEVER disconnect the machine on a slope!

1. First, disconnect the machine electrically. See 12.1.2 Disconnecting the machine electrically on page 185.
2. Place the machine on a stable, solid surface.
3. Place wheel chocks in front of and behind the rear wheels of the machine.
4. Place the support leg is the lowest possible position and secure it.
5. Turn the support leg further out until the machine is supported.
6. Disconnect the safety chains from the drive shaft.
7. Disconnect the safety chain from the tractor.
8. Disconnect the drive shaft from the tractor.
9. Disconnect the tractor from the machine.
10. Drive the tractor forwards.

12.1.4 Extending the support leg

You use the support leg to adjust the towing eye of the machine to the desired height.

1. Release the handle and move the profile (3) downwards (A).
2. Lock the handle in the highest possible opening.
3. Turn the handle (1) clockwise.

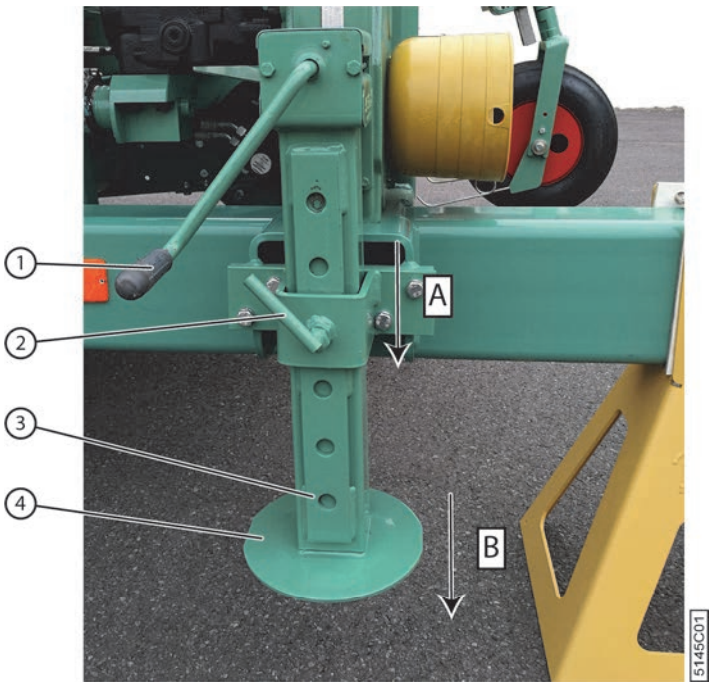


Fig. 141: The support leg extends

The lowermost part of the supporting leg (4) touches the ground and pushes the towing bar upwards.

12.2 Scrapping the machine

1. Take the machine out of service. See 12.1 Taking the machine out of service on page 185.
2. Remove all hazardous substances from the machine.
   - Carefully read the Safety Information Sheets for the hazardous substances. See 4.7 Hazardous substances on page 58.
   - See 12.2.1 Draining the hydraulic tank on page 187.
   - Lubricating grease
3. Remove all hydraulic pipes and hydraulic filters and collect all oil.
4. Remove all electrical cables and electrical components.
5. Remove all plastic components.
6. Remove the wheels and remove the rubber tyres.
7. Dispose of the various types of materials in accordance with the current local statutory regulations.

12.2.1 Draining the hydraulic tank

The drain plug is located underneath the hydraulic tank and above the mudguard for the right-hand wheel.

Carefully read the Safety Information Sheet for the hydraulic oil used.

Drain the hydraulic tank when the oil is hot, then it flows better.

ENVIRONMENT
Spilled liquid must be removed in accordance with the regulations for the liquid and in accordance with the current local statutory regulations.

NOTE
When scrapping the machine, it is easier to drain the hydraulic oil if you first remove the rear right-hand wheel and the mudguard.

Required equipment:

- Drain tray with minimum capacity of 150 litres.
- Drain hose with a minimum inside diameter of 3/4” (20 mm).
- Cleaning rags

Fig. 142: Draining hydraulic tank

1. Lower the pick-up and close the pressing chamber.
   This action removes all hydraulic oil from the cylinders.
2. Place the drain tray as close as possible to the hydraulic tank.
3. Loosen the drain plug (3), push the hose over the drain plug and collect the hydraulic oil.
4. Remove the hydraulic filter from the pump and collect the hydraulic oil.

