

## **RV 2160 / 2190**

### **Operation manual**

Issue	04/2007
Date of printing	4.2007
Language	EN
From machinenumber (PSN)	RK000300 / RL000300
Serial number (PIN)	02RK01 / 02RL01
Reference number	VGG0704RKL(3)EN

## Identification of the machine

To support you as soon as possible your dealer requires several details of your machine.  
Please enter the information here.

Designation

RV 2160 / RV 2190

PSN

RK ..... / RL .....

Software version

Assembled  
options

Dealer's address

Manufacturer's  
address

Kverneland Group Geldrop BV  
Nuenenseweg 165  
5667 KP Geldrop  
The Netherlands

Phone +31 40 2893300

# Table of contents

<b>Preface</b> .....	<b>6</b>	Road transport	82
Target group of this operation manual	6	Preparation for road transport	83
Symbols used	7	Wheels / tyres	84
<b>Safety instructions</b> .....	<b>8</b>	<b>Preparation at the field</b> .....	<b>85</b>
For your safety	8	Safety	85
Who is allowed to operate the machine?	13	Performing settings	85
General	13	Prior to baling	85
Hitching the machine	14	Crop guard adjustment	86
Road transport	16	<b>Use at the field</b> .....	<b>88</b>
Working with the machine	17	Safety	88
Unhitching the machine	19	Dis/engaging knives	89
Care and maintenance	20	Bale diameter setting	89
Further prescriptions	21	Manual binding control	90
<b>Acquaintance with the machine</b> .....	<b>23</b>	Electronic twine tie settings	92
Destination of the machine	23	Electronic net wrap settings	93
Characteristics of the machine	23	Driving	94
Description of the components	24	Bale growth	96
Technical specifications	27	Twine tie system	96
<b>Delivery and preparation</b> .....	<b>43</b>	After the first bale	100
Checking the delivery	43	Rebaling bales	100
<b>Hitching the machine</b> .....	<b>44</b>	End of baling	100
Safety	44	<b>Focus</b> .....	<b>102</b>
General	44	General	102
Hitching	45	Overview main parts	102
Support jack	47	Control box	103
Ground adjustment of the machine	47	Operation	108
Coupling the pto drive shaft	48	Basic display	112
Installation control box	49	Operating display	114
Parking brake [+]	51	Manual or automatic mode	116
Connections	52	Twine tie settings	118
Running	55	Net wrap settings	119
<b>Preparation for use</b> .....	<b>56</b>	Driving	120
Safety	56	Bale counters	125
General	57	Work functions	127
Lateral doors	57	User functions	128
Adjustment gauge wheels	58	Diagnostics	131
Pick-up safety chains	58	Dealer menu	132
Pick-up suspension	59	Service menu	137
Opticut cutting system adjustment	60	<b>Tellus</b> .....	<b>138</b>
Exchange of knives by dummy knives [+]	67	General	138
Twine installation - Focus	68	Overview main parts	138
Net installation - Focus	70	Control box	139
Twine installation - Tellus	73	Operation	143
Net installation - Tellus	75	Basic display	148
Core density adjustment	78	Tractor information display	150
Scraper adjustment	79	Field counters	151
Windrow dimensions	79	Operating display	152
Running	80	Manual or automatic mode	154
<b>Road transport</b> .....	<b>81</b>	Twine tie settings	156
Safety	81	Net wrap settings	157
Before road transport	81	Driving	158
		Bale counters	163

# Table of contents

Work functions	166	Error messages - Focus	240
User functions	167	Error messages - Tellus	246
Diagnostics	170	Security systems	252
Extended user functions	171	<b>Disposal of the machine</b> .....	<b>261</b>
Dealer menu	172	<b>EC Declaration of conformity</b> .....	<b>262</b>
Service menu	177	<b>Index</b> .....	<b>263</b>
<b>Cleaning and caring</b> .....	<b>178</b>		
Safety	178		
Cleaning	178		
Caring	178		
<b>Storing the machine</b> .....	<b>179</b>		
Safety	179		
General	179		
Unhitching and securing of the machine	180		
After the season	181		
<b>Maintenance</b> .....	<b>182</b>		
Safety	182		
General	184		
Attaching elements	188		
Pto drive shaft	190		
Lubrication	191		
Gearbox	205		
Mechanical netbinder settings	206		
Mechanical twine tie settings	211		
Belts and belt alignment	216		
Wheels/axle	223		
Tyre pressure	224		
Drawbar	226		
Sensors	227		
Diagrams and schemes	230		
<b>Optional equipment</b> .....	<b>235</b>		
General	235		
Extra net roll storage	235		
Wheel chocks	235		
2 wheels with extra wide tyres	236		
Automatic chain lubrication system	236		
Belt repair tool	236		
Belt repair set (5 belts)	236		
14 dummy-knives, set (OC only)	236		
14 knives (OC only)	237		
Extra hardened knives (OC only)	237		
Guiding "Teardrop" plate	237		
In-cab "mixed chamber" control	237		
23 knives (FC only)	237		
Extra drive	237		
Super silage set	238		
Net binder	238		
Flax kit	238		
Hitch clevis	238		
Bale ramp	238		
<b>Troubleshooting</b> .....	<b>239</b>		
Troubleshooting table electronics	239		

# Table of contents



## Target group of this operation manual

This operation manual is meant for those concerned with the control, use and maintenance of the machine. It contains all data required for a safe handling, use and maintenance of the machine.

### For your safety

Before starting to adjust and use your machine, familiarise yourself with this operation manual. By doing so your safety and the best performance are assured. It is very important to read this manual carefully before using the machine and to keep it handy. In this way, you will

- avoid accidents
- respect the warranty conditions
- always have a functional machine in perfect working order

### For the employer

All personnel are to be trained in the use of the machine regularly (at least once a year) in accordance with employers' liability insurance association guidelines. Untrained or unauthorised individuals are not permitted to use the machinery.

You are responsible for the safe operation and maintenance of your machine. You must ensure that you and anyone else who is going to operate, maintain or work around the unit be familiar with the operating and maintenance procedures and related safety information contained in this manual.

## Symbols used

In this operation manual the following symbols and terms are used:

- A bullet stands at enumerations

> A triangle stands at steps, which you must do

→ An arrow shows cross-references at other text passages

[+] The plus sign shows that it handles about optional equipment, which does not belong to the standard model.

Besides these symbols, pictograms are used, which will help you with locating of text passages:

**TIP** The word "Tip" shows tips and advices to the use.



The triangle refers to danger at assembling or adjusting work.



The key refers to tips at assembling or adjusting work.



The star shows examples, which are needed for a better understanding.



## For your safety

This chapter contains all general safety instructions. Subject-specific safety instructions are located per chapter. Take care of the safety instructions

- because of your own safety
- because of the safety of your fellow man and
- to guarantee the machine safety

When handling agricultural machinery, wrong behaviour can lead to a lot of danger. Therefore work with special care and never under pressure of time.

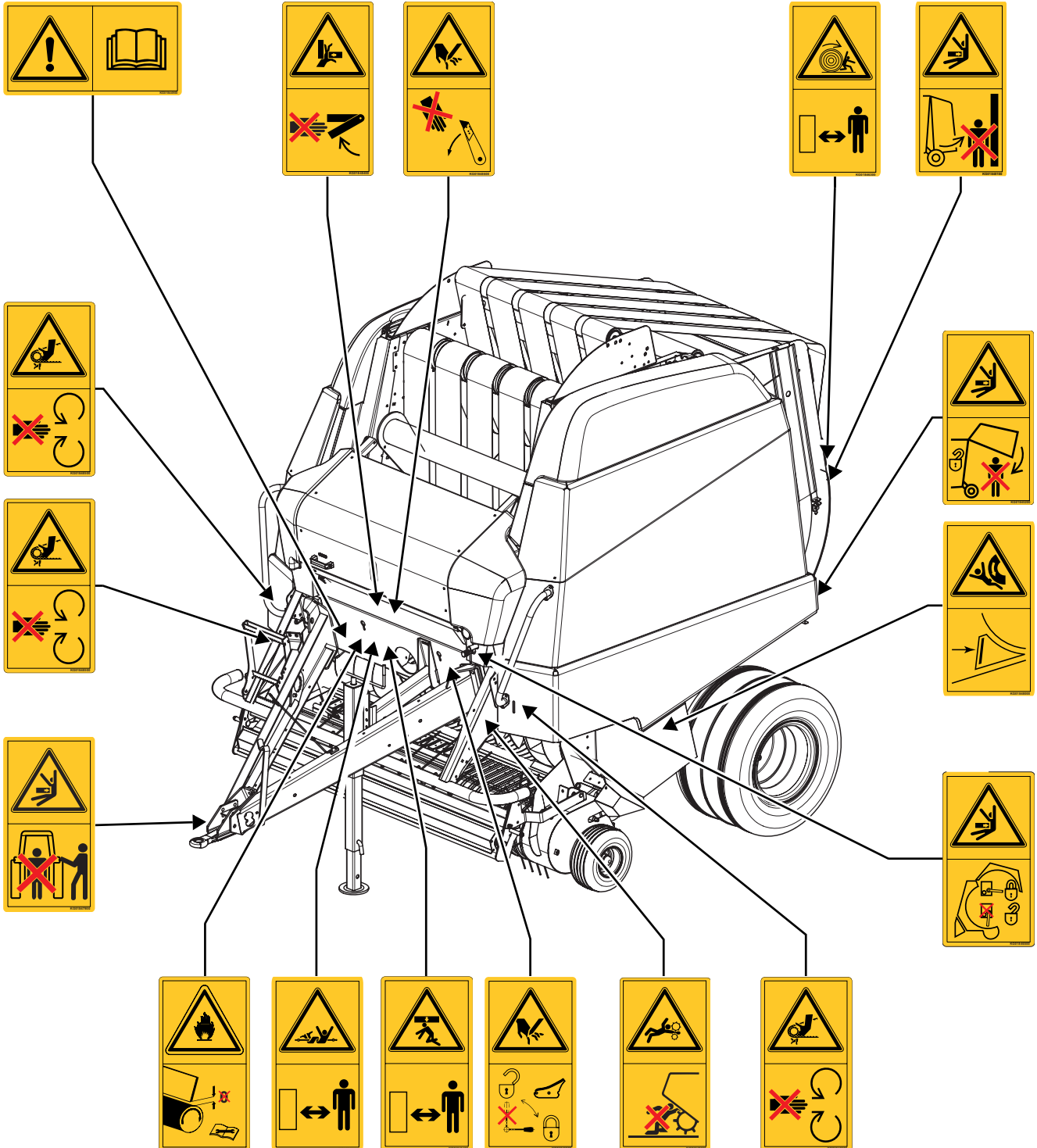
### For the employer

Inform the one who works with this machine frequently about these safety instructions and according to the legal regulations.



## Safety decals at the machine

The installed warning and advisory signs give important hints for a safe operation; adhering to serves your own safety. Keep safety decals and signs clean and legible at all times. Replace safety decals and signs that are missing or have become illegible. If original parts on which a safety decal or sign was installed are replaced, be sure that the replacement part also displays the current decal or sign.



# Safety instructions



## Meaning of the safety decals



### Read the operation manual carefully

Read the operation manual carefully before taking the machine into operation. Various setup and maintenance procedures require special settings. Not following these special settings can cause serious or deadly injuries or machine damage.



### Stay clear of a raised tailgate

Stay clear of a raised tailgate unless the safety lock is applied. An unsecured tailgate can lower. Serious or deadly injuries can occur.



### Place chocks at a parked machine

Always place chocks if the machine is parked on a non-horizontal plane. A non-secured machine can cause serious or deadly injuries or damages.



### Stay clear of pto drive shaft

Stay clear of danger area of pto drive shaft. Do not work with a pto drive shaft if protection is damaged or not present. Personal injuries can occur.



### Stay clear of a moving pick-up

Stay at a safe distance of a rotating pick-up. The pick-up tines may grab your clothes if you come close to it and pull you inside the machine. Serious or deadly injuries can occur.



### Stay clear of draft link lifting range

Do not stay between the machine and the tractor during hitching and unhitching of the machine. Serious or deadly injuries can occur.



### Stay clear of the tailgate area

Stay clear of the tailgate area while the tractor engine is running. A swinging tailgate can cause personal injuries.



### Never stay behind a working machine on a slope

An outgoing, rolling bale has a heavy mass and a high speed. A bale rolling down can cause serious or deadly injuries.



### Correct scraper setting

Ensure the scrapers have always the correct setting in accordance with the crop, especially when baling dry crop. A false scraper adjustment can cause fire. Personal or machine damages can occur.



### Stay clear of the twine tubes area

Stay clear of the moving twine tubes area. Hands can be squeezed between the moving parts. Personal injuries can occur.

# Safety instructions



## Stay clear of a raised machine

Stay clear at a safe distance of a raised machine. Serious or deadly injuries can occur.



## Danger of cutting by twine or net cutter

Stay clear of the area of the twine or net cutting blade if electronic control can be activated. Serious injuries can occur.



## Keep doors closed on a running machine

Behind lateral doors rotate chains and sprockets. Do not open the shielding while the engine is running. Personal injuries can occur.



## Danger of crushing by tailgate

Stay clear of the tailgate area if electronic or hydraulic control can be activated.

Apply tailgate safety lock prior to going under an opened tailgate:

lever to the right = safe;

lever downward = working position = unsafe.



## Apply the cutting unit safety lock

Apply the cutting unit safety lock prior to work on the cutting unit or pick-up:

lever to the right = safe;

lever upward = working position = unsafe.



## Who is allowed to operate the machine?

### General

#### **Authorised people only**

The machine may only be used, maintained or repaired by authorised people who have been informed about the dangers when handling the machine.

Usually such persons have an agricultural or equal intensive education.

#### **Safety is your responsibility**

Apply and insist upon application of the safety instructions. Most accidents are avoidable. Do not run the risk of serious or fatal accidents through ignorance of these safety instructions.

#### **Wear close fitting clothing**

Avoid wearing loose fitting clothing.

Loose clothing can get stuck between rotating parts. Danger of serious injury.

#### **Keep the machine clean**

Always keep the machine clean to avoid fire risk.

#### **Fire extinguisher**

Carry a fire extinguisher at all times, especially when operating in dry crop materials. This should be a multi-purpose ABC rated extinguisher with a 10 kg capacity, approved by the appropriate authority.

#### **Good operating condition**

Always check that

- the tractor is in good operating condition and
- the tractor brakes are powerful enough for the machine

#### **Use a proper tractor**

Make sure the tractor is in safe operating condition with adequate braking capabilities for a machine of this weight. See the tractor's technical details.

#### **Running in an enclosed area**

Do not run the machine in an enclosed area. Exhaust fumes can be dangerous.

#### **Never work on a running machine**

Never work on the machine while it is running. Severe injuries can occur.

#### **No modification of the machine**

Do not modify the machine in any way. Unauthorised modifications may impair the function and/or safety and could affect the life of the machine.



## Hitching the machine

### Increased danger of injury

While hitching the machine onto the tractor an increased danger of injury occurs. Therefore:

- prevent the tractor from rolling away, shut down the engine and remove the ignition key
- never stay between tractor and machine during hitching
- mount and secure the pto drive shaft at the pto

In case of negligence damages to the machine or serious personal injuries can occur.

### Pto drive shaft

Only use the pto drive shaft complying with the manufacturer's specification. Other pto drive shafts with slip clutches can permit higher torques. Higher torques can damage the machine.

### Pto drive shaft operation manual

Regard to the operation manual of the pto drive shaft manufacturer. Here you find instructions for correct handling of the pto drive shaft. Negligence can lead to damages at the pto drive shaft and to the machine.

### Fix and check pto drive shaft protection

The rotating pto drive shaft is secured by a pto drive shaft protection. Take care that the pto drive shaft protection is not damaged. Pto drive shaft protection must be fixed through the chains, both at tractor and machine side. Unprotected pto drive shafts can cause serious personal injuries.

### Pto speed 540 rpm

The prescribed pto speed of maximum 540 rpm may not be exceeded. Higher pto rpm can cause damages to the machine.



## Hydraulics

### **Hydraulic couplings only pressureless**

Only couple the hydraulic hoses to the tractor when both tractor and machine hydraulics are pressureless. Hydraulics under pressure can cause accidental movements of the machine.

### **High pressure in the hydraulic system**

The hydraulic system is under high pressure. All tubes, hoses and couplings must be controlled regularly for leaks and external damages. Only use suitable tools when searching for leaks. Immediately repair damages. Leaking oil can cause injuries and fire. When having injuries visit a doctor immediately.



## Road transport

### **Pay attention to a road-safe condition**

When driving on the local roads, the machine must correspond to the current traffic prescriptions. To which e.g. belongs:

- mounting of lighting, warning and protection installations
- comply with the permissible transport dimensions and weights, maximum permissible axle loads, tyre carrying capacity, total weights and national speed limits
- taking care of the maximum permitted speed of 25 or 40 km/h

In case of negligence, driver and owner of the machine are fully liable.

### **Check tyre pressure**

Check the tyre pressure regularly. Wrong tyre pressure decreases the life of the tyres and can cause unstable driving characteristics and accidents.

### **Prohibition of transporting people on the machine**

Nobody and nothing shall be transported on the machine during transport. Transporting of people or objects on the machine is perilous and prohibited.

### **Changed driving and braking handling**

Because of the hitched machine the driving and braking handling changes. Especially when driving curves the dimensions and mass of the machine have to be taken into account. A not adapted driving style can lead to accidents.

### **Adapted driving speed**

Under bad road circumstances and at high driving speeds very high forces can appear, which load or overload the tractor and machine too much. Adapt the driving speed according to the road circumstances. A not adapted driving speed can lead to accidents.

### **Do not transport bales in the bale chamber**

Never transport bales in the bale chamber. Transporting a bale influences the tractor's steering and braking capacities. Personal or machine damages can occur.



## Working with the machine

### **First use only after instruction**

The machine may at the first time of use only be brought into use by employees of the dealer, factory representatives or employees of the manufacturer. False use after bringing the machine into use without instructions can cause damages to the machine or accidents.

### **Take care of technical correct condition**

Only bring the machine into use in a technical correct condition. Check all important parts and replace defective parts before use. Defective parts can cause material or personal damages.

### **Do not remove protective covers**

The protective covers should not be removed or evaded. Check all protective covers before using. Unprotected machine parts can cause heavy or deadly accidents.

### **Prohibition of transporting people on the machine**

Nobody and nothing shall be transported on the machine during transport. Transporting of people or objects on the machine is perilous and prohibited.

### **Check the direct surroundings**

Before driving and bringing into use of the machine the direct surroundings must be checked. Take care of sufficient view. Only start driving when no persons or objects are in the direct surroundings. Perilous injuries can occur.

### **Tighten bolts and nuts**

Check bolts and nuts regularly for being tight and tighten if necessary. Because of using the machine bolts can get loose. Damages to the machine or accidents can be caused.

### **Behaviour at troubles**

At functional troubles stop and secure the machine immediately. Remedy the trouble immediately or commission a workshop. Continuing working with the machine cause accidents or damages.

### **Pto rotates after disengaging**

After disengaging or switching off the pto, the machine will continue running because of inertia. Keep a safe distance to the machine until the pick-up and the moving parts really stand still.

### **Cornering or manoeuvring**

When cornering, anticipate centrifugal forces caused by the distance of the centre of gravity of the machine behind the tractor. Beware of the turning radius and the inertia of the machine.

### **Bale ejection**

Keep clear of the bale ejection area. Danger of crushing. Which can cause severe injuries.

Never stay behind the machine when a bale is coming out.



## **Drive adapted to ground conditions**

Always drive with caution on sloping or moving ground.  
Respect the maximum load permitted per axle and the total working weight authorised.

## **Blockage of a security device**

In case of a blockage or operation of a security device, never work on the machine without

- disengaging the tractor pto first
- switching off the electronic control system
- stopping the engine and removing the ignition key

Never be tempted to hand feed or unblock the machine while it is running. Serious or deadly injuries can occur.



## Unhitching the machine

### Increased danger of injury

While unhitching the machine from the tractor an increased danger of injury occurs. Therefore:

- prevent the tractor from rolling away, shut down the engine and remove the ignition key
- never stay between tractor and machine during unhitching
- take care of a level and secure surface for the machine
- take care of a secure lock of the jack stand
- place the pto drive shaft at the support or hang it in the chain
- prevent the machine from rolling away
- only disconnect the hydraulic hoses when the hydraulic system at both tractor and machine is pressureless

In case of negligence heavy or deadly injuries can be the consequence.



## Care and maintenance

### **Observe the care and maintenance intervals**

Observe the prescribed intervals and those stated in the operation manual for recurring checks and inspections. In case of negligence of the intervals damages to the machine or accidents can be caused.

### **Use original parts only**

Lots of components have special properties which decides for the stability and the function of the machine. Only the parts and options delivered from the manufacturer have been tested and released. Other products can interrupt the function of the machine or can harm the security. When using not original parts the warranty and liability of the manufacturer reduces to nil and void.

### **At all care and maintenance work:**

- switch off pto
- make the hydraulics pressureless
- unhitch the tractor if possible
- switch off the engine and remove the ignition key
- make sure the tractor and machine are positioned on a firm and level area, support if necessary
- do not use parts of the machine as climbing help, use suitable climbing helps on the contrary
- prevent the machine from rolling away

Only when observing these prescriptions a secured working during care and maintenance work is guaranteed.

### **Interrupt electric power supply**

Before working on the electrical device, separate this from the electric power supply. Supplies being charged can cause material or personal damages.

### **Exchange hydraulic hoses**

Hydraulic hoses can age without external recognizable indications. We therefore recommend to exchange all hydraulic hoses every three years. Defective hydraulic hoses can cause heavy or deadly injuries.

### **Careful when cleaning with high-pressure cleaner**

The machine can be cleaned with water or steam. Clean bearings, plastic parts and hydraulic hoses with low pressure only. Too high pressure can damage these parts.

### **No aggressive wax additives**

When cleaning do not use aggressive wax additives. Bright metal surfaces can get damaged.

### **Before welding work**

Before welding to the hitched machine, disconnect the tractor's battery and the dynamo. Therefore you will avoid damages to the electrical installation.

### **Tighten bolted links**

After care and maintenance work all loose bolted links must be tightened. Because of loose bolted links material damages can be caused.



## Further prescriptions

### Observe the prescriptions

Please observe besides these safety information

- the accident prevention prescriptions
- the general accredited safety-technical, industrial medicinal and road traffic law rules
- the tips in this operation manual
- the work, care and maintenance prescriptions

# Safety instructions

---



## Warranty

Disregard of the 'Safety instructions', inadequate maintenance, use of the machine other than for its intended purpose, overloading or unauthorised modification of the machine, renders the manufacturer's warranty and responsibility void.

# Acquaintance with the machine

This chapter contains general information about your machine and information about:

- characteristics
- technical specifications

## **Destination of the machine**

The machine is a round baler, which is exclusively appropriate designed for collecting of cut non or insignificantly ligneous plants, mainly grasses, from the ground, feeding them through pick-up and cutting system, forming a round bale inside the bale chamber, and consequently wrapping the bale with twine or net, taking into account all prescriptions, procedures, etcetera as stated herein and/or through decals or other signs on the machine.

## **Intended use of the machine**

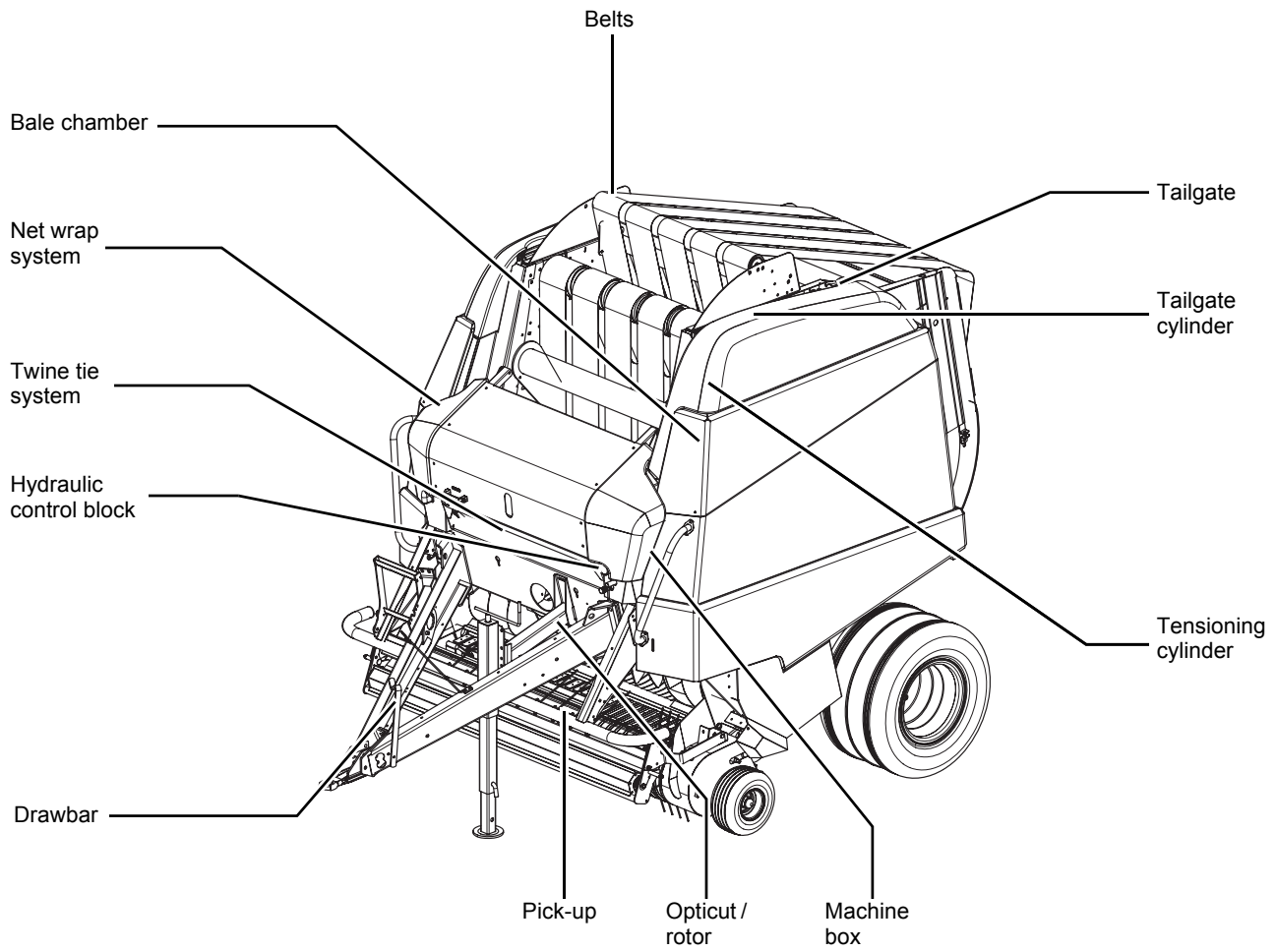
This machine shall be exclusively used for the normal agricultural work. Any use beyond the one stipulated above is not intended use. For damages, occurring of non-intended use, neither the manufacturer nor the dealer are liable. The risk is for the user only.

## **Characteristics of the machine**

The pick-up picks up the crop from the ground. Eventually it will be cut by the Opticut cutting system. A belt system provides rotational movement and thus rolls the bale into shape. The build core presses the starter chamber and keeps growing by the constantly fed-in crop. Upon reaching the desired diameter the bale is wrapped with twine or net. Then the tailgate is opened and the bale is cleared out.