See also
- 2.2.11 The hydraulic tank on page 28

12.2.2 Draining the reduction gearbox

Carefully read the Safety Information Sheet for the oil used.

Drain the reduction gearbox when the oil is hot, then it flows better.

ENVIRONMENT
Spilled liquid must be removed in accordance with the regulations for the liquid and in accordance with the current local statutory regulations.

Required equipment:

- Drain tray with minimum capacity of 5 litres.
- Cleaning rags

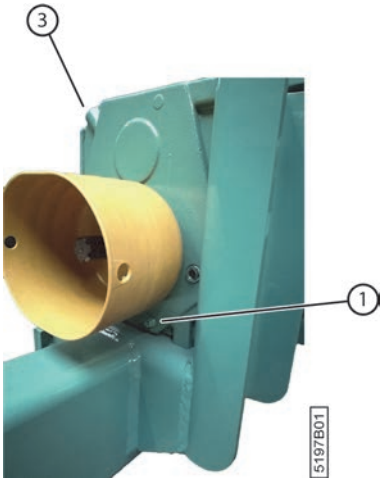


Fig. 143: Draining the reduction gearbox

1. Disconnect the hydraulic pump from the reduction gearbox.
2. Disconnect the reduction gearbox from the chassis by unscrewing the bolts underneath and to the left.
3. Place the drain tray underneath the drain plug opening.
4. Open the filler cap (3).
   This will cause the oil to flow faster and more uniformly through the drain plug opening.
5. Loosen the drain plug (1), and collect the hydraulic oil in the drain tray.

12.3 Safety regulations for disassembly

See 10.1 Safety regulations before starting the maintenance on page 133.

13 Annexes

13.1 Guarantee conditions

See sales agreement.

13.2 Liability

See sales agreement.

13.3 EC declaration

EC DECLARATION OF CONFORMITY

IN ACCORDANCE WITH ANNEX II.1.A. OF THE DIRECTIVE 2006/42/EC

This declaration relates exclusively to the machine in the condition in which it was placed on the market, and excludes components that are added and/or operations performed subsequently by the end user.

Business name and full address of the manufacturer:

Depoortere NV	Kortrijkseweg 105 8791 Beveren-Leie Belgium

Name and address of the person authorised to compile the technical file. The person stated below is domiciled in the European Community:

Rik Depoortere	Kortrijkseweg 105 8791 Beveren-Leie Belgium

Description and identification of the machine:

Name	Towed flax-baling machine
Function	Rolling-up of the flax
Type	ZORTRA

This machine satisfies all of the provisions of the directives stated below:

2006/42/EC	Directive dated 17 May 2006 relating to machines, and to the amendment of directive 95/16/EC (revision)
2014/30/EU	Directive dated 26 February 2014 relating to the harmonisation of legislation for the member states pertaining to electromagnetic compatibility (revision)

Place: Beveren-Leie Date of drawing up the declaration: 1/01/2021	**Identity and signature** of person who, on behalf of the manufacturer or his proxy, is authorised to draw up the declaration  Managing director Rik Depoortere

13.4 Specific certificates and forms

Not applicable.

13.5 Initial settings

13.5.1 Initial settings for the control screen

“HARVESTING” parameters

Parameter	Initial values
delay autobinding	0 s
speed start autobind	04 km/h
early opening pressing chamber	No
speed fault sensor	12 km/h
commence start-up time	00
delay close pressing chamber	1.0 s
delay rope break	035 m
throughput speed emptyiing	050 %
unblocking speed	060 %
pressing chamber speed binding	090 %
pressing chamber speed cutting ropes	008 %
pressing chamber speed opening	015 %
stop binding rope break	Yes
emptying pick-up	No
sealing throughput	065 %
minimum speed start pick-up	06 km/h
graph calculation driving speed	3.0 s
calculate driving speed ON	0
frequency rope open pressing chamber	15 Hz
delay open pressing chamber	0.1 s
sealing step	10 %
speed pick-up diameter OK	1
pick-up stop for binding	0
max. speed pick-up	12 km/h
coefficient speed pick-up/driving	100 %
select frequency ISO 1786	No
Frequency coefficient ISO 11786	130

disable sensors parameters

Parameter	Initial values
driving speed sensor OFF	No
pressing chamber speed sensor OFF	No
belt speed sensor OFF	No
pick-up speed sensor OFF	No
pressing chamber open sensor OFF	No