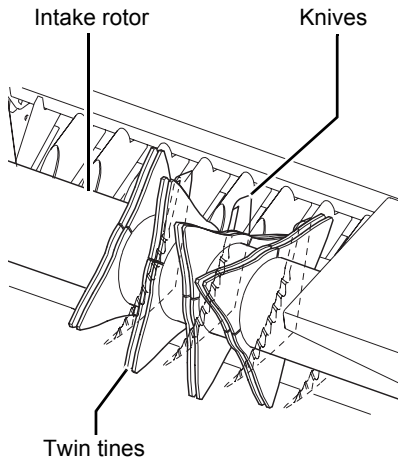
# Acquaintance with the machine

## Description of the components



# Acquaintance with the machine

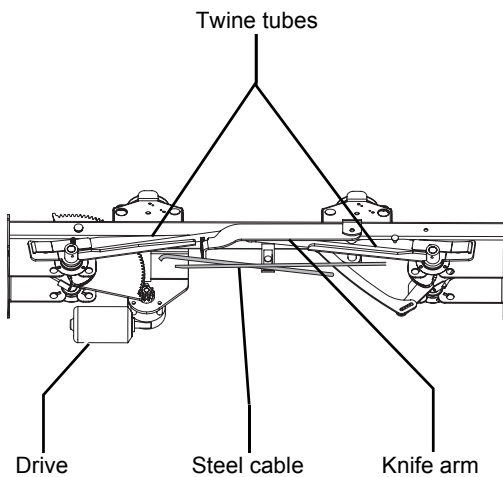
## Opticut cutting system



The rotating intake rotor with helically fitted twin tines generate a continuous draw cut over the knives. The Opticut system provides the possibility to cut the crop at different settings.

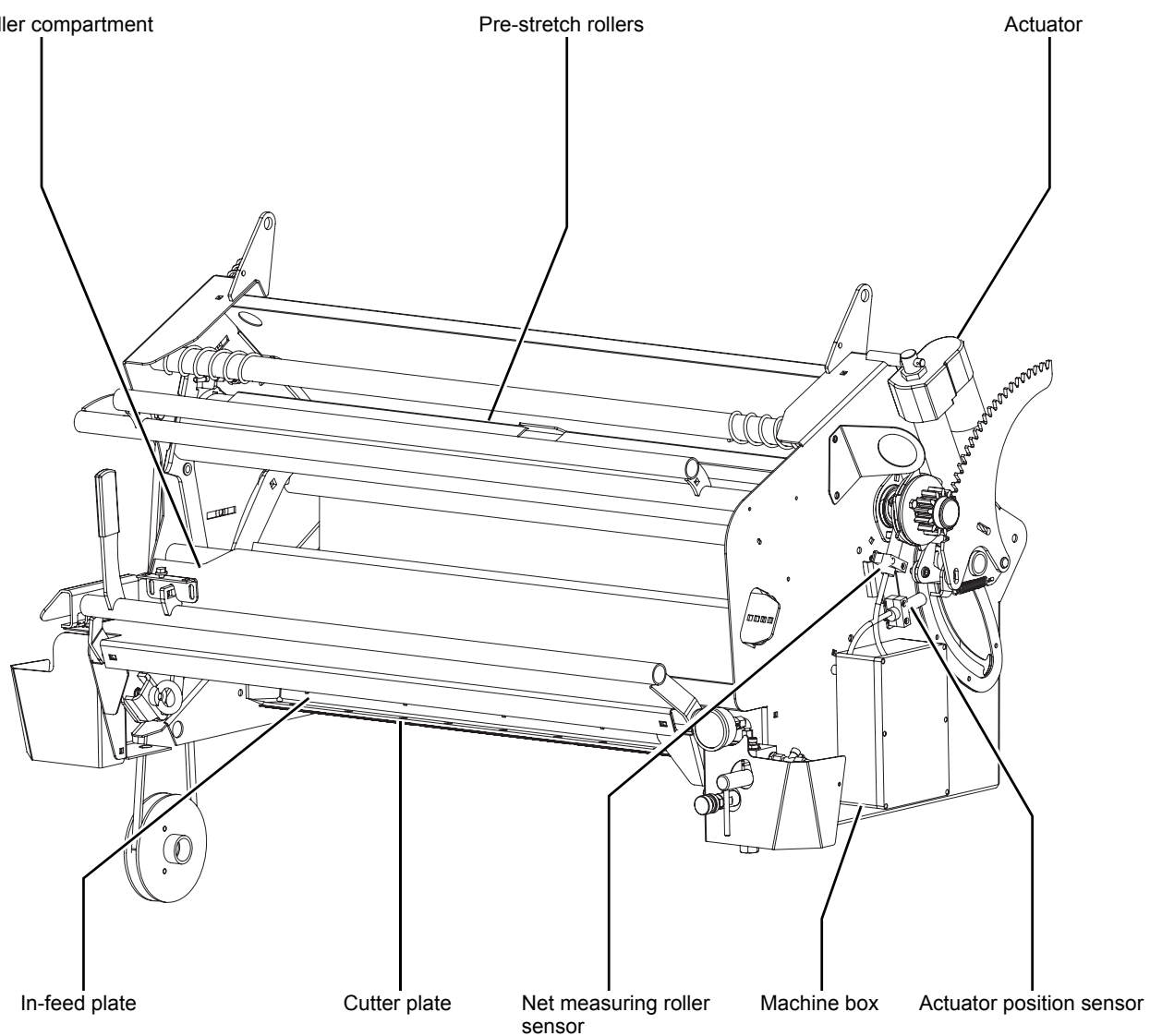
The knives are controlled fully hydraulically. The number of knives, and thus the cutting length can be chosen upon desire. The knife attachment prevents the knives from being blocked by foreign objects; every knife gives way upon extraordinary load and then automatically revert in the original working position.

## Twine tie system



# Acquaintance with the machine

## Net wrap system



## Technical specifications

### RK - Open intake / Rotor

	RK - Open intake	RK - Rotor
<b>Weight</b>		
Weight empty (kg)	2,210	2,490
Weight net wrap unit (kg)	155	155
<b>Length (m)</b>		
Overall length	4.02	4.02
Overall length with net wrap unit	4.26	4.26
<b>Width (m)</b>		
Width	2.46	2.46
Height with tailgate closed	2.67	2.67
Height with tailgate opened	3.74	3.74
<b>Tyres/axle</b>		
Tyres	11.5/80-15	11.5/80-15
	15.0/55-17	15.0/55-17
	19.0/45-17	19.0/45-17
	-	500/50-17
Maximum transport speed (km/h)	30	30
<b>Bale dimensions (m)</b>		
Width	1.20	1.20
Diameter	adjustable from 0.80 to 1.65	adjustable from 0.80 to 1.65
<b>Pick-up</b>		
Collecting width (m)	2.10	2.10
Reel diameter (m)	0.30	0.30
Number of tine bars/tines	4/60	4/60
Space between tines (cm)	6.1	6.1
Lift/lower	hydraulic	hydraulic
Gauge wheels	2 pneumatic wheels	2 pneumatic wheels
<b>Feeding</b>		rotor with integrated augers and automatic overload clutch
<b>Baling</b>		
Density control	hydraulic system	hydraulic system

# Acquaintance with the machine

<b>Binding - twine tie</b>		
Number of twine spools	8	8
Recommended twine (m/kg)	400-700 (synthetic)	400-700 (synthetic)
	200-330 (sisal)	200-330 (sisal)
<b>Binding - net wrap</b>		
Number of net rolls	1	1
Recommended net roll width (m)	1.23-1.30	1.23-1.30
Maximum net roll diameter (m)	0.32	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>		
Pto horsepower (kW / hp)	40 / 54	50 / 67
Pto speed (rpm)	540	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	1 single acting control valve	1 single acting control valve
	1 double acting control valve	1 double acting control valve
	1 brake connection to ISO 5676 [+]	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RK - XL-Rotor

	RK - XL-Rotor
<b>Weight</b>	
Weight empty (kg)	2,680
Weight net wrap unit (kg)	155
<b>Length (m)</b>	
Overall length	4.02
Overall length with net wrap unit	4.26
<b>Width (m)</b>	
Width	2.46
Height with tailgate closed	2.67
Height with tailgate opened	3.74
<b>Tyres/axle</b>	
Tyres	11.5/80-15
	15.0/55-17
	19.0/45-17
	500/50-17
Maximum transport speed (km/h)	30
<b>Bale dimensions (m)</b>	
Width	1.20
Diameter	adjustable from 0.80 to 1.65
<b>Pick-up</b>	
Collecting width (m)	2.10
Reel diameter (m)	0.30
Number of tine bars/tines	4/60
Space between tines (cm)	6.1
Lift/lower	hydraulic
Gauge wheels	2 pneumatic wheels
<b>Feeding</b>	rotor with integrated augers and automatic overload clutch
<b>Baling</b>	
Density control	hydraulic system
<b>Binding - twine tie</b>	
Number of twine spools	8
Recommended twine (m/kg)	400-700 (synthetic)

## Acquaintance with the machine

	200-330 (sisal)
<b>Binding - net wrap</b>	
Number of net rolls	1
Recommended net roll width (m)	1.23-1.30
Maximum net roll diameter (m)	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>	
Pto horsepower (kW / hp)	50 / 67
Pto speed (rpm)	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	1 single acting control valve
	1 double acting control valve
	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RK - OC / OC 23 Super S

	RK - OC	RK - OC 23 Super S
<b>Weight</b>		
Weight empty (kg)	2,595	2,940
Weight net wrap unit (kg)	155	155
<b>Length (m)</b>		
Overall length	4.02	4.02
Overall length with net wrap unit	4.26	4.26
<b>Width (m)</b>		
Width	2.46	2.46
Height with tailgate closed	2.67	2.67
Height with tailgate opened	3.74	3.74
<b>Tyres/axle</b>		
Tyres	11.5/80-15	11.5/80-15
	15.0/55-17	15.0/55-17
	19.0/45-17	19.0/45-17
	500/50-17	500/50-17
Maximum transport speed (km/h)	30	30
<b>Bale dimensions (m)</b>		
Width	1.20	1.20
Diameter	adjustable from 0.80 to 1.65	adjustable from 0.80 to 1.65
<b>Pick-up</b>		
Collecting width (m)	2.10	2.10
Reel diameter (m)	0.30	0.30
Number of tine bars/tines	4/60	5/80
Space between tines (cm)	6.1	6.1
Lift/lower	hydraulic	hydraulic
Gauge wheels	2 pneumatic wheels	2 pneumatic wheels
<b>Feeding</b>	rotor with integrated augers and automatic overload clutch	rotor with integrated augers and automatic overload clutch
<b>Baling</b>		
Density control	hydraulic system	hydraulic system
<b>Binding - twine tie</b>		
Number of twine spools	8	8

# Acquaintance with the machine

Recommended twine (m/kg)	400-700 (synthetic)	400-700 (synthetic)
	200-330 (sisal)	200-330 (sisal)
<b>Binding - net wrap</b>		
Number of net rolls	1	1
Recommended net roll width (m)	1.23-1.30	1.23-1.30
Maximum net roll diameter (m)	0.32	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>		
Pto horsepower (kW / hp)	50 / 67	60 / 80
Pto speed (rpm)	540	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	1 single acting control valve	1 single acting control valve
	1 double acting control valve	1 double acting control valve
	1 brake connection to ISO 5676 [+]	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RK - OC 23 HP

	RK - OC 23 HP
<b>Weight</b>	
Weight empty (kg)	2,895
Weight net wrap unit (kg)	155
<b>Length (m)</b>	
Overall length	4.02
Overall length with net wrap unit	4.26
<b>Width (m)</b>	
Width	2.46
Height with tailgate closed	2.67
Height with tailgate opened	3.74
<b>Tyres/axle</b>	
Tyres	11.5/80-15
	15.0/55-17
	19.0/45-17
	500/50-17
Maximum transport speed (km/h)	30
<b>Bale dimensions (m)</b>	
Width	1.20
Diameter	adjustable from 0.80 to 1.65
<b>Pick-up</b>	
Collecting width (m)	2.10
Reel diameter (m)	0.30
Number of tine bars/tines	4/60
Space between tines (cm)	6.1
Lift/lower	hydraulic
Gauge wheels	2 pneumatic wheels
<b>Feeding</b>	rotor with integrated augers and automatic overload clutch
<b>Baling</b>	
Density control	hydraulic system
<b>Binding - twine tie</b>	
Number of twine spools	8
Recommended twine (m/kg)	400-700 (synthetic)

## Acquaintance with the machine

	200-330 (sisal)
<b>Binding - net wrap</b>	
Number of net rolls	1
Recommended net roll width (m)	1.23-1.30
Maximum net roll diameter (m)	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>	
Pto horsepower (kW / hp)	50 / 67
Pto speed (rpm)	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	
	2 double acting control valves
	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RL - Open intake / Rotor

	RL - Open intake	RL - Rotor
<b>Weight</b>		
Weight empty (kg)	2,260	2,540
Weight net wrap unit (kg)	155	155
<b>Length (m)</b>		
Overall length	4.12	4.12
Overall length with net wrap unit	4.38	4.38
<b>Width (m)</b>		
Width	2.46	2.46
Height with tailgate closed	2.87	2.87
Height with tailgate opened	3.77	3.77
<b>Tyres/axle</b>		
Tyres	11.5/80-15	11.5/80-15
	15.0/55-17	15.0/55-17
	19.0/45-17	19.0/45-17
	-	500/50-17
Maximum transport speed (km/h)	30	30
<b>Bale dimensions (m)</b>		
Width	1.20	1.20
Diameter	adjustable from 0.80 to 1.85	adjustable from 0.80 to 1.85
<b>Pick-up</b>		
Collecting width (m)	2.10	2.10
Reel diameter (m)	0.30	0.30
Number of tine bars/tines	4/60	4/60
Space between tines (cm)	6.1	6.1
Lift/lower	hydraulic	hydraulic
Gauge wheels	2 pneumatic wheels	2 pneumatic wheels
<b>Feeding</b>		rotor with integrated augers and automatic overload clutch
<b>Baling</b>		
Density control	hydraulic system	hydraulic system
<b>Binding - twine tie</b>		
Number of twine spools	8	8

## Acquaintance with the machine

Recommended twine (m/kg)	400-700 (synthetic)	400-700 (synthetic)
	200-330 (sisal)	200-330 (sisal)
<b>Binding - net wrap</b>		
Number of net rolls	1	1
Recommended net roll width (m)	1.23-1.30	1.23-1.30
Maximum net roll diameter (m)	0.32	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>		
Pto horsepower (kW / hp)	40 / 54.4	50 / 67
Pto speed (rpm)	540	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	1 single acting control valve	1 single acting control valve
	1 double acting control valve	1 double acting control valve
	1 brake connection to ISO 5676 [+]	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RL - XL-Rotor

RL - XL-Rotor	
<b>Weight</b>	
Weight empty (kg)	2.730
Weight net wrap unit (kg)	155
<b>Length (m)</b>	
Overall length	4.12
Overall length with net wrap unit	4.38
<b>Width (m)</b>	
Width	2.46
Height with tailgate closed	2.87
Height with tailgate opened	3.77
<b>Tyres/axle</b>	
Tyres	11.5/80-15
	15.0/55-17
	19.0/45-17
	500/50-17
Maximum transport speed (km/h)	30
<b>Bale dimensions (m)</b>	
Width	1.20
Diameter	adjustable from 0.80 to 1.85
<b>Pick-up</b>	
Collecting width (m)	2.10
Reel diameter (m)	0.30
Number of tine bars/tines	4/60
Space between tines (cm)	6.1
Lift/lower	hydraulic
Gauge wheels	2 pneumatic wheels
<b>Feeding</b>	rotor with integrated augers and automatic overload clutch
<b>Baling</b>	
Density control	hydraulic system
<b>Binding - twine tie</b>	
Number of twine spools	8
Recommended twine (m/kg)	400-700 (synthetic)

## Acquaintance with the machine

	200-330 (sisal)
<b>Binding - net wrap</b>	
Number of net rolls	1
Recommended net roll width (m)	1.23-1.30
Maximum net roll diameter (m)	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>	
Pto horsepower (kW / hp)	50 / 67
Pto speed (rpm)	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	1 single acting control valve
	1 double acting control valve
	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RL - OC / OC 23 Super S

	RL - OC	RL - OC 23 Super S
<b>Weight</b>		
Weight empty (kg)	2,655	2,990
Weight net wrap unit (kg)	155	155
<b>Length (m)</b>		
Overall length	4.12	4.12
Overall length with net wrap unit	4.38	4.38
<b>Width (m)</b>		
Width	2.46	2.46
Height with tailgate closed	2.87	2.87
Height with tailgate opened	3.77	3.77
<b>Tyres/axle</b>		
Tyres	11.5/80-15	11.5/80-15
	15.0/55-17	15.0/55-17
	19.0/45-17	19.0/45-17
	500/50-17	500/50-17
Maximum transport speed (km/h)	30	30
<b>Bale dimensions (m)</b>		
Width	1.20	1.20
Diameter	adjustable from 0.80 to 1.85	adjustable from 0.80 to 1.85
<b>Pick-up</b>		
Collecting width (m)	2.10	2.10
Reel diameter (m)	0.30	0.30
Number of tine bars/tines	4/60	5/80
Space between tines (cm)	6.1	6.1
Lift/lower	hydraulic	hydraulic
Gauge wheels	2 pneumatic wheels	2 pneumatic wheels
<b>Feeding</b>	rotor with integrated augers and automatic overload clutch	rotor with integrated augers and automatic overload clutch
<b>Baling</b>		
Density control	hydraulic system	hydraulic system
<b>Binding - twine tie</b>		
Number of twine spools	8	8

# Acquaintance with the machine

Recommended twine (m/kg)	400-700 (synthetic)	400-700 (synthetic)
	200-330 (sisal)	200-330 (sisal)
<b>Binding - net wrap</b>		
Number of net rolls	1	1
Recommended net roll width (m)	1.23-1.30	1.23-1.30
Maximum net roll diameter (m)	0.32	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>		
Pto horsepower (kW / hp)	50 / 67	60 / 80
Pto speed (rpm)	540	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	1 single acting control valve	1 single acting control valve
	1 double acting control valve	1 double acting control valve
	1 brake connection to ISO 5676 [+]	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]	2 connections for pneumatic brakes [+]

# Acquaintance with the machine

## RL - OC23 HP

	RL - OC 23 HP
<b>Weight</b>	
Weight empty (kg)	2,950
Weight net wrap unit (kg)	155
<b>Length (m)</b>	
Overall length	4.12
Overall length with net wrap unit	4.38
<b>Width (m)</b>	
Width	2.46
Height with tailgate closed	2.87
Height with tailgate opened	3.77
<b>Tyres/axle</b>	
Tyres	11.5/80-15
	15.0/55-17
	19.0/45-17
	500/50-17
Maximum transport speed (km/h)	30
<b>Bale dimensions (m)</b>	
Width	1.20
Diameter	adjustable from 0.80 to 1.85
<b>Pick-up</b>	
Collecting width (m)	2.10
Reel diameter (m)	0.30
Number of tine bars/tines	4/60
Space between tines (cm)	6.1
Lift/lower	hydraulic
Gauge wheels	2 pneumatic wheels
<b>Feeding</b>	rotor with integrated augers and automatic overload clutch
<b>Baling</b>	
Density control	hydraulic system
<b>Binding - twine tie</b>	
Number of twine spools	8
Recommended twine (m/kg)	400-700 (synthetic)

## Acquaintance with the machine

	200-330 (sisal)
<b>Binding - net wrap</b>	
Number of net rolls	1
Recommended net roll width (m)	1.23-1.30
Maximum net roll diameter (m)	0.32
Recommended net	Polydress Rondotex MX1000 or TAMA edge-to-edge (2000 or 3000 m rolls)
<b>Tractor requirements</b>	
Pto horsepower (kW / hp)	50 / 67
Pto speed (rpm)	540
Electric supply	12 V (DC) coupling for control box (DIN 9680)
	12 V (DC) coupling for road lighting (DIN ISO 1724)
Hydraulics	
	2 double acting control valves
	1 brake connection to ISO 5676 [+]
Pneumatics	2 connections for pneumatic brakes [+]

## Checking the delivery

### Completely delivered

The machine is delivered completely. In case parts are not mounted, please contact your dealer.

The machine must be checked after delivery. The machine is equipped with:

- Operation manual
- Spare parts manual
- Pto drive shaft assembly
- Hydraulic hoses with couplings
- Electronic control system (control box, fixing brackets, power cable)
- Lighting cables
- Mechanical brake cord [+]
- Number plate board

# Hitching the machine

## Safety



### Increased danger of injury

- Prevent the tractor from rolling away
- Never stay between the tractor and the machine during hitching  
In case of negligence serious or deadly injuries can occur.

### Use a proper tractor

Make sure the tractor

- is in safe operating condition,
- has adequate braking capabilities for this machine
- is suitable for carrying and transporting this machine

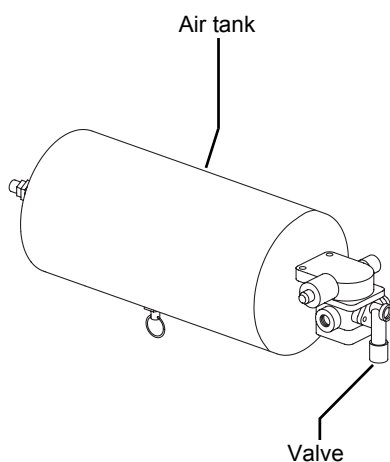
Using a tractor which is not suitable can cause serious personal and material damages.

## General

The machine is ex works provided for hitching onto the tractor's hook. To prepare the machine for hitching, the following items are necessary:

- Both tractor and machine must be placed on a firm level
- The drawbar must be adjusted
- The hitch eye must be adjusted
- The pto drive shaft must be coupled
- The machine must be levelled
- The electronic control box must be installed
- The parking brake [+] must be installed
- The hydraulic hoses must be coupled
- The pneumatic hoses [+] must be coupled
- The lighting cables must be coupled

## Moving the machine without tractor



When the machine is equipped with pneumatic brakes, it must be prepared before it can be moved without a tractor.

- > Push the valve upwards
- After moving
- > pull the valve downwards

## Hitching



### Remove tractor lower links

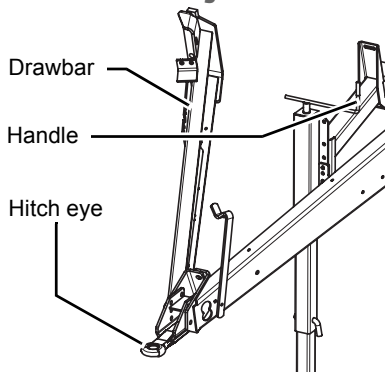
Remove the tractor lower links to avoid them touching the drawbar. During turning, the lower links can touch the drawbar and the machine can tip over. Personal or machine damages can occur.

Before the machine can be hitched onto the hook, the correct height of the hitch eye to the tractor's clevis must be determined.

- > Place both tractor and machine in line on a firm level, with a distance between clevis and hitch eye of about 15 cm

Both drawbar and hitch eye can be turned upside down. Doing this the drawbar can be set for high and low attachment.

## Drawbar adjustment



The machine must be placed in a horizontal position:

- > Turn the handle to the left: the drawbar goes upwards
- or
- > Turn the handle to the right: the drawbar goes downwards
  - > Check the height of the tractor's clevis

The drawbar height can be changed by

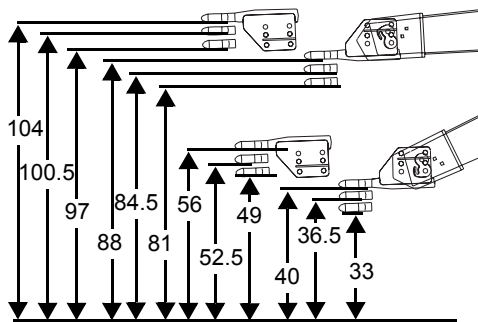
- moving the drawbar
- moving the hitch eye

Select the correct position in accordance with your tractor in order to have tractor and machine lined up correctly.

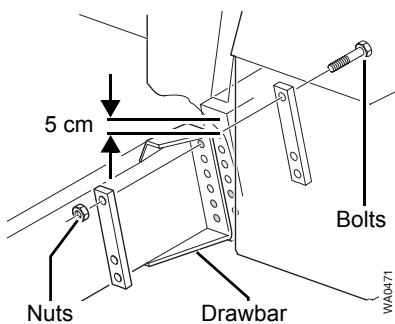
→ Levelling the machine, page 48

# Hitching the machine

## Moving the drawbar



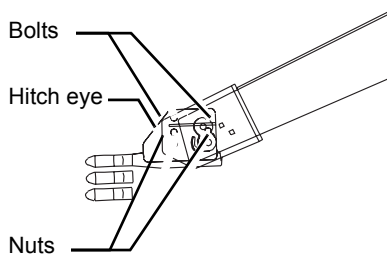
Hitch height (cm)
33
36.5
40
49
52.5
56
81
84.5
88
97
100.5
104



- > Secure the drawbar by placing it in a well suited hoist
- > Loosen the bolts and the nuts
- > Move the drawbar to the desired position
- > Tighten the bolts and the nuts
- > Torque the bolts and the nuts to 450 Nm
- > Remove the hoist

The hole pattern on the machine allows one extra position 5 cm higher. The drawbar must always be fitted with 3 bolts and nuts per side.

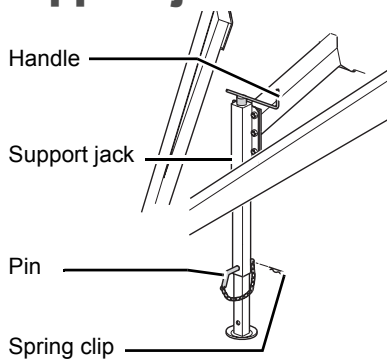
## Moving the hitch eye



The hitch eye can be moved into six positions.

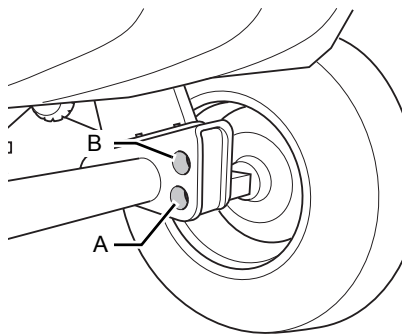
- > Loosen the bolts and the nuts
- > Move the hitch eye to the desired position
- > Tighten the bolts and the nuts
- Tightening torques, page 189

## Support jack



- > Level the drawbar to the correct height using handle
- > Attach the machine onto the tractor
- > Fully retract the support jack using handle
- > Remove spring clip
- > Remove pin
- > Push the support jack fully up
- > Place pin
- > Lock the pin with spring clip

## Ground adjustment of the machine



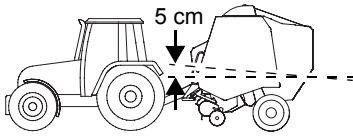
The ground distance of the machine can be adjusted by moving the axles.

Setting	Explanation
A	standard setting
B	low setting for: <ul style="list-style-type: none"><li>• machines with wide pick-up</li><li>• hilly terrain</li><li>• a better bale start (open intake)</li></ul>

- > Place a well-suited jack under the axle
- > Loosen the wheel nuts
- > Remove the wheel
- > Loosen the axle
- > Move the axle to the desired setting
- > Tighten the axle
- > Replace the wheel
- > Tighten the wheel nuts
- > Remove the jack
- > Repeat the mentioned procedure for the other axle

# Hitching the machine

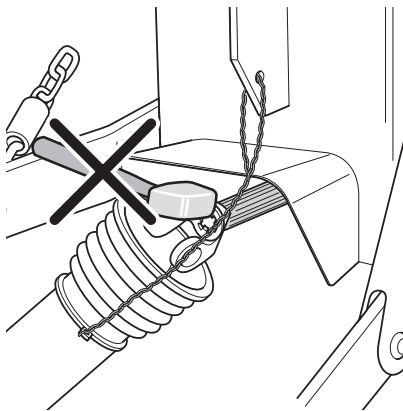
## Levelling the machine



The machine must be lined up correctly behind the tractor. The machine must be horizontally or slightly inclined backwards.

- > Use the horizontal lines of the lateral doors at both sides for reference

## Coupling the pto drive shaft



### Do not use a hammer

The pto drive shaft may not be mounted using a hammer or other equivalent tools. Using these, the pto drive shaft can get seriously damaged. A damaged pto can cause both machine and tractor damages.

- > Check, before coupling the pto drive shaft, if the pto drive shaft has to be shortened
- > Shorten the pto if necessary
  - Pto drive shaft, page 190
- > Ensure the tractor pto is clean and greased
- > Couple the pto drive shaft at both tractor and machine side
- > Ensure the shaft sliding ring catches with the slot of the pto
- > Fit the chains to rigid positions at both tractor and machine to prevent the protection covers from turning with

## Installation control box



The control box must be installed on a support or holder in the tractor cab.

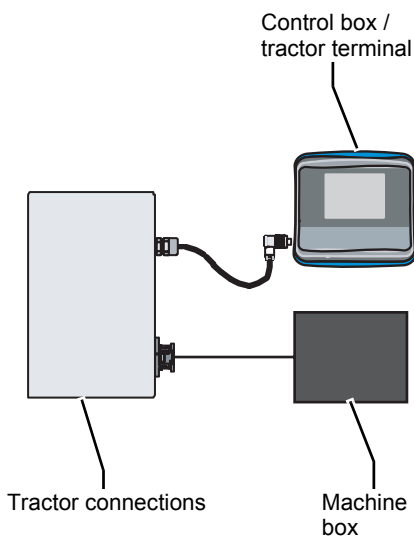
Take care of the following:

- Ensure the control box is installed in good manual and visible reach of the operator
- Do not mount the control box onto a part that is subject to strong vibrations
- Ensure the control box is in an area with less dust
- Do not install the control box where bright sun or rain may reach it

Three different electrical connections are possible, depending on the version of the machine:

- standard - the tractor already has an ISO or an additional terminal
- switched power cable
- ISO upgrade kit

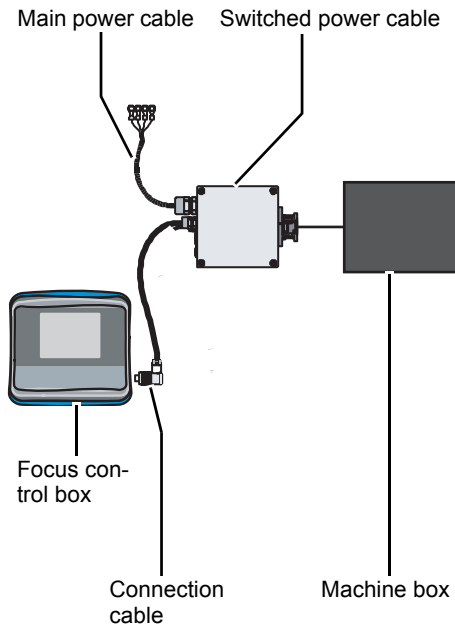
## Electrical connections - standard



- > Connect the cable of the machine box directly to tractor ISO connection

# Hitching the machine

## Electrical connections - switched power cable (Focus only)



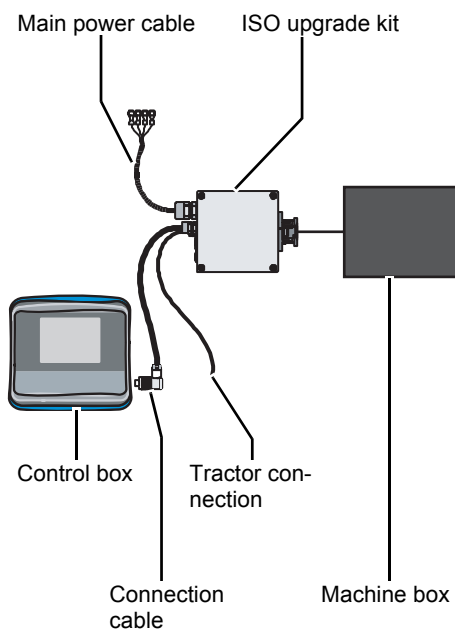
The switched power cable is only available for the Focus electronic control system.

- > Connect the main power cable of the switched power cable directly to the 12V battery of the tractor

Colour	Pole
Red	+
Black	-

- > Connect the cable of the machine box to the switched power cable
- > Connect the connection cable of the switched power cable to the control box

## Electrical connections - ISO upgrade kit

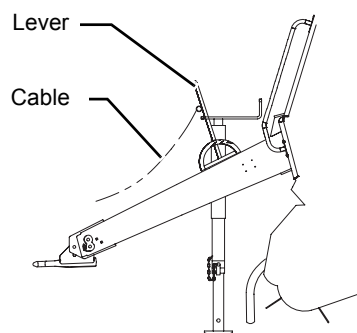


- > Connect the main power cable of the ISO upgrade kit directly to the 12V battery of the tractor

Colour	Pole
Red	+
Black	-

- > Connect the cable of the machine box to the ISO upgrade kit
- > Connect the connection cable of the control box to the ISO upgrade kit

## Parking brake [+]



The parking brake prevents the machine from rolling away when parked.

- > Attach cable from lever to a fixed point at the tractor
- > Put lever backwards

# Hitching the machine

## Connections

### Hydraulic connections



#### **Hydraulic coupling only pressureless**

Only couple the hydraulic hoses to the tractor when both tractor and machine hydraulics are pressureless. Hydraulics under pressure can cause accidental movements of the machine.

#### **Avoid oil mixture**

When using the machine in combination with different tractors, improper oil mixture can take place. Improper oil mixture can destroy tractor parts.

#### **Avoid entering of dirt into the hydraulic system**

The hydraulic system can get seriously damaged. Personal injuries or material damage can be caused.

#### **Check hoses and couplings**

Before connecting, prove all hydraulic hoses for damages. After connecting check all hydraulic couplings for tight connection. Defective hydraulic hoses or bad connected hydraulic couplings can cause injuries or unforeseen movements of the machine.

#### **Secure tractor hydraulic devices**

In transport position tractor hydraulic devices must be secured against unintentional movements. Unintentional movements of the hydraulic device can cause serious injuries or unforeseen movements of the machine.

#### **Check correct position of hydraulic hoses**

Hydraulic hoses may not stick or tighten. Pay attention to sufficient free space. Torn or stuck hydraulic hoses cause unverifiable movements of the machine and serious injuries.

#### **Take care of the correct laying of hydraulic hoses**

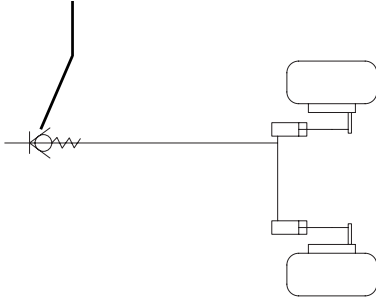
Hydraulic hoses may not stick or tighten. Take care of sufficient free space. Worn or stuck hydraulic hoses can cause heavy damage to the machine or severe injuries.

Check the following connections from the tractor to the machine (if applicable):

- hydraulic connections
- electronic connections
- pneumatic connections, if applicable

## Brake coupling

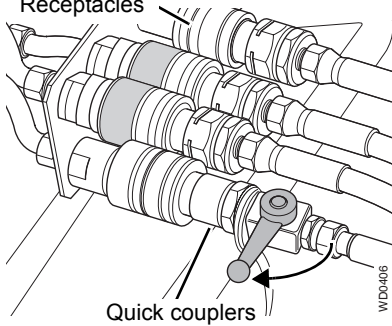
Quick coupler



- > Ensure the quick coupler is clean
- > Make sure the tractor hydraulic braking valve is pressureless
- > Couple the brake coupling to the braking valve

## Coupling

Receptacles



- > Ensure the quick couplers are clean
- > Make sure the tractor hydraulic device is pressureless
- > Couple the hydraulic couplings to the concerning hydraulic valves

# Hitching the machine

## Pneumatic connections [+]



Avoid entering of dirt into the pneumatic system. The pneumatic system can get seriously damaged. Personal or material damage can be caused.

Pneumatic connections are only available if the machine has been provided with pneumatic brakes.

- > Ensure the quick couplers are clean
- > Connect the quick couplers of the pneumatic hoses to the pneumatic receptacles of the tractor

## Coupling

- > Ensure the valves at the tractor are open
- > Couple the red quick coupler to the corresponding tractor valve
- > Couple the yellow quick coupler to the corresponding tractor valve

## Electric lighting

- > Fit the number plate board (if necessary)
- > Connect the 7-pin plug to the trailer lighting socket on the tractor

## Running

- > Run the tractor pto at idle
  - Check correct operation of the components
  - Check if there are no unusual noises
- > Run the machine at 540 rpm for some minutes
- > Switch off the pto
  - Check the tightness of the hardware
  - Check the tension of the chains

During the running-in period, a specific maintenance must be done  
→ Maintenance intervals, page 185

## Safety



### **Obey safety instructions**

Obey the safety instructions at the execution of all work. Ignoring the safety instructions can lead to serious or deadly injuries.

### **Guarantee correct hydraulic coupling**

Check before using if all hydraulic couplings are coupled correct to the single and double acting valves. Not correct coupled hydraulic couplings can cause unpredictable movements of the machine.

### **Never work on the machine while it is running**

Never carry out adjustment work while the machine is running.

- Pto must be switched off
- Tractor engine must be switched off and the ignition key must be removed
- Electronic control box must be switched off

In case of negligence, serious or deadly injuries can occur.

### **No persons in turning area**

During work, no persons may be within the turning area of the machine. Serious personal injuries can be caused.

### **Secure the machine**

During adjustment, an increased danger of injury exists. Therefore

- secure the machine from accidental commencement of operations and rolling away (use wheel chocks)
- the machine must have a level, secure position and must be supported during working if necessary

Unsecured or not supported machines can lead to accidents.

### **Wear safety shoes**

During all work at the machine never bring your feet under the machine and always wear safety shoes. Wearing safety shoes prevents or decreases the risk of serious injuries.

### **Guarantee correct hydraulic coupling**

Check definitely, before using the machine, if the hydraulics for the pick-up, the tailgate and the cutting system are coupled to the correct single or double acting valves. Not correct coupled hydraulic hoses can cause accidental movements of the machine.

## General

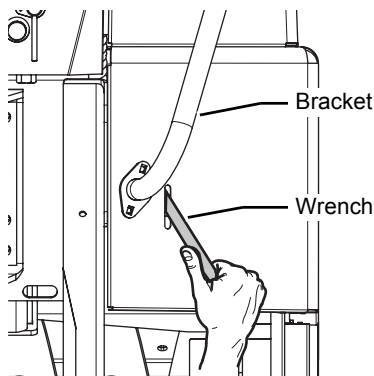
For the realization of all preparations counts:

- Secure the machine
- Check the tyre pressure

The following settings have to be realized before using the machine:

- gauge wheels adjustment
- pick-up safety chains
- pick-up suspension
- Opticut cutting system adjustment
- net installation
- twine installation
- core density adjustment
- scraper adjustment

## Lateral doors



The lateral doors can be opened for

- storing a net roll
- storing an extra net roll [+]
- storing twine spools
- adjustment
- care and maintenance

## Opening the lateral doors

- > Use a 13-mm open-ended wrench to unlock the lock
- > Pull up the bracket to open the lateral door

## Closing the lateral doors



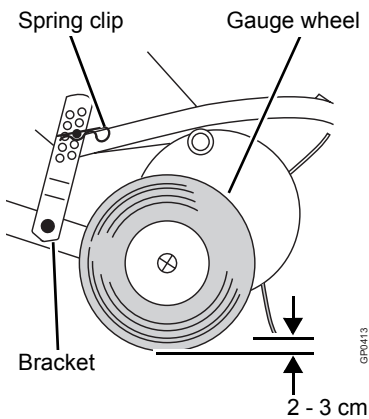
### Carefully pull down lateral door

Be careful when pulling down the bracket to close the lateral door. The lateral door is spring loaded to close on the last part of the stroke. Personal injuries can occur.

- > Pull down the bracket to close the lateral door  
The lateral door locks automatically.

# Preparation for use

## Adjustment gauge wheels



The adjustment of the pick-up working height is determined by the height of the gauge wheels on each side of the machine.

The mentioned height above the ground is just a recommendation since the correct value depends much on ground and crop conditions. Both sides of the pick-up shall be set to the same height.

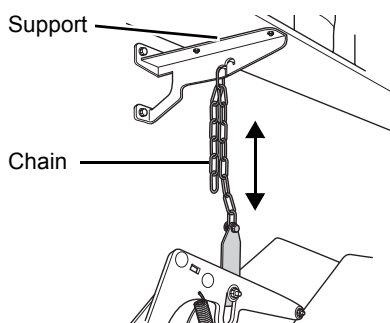
The adjustment of the gauge wheels is carried out by placing the bracket in different vertical positions. Adjust as follows:

- > Raise the pick-up fully
- > Close the valve
- > Remove the spring clip
- > Place the gauge wheel with help of bracket at the desired position
- > Replace the spring clip

## Pick-up safety chains

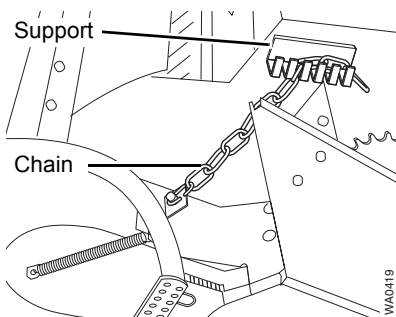
The pick-up is prevented by two chains from unexpected lowering during working.

### Wide pick-up



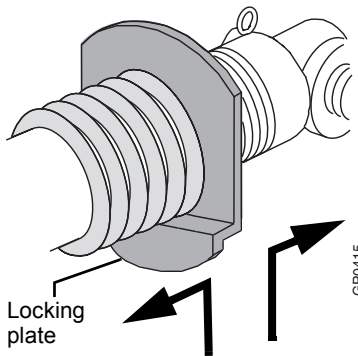
- > Attach the chain on both sides of the machine at the support

### OC + Rotor



- > Attach the chain on both sides of the machine at the support

## Pick-up suspen- sion



Two springs, located on the pick-up hydraulic cylinders, ensure suspension of the pick-up.

Adjust the spring tension on both sides of the pick-up as follows:

- > Raise pick-up fully
- > Close valve
- > Move locking plate to the left: increase spring tension

or

- > Move locking plate to the right: decrease spring tension

The pick-up is correctly adjusted when it can be lifted by hand at the front of the flanks.

**TIP** Make sure that the spring tension is the same on both sides of the pick-up.

# Preparation for use

## Opticut cutting system adjustment



### Wear safety gloves

Cutting knives are very sharp. Always wear safety gloves when handling cutting knives. Not wearing safety gloves can cause serious injuries.

## Removing the knives

All the knives can be individually removed.

### Focus



> Push to I



> Push to unlock the system and to enter the operating display



> Push to select knife control

### Tellus



> Push to I



> Push to enter the working display



> Push to select knife control

### OC

> Move the hydraulic valve to pressurize the cutting system

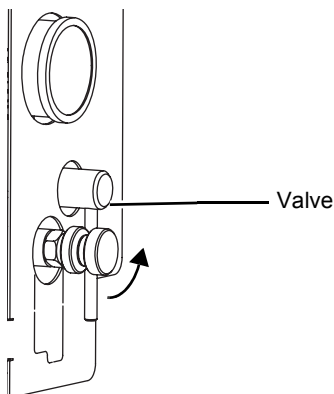
The knives will move out.

### OC 23 HP

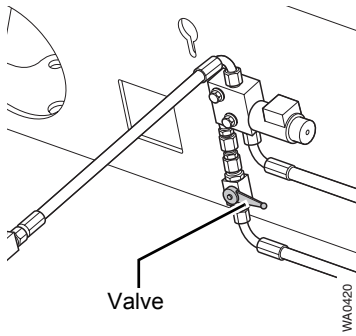
> Move the hydraulic valve to depressurize the cutting system

> Open the tailgate hydraulically

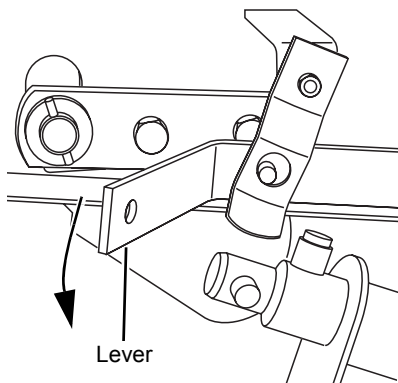
> Close the valve on the left side



# Preparation for use



- > Close the valve at the hydraulic block on the left side
- > Stop the tractor engine and remove the ignition key



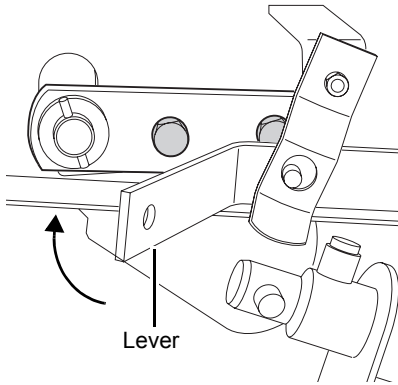
- > Turn lever downwards
- > Seize the knife by its end and take it out towards the rear

Always keep the cutting knives sharp. Sharp knives save power and provide a higher capacity.

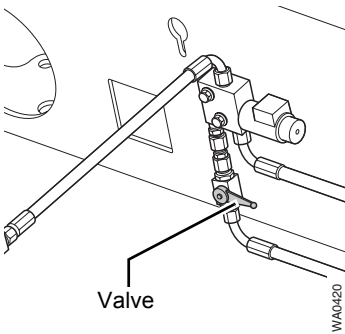
→ Knife sharpening, page 197

# Preparation for use

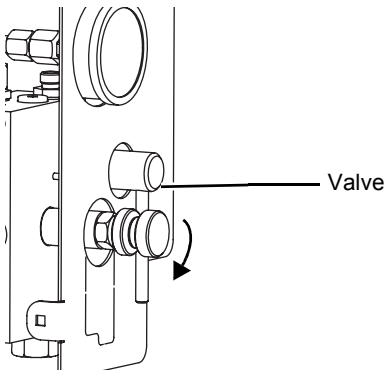
## Installing the knives



- > Seize the knives by their ends and push towards the front to install them
- > Slide the knives at the slotted holes over the knife carrier shaft
- > Turn lever upwards



- > Open valve at the hydraulic block on the left side



- > Open valve on the left side
- > Close the tailgate hydraulically

### OC

- > Move hydraulic valve to depressurize the cutting system

### OC 23 HP

- > Move hydraulic valve to pressurize the cutting system

The knives will move in.

## Removing the knives - OC 23 HP

The knives can be removed, to create a larger cutting length.

### Focus



> Push to I



> Push to unlock the system and to enter the operating display



> Push to select knife control

### Tellus



> Push to I



> Push to enter the working display



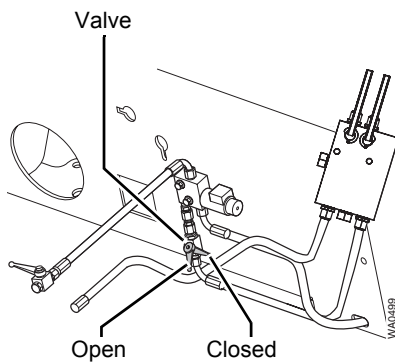
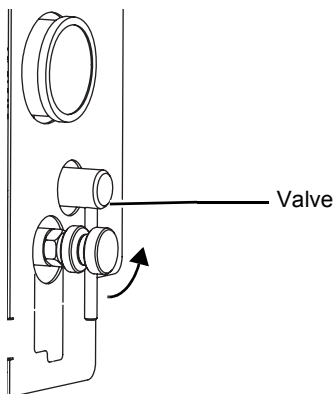
> Push to select knife control

> Move the hydraulic valve to pressurize the cutting system  
The knives will retract.

> Move hydraulic valve to depressurize the cutting system  
The knives will extract.

> Open tailgate hydraulically

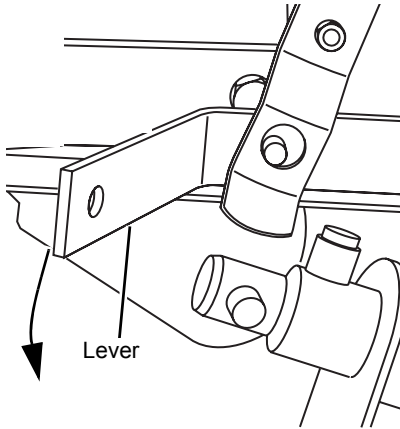
> Close hydraulic safety valve



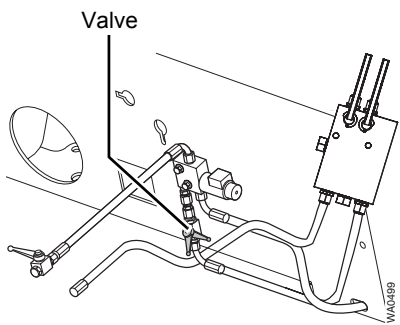
> Close valve

> Stop the tractor engine and remove the ignition key

# Preparation for use



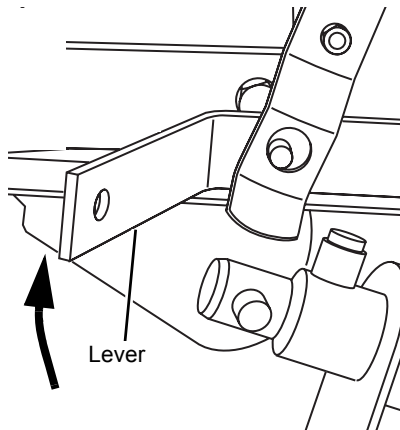
- > Turn lever fully downwards
  - > Remove the knife(s)
- Hold the knife at its upper end.
- > Rotate the rotor as required
- A blunt knife can be sharpened  
→ Knife sharpening, page 197
- > Turn the lever fully upwards



- > Close valve

All the knives can be individually removed. If necessary, they can be replaced by a dummy knife  
→ Exchange of knives by dummy knives [+], page 67

## Installing the knives - OC 23 HP



- > Slide the knives at the slotted holes over the knife carrier shaft
- > Seize the knives by their ends and push towards the front to install them
- > Turn lever upwards

## Cutting length - OC 23 HP

The cutting length can be chosen as desired, by varying the amount and the position of the knives.

When using 11 or less knives at once, quick-change of knives is possible by changing between 2 main bars with each 11, 12 or less knives.


Selecting the knives will only be possible if:


- the knives are selected
- the concerning hydraulic valve is operated


## Changing to 23 knives

Make sure all 23 knives are present.


### Focus


 > Push to I


 > Push to enter the working display

 > Push to select knife control

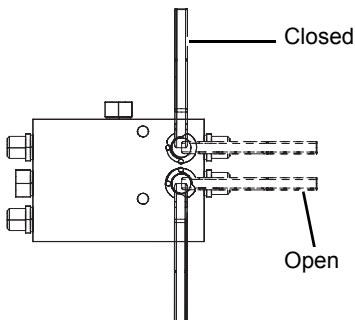
### Tellus

 > Push to I

 > Push to enter the working display

 > Push to select knife control




- > Open the valves at the hydraulic block on the left side
  - > Move the hydraulic valve to pressurize the cutting system
- The knives will retract.






# Preparation for use

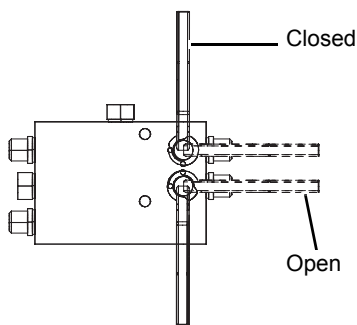
## Changing to 12 or 11 knives

### Focus

-  > Push to I
-  > Push to enter the working display
-  > Push to select knife control

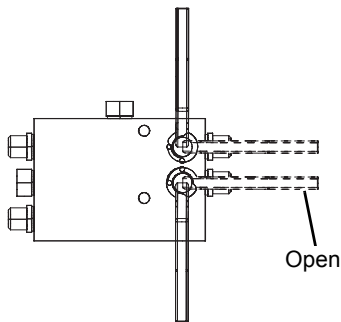
### Tellus

-  > Push to I
-  > Push to enter the working display
-  > Push to select knife control






- > Open valves at the hydraulic block on the left side
  - > Move the hydraulic valve to depressurize the cutting system
  - > Close one of both valves at the hydraulic block on the left side
  - > Move the hydraulic valve to pressurize the cutting system
- Half of the knives will retract or extract.




## Changing to 0 knives



### Focus

-  > Push to I
-  > Push to enter the working display
-  > Push to select knife control

### Tellus

-  > Push to I
-  > Push to enter the working display
-  > Push to select knife control

- > Open valves at the hydraulic block on the left side
  - > Move the hydraulic valve to depressurize the cutting system
- All knives will extract.

## Cutting length

The cutting length can be chosen as desired, by varying the amount and the position of the knives.

Minimum cutting length:

- 14 knives: about 70 mm
- 23 knives: about 50 mm

## Exchange of knives by dummy knives [+]

Once the knives are removed, they can be replaced by dummy knives. Which helps to

- keep the knife slots clean
- ensure an uniform crop flow over the cutting system floor

To install the dummy knives

→ Installing the knives, page 62

# Preparation for use

## Twine installation - Focus



- Before guiding the twine:
- > Switch off the pto
  - > Stop the tractor engine
  - > Remove the ignition key

### Wear safety gloves

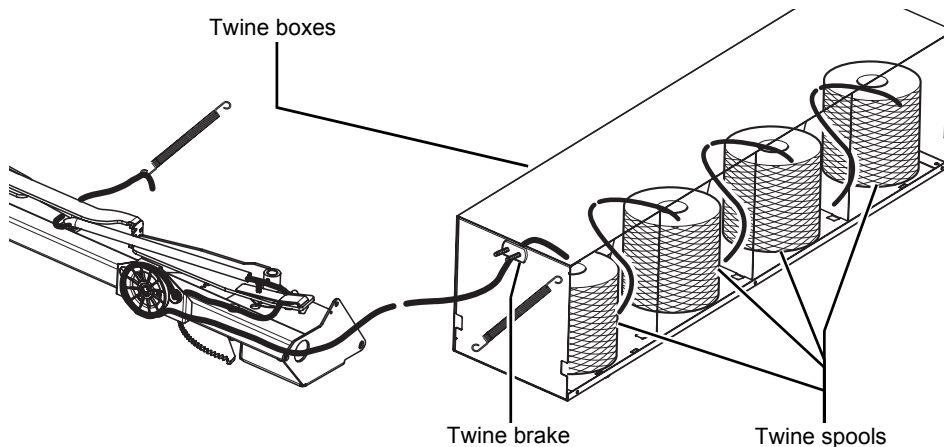
The twine knife is very sharp. Always wear safety gloves when handling the twine knife. Not wearing safety gloves can cause serious injuries.

- > Choose a good quality twine in order to ensure a satisfactory wrapping function

Recommended is

→ Technical specifications, page 27

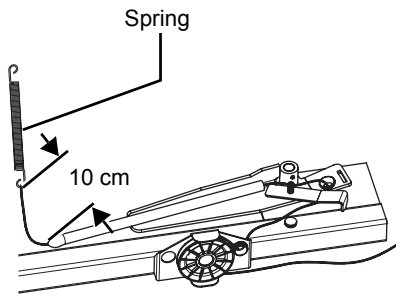
## Guiding the twine



- > Push to 0 to switch off the system  
All cycles are now interrupted. The machine is in safe mode.