Parameter	Initial values
pressing chamber closed sensor OFF	No
balancing arm low sensor OFF	No
rope 1 sensor OFF	No
rope 2 sensor OFF	No
time fault pressing chamber speed	0.5 s
time fault belt speed	0.5 s
time fault pick-up speed	0.5 s
time fault driving speed	3.5 s
minimum revs. pressing chamber -> incorrect	30 %
minimum revs. belt -> incorrect	30 %
minimum revs. pick-up -> incorrect	30 %

13.6 Overview of the filters

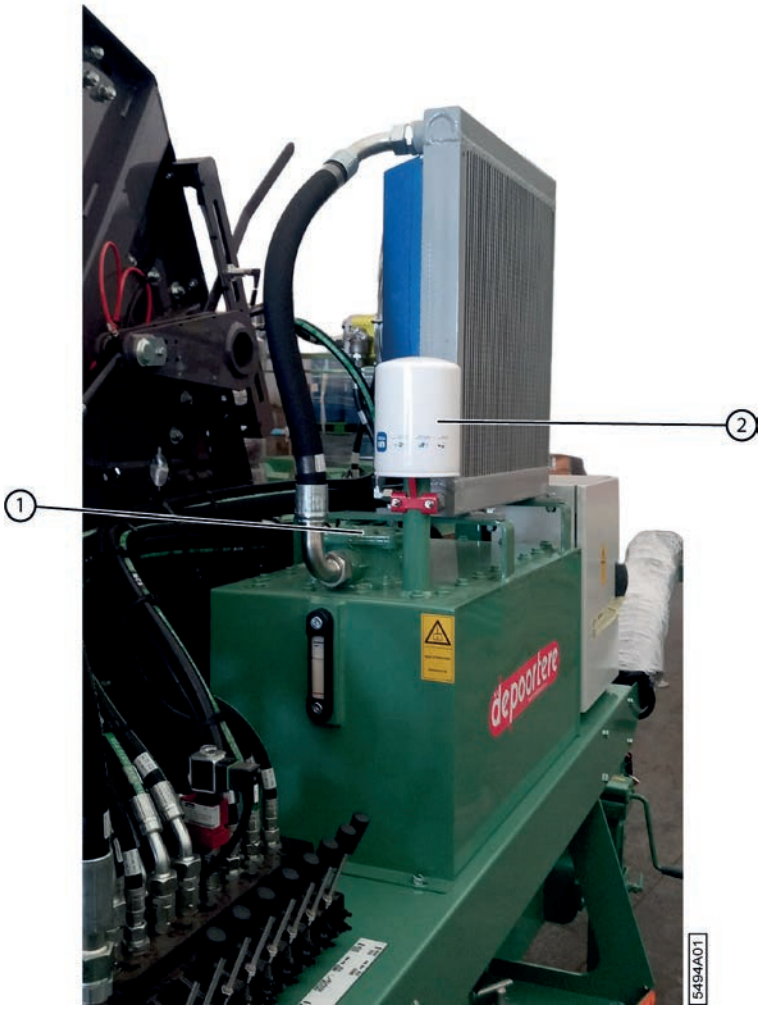


Fig. 144: Return filter and aerator

Fig. 145: High-pressure filter

Nr.	Reference Depoortere NV:	Description	More information
1	1213100200	Return filter element 25 µ	
2	1210100050	Aerator	The aerator filters dust from the ambient air when compensating for the volume in the hydrauilc oil tank.
3	1212100100	Filter element high-pressure filter	Filter element for the 420 bar high-pressure filter.

13.7 Spare parts list

The spare parts list is supplied separately.

13.8 Maintenance sheet

Date	Executor	Maintenance performed

Index

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W