For both left and right side of the machine:

- > Put the twine spools in the twine boxes
- > Attach the twine ends to each other
- > Pass the twine through the twine brakes inside the twine boxes



## Twine brakes

- > Pass the twine through
    - the twine brakes
    - the twine indication rollers
    - the twine tubes
  - > Use the spring to pass the twine through the twine tubes
- The end of the twine shall protrude about 10 cm the twine tubes.

The twine brakes in the twine boxes and at the twine tubes pretension the twine.

Adjustment:

→ Twine brake - twine boxes, page 212

→ Twine brake - twine tubes, page 212

# Preparation for use

## Net installation - Focus



Before installing the net:

- > Switch off the pto
- > Stop the tractor engine
- > Remove the ignition key

### Cutter plate cutting hazard

The cutter plate is very sharp. Make sure the cutter plate is in rest position and wear safety gloves. An unsafe cutter plate can cause serious injuries.

- > Choose a good quality of net in order to ensure troublefree functioning of the net wrap system

Recommended is

→ Technical specifications, page 27

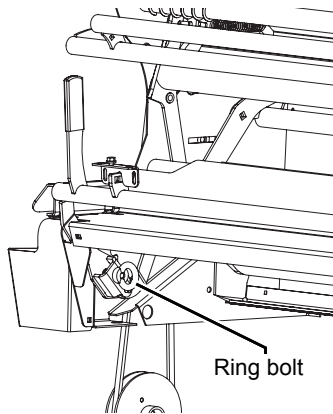
## Placing the net roll



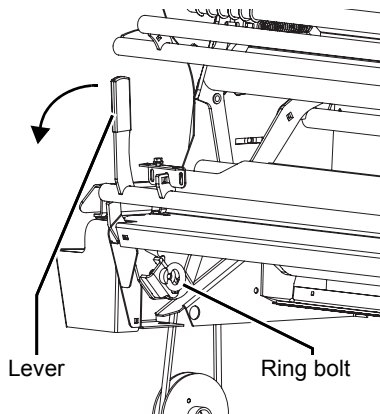
- > Push to 0 to switch off the system

All cycles are now interrupted. The machine is in safe mode.

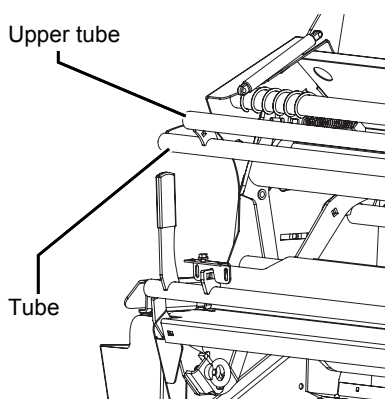
- > Pull the ring bolt and hold it



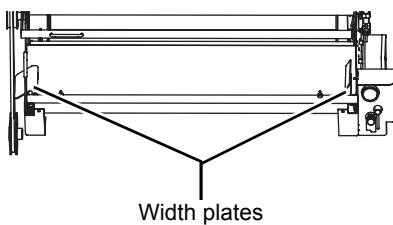
# Preparation for use



- > Move down the lever completely and release the ring bolt  
The lever is locked now.



- > Move up the tube completely, using the upper tube
- > Place the net roll in the net roll compartment
- > Check that the net is rolling off in the right direction

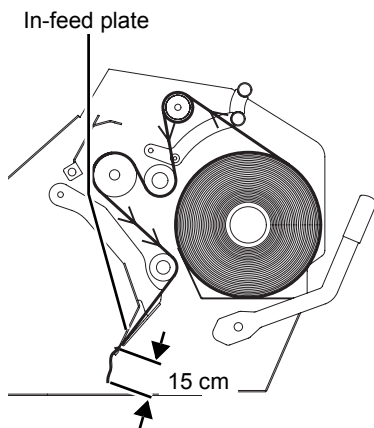


- > Move both left and right width plates if necessary to the
  - outermost position: 130 cm net roll
  - inmost position: 123 cm net roll

The net roll is now centered.

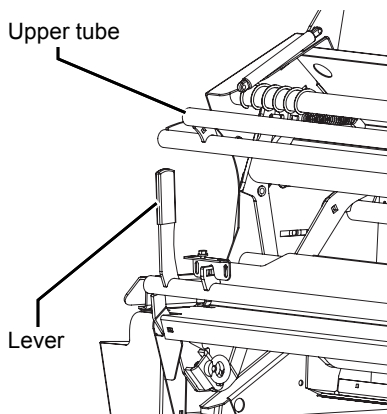
# Preparation for use

## Guiding the net



- > Guide the net according to the scheme
- > Leave about 15 cm net out of the in-feed plate

**TIP** It is not necessary to spread the net to its full width.



- > Move the lever completely upwards
- > Move down the tube completely, using the upper tube
- > Close the screen lid



- > Push to I

The system is now ready to operate.

## Twine installation - Tellus



Before guiding the twine:

- > Switch off the pto
- > Stop the tractor engine
- > Remove the ignition key

### Wear safety gloves

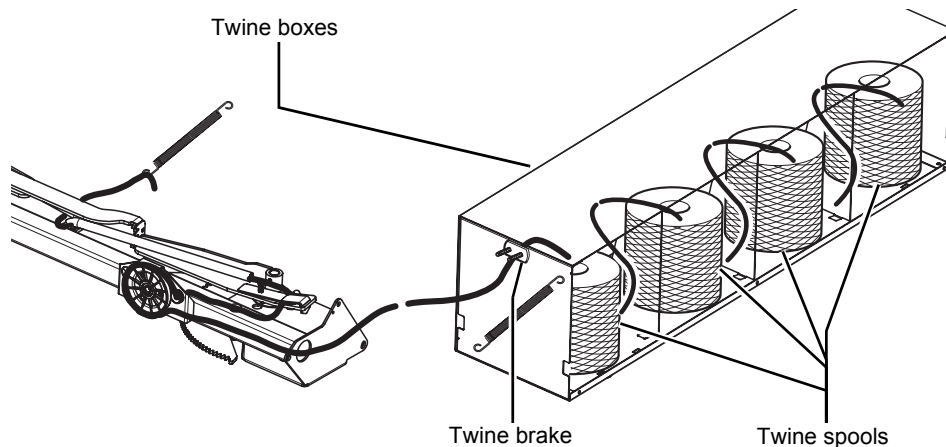
The twine knife is very sharp. Always wear safety gloves when handling the twine knife. Not wearing safety gloves can cause serious injuries.

- > Choose a good quality twine in order to ensure a satisfactory wrapping function

Recommended is

→ Technical specifications, page 27

## Guiding the twine



For both left and right side of the machine:

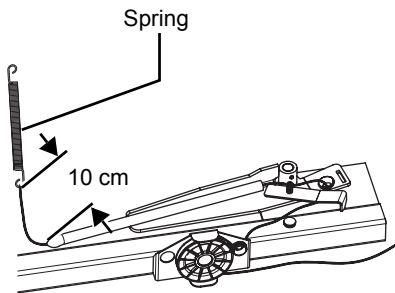
- > Put the twine spools in the twine boxes
- > Attach the twine ends to each other
- > Pass the twine through the twine brakes inside the twine boxes



- > Push to shut down the system

All cycles are interrupted now. The machine is in a safe mode.

# Preparation for use



- > Pass the twine through
    - the twine brakes
    - the twine indication rollers
    - the twine tubes
  - > Use the spring to pass the twine through the twine tubes
- The end of the twine shall protrude about 10 cm the twine tubes.

## Twine brakes

The twine brakes in the twine boxes and at the twine tubes pretension the twine.

Adjustment:

→ Twine brake - twine boxes, page 212

→ Twine brake - twine tubes, page 212

## Net installation - Tellus



Before installing the net:

- > Switch off the pto
- > Stop the tractor engine
- > Remove the ignition key

### Cutter plate cutting hazard

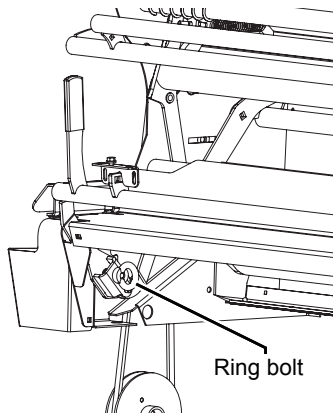
The cutter plate is very sharp. Make sure the cutter plate is in rest position and wear safety gloves. An unsafe cutter plate can cause serious injuries.

- > Choose a good quality of net in order to ensure troublefree functioning of the net wrap system

Recommended is

→ Technical specifications, page 27

## Placing the net roll

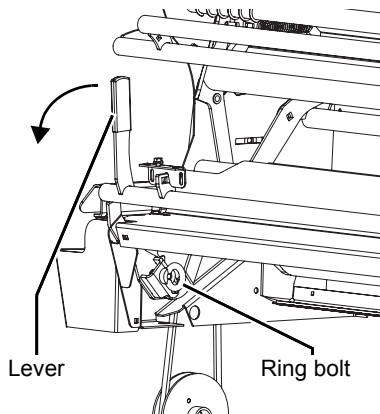


- > Push to switch off the system

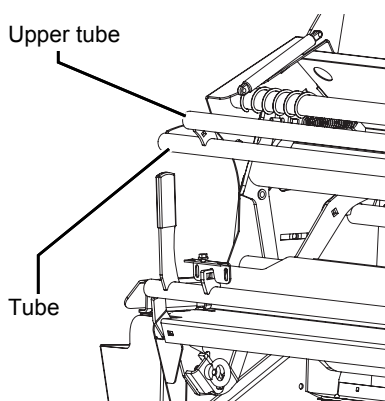
All cycles are now interrupted. The machine is in safe mode.

- > Pull the ring bolt and hold it

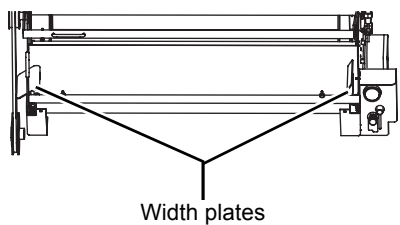
# Preparation for use



- > Move down the lever completely and release the ring bolt  
The lever is locked now.



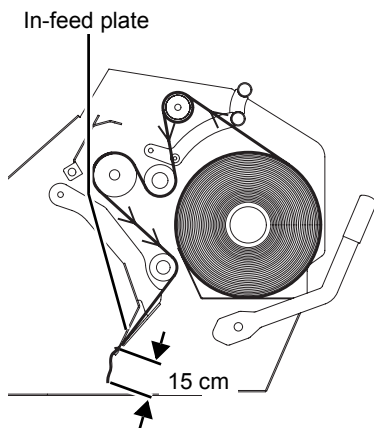
- > Move up the tube completely, using the upper tube
- > Place the net roll in the net roll compartment
- > Check that the net is rolling off in the right direction



- > Move both left and right width plates if necessary to the
  - outermost position: 130 cm net roll
  - inmost position: 123 cm net roll

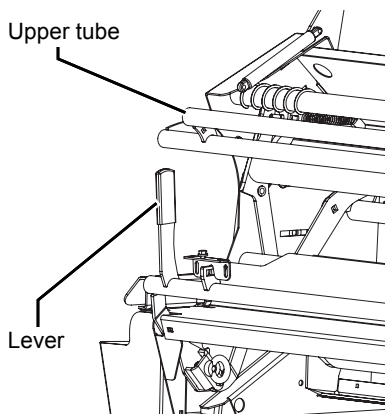
The net roll is now centered.


## Guiding the net



- > Guide the net according to the scheme
- > Leave about 15 cm net out of the in-feed plate

**TIP** It is not necessary to spread the net to its full width.

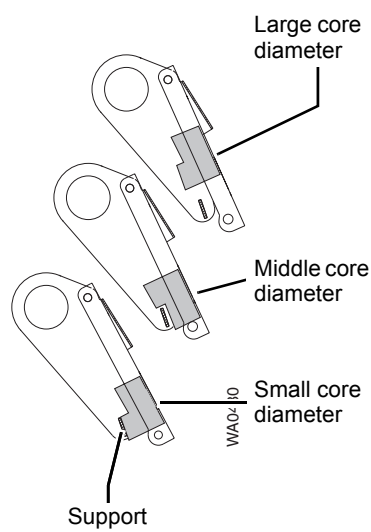
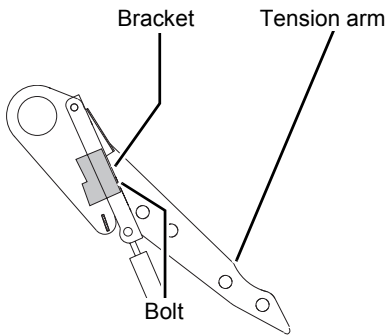


- > Move the lever completely upwards
  - > Move down the tube completely, using the upper tube
  - > Close the screen lid
-  > Push to switch on the system

The system is now ready to operate.

# Preparation for use

## Core density adjustment

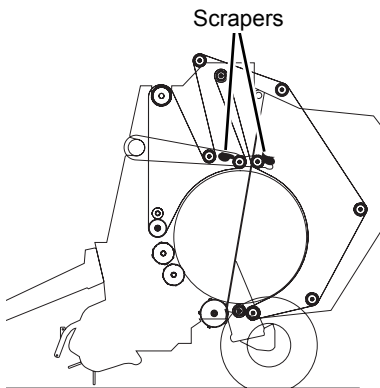


After some time, the belts are getting longer. In standard case the tension arm is little hydraulically loaded when the bale chamber is empty. This is in order to create a uniform core diameter. To compensate the belt elongation a bracket on the tension arm can be set.

- > Loosen bolt
- > Place bracket to the desired core density
- > Tighten bolt

**TIP** After mounting the bracket and tightening of the bolt, there should always remain a gap between bracket and support when the bale chamber is empty.

## Scraper adjustment



In order to ensure the crop does not stick onto the rollers the machine has been equipped with scrapers.

The following types of scrapers have been installed:

- sharp scrapers
- scrapers of the profiled rollers

These scrapers are both provided for the following crops:

- dry crop
- silage

For scraper adjustment

→ Scraper adjustment, page 201

## Windrow dimensions

A constantly built windrow allows crop collection at a constant speed and avoid shocks to the machine. Its shape, volume and moisture directly affects the output of the machine.

The machine can take in windrows according to the following specifications:

Width (m)	Height (m)
maximum 1.20	0.40

A windrow with a larger height than 0.40 m risks being caught by the drawbar and so creating an irregular feed to the pick-up, upsetting the normal rhythm of the machine (risking the overload of the feeding system during baling).

# Preparation for use

## Running

- > Run the tractor pto at idle
  - Check correct operation of the components
  - Check there are no unusual noises
- > Run the machine at 540 rpm for some minutes
- > Switch off the pto
  - Check the tightness of the hardware

During the running-in period, a specific maintenance must be done, confer to maintenance chart

→ Maintenance intervals, page 185

## Safety

Before road transport will take place, please read the following safety information. The compliance is prescribed and helps you to avoid accidents.



### **Close valves**

Before road transport close all valves. With open valves and false operation the lifting cylinder can be lowered. Traffic accidents can be caused.

### **Clean the machine before road transport**

Clean the machine, before every road transport, from crop residues and heavy dirt. Crop or dirt, falling at the road, can cause a slippery state of the road. This can lead to fatal accidents.

### **Tractor rear wheels may not touch the drawbar**

During driving through curves the tractor rear wheels may not touch the drawbar. The tractor rear wheels can touch the pto drive shaft. Serious machine damages can be caused.

### **Do not transport bales in the bale chamber**

Never transport bales in the bale chamber. Transporting a bale influences the tractor's steering and braking capacities. Personal or machine damages can occur.

## Before road transport

Road transport must be done in transport position. To bring the machine into transport position, the following steps are necessary:

- > Remove crop residues and heavy dirt
- > Lift the pick-up fully
- > Close the tailgate

# Road transport

## Preparing the machine

### Guarantee correct hydraulic couplings

Before preparing the machine, strictly check if the hydraulic couplings are coupled correctly to the hydraulic valve. Not correct coupled hydraulic couplings can cause unpredictable movements of the machine. Personal or machine damages can occur.

## Checking the machine

Check the machine before road transport by the checklist:

- Tailgate closed and locked completely?
- Electronic control switched off?
- Tractor hydraulic switched off?
- Pto switched off?
- All valves closed?
- Correct tyre pressure?
- Crop residues and heavy dirt are removed?
- Road lighting is connected properly?
- The braking system (if available) is connected properly?
- Cables and lines are placed in that way they will not tension or get in touch with the tractor rear tyres during curve driving?
- Lighting functions?

## Road transport

- Before starting driving, check the close environment. Always take care of a clear view and especially at children in the working environment of the machine.
- Lock hydraulic valves of the tractor before road transport
- Do not transport any persons or objects at or inside the machine
- Adapt the drive speed to the road conditions
- Do not exceed the maximum speed of 40 km/h. Obey the national and local speed limits.
- Pay attention to sufficient driving and braking capacity. Then driving and braking capacity are influenced by the attached machine (longer braking paths because of larger propulsion).

## Preparation for road transport

Before the machine is travelling by road, the machine must be placed into transport position. Therefore

- the pick-up must be lifted to maximum height
- the bale chamber must be empty

## Pick-up

When the machine is travelling by road, the pick-up must be fully lifted to the maximum height.

- > Lift the pick-up to maximum height
- > Close the isolating valve on the hydraulic hose at tractor side

## Bale chamber

The bale chamber must be empty before road transport may take place. Eventual the last bale must be tied with either twine or net.

## Twine tie

### Focus



- > Push to tie the last bale, if necessary

### Tellus



- > Push to tie the last bale, if necessary

## Net wrap

### Focus



- > Push to tie the last bale, if necessary

### Tellus



- > Push to tie the last bale, if necessary

- > Open the tailgate to eject the bale
- > Close the tailgate

## Wheels / tyres

### Tyre pressure

- > Check the tyre pressure
- Wheels, page 224

### Tightness of wheel nuts

- > Check the tightness of the wheel nuts
- Tightness of wheel nuts, page 223

## Safety



### Obey the safety information

Obey the safety information at the execution of all work. Ignoring the safety information can lead to serious or deadly injuries.

### Secure tractor and machine

- Switch off and secure the tractor
- Prevent the machine against accidental commencement of operations

Unsecured machines can lead to accidents.

## Performing settings

The settings to the machine must be performed in working position. They are described in the next sections:

- Crop guard adjustment

## Prior to baling

Before baling can start, the following has to be checked:

- Has the electronic control box been switched on?
- Has the bale diameter been set?
- Has the pto been switched on at low rpm and increased to 540 rpm?
- Has the hydraulic density pressure been adjusted?
- Has the pick-up been positioned at the desired height?
- Is the tailgate closed?
- Is the tailgate locked by its locks?
- Have the scrapers been adjusted?
- Has the crop guard been set?

# Preparation at the field

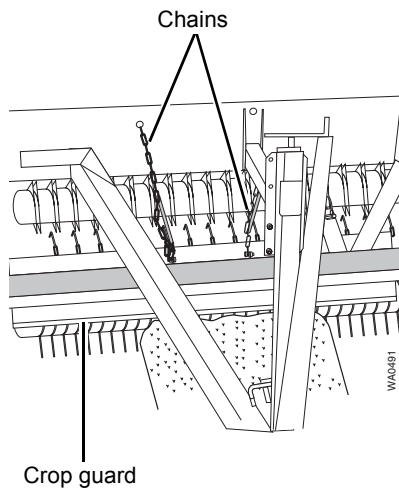
## Crop guard adjustment

The crop guard favours a good crop feed. Especially in short crop and windy weather.

The crop guard adjustment depends on the kind of pick-up mounted:

- WPU
- Rotor + XL-Rotor
- OC + OC 23

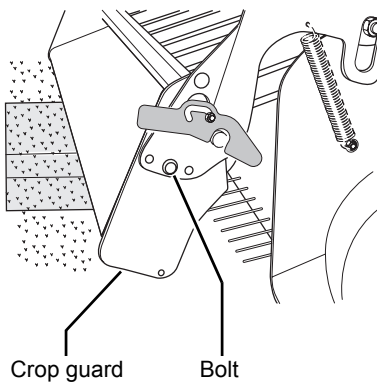
## Crop guard - Rotor + OC



The crop guard can be placed into various positions.

- > Support the crop guard by one hand
  - > Place the chains to the desired position
- The bottom side must just touch the window.  
Both chains should be at the same height.
- > Let go the crop guard slowly

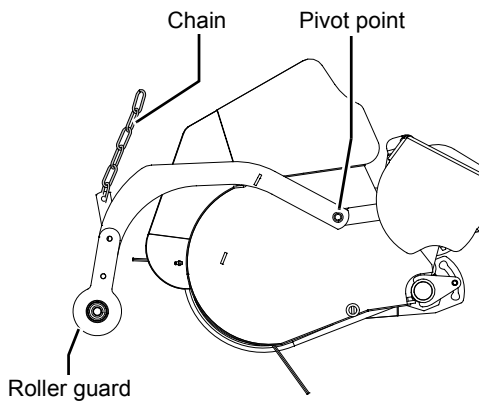
## Crop guard - WPU



The crop guard can be placed into three positions.

- > Remove the bolt
  - > Place the crop guard in the desired position
- The bottom side must just touch the window.
- > Mount the bolt

## Roller guard



The bottom side of the roller guard must just touch the windrow.  
The roller guard may only be used in the most forward pivot point.

Adjust the roller guard as follows:

- > Use the chain to prevent the roller guard from sinking

## Safety



### **No adjustment on a working machine**

It is prohibited to do adjustments on a working or moving machine.

### **Driving along at the machine prohibited**

It is not allowed that people or objects drive along at the machine. Driving along at the machine is perilous and prohibited.

### **No persons in the turning area**

Take care of no people be in the turning and working area of the machine. People can get grabbed or hit by the machine. Serious or deadly injuries can occur.

### **Pto speed maximum 540 rpm**

The pto speed may not exceed 540 rpm and must be adapted to the condition of the crop. A higher rpm can cause damages to the machine.

### **Do not compress the pto drive shaft**

In no working or transport position may the pto drive shaft be compressed. Compressed pto drive shafts can cause damages to the tractor or the machine.

## Dis/engaging knives

The cutting length is dependent on the number of knives. When all knives are engaged, the crop will be cut to a length of 70 mm (14 knives) or 50 mm (23 knives).

The knives can be engaged and disengaged using the hydraulic valve.

## Engaging knives - Focus



> Push to select cutting system

The chosen function is framed and highlighted now.

> Move the hydraulic valve to depressurize the cutting system

The knives will move in.

## Engaging knives - Tellus



> Push to select cutting system

The chosen function is framed and highlighted now.

> Move the hydraulic valve to depressurize the cutting system

The knives will move in.

## Bale diameter setting

The bale diameter must be set electronically in order to control eventual alarms.

The bale diameter in metres can be set

- from 0.80 to 1.65 (RK)
- from 0.80 to 1.85 (RL)

## Bale diameter - Focus

→ Bale diameter and mixed chamber settings, page 117

## Bale diameter - Tellus

→ Bale diameter and mixed chamber settings, page 155

## Manual binding control

Manual wrapping control can be used for a short period in the following cases:

- if one or more connections are faulty
- if one or more sensors are defective

That way a field can be completed.

Manual wrapping control offers the possibility to control the net wrap actuator and the twine motor manually.

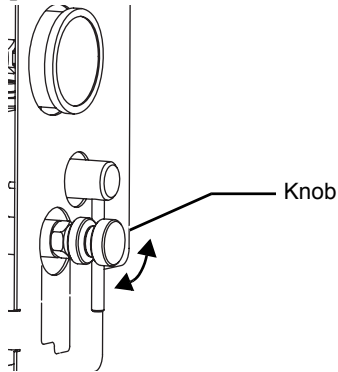
## Manual binding - Focus

→ Manual or automatic mode, page 116

## Manual binding - Tel-lus

→ Manual or automatic mode, page 154

## Adjustments bale pressure



### No modifications causing a higher pressure allowed

Any modification to obtain a higher pressure may cause damage to the machine. Even at the attempt of such a modification all liability and warranty become extinct.

The bale pressure can be set between 60 and 200 bar. The set bale pressure can be controlled by closing the tailgate via the control valve of the tractor. When the tailgate has been closed completely the set pressure can be read on the pressure gauge.

The pressure can be adjusted by knob.

- > Turn knob clockwards: pressure increases
- > Turn knob counterclockwards: pressure decreases

When working with a tractor that cannot provide the set pressure you only can verify the pressure setting when making the next bale.

The given pressure values are standard values only. The real values required depends on the crop type and baling conditions. Therefore they may differ a lot.

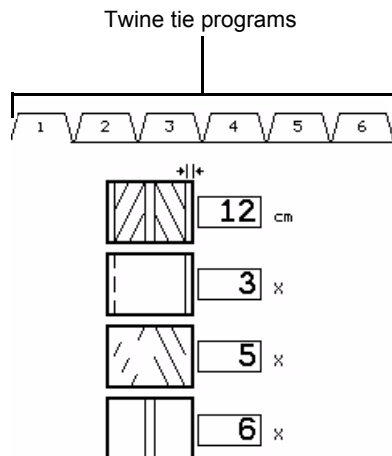
Setting	Pressure (bar)
Very dry hay or dry straw	200
Normal dry hay	180
Silage	140 - 180 (dependent on crop humidity)

**TIP** The set pressure may not be reached if the crop quantity taken in is too little.





# Use at the field

## Electronic twine tie settings

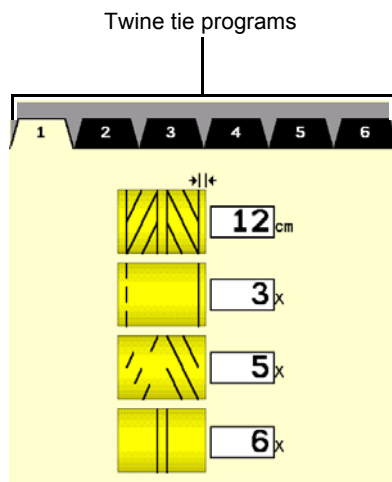
### Focus twine tie settings







For additional explanation  
→ Twine tie settings, page 118

-  > Push, the display twine tie settings appears
-  > Push to select the set twine wraps
-  > Push to set the number of twine wraps
-  > Push to confirm

### Tellus twine tie settings

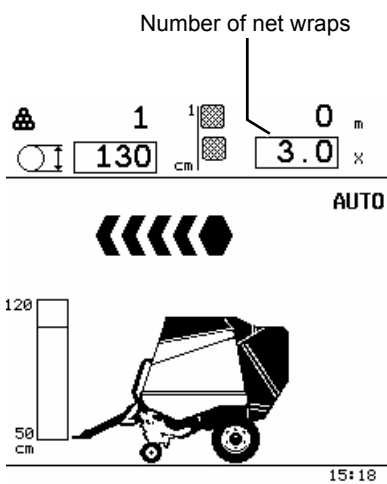





For additional explanation  
→ Twine tie settings, page 156

-  > Push, the display twine tie settings appears
-  > Push to select the set twine wraps
-  > Push to set the number of twine wraps
-  > Push to confirm

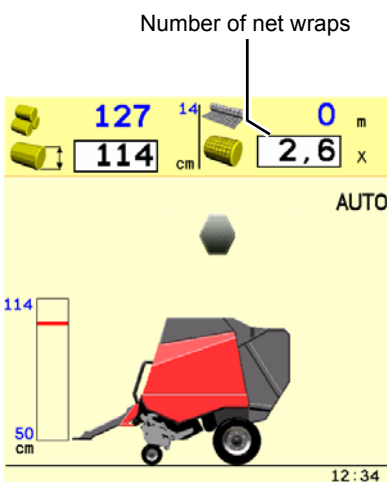
## Electronic net wrap settings




### Focus net wrap settings



-  > Push to select the set net wraps
-  > Push to set the number of net wraps
-  > Push to confirm

### Tellus net wrap settings



-  > Push to select the set net wraps
-  > Push to set the number of net wraps
-  > Push to confirm

# Use at the field

## Driving



### Run 540 rpm during use

It is vital to let the machine run at 540 rpm speed during use. Only then a fluent operation of the various functions can be guaranteed.

Please take care of the following during use:

- the pto must be switched on
- drive at the correct working speed (between 4 and 15 km/h); adapted according to the crop

## Pto

The pto may only be switched on at low motor rpm.

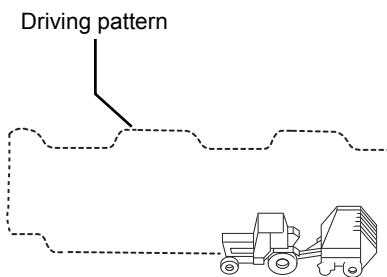
- > Switch on the pto

## Driving speed

Use an adequate forward speed to ensure the crop is fed uniformly and constantly into the machine.

- > Adjust the driving speed according to
  - crop amount
  - windrow volume
  - ground conditions

## Driving pattern



The bale shape indication arrows on the control box display indicate how the bale is formed inside the bale chamber.

- > Steer the machine in such a way that the windrow is fed alternately at both sides into the pick-up
- This in order to fill the bale chamber to the optimum.
- > Continue checking this on the display

The driving is especially critical when working in a narrow windrow.

**TIP** Do not weave over a narrow windrow but always stay driving for a while at the sides as the figure shows. This since zig-zagging causes bad lateral feed and thus badly formed bales.

- > Start slowly straight on the windrow
- > Maintain 540 rpm at windrow end so eventually a binding cycle operates

## Pick-up



### Stay clear of a rotating pick-up

Never try to pull crop out of or push crop into a rotating pick-up. Serious personal injuries can occur.

- > Put the hydraulic valve in floating position

## Focus

To control the pick-up instead of the Opticut cutting system



- > Push to select the pick-up

## Tellus

To control the pick-up instead of the Opticut cutting system



- > Push to select the pick-up

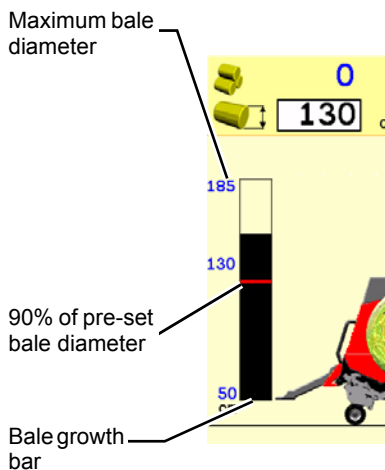
## Pick-up height

In rough and/or stony terrain it is recommended to use only the chains and not the gauge wheels.

In that case the gauge wheels must be lifted high enough not to interfere

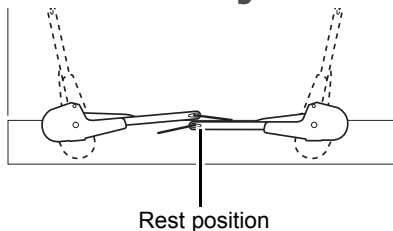
→ Adjustment gauge wheels, page 58

## Bale growth

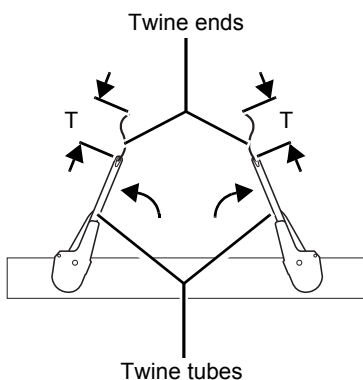


In the working screens, the display always shows a vertical bale growth bar. The values beside match the pre-set bale diameter. The bar displays the part of the bale diameter which has been reached. When the bale chamber is empty, the bale growth bar is empty (set to 0).

## Twine tie system

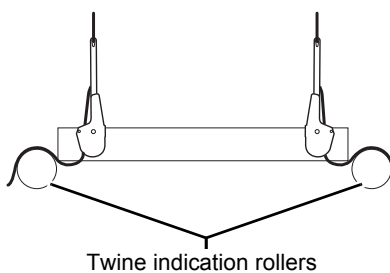


During baling the twine tie system remains in its rest position. Except for baling flax.

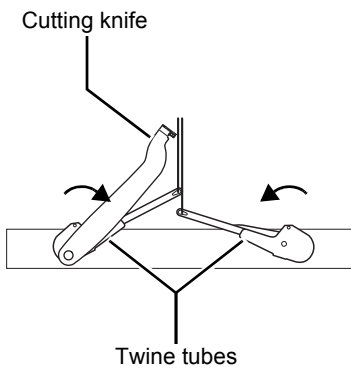


Upon activation of the tying system the twine tubes move to the borders of the bale.

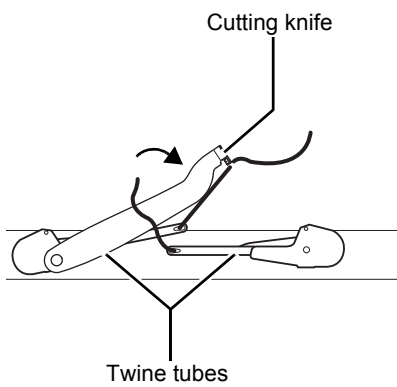
In order to ensure a good twine tie starting it is necessary that the twine ends T protrude about 10 cm out of the twine tubes.



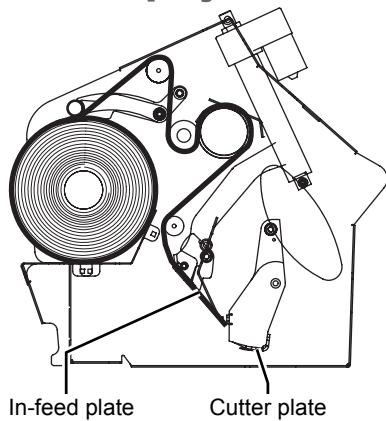
The twine brake is released momentarily in order to allow the twine to start running. As soon as the twine has been caught by the bale the twine indication rollers rotate and the lateral wraps are laid around the outer sides of the bale.



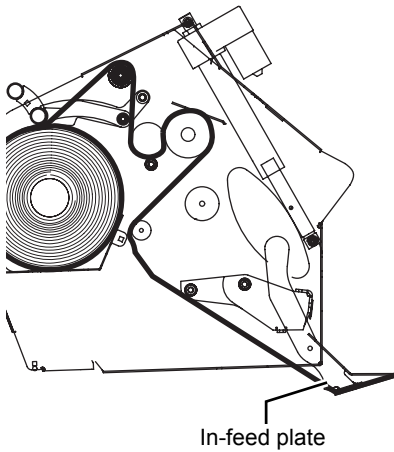
Both twine tubes move simultaneously to the centre where they lay the final wraps over each other. Then the twine is automatically cut. The movement of the twine tubes can be set using the control box, thus enabling several tying patterns.



## Net wrap system



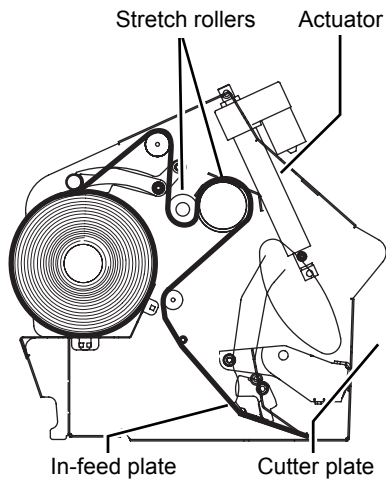
During baling, the net binding mechanism is in the rest position. The cutter plate is in the lowest position. The in-feed plate is in the rest position.



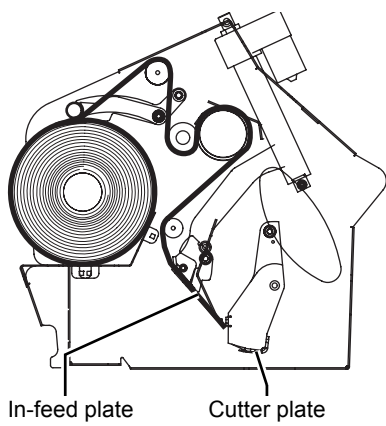
When the net binder is activated

- the actuator moves out completely and
- the in-feed plate moves down

The required length of net is supplied by the stretch rollers. At the same time, the in-feed plate moves towards the bale.



The net is now taken along with the bale. When the net is taken by the bale, the actuator moves back so far that the net is held at full width. The in-feed plate is now free of the bale. Via the measuring roller and the sensor, the net in-feed length is measured.



After the set amount of net is fed in, the actuator moves completely back, which causes the cutter to move down and cut the net.

## After the first bale

After the first bale, the following must be checked and readjusted if required:

- Bale diameter
- Bale density
- Wrapping of the bale

## Focus

- Bale diameter
- Basic display, page 112
- Bale density
- Bale diameter and mixed chamber settings, page 117
- Wrapping of the bale
- Twine tie settings, page 118
- Net wrap settings, page 119
- Net brake tension, page 206

## Tellus

- Bale diameter
- Basic display, page 148
- Bale density
- Bale diameter and mixed chamber settings, page 155
- Wrapping of the bale
- Twine tie settings, page 156
- Net wrap settings, page 157
- Net brake tension, page 206

## Rebaling bales



When rebaling bales, make sure:

- the bales are clear of all net
- the material has been spread to avoid an overload of the pick-up or cutting system

## End of baling

At the end of the job:

- the last bale must have been wrapped
- the last bale must have been cleared out
- the tailgate must have been closed and locked
- the pto must be switched off
- the control box must be switched off
- the pick-up must be moved fully up and locked
- the valve in the hydraulic line must be closed
- all doors and accesses must be closed and locked

## Cleaning the bale chamber



- Never work on the machine while it is running
- Due to its inertia, the pto continues to rotate after disengaging. Stay clear of the machine until it has come to a complete stop

The bale chamber must be empty before road transport may take place.

## Cleaning the bale chamber - Focus



- > Push to tie the last bale, if necessary
- > Open the tailgate to eject the bale
- > Close the tailgate

## Cleaning the bale chamber - Tellus



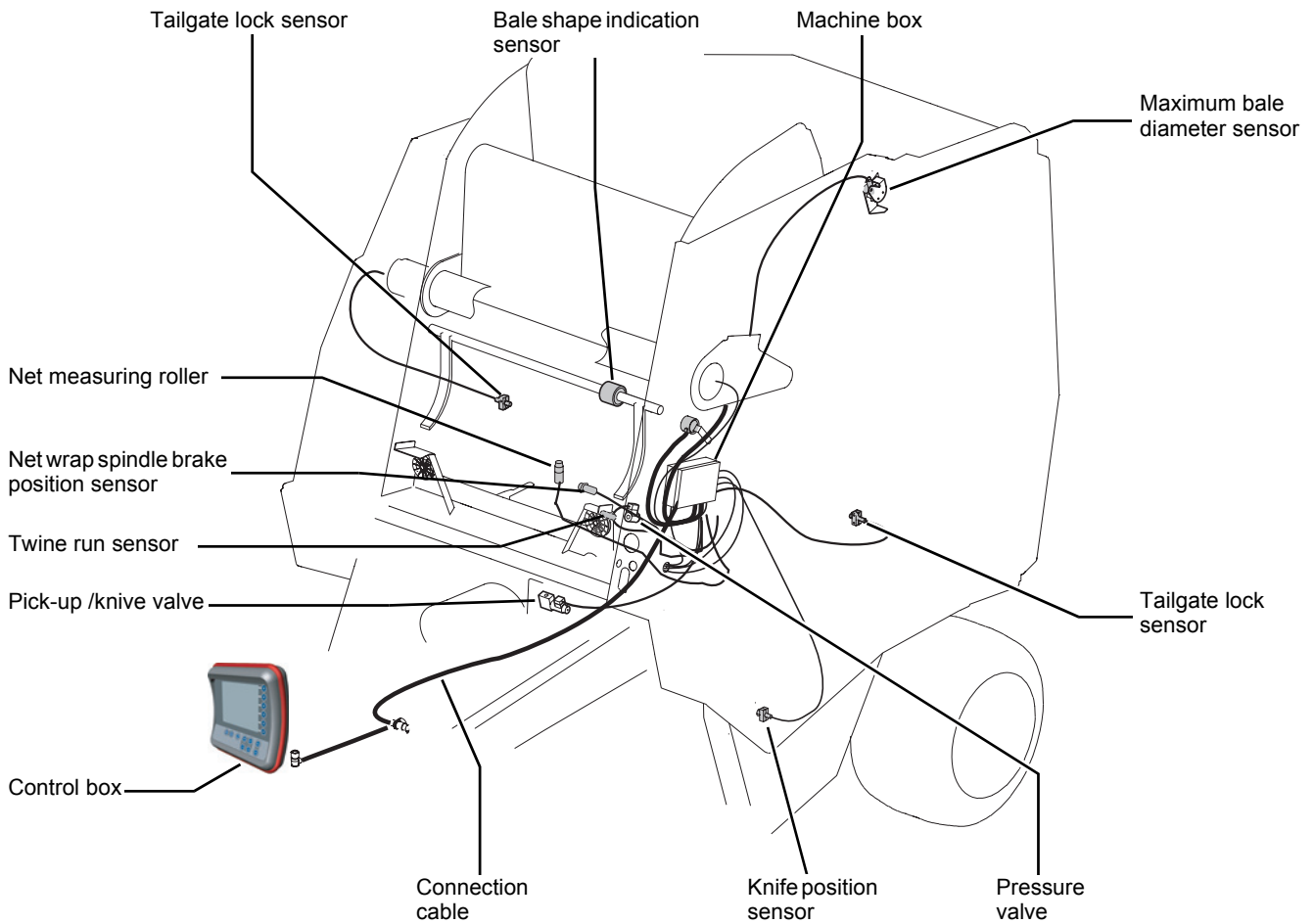
- > Push to tie the last bale, if necessary
- > Open the tailgate to eject the bale
- > Close the tailgate

## General

The electronic control system controls and monitors the growing bale, the wrapping and clearing out of the bale. Furthermore the system also provides error indicating functions.

## Overview main parts

The machine is equipped with sensors (proximity switches and rotational sensors).

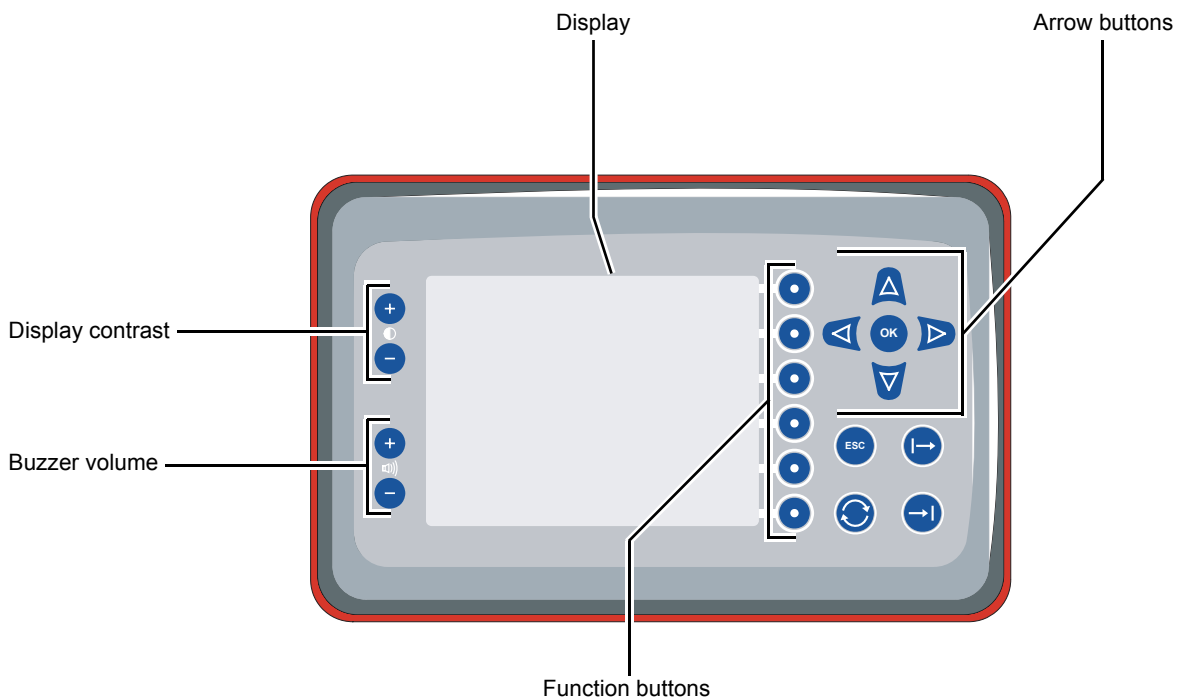


## Control box

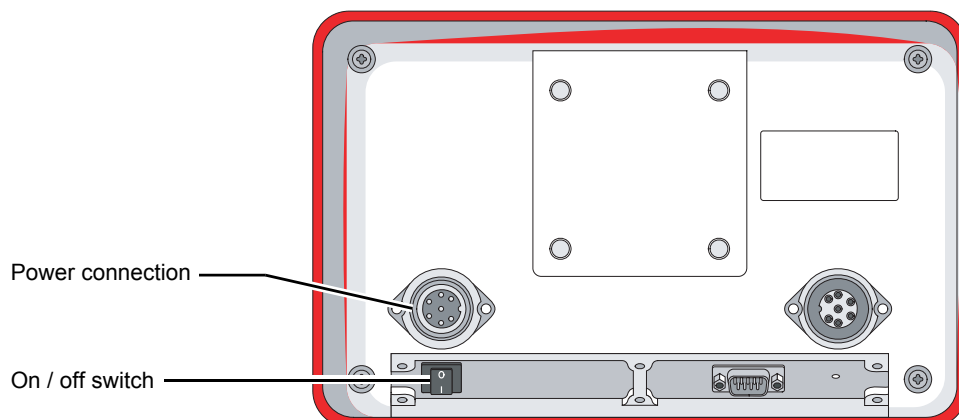
The control box enables supervision of the total baling procedure from the tractor cab. Especially the following functions can be monitored:

- Bale diameter indication
- Bale shape indications
- Drive indications to fill the bale chamber uniformly
- Bale wrapping process (twine tie/net wrap)
- Tailgate open/closed information
- Softcore control [+]
- Bale counters (day counters + total counter)
- Knife position indication of the Opticut cutting system

## Control box - front



## Control box - back



## Buttons



### Increase value button

- To increase the display contrast
- To increase the volume of the buzzer



### Decrease value button

- To decrease the display contrast
- To decrease the volume of the buzzer



### Change button

- To change between implements
- To switch between the basic and the terminal display



### Arrow up button

- To change a value

The new value blinks till confirmation with the Confirm/save button.



### Arrow down button

- To change a value

The new value blinks till confirmation with the Confirm/save button.




### Left arrow button


To switch between settings.




### Right arrow button

To switch between settings.

 No function.

 No function.

 **Leave / interrupt a function**

 **Confirm / save button**

The value blinks no longer after confirming / saving.

- In some functions used to move to the next function in series.
- To acknowledge an error message.

 **Function button**



**Enter the basic display**



**Switch to**

- the previous or to the next function(s)



**Enter the left tab**



**Enter the right tab**



**Enter the next function display**



**Enter the previous function display**



**Activate the concerning tab**

The number is shown in the working display.



**Clear all values at once**

## Operation



 > Push to I

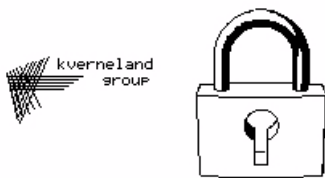
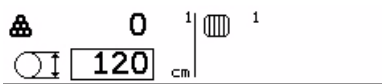
The terminal display appears. After 10 seconds, the basic display automatically appears.

From the terminal display, the following displays can be reached

- basic display, appears automatically after start up
- configuration display
- flash display

> Check and complete the settings in the configuration display firstly  
→ Configuration settings, page 109


## Basic display




15:00

The basic display shows:

- the amount of bales made
- the selected bale counter
- the pre-set bale diameter
- the selection of twine tie or net wrap
- the selected binding program (twine tie only)
- the amount of net used (net wrap only)
- the number of net wraps (net wrap only)
- the actual time
- system lock

 > Push to return to the the terminal display

or

 > Push to unlock the system and to enter the operating display

## Configuration settings

Configuration

Language:	<input type="text" value="en"/>
UTC:	<input type="text" value="2006"/> <input type="text" value="04"/> <input type="text" value="21"/> <input type="text" value="15"/> <input type="text" value="20"/> <input type="text" value="01"/>
Broadcast time:	<input checked="" type="checkbox"/>
Contrast:	<input type="text" value="40"/> %
Default volume:	<input type="text" value="50"/> %
CANBUS terminator:	<input checked="" type="checkbox"/>
Block TCU:	<input checked="" type="checkbox"/>
Task Control:	<input type="checkbox"/>
Broadcast Speed:	<input type="text" value="No"/>



> Push to enter the display configuration settings

The following can be set:

- language
- current date and time (UTC)
- broadcast time; if enabled, the actual time is shown
- display contrast; can be set between dark (0%) and pale (100%)
- default volume; can be set between silent (0%) and loud (100%)
- canbus terminator (always enabled)
- block TCU; if enabled, the tractor control unit is blocked
- task control (for optional equipment only)
- broadcast speed (for optional equipment only)



> Push to select a value to be changed



> Push to set the required value



> Push to confirm

From the display configuration, the following displays can be reached:

- terminal display
- display formats & units



> Push to return to the terminal display

or



> Push to enter the display formats & units

## Display formats & units

Formats & units	
Decimal symbol:	. (Point)
Date format:	YYYYDDMM
Time format:	24 Hour
Distance unit:	Metric
Area unit:	Metric
Volume unit:	Metric
Mass unit:	Metric
Temperature:	Metric
Pressure unit:	Metric
Force unit:	Metric
Other unit:	Metric

The following settings can be adjusted:

- decimal symbol
- date format
- time format
- distance unit
- area unit
- volume unit
- mass unit
- temperature
- pressure unit
- force unit
- other units

The units can be shown in the following standards:

- metric
- imperial
- US

The units can be changed both individual as all at once.

### Change individual units



> Push to select a value to be changed



> Push to set the required value



> Push to confirm



> Push to return to the terminal display  
or



> Push to enter the configuration display

### Change all units at once

Metric

> Push to change all units to metric standard  
or

Impe

> push to change all units to imperial standard  
or

US

> push to change all units to US standard



> Push to enter the terminal display  
or



> push to enter the configuration display

## Flash display

```

● Focus 0.02 1-11-9996
-----
PCB ID: 5067507 Radar 1
Wheel 0
-----
EXT. FLASH(Kb)
|-----|
0 0 0
EXT. RAM(Kb)
|-----|
0 0 0
-----
107
1
Clear
    
```

The flash display gives information about the software of the terminal.

The flash display shows:

- the software version
- the software release date
- the amount of used flash memory
- the amount of used RAM memory



> Push to enter the flash display

All machine data stored in the memory can be cleared.



> Push to clear the memory

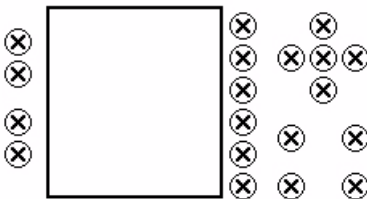


> Push to return to the terminal display  
or



> Push to go to the keyboard test screen

## Keyboard test display



The keyboard test display is used for testing, if the corresponding button works.

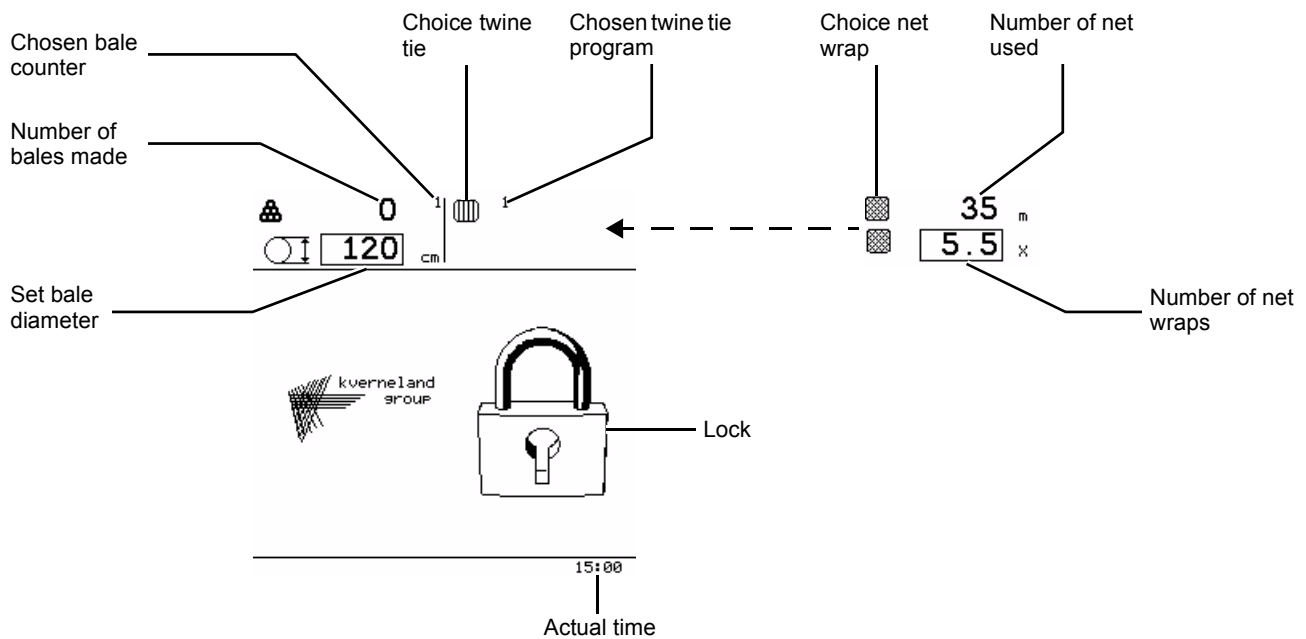
Test

- > Push
  - > Push each corresponding button on the control box
- If the X changes into OK, the button works fine.



> Push to return to the terminal display

## Basic display



The basic display always shows the following information:

- Chosen bale counter
- Number of bales made
- Choice net or twine tie
- Chosen binding program (twine tie only)
- Actual time
- Set bale diameter
- System lock
- The amount of net used (net wrap only)
- The number of net wraps (net wrap only)

From the basic display, the following displays can be entered:

- Operating display
- Settings display
- Bale chamber and mixed chamber settings display
- Bale counter display



> Push to put the system into operation mode  
The operating display shows.

or



> Push to enter the settings display

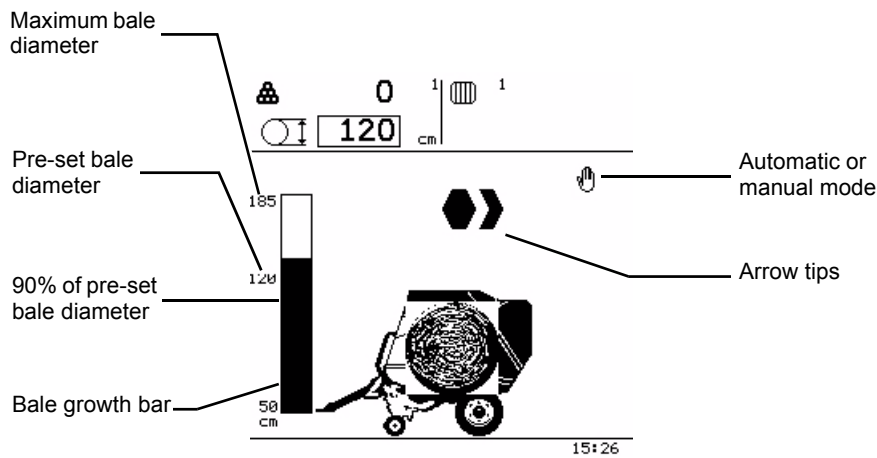
The settings display shows.

or



> Push to enter the bale counter display  
The bale counter display shows.

## Operating display



The operating display monitors the baling process.

The following information is shown:

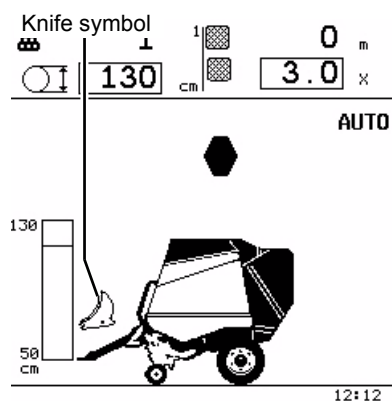
- arrow tips; display the difference between left and right side diameter. Four arrow tips indicate that the maximum difference has been reached.
- automatic (AUTO) or manual mode (hand symbol)
- knives active (knife symbol) or inactive
- bale growth bar
- horizontal line shows 90% of the pre-set bale diameter

## Settings

The following settings / functions can be done from the operating display:

- choice net or twine binding
- clearing used net metres indication
- choice automatic or manual mode
- choice pick-up or knives (in combination with the concerned tractor hydraulic valve)
- manually extending or intending of the net actuator
- manually extending or inteding of the twine tubes
- bale diameter and mixed chamber [+] settings
- choice twine tie program
- start net wrapping of twine tying

## Choice knives or pick-up



> Push to select pick-up or cutting system

The chosen function is framed and highlighted now. Standard setting is pick-up.

> Open both hydraulic valves

> Move the knives hydraulically in or out

As soon as the knives are in cutting position, a knife symbol appears in the display.

## Manual or automatic mode

The system starts in automatic mode. Automatic mode is standard setting. Manual mode can be used:

- to complete a field
- during twine or net installation
- to create a user-defined twine pattern

The complete baling cycle is automatic except the wrapping.



> Push to choose manual mode

or

AUTO

> Push to choose automatic mode

Automatic mode is standard setting.

## Manual net binding



> Push to choose net wrap

Depending on the setting, the button shows net or twine tie.



> Push to start wrapping

If necessary



> push to extend the actuator

or



> push to intend the actuator

## Clearing used net indication



> Push to clear the used net metres indication

## Manual twine binding



> Push to choose the desired twine tie program



> Push to choose twine tie

Depending on the setting, the button shows net or twine tie.



> Push to start wrapping

If necessary



> push to extend the twine tubes

or



> push to intend the twine tubes

## Bale diameter and mixed chamber settings



In the basic display:

- > Push to enter the display bale diameter and mixed chamber settings



**130** cm Outer bale diameter

A proportional pressure valve enables adjustment of both the outside and the core pressure.



**61** cm Soft core diameter  
[+]

The maximum outer bale diameter depends on the machine type; 160 or 185 cm.



**152** bar Outer bale pressure  
[+]

The minimum soft core diameter is 60 cm (0 = no soft core).

The maximum value equals the total bale diameter. The entire bale is soft than.



**70** bar Soft core pressure  
[+]



- > Push to select a value to be changed



- > Push to set the required value

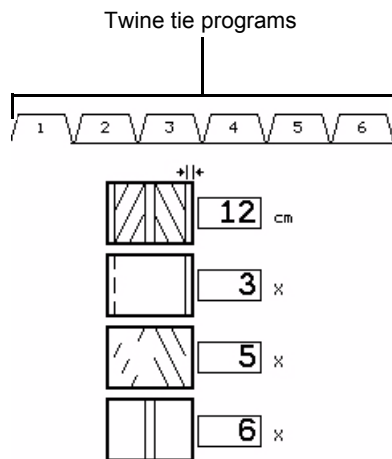


- > Push to confirm



- > Push to go back to the basic display or to the operating display

## Twine tie settings



> Push, the display twine tie settings appears

Adjustable are:

- Distance from lateral wraps to the side of the bale in cm
- Number of wraps near the bale sides (starting wraps)
- Number of intermediate wraps
- Number of final wraps

The standard twine tie programmes can be changed upon desire. Programme 6 is for flax.

The number of wraps does not depend upon the bale diameter. At the start of wrapping the control system automatically calculates the quantity taking into account the actual bale diameter. Only the pto speed influences the real number of wraps: it is based upon a pto speed of 540 rpm.



> Push to select a value to be changed



> Push to set the desired value



> Push to confirm



> Push to activate a certain twine tie program  
The number is shown in the working display.



> Push to reset all values to default values



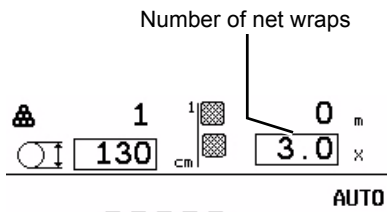
> Push to go to the next twine tie program  
or



> Push to return to the previous twine tie program

## Net wrap settings

### Changing the number of wraps



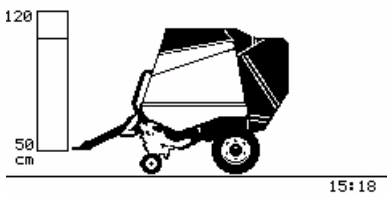
> Push to select the set net wraps



> Push to set the number of net wraps



> Push to confirm



## Driving

- > Adapt the driving direction when the third arrow tip shows
- As soon as the fourth arrow tip shows, the buzzer sounds.
- > Immediately change the driving direction

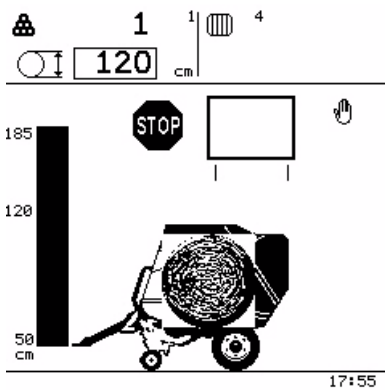
The arrow tips are replaced by a single complete arrow if the bale shape indication

- does not function correctly at both sides in the bale chamber
  - has not been installed
- 
- > Drive with an adequate forward speed (4 - 15 km/h) over the wind-row
  - > Steer left and right in accordance with the indication of the bale shape indication system

The buzzer sounds when 90% of the pre-set bale diameter has been reached.

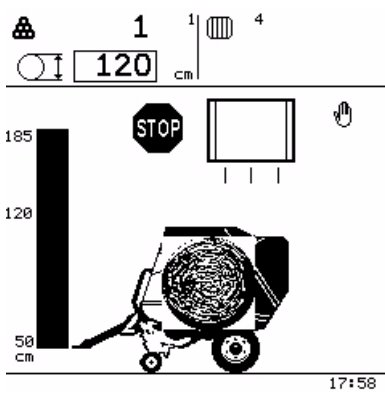
Upon reaching the pre-set bale diameter (100%), the buzzer sounds again, with different sound.

## Twine tie process

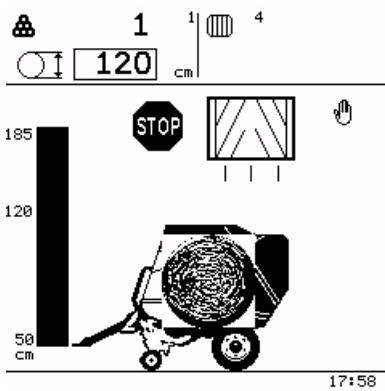


If twine tying commences this display shows.

- > Stop immediately when this display appears
- The twine tubes now move to their starting position.

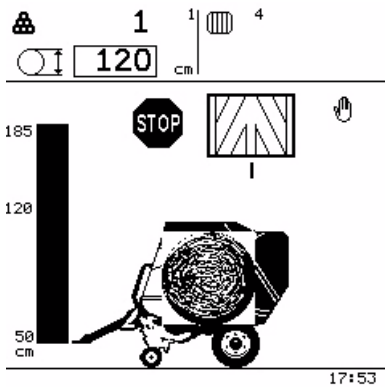


As soon as the twine tubes have reached their lateral position this graphic appears.



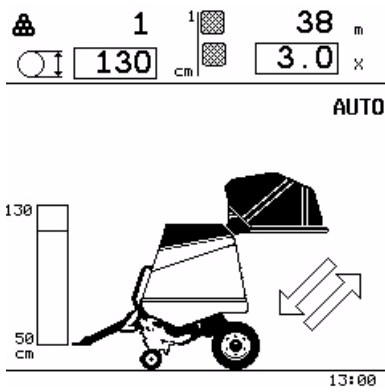
The intermediate wraps are being made.

The final wraps are being made.

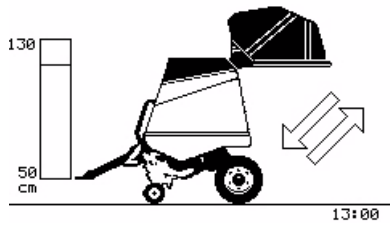
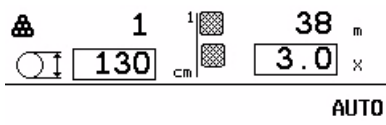


When twine tie has been finished display shows.  
Now the tailgate can be opened.

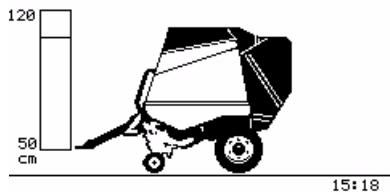
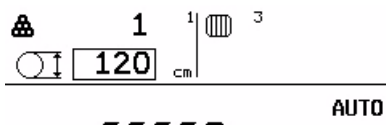
> Open tailgate, using hydraulic valve control lever in tractor cab  
The bale is cleared out of the bale chamber.



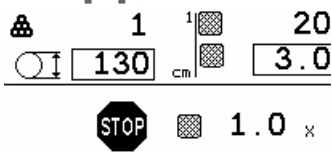
> Close the tailgate



The working display re-appears.



## Net wrap process



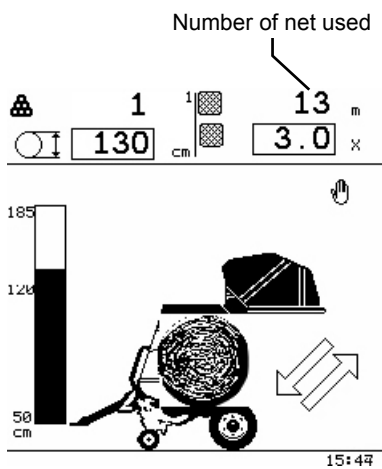
Upon reaching the desired bale diameter (100%) the buzzer sounds.  
> Stop immediately

During net wrap cycle the actual number of net wraps is indicated in the center of the display. The total used net quantity since clearing the counter is shown at the right side of the display.

After completion of the net wrap the tailgate open display appears.

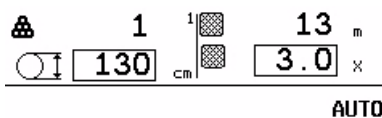
> Open the tailgate

The bale is cleared out of the bale chamber.



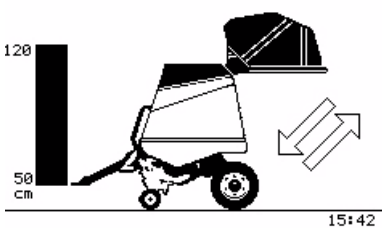
> Open the tailgate

The bale is cleared out of the bale chamber.



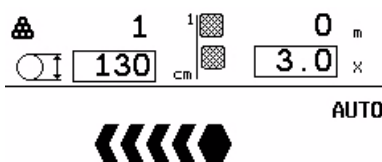
When the bale is cleared out of the bale chamber the tailgate close display appears.

> Close the tailgate



When the bale is cleared out of the bale chamber the tailgate close display appears.

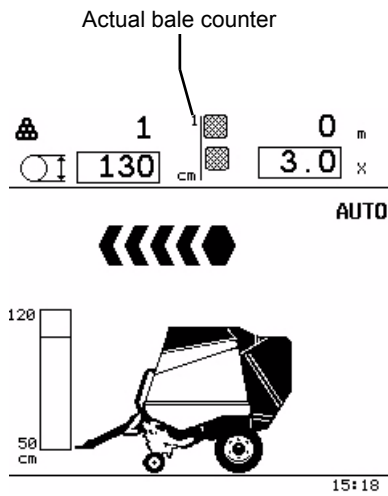
> Close the tailgate



When the tailgate is closed, the working display re-appears.



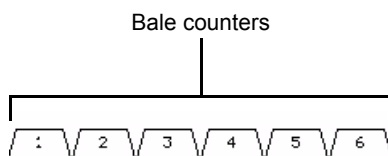
## Bale counters



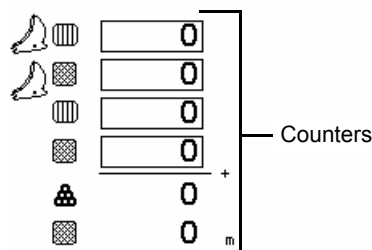
The active bale counter is shown in the operating display.



> Push to go to the basic display



> Push to enter the entire bale counters  
40 bale counters are available.



The display bale counters consists of different types counters:

- bales wrapped with twine, inclusive Opticut
- bales wrapped with net, inclusive Opticut
- bales wrapped with twine, exclusive Opticut
- bales wrapped with net, exclusive Opticut
- one total bale counter
- the total number of net used



> Push to select a counter to adjust  
The counter chosen will blink.



> Push to set the required value



> Push to confirm



> Push to reset all counters to zero



> Push to activate a certain bale counter  
The number is shown in the working display.



> Push to go to the next bale counter  
or

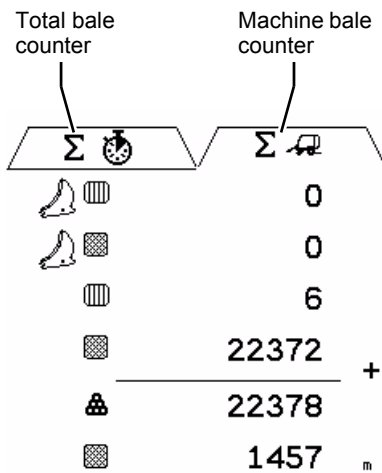


> Push to return to the previous bale counter



> Push to go back to the basic display

## Total machine bale counter



The total machine bale counter display shows the general total number of bales made with the machine, split up into:

- bales wrapped with twine, inclusive Opticut
- bales wrapped with net, inclusive Opticut
- bales wrapped with twine, exclusive Opticut
- bales wrapped with net, exclusive Opticut
- one total bale counter
- the total number of net used

In the basic display:



> Push to enter the total bale counter



> Push to go to the total machine bale counter



> Push to go to the next total machine bale counter  
or



> Push to return to the previous total machine bale counter

The total bale counter can be reset.



> Push to reset all values to zero

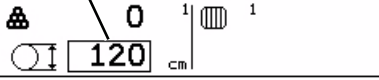


> Push to go back to the basic display

## Work functions

### Bale diameter settings

Bale diameter



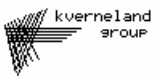
> Push to select a value to be changed



> Push to set the desired value



> Push to confirm



15:00

## User functions

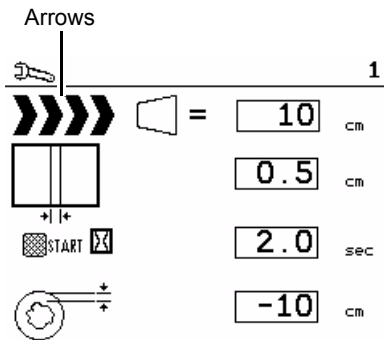
The following user functions can be set:

- bale shape indication sensitivity
- twine end distance
- net wrap delay
- bale diameter correction



> Push to enter the user functions

## Bale shape indication



The bale shape indication indicates the difference between the left and right side bale diameter.

The value in the display indicates the difference in cm between left and right side bale diameter. This value is represented by four arrow tips. One arrow tip is the fourth part of that value.

The bale shape indication can be set between 5 and 20 cm. 10 cm is factory setting.



> Push to select a value to be changed



> Push to increase the bale shape indication value

or

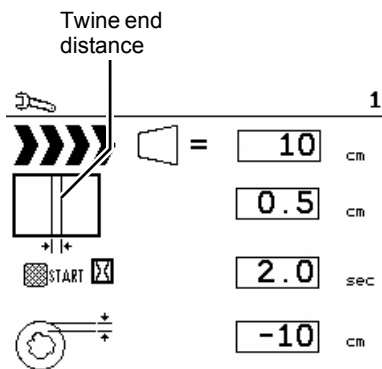


> Push to decrease the bale shape indication value



> Push to confirm

## Twine end distance



The twine end distance indicates set-off between the final twine end wraps.

Standard setting is 0.7 cm. A higher value means a larger distance between the final wraps.

The value in the display indicates the distance in cm between the final twine end wraps.

> Push to select a value to be changed

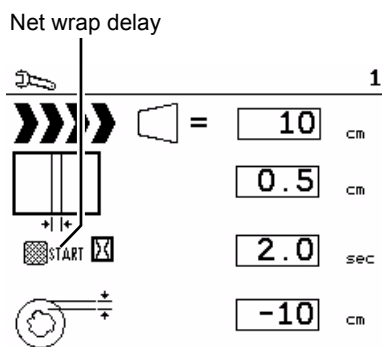
> Push to increase the twine end distance

or

> Push to decrease the twine end distance

> Push to confirm

## Net wrap delay



In Automatic mode, it is possible to delay the net wrap start when the bale diameter has reached its preset value.

Standard setting is 0. A higher value means: the Stop sign will appear earlier than the moment the actuator starts.

> Push to select a value to be changed

> Push to increase the net wrap delay time

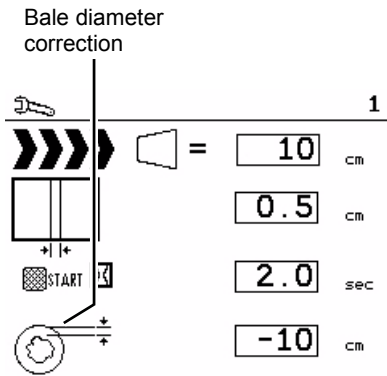
or





> Push to decrease the net wrap delay time

> Push to confirm

## Bale diameter correction

In case the real bale diameter differs from the pre-set bale diameter, the bale diameter has to be corrected.  
The bale diameter can be adjusted between +10 and -10 cm.



-  > Push to select a value to be changed
-  > Push to increase the bale diameter
- or
-  > Push to decrease the bale diameter
-  > Push to confirm

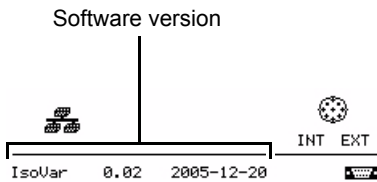
## Diagnostics

The information in the diagnostics displays is important when contacting your dealer or service manager.



> Push to enter the user functions

## Software version



> Push to enter the display software version of the machine

> Write down the software version at the backside of the first page



> Push to enter the error/event log display  
or



> Push to go back to the basic display

## Error/event log display

The information in the error/event log display is important when contacting your dealer or service manager.

Diagnostics

2

Service Acc.	2	2007-02-02	11:51:24
Net run	1	2007-02-02	12:38:58
No net run	35	2007-02-02	12:59:58
Twine run	0	2007-01-31	13:58:46
No twine run	0	2007-01-31	13:58:46
Gate left	10	2007-02-02	12:59:04
Gate right	11	2007-02-02	12:59:04
Max bale	8	2007-01-31	15:23:16
Last bale	11	2007-02-02	13:00:58
Bale 25	0	2006-11-10	11:44:04
Bale 250	0	2006-04-11	13:21:32
Bale 2500	3	0.000 h	
Act Pwr	0	2007-01-31	13:58:46
Pwr out	0	2007-01-31	13:58:46
5U out	0	2007-01-31	13:58:46
70 Degrees	0	2007-01-31	13:58:46



> Push to go to the extended user functions

## Extended user functions

Extended user functions are functions meant for reading and adjustment especially by an authorized service technician.

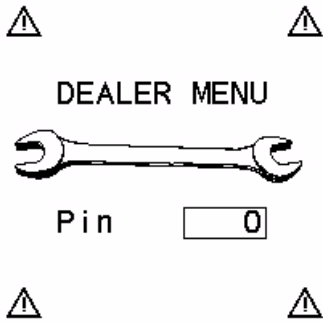
3







PCB ID:	0	IsoVar	0.03
ACT-PWR	12.1 U	5U-OUT	5.0 U
12U-OUT	11.9 U		
Bale arrow	887 cnt		49 cm
L/R Indicator	710 cnt	T=	34 °
Net rpm	0		0 rpm
Twine mtr fls	1		0 rpm
OC Knife Pos.	0		
Gate left/right	1		1
Max. bale	1		
Net wrap	0		
Twine Pulse 1	0		0 rpm
Twine Pulse 2	0		0 rpm



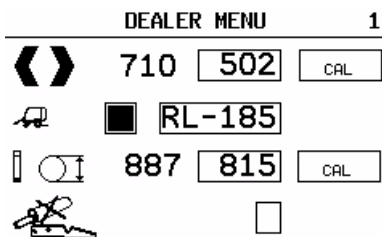
> Push to go back to the basic display

## Dealer menu



-  > Push to go to the user functions display
-  > Push to go to the dealer menu
-  > Push to return to the basic display
-  > Push to enter PIN
-  > Push to select the PIN code; enter 5
-  > Push to confirm

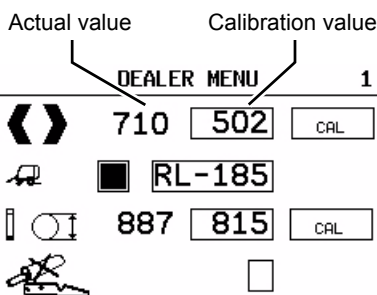
## Dealer menu 1





The following user functions can be set:

- bale shape sensor calibration
- machine type (RK-160 or RL-185) and colour (not relevant for Focus)
- bale growth sensor calibration
- tailgate sensor switch off

## Bale shape sensor calibration

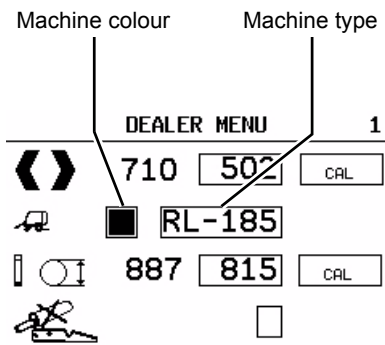


To compensate the left and right bale shape sensor, they must be calibrated with respect to each other.

- > Ensure the bale chamber is empty
- > Ensure there is no pollution underneath both bale shape sensors
-  > Push to go to CAL
-  > Push to confirm

The shown actual calibration value (e.g. 515) is now entered and confirmed. 512 is the default value.

## Machine type / colour



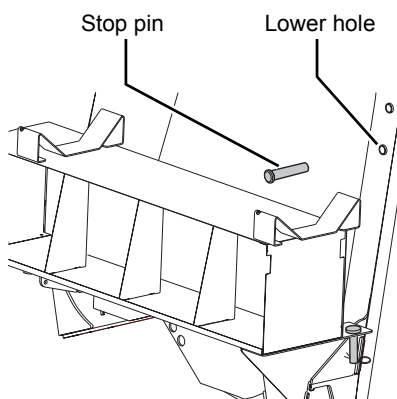
The following machine types can be set:

- RK-160
- RL-185

RK and RL indicate the type, 160 and 185 the maximum bale diameter in cm.

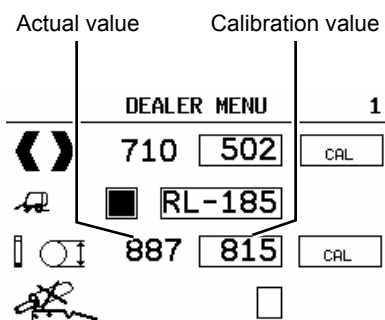
- > Push to set the machine type and the colour
- > Push to increase the value  
or
- > Push to decrease the value
- > Push to confirm

## Bale growth sensor calibration



- > Open the tailgate hydraulically
- > Place the pin in the lower hole in the lateral wall
- > Lower the tailgate pressureless (floating position) until the tensioner arm rests on the pin

This is the basic position for calibration.



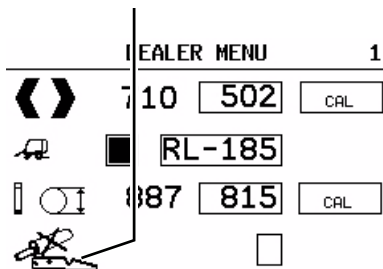
- > Push to go to CAL
- > Push to confirm

The calibration value is now entered and confirmed. 692 is the default value.






- > Open the tailgate hydraulically
- > Remove the pin from the lower hole in the lateral wall
- > Close the tailgate completely

## Tailgate lock sensor switch off

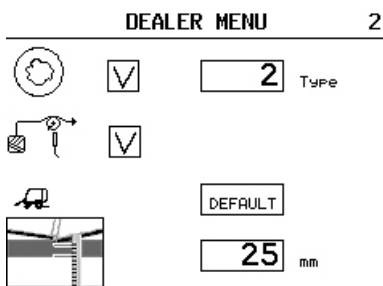
Tailgate lock sensor switch off



In case one tailgate lock sensor is faulty, this sensor can be switched off.

-  > Push to select a value to be changed
-  > Push to select L, R or to leave the field blank
- or
-  > Push to select L, R or to leave the field blank
-  > Push to confirm
-  > Push to go to the dealer menu 2

## Dealer menu 2

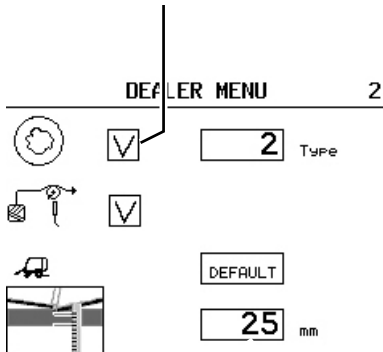






The following functions can be set:

- mixed chamber control [+] on or off
- valve type
- twine run control [+] on or off
- default all settings
- twine tubes calibration

## Mixed chamber control [+]

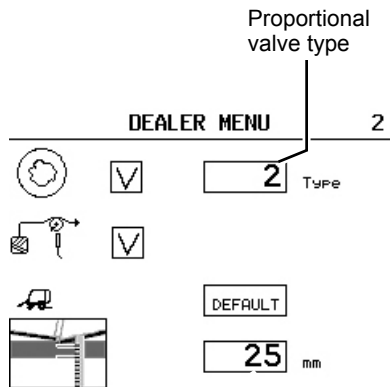
Mixed chamber control



-  > Push to go to mixed chamber
-  > Push to switch on mixed chamber control
- or
-  > Push to switch off mixed chamber control
-  > Push to confirm
- > Enter the valve type
- Proportional valve type, page 135

## Proportional valve type

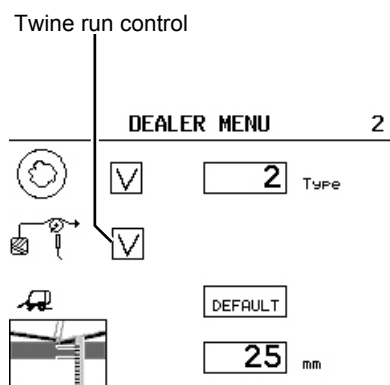
Only possible when mixed chamber control is switched on.  
→ Mixed chamber control [+], page 134



- > Read out the one-digit value inscribed at the proportional valve
- > Push to go to valve type
- > Push to enter the read-out value
- or
- > Push to enter the read-out value
- > Push to confirm

## Twine run control [+]

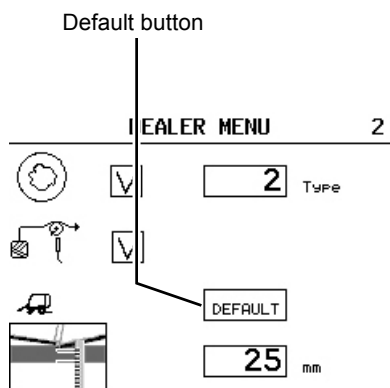
Twine run control checks if the twine is running or not.



- > Push to go to twine run control
- > Push to switch on twine run control
- or
- > Push to switch off twine run control
- > Push to confirm

## System default

Default re-initiation resets the electronic control system to the default factory settings.



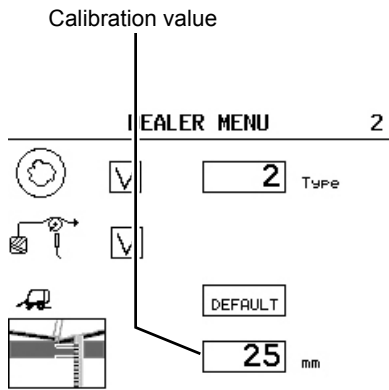
- DEFAULT > Push to reset the electronic control system to the factory setting

After default re-initiation:

- > calibrate the bale shape sensor  
→ Bale shape sensor calibration, page 132
- > calibrate the bale growth sensor  
→ Bale growth sensor calibration, page 133

## Twine tubes calibration

The twine tubes in rest position must have a certain distance to the frame of the twine binding device. Default distance is 34 mm.



> Push



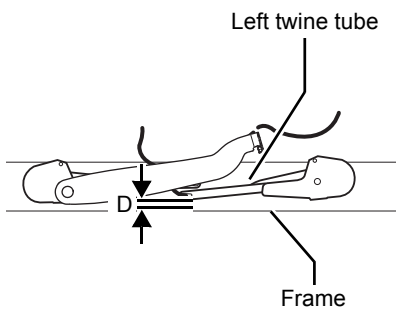
> Push

The mechanism fully retracts.



> Push to put the system in safe mode

The twine tubes are in rest position.



> Measure the distance D between the left twine tube and the frame

> Push to go to calibration value



> Push to enter the measured value of distance D

or



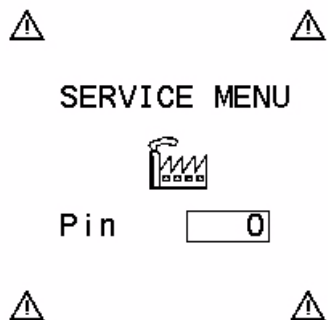
> Push to enter the measured value of distance D








> Push to confirm

## Service menu

The functions in the service menu are functions meant for reading and adjustment especially by an authorized service technician.



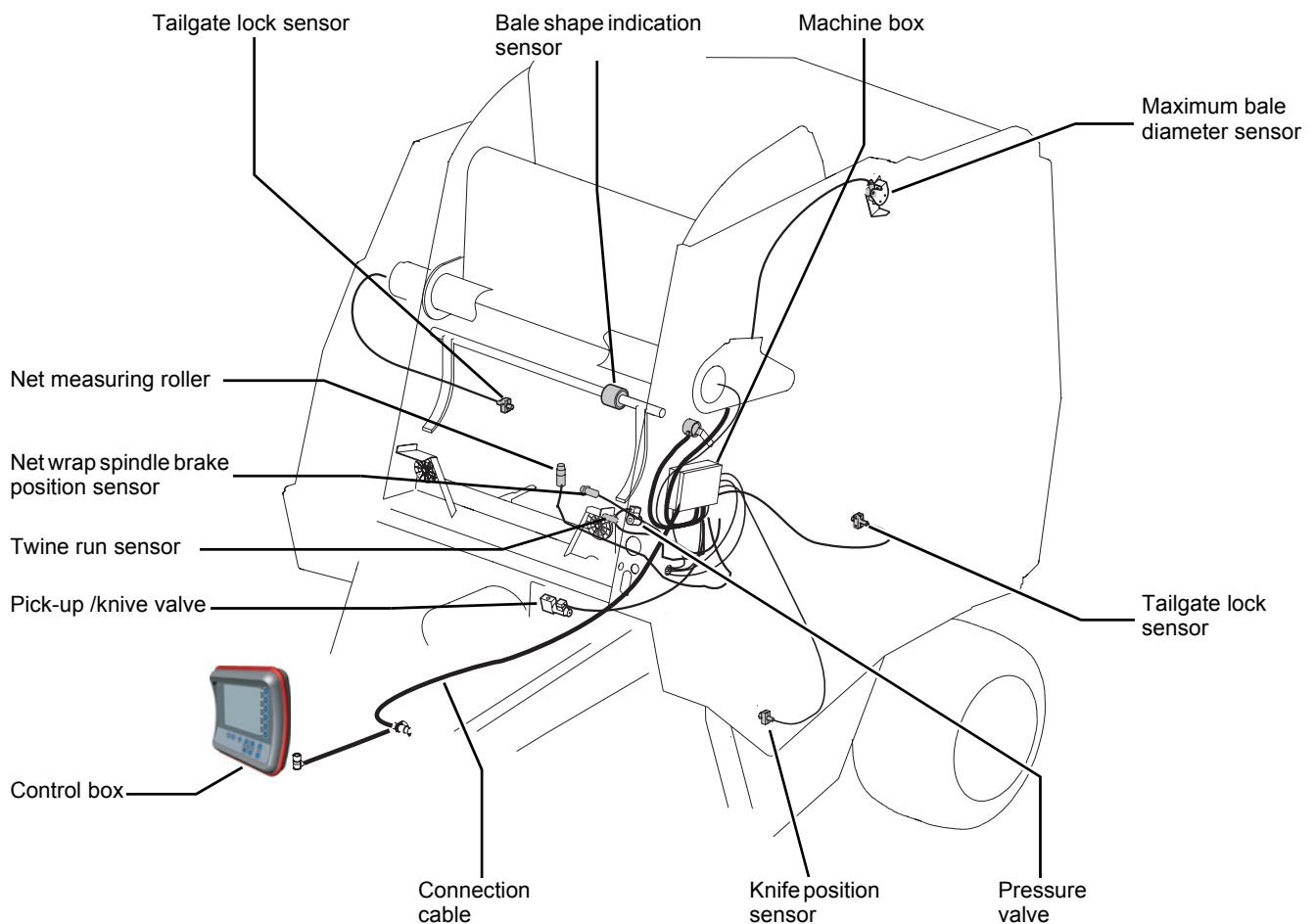
-  > Push to go to the user functions display
-  > Push to enter the display service functions
-  > Push to enter PIN
-  > Push to select the PIN code
-  > Push to confirm

## General

The electronic control system controls and monitors the growing bale, the wrapping and clearing out of the bale. Furthermore the system also provides error indicating functions.

## Overview main parts

The machine is equipped with sensors (proximity switches and rotational sensors).

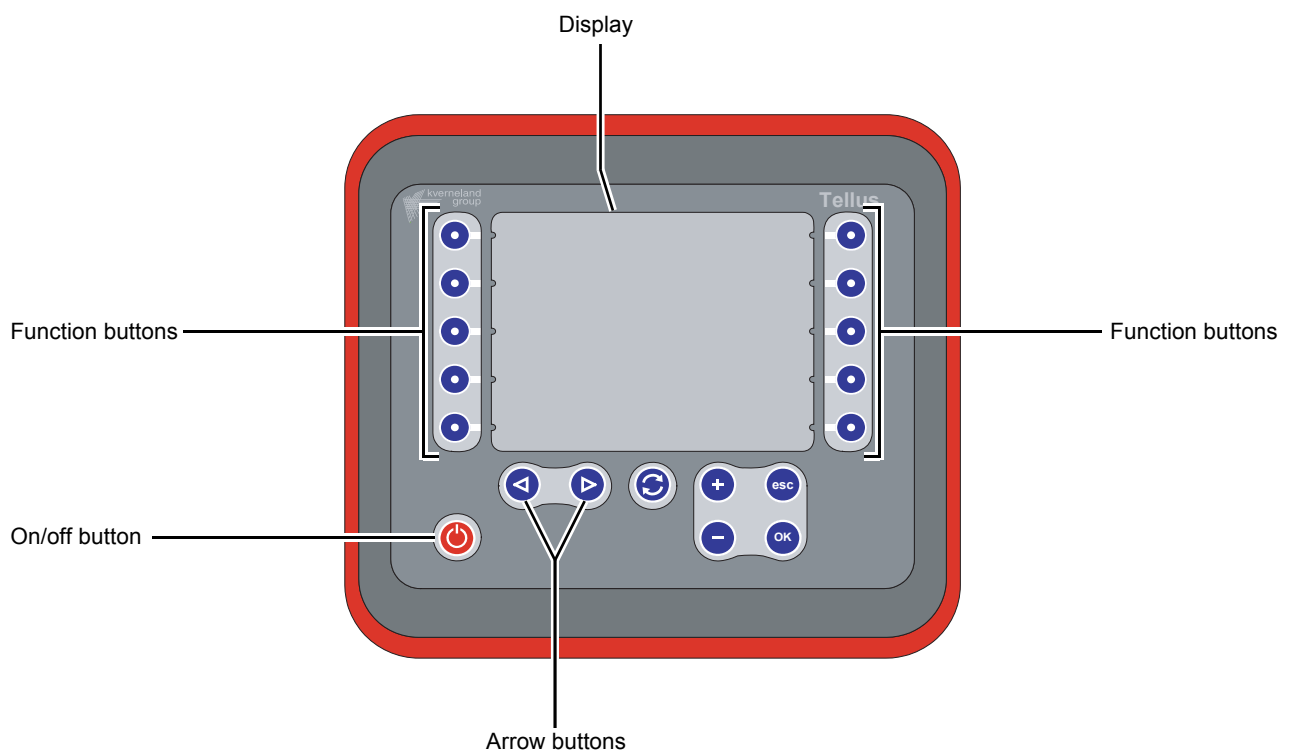


## Control box

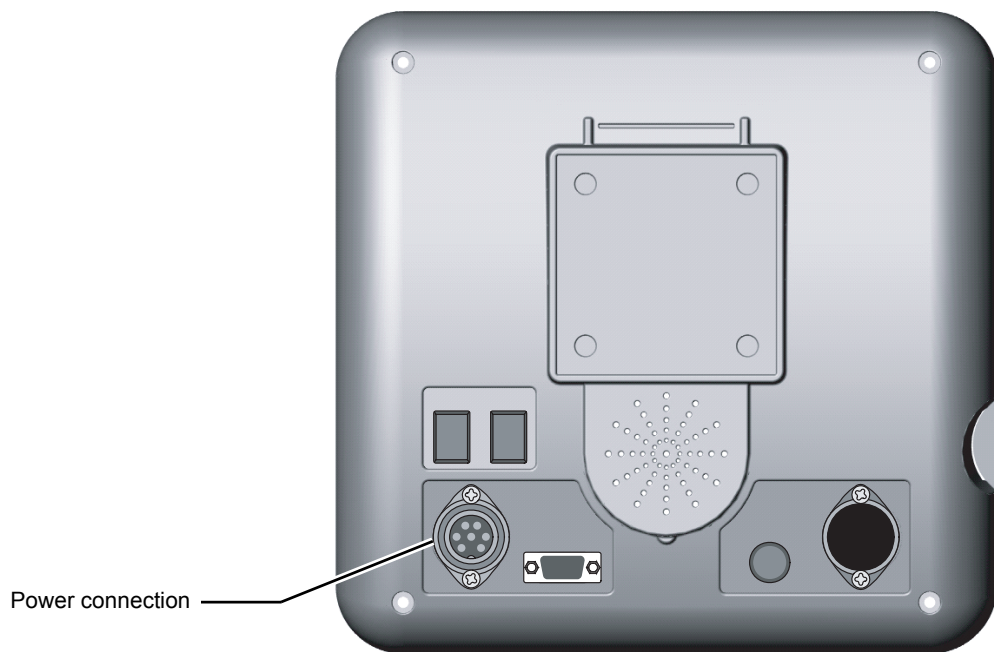
The control box enables supervision of the total baling procedure from the tractor cab. Especially the following functions can be monitored:

- Bale diameter indication
- Bale shape indications
- Drive indications to fill the bale chamber uniformly
- Bale wrapping process (twine tie/net wrap)
- Tailgate open/closed information
- Softcore control [+]
- Bale counters (day counters + total counter)
- Knife position indication of the Opticut cutting system

## Control box front



## Control box back



## Buttons



### Change button

- To change between implements
- To switch between the basic and the terminal display



### Left arrow button

To switch between settings.



### Right arrow button

To switch between settings.



### Increase value button

To increase the selected value.

The new value blinks till confirmation with the Confirm/save button.



### Decrease value button

To decrease the selected value.

The new value blinks till confirmation with the Confirm/save button.



### Leave / interrupt a function



### Confirm / save button

The value blinks no longer after confirming / saving.

In some functions used to move to the next function in series.



### Function button

Depending on the shown graphic in the display:

- Activate a function



### Stop button

To switch the electronic control system on or off.



**Enter the basic display**



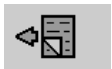
**Enter the left tab**



**Enter the right tab**



**Enter the next function display**



**Enter the previous function display**



**Activate the concerning tab**

The number is shown in the working display.



**Clear all values at once**

## Operation



To switch on the system



> Push

The terminal display appears. The tractor information display appears immediately after the terminal display.

From the terminal display, the following displays can be reached

- basic display
- tractor information display
- information display
- random keys display
- configuration display

> Check and complete the settings in the configuration display firstly

→ Configuration settings, page 145

## Basic display



The basic display shows:

- the amount of bales made
- the selected bale counter
- the pre-set bale diameter
- the selection of twine tie or net wrap
- the selected binding program (twine tie only)
- the amount of net used (net wrap only)
- the number of net wraps (net wrap only)
- the actual time
- system lock

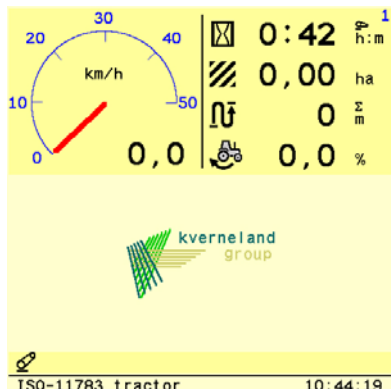


> Push to enter the basic display



> Push once to return to the terminal display

## Tractor information display



The tractor information display shows:

- driving speed of the tractor
- total surface
- area capacity
- wheelslip percentage



> Push to enter the tractor information display



> Push twice to return to the terminal display

## Information display

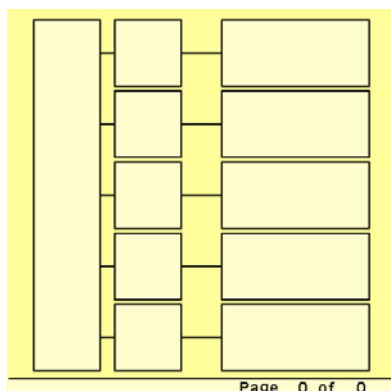


> Push to enter the information display



> Push to return to the terminal display

## Random keys display



Both to the start and stop button, user-defined functions can be added.



> Push to enter the random keys display



> Push to return to the terminal display

## Configuration settings

configuration				
Language:	en			
UTC:	2006	1	24	13 23 56
Local time offset:	0	hr	0	mn
Broadcast Time:	<input checked="" type="checkbox"/>			
Brightness:	100 %			
Default volume:	50 %			
Serial port mode:	Terminal			
Serial port baudrate:	9600			
Serial port checksum:	<input type="checkbox"/>			
Task Control:	<input type="checkbox"/>			
Alarm	Volume	Freq.	ON ms	OFF ms
High:	100	1200	300	200
Medium:	75	1000	550	450
Low:	50	800	800	700



> Push to enter the display configuration settings

The following can be set:

- language
- current date and time (UTC)
- local time offset
- broadcast time; if enabled, the actual time is shown
- display brightness; can be set between dark (0%) and pale (100%)
- default volume; can be set between silent (0%) and loud (100%)
- serial port mode
- serial port baudrate
- serial port checksum
- task control (for optional equipment only)



> Push to select a value to be changed



> Push to set the required value



> Push to confirm

From the display configuration, the following displays can be reached:

- terminal display
- display formats & units



> Push to return to the terminal display

or



> Push to enter the display formats & units

## Display formats & units

formats & units	
Decimal symbol:	, (comma)
Date format:	DDMMYYYY
Time format:	24 hour
Distance unit:	Metric
Area unit:	Metric
Volume unit:	Metric
Mass unit:	Metric
Temperature:	Metric
Pressure unit:	Metric
Force unit:	Metric
Other units:	Metric

The following settings can be adjusted:

- decimal symbol
- date format
- time format
- distance unit
- area unit
- volume unit
- mass unit
- temperature
- pressure unit
- force unit
- other units

The formats and units can be shown in the following standards:

- metric
- imperial
- US

The formats and units can be changed both individual as all at once.

## Change individual formats and units



> Push to select a value to be changed



> Push to set the required value



> Push to confirm



> Push to return to the terminal display


or





> Push to enter the configuration display


## Change all formats and units at once


formats & units	
Decimal symbol:	, (comma)
Date format:	DDMMYYYY
Time format:	24 hour
Distance unit:	Metric
Area unit:	Metric
Volume unit:	Metric
Mass unit:	Metric
Temperature:	Metric
Pressure unit:	Metric
Force unit:	Metric
Other units:	Metric

 > Push to change all units to metric standard  
or

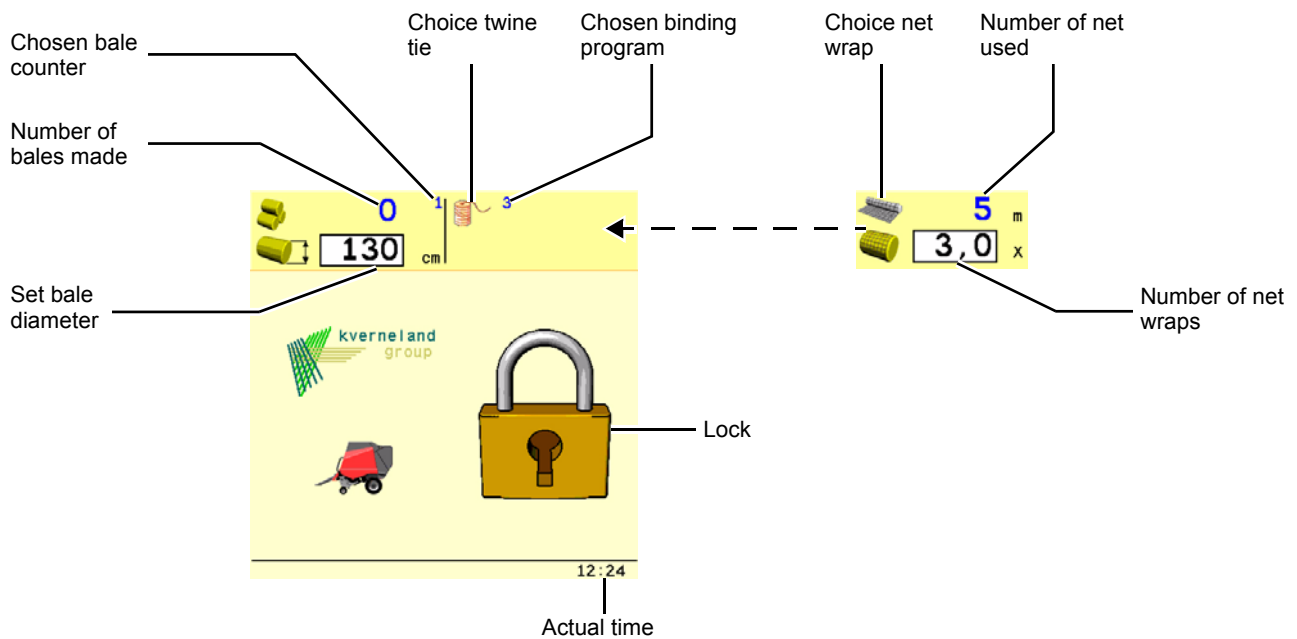
 > push to change all units to imperial standard  
or

 > push to change all units to US standard

 > Push to enter the terminal display  
or

 > Push to enter the display configuration display

## Basic display



The basic display always shows the following information:

- Chosen bale counter
- Number of bales made
- Choice net or twine tie
- Chosen binding program (twine tie only)
- Actual time
- Set bale diameter
- System lock
- The amount of net used (net wrap only)
- The number of net wraps (net wrap only)

From the basic display, the following displays can be entered:

- Operating display
- Settings display
- Bale chamber + mixed chamber settings display
- Bale counter display



> Push to put the system into operation mode  
The operation display shows.

or



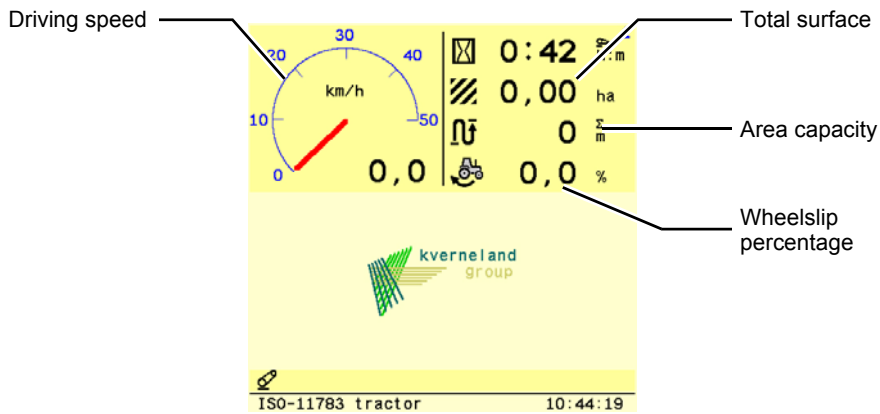
> Push to enter the settings display  
The settings display shows.

or



> Push to enter the bale counter display  
The bale counter display shows.

## Tractor information display



The tractor information display shows:

- driving speed of the tractor
- total surface
- area capacity
- wheelslip percentage



> Push to enter the tractor information display



> Push to enter the entire field counters

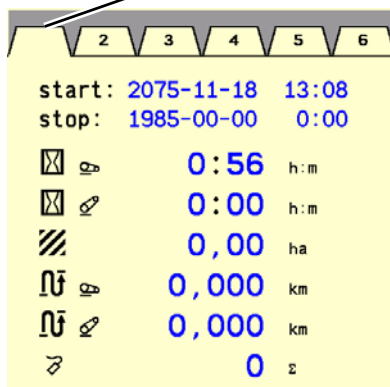
or



> Push twice to return to the terminal display

## Field counters

Active field counter



Field counters can be used to store work statistics, e.g. per field or per customer.

A field counter shows:

- start date and time
- stop date and time
- effective time worked
- ineffective time not worked
- area done
- effective distance
- ineffective distance

There are 20 different field counters available.  
The active field counter is shown on the operating display.

From the tractor information display:



> Push to enter the entire field counters



> Push to select a counter to adjust  
The counter chosen will blink.



> Push to set the required value



> Push to confirm



> Push to activate a certain field counter



> Push to reset the chosen field counter to zero



> Push to go to the next field counter  
or



> Push to return to the previous field counter



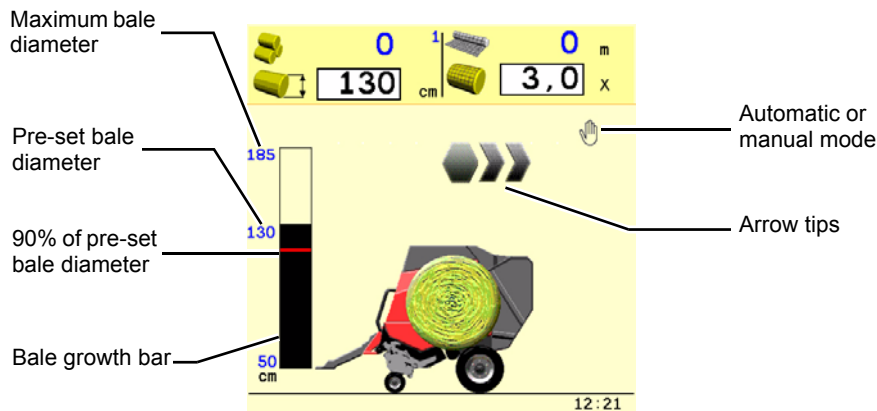
> Push to return to the tractor information display

or



> Push to return to the basic display

## Operating display



The operating display monitors the baling process. The following information is shown:

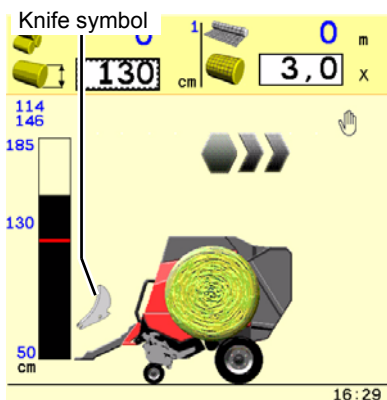
- arrow tips; display the difference between left and right side diameter. Four arrow tips indicate that the maximum difference has been reached.
- automatic (AUTO) or manual mode (hand symbol)
- knives active (knife symbol) or inactive
- bale growth bar
- horizontal line shows 90% of the pre-set bale diameter

## Settings

The following settings / functions can be done from the operating display:

- choice net or twine binding
- clearing used net metres indication
- choice automatic or manual mode
- choice pick-up or knives (in combination with the concerned tractor hydraulic valve)
- manually extending or intending of the net actuator
- manually extending or intending of the twine tubes
- bale diameter and mixed chamber [+] settings
- choice twine tie program
- start net wrapping of twine tying

## Choice knives or pick-up



> Push to select pick-up or cutting system

The chosen function is framed and highlighted now. Standard setting is pick-up.

> Open both hydraulic valves

> Move the knives hydraulically in or out

As soon as the knives are in cutting position, a knife symbol appears in the display.

## Manual or automatic mode

The system starts in automatic mode. Automatic mode is standard setting. Manual mode can be used:

- to complete a field
- during twine or net installation
- to create a user-defined twine pattern

The complete baling cycle is automatic except the wrapping.



> Push to choose manual mode

or



> Push to choose automatic mode

Automatic mode is standard setting.

## Manual net binding



> Push to choose net wrap

Depending on the setting, the button shows net or twine tie.



> Push to start net binding

If necessary



> push to extend the actuator

or



> push to intend the actuator

## Clearing used net indication



> Push to clear the used net metres indication

## Manual twine binding



> Push to choose the desired twine tie program



> Push to choose twine tie

Depending on the setting, the button shows net or twine tie.



> Push to start twine binding

If necessary



> push to extend the twine tubes

or



> push to intend the twine tubes

## Bale diameter and mixed chamber settings



> Push to enter the display bale diameter and mixed chamber settings



**144** cm Outer bale diameter



**61** cm Soft core diameter  
[+]



**152** bar Outer bale pressure  
[+]



**70** bar Soft core pressure  
[+]

A proportional pressure valve enables adjustment of both the outside and the core pressure.

The maximum outer bale diameter depends on the machine type; 160 or 185 cm.

The minimum soft core diameter is 60 cm (0 = no soft core).

The maximum value equals the total bale diameter. The entire bale is soft than.



> Push to select a value to be changed



> Push to set the required value

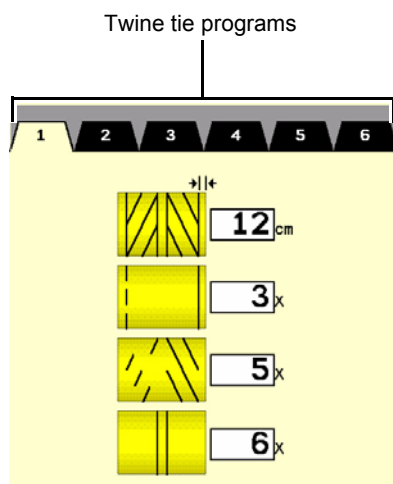



> Push to confirm



> Push to enter the basic display

## Twine tie settings





 > Push, the display twine tie settings appears



Adjustable are:


- Distance from lateral wraps to the side of the bale in cm
- Number of wraps near the bale sides (starting wraps)
- Number of intermediate wraps
- Number of final wraps


The standard twine tie programmes can be changed upon desire. Programme 6 is for flax.


The number of wraps does not depend upon the bale diameter. At the start of wrapping the control system automatically calculates the quantity taking into account the actual bale diameter. Only the pto speed influences the real number of wraps: it is based upon a pto speed of 540 rpm.

  > Push to select a value to be changed

  > Push to set the desired value

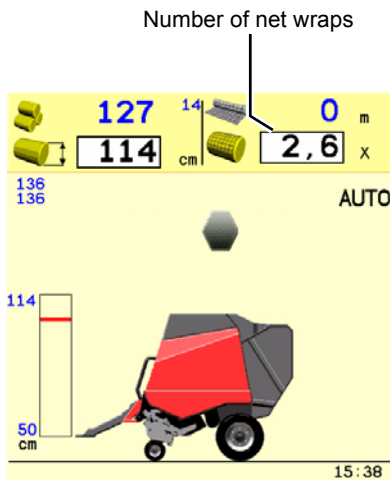
 > Push to confirm

 > Push to activate the concerning tab  
The number is shown in the working display.

 > Push to reset the all values to zero

## Net wrap settings

### Changing the number of wraps



> Push to select the set net wraps



> Push to set the number of net wraps



> Push to confirm

## Driving

- > Adapt the driving direction when the third arrow tip shows  
As soon as the fourth arrow tip shows, the buzzer sounds.
- > Immediately change the driving direction

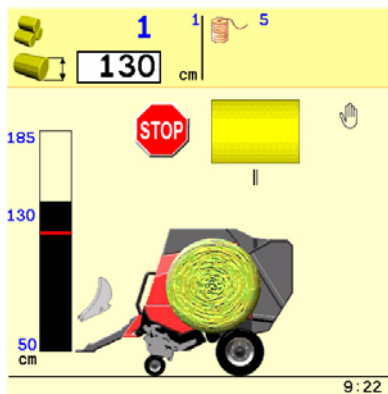
The arrow tips are replaced by a single complete arrow if the bale shape indication

- does not function correctly (at both sides in the bale chamber) or
  - has not been installed
- > Drive with an adequate forward speed (4 - 15 km/h) over the wind-row
  - > Steer left and right in accordance with the indication of the bale shape indication system

The buzzer sounds when 90% of the pre-set bale diameter has been reached.

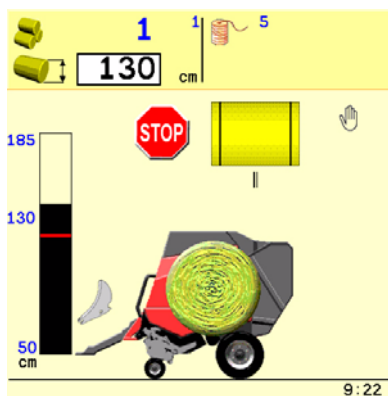
Upon reaching the pre-set bale diameter (100%), the buzzer sounds again, with different sound.

## Twine tie process

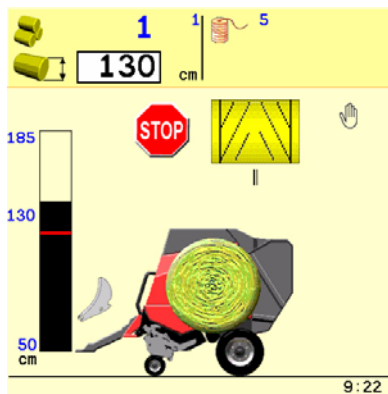


If twine tying commences this display shows.

- > Stop immediately when this display appears
- The twine tubes now move to their starting position.

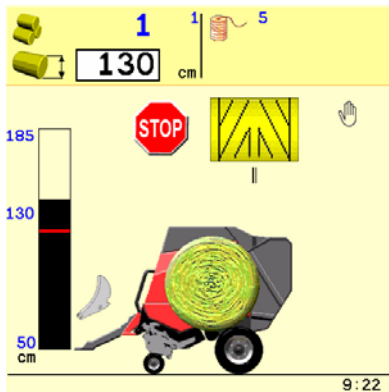


As soon as the twine tubes have reached their lateral position this graphic appears.



The intermediate wraps are being made.

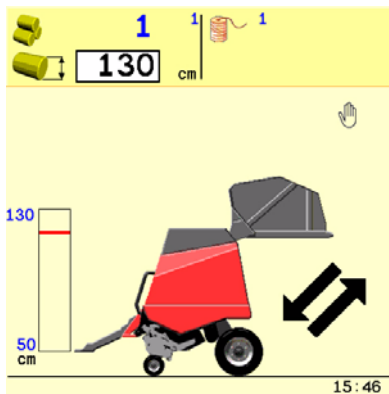
The final wraps are being made.



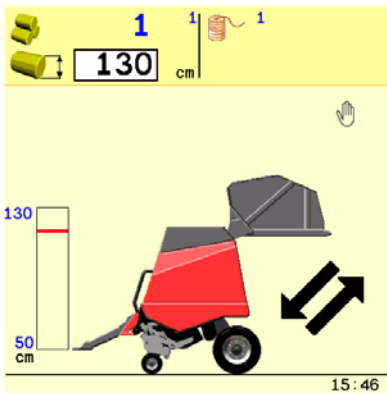
When twine tie has been finished display shows.  
Now the tailgate can be opened.

> Open tailgate, using the hydraulic valve control lever in the tractor cab

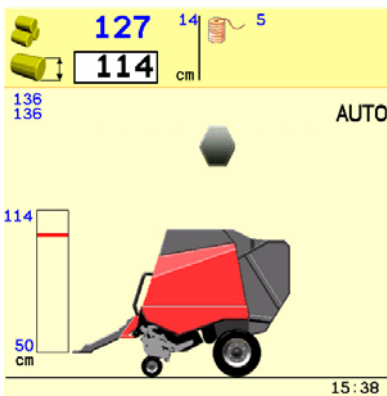
The bale is cleared out of the bale chamber.



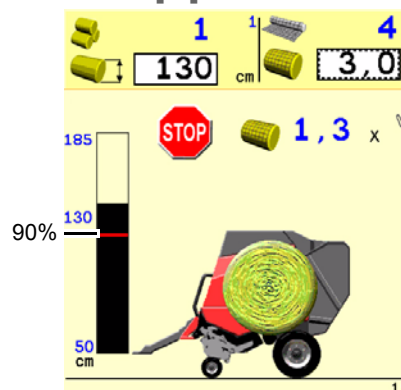
> Close the tailgate



The working display re-appears.



## Net wrap process



Upon reaching the desired bale diameter (100%) the buzzer sounds.  
 > Stop immediately

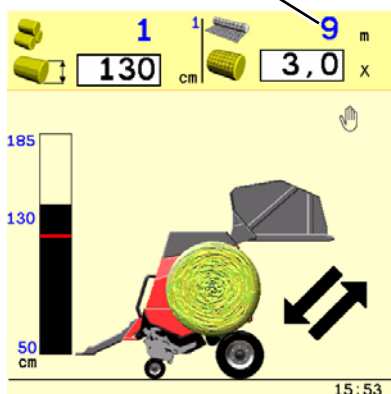
During net wrap cycle the actual number of net wraps is indicated in the center of the display. The total used net quantity since clearing the counter is shown at the right side of the display.

After completion of the net wrap the tailgate open display appears.

> Open the tailgate

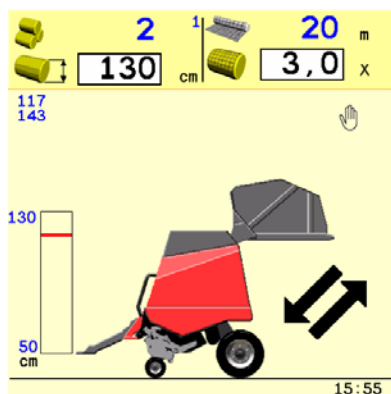
The bale is cleared out of the bale chamber.

Number of net used

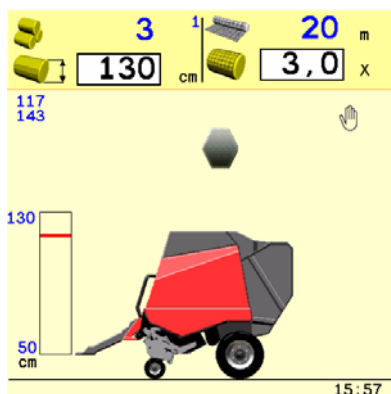


When the bale is cleared out of the bale chamber the tailgate close display appears.

> Close the tailgate

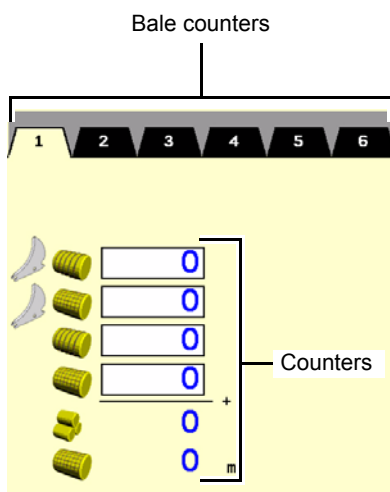
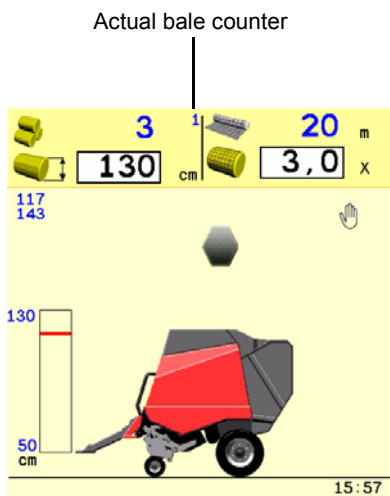



When the tailgate is closed, the working display re-appears.



## Bale counters



The active bale counter is shown in the operating display.






 > Push to enter the entire bale counters  
40 bale counters are available.

The display bale counters consists of different types of counters:

- bales wrapped with twine, inclusive Opticut
- bales wrapped with net, inclusive Opticut
- bales wrapped with twine, exclusive Opticut
- bales wrapped with net, exclusive Opticut
- one total bale counter
- the total number of net used

  > Push to select a counter to adjust  
The counter chosen will blink.

  > Push to set the required value

 > Push to confirm



> Push to reset all counters to zero



> Push to activate a certain bale counter  
The number is shown in the working display.



> Push to go to the next bale counter  
or



> Push to return to the previous bale counter

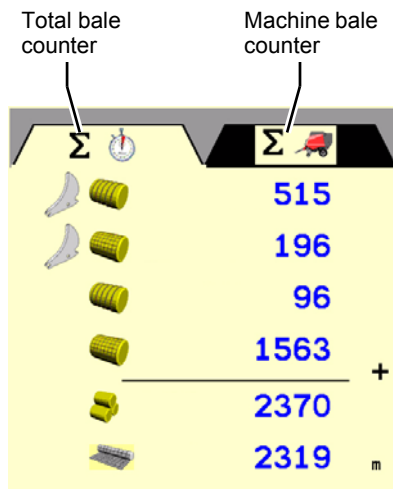


> Push to go back to the basic display  
or



> Push to return to the terminal display

## Total machine bale counter



The total machine bale counter display shows the general total number of bales made with the machine, split up into:

- bales wrapped with twine, inclusive Opticut
- bales wrapped with net, inclusive Opticut
- bales wrapped with twine, exclusive Opticut
- bales wrapped with net, exclusive Opticut
- one total bale counter
- the total number of net used

In the basic display:



> Push to enter the total bale counter



> Push to go to the total machine bale counter



> Push to go to the next total machine bale counter  
or



> Push to return to the previous total machine bale counter

The total bale counter can be reset.



> Push to reset all values to zero

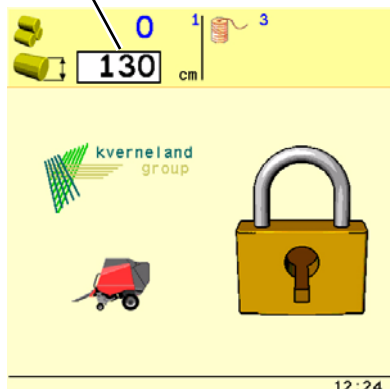







> Push to go back to the basic display

## Work functions

### Bale diameter settings

Bale diameter



-   > Push to select a value to be changed
-   > Push to set the desired value
-  > Push to confirm

## User functions

The following user functions can be set:

- bale shape indication sensitivity
- twine end distance
- net wrap delay
- bale diameter correction

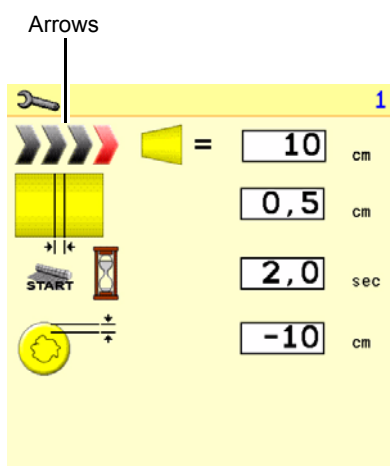


> Push to enter the user functions



> Push to go to the dealer menu display

## Bale shape indication



The bale shape indication indicates the difference between the left and right side bale diameter.

The value in the display indicates the difference in cm between left and right side bale diameter. This value is represented by four arrow tips. One arrow tip is the fourth part of that value.

The bale shape indication can be set between 5 and 20 cm. 10 cm is factory setting.



> Push to select a value to be changed



> Push to increase the bale shape indication value  
or

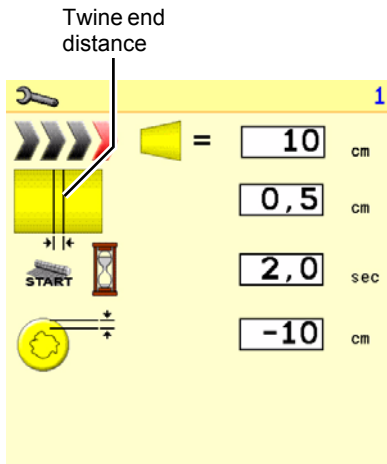


> Push to decrease the bale shape indication value



> Push to confirm

## Twine end distance



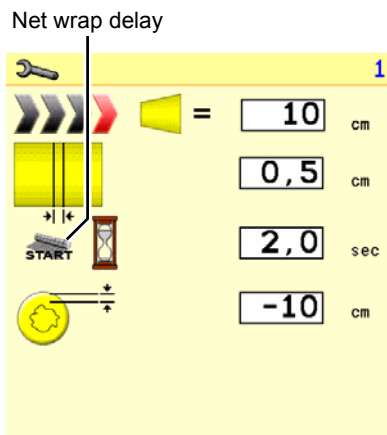
The twine end distance indicates set-off between the final twine end wraps.

Standard setting is 0.7 cm. A higher value means a larger distance between the final wraps.

The value in the display indicates the distance in cm between the final twine end wraps.

- > Push to select a value to be changed
- > Push to increase the twine end distance
- or
- > Push to decrease the twine end distance
- > Push to confirm

## Net wrap delay



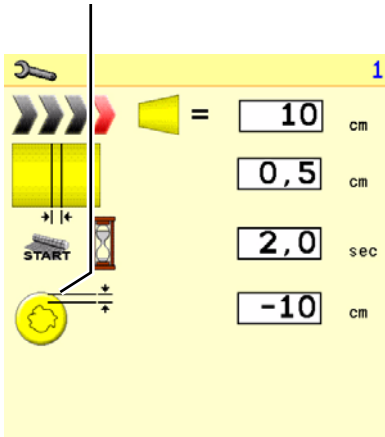
In Automatic mode, it is possible to delay the net wrap start when the bale diameter has reached its preset value.

Standard setting is 0. A higher value means: the Stop sign will appear earlier than the moment the actuator starts.

- > Push to select a value to be changed
- > Push to increase the net wrap delay time
- or
- > Push to decrease the net wrap delay time
- > Push to confirm

## Bale diameter correction

Bale diameter correction



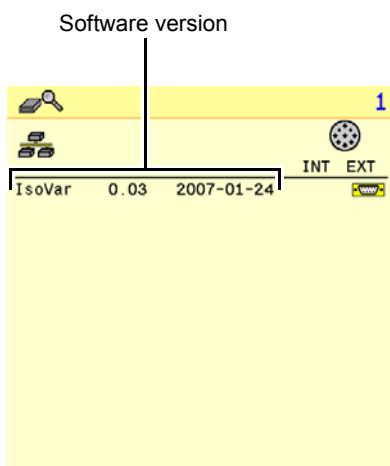
- ◀ ▶ > Push to select a value to be changed
- + > Push to increase the bale diameter  
or
- > Push to decrease the bale diameter
- OK > Push to confirm

In case the real bale diameter differs from the pre-set bale diameter, the bale diameter has to be corrected.  
The bale diameter can be adjusted between +10 and -10 cm.

## Diagnostics

The information in the diagnostics displays is important when contacting your dealer or service manager.

### Software version



> Push to enter the user functions



> Push to enter the display software version of the machine

This information is important when contacting your dealer or service manager.

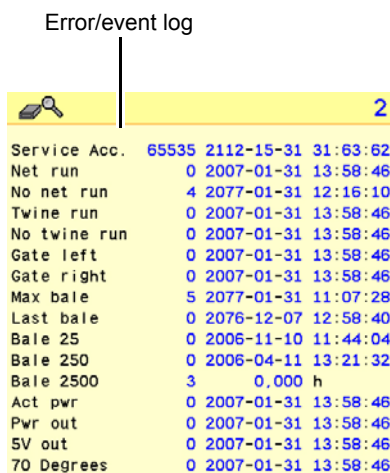
> Write down the software version at the backside of the first page



> Push to enter the error/event log display

### Error/event log display


The information in the error/event log display is important when contacting your dealer or service manager.



> Push to go to the extended user functions

## Extended user functions

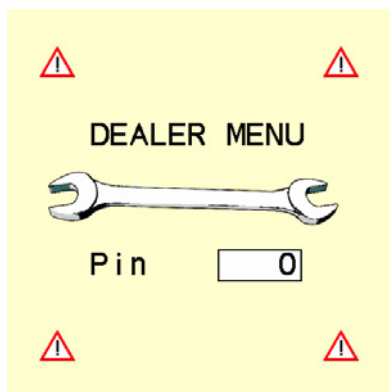
Extended user functions are functions meant for reading and adjustment especially by an authorized service technician.


 <span style="float: right;">3</span>	
● PCB ID: 0	IsoVar 0.03
ACT-PWR 12.1 V	5V-OUT 5.0 V
12V-OUT 11.8 V	
Bale grow 644 cnt	133 cm
L/R Indicator 350 cnt	T= 36 °
Net ppm 0	0 ppm
Twine mtr pls 0	0 rpm
OC Knife pos. 0	
Gate left/right 1	1
Max. bale 1	
Net wrap 0	
Twine pulse 1 0	0 rpm
Twine pulse 2 0	0 rpm







> Push to enter the basic display


## Dealer menu



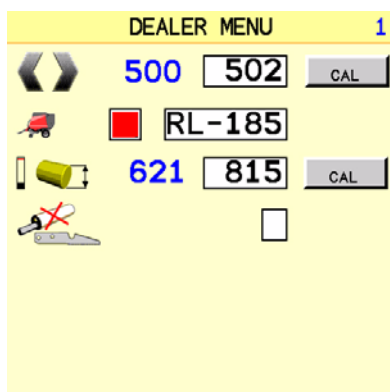
 > Push to go to the settings display

  > Push to enter PIN

  > Push to select the PIN code; enter 5

 > Push to confirm

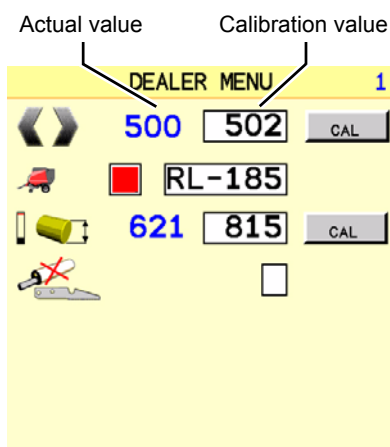
## Dealer menu 1



The following functions can be set:



- bale shape sensor calibration
- machine type (RK-160 or RL-185) and colour (red or green)
- bale growth sensor calibration
- tailgate lock sensor switch off


## Bale shape sensor calibration



To compensate the left and right bale shape sensor, they must be calibrated with respect to each other.

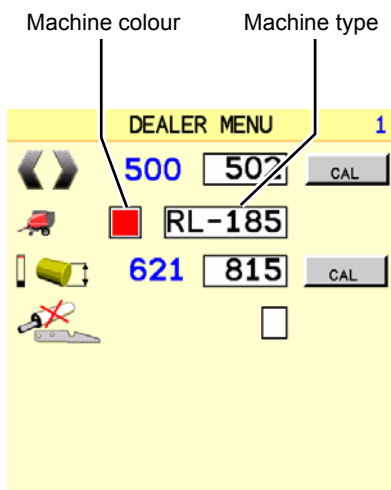
- > Ensure the bale chamber is empty
- > Ensure there is no pollution underneath both bale shape sensors

  > Push to go to CAL

 > Push to confirm

The shown actual calibration value (e.g. 525) is now entered and confirmed. 512 is the default value.

## Machine type / colour



The following machine types can be set:

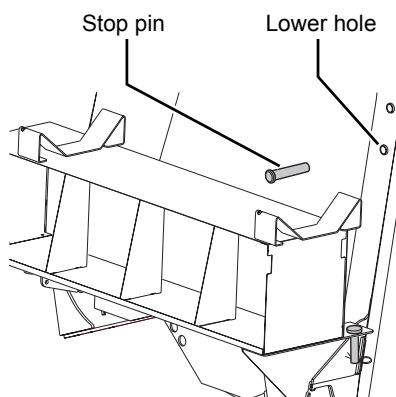
- RK-160
- RL-185

RK and RL indicate the type, 160 and 185 the maximum bale diameter in cm.

The machine colour can be set to red or green.

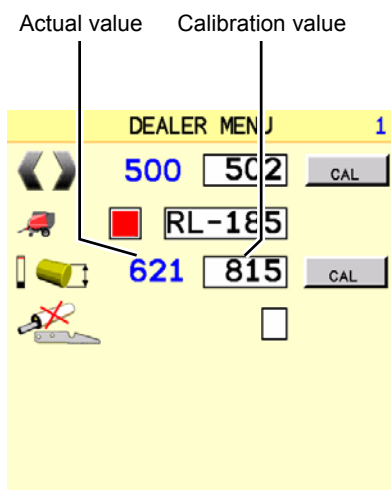
- < > > Push to set the machine type and the colour
- + > Push to increase the value  
or
- > Push to decrease the value
- OK > Push to confirm

## Bale growth sensor calibration



- > Open the tailgate hydraulically
- > Place the pin in the lower hole in the lateral wall
- > Lower the tailgate pressureless (floating position) until the tensioner arm rests on the pin

This is the basic position for calibration.



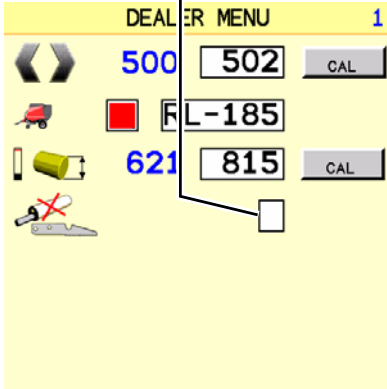
- < > > Push to go to CAL
- + > Push to increase the value  
or
- > Push to decrease the value
- OK > Push to confirm

The calibration value is now entered and confirmed. 692 is the default value.







- > Open tailgate hydraulically
- > Remove pin from the lower hole in the lateral wall
- > Close the tailgate completely

## Tailgate lock sensor switch off

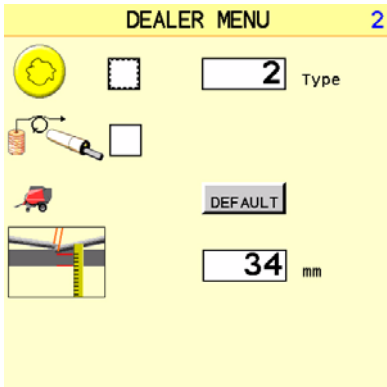
Tailgate lock sensor switch off



In case one tailgate lock sensor is faulty, this sensor can be switched off.

-   > Push to select a value to be changed
-  > Push to select L, R or to leave the field blank  
or
-  > Push to select L, R or to leave the field blank
-  > Push to confirm
-  > Push to go to the dealer menu 2

## Dealer menu 2

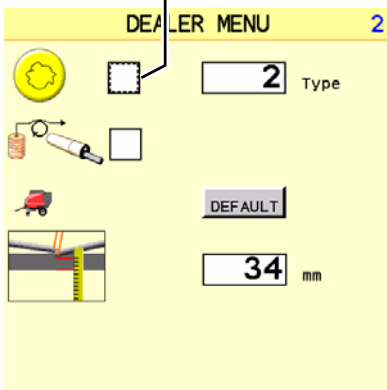







The following functions can be set:

- mixed chamber control [+] on or off
- valve type
- twine run control [+] on or off
- default all settings
- twine tubes calibration

## Mixed chamber control [+]

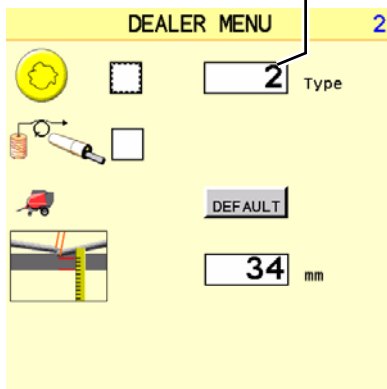
Mixed chamber control



-   > Push to go to mixed chamber control
-  > Push to switch on mixed chamber control  
or
-  > Push to switch off mixed chamber control
-  > Push to confirm
- > Enter the valve type  
→ Valve type, page 175

## Valve type

Valve type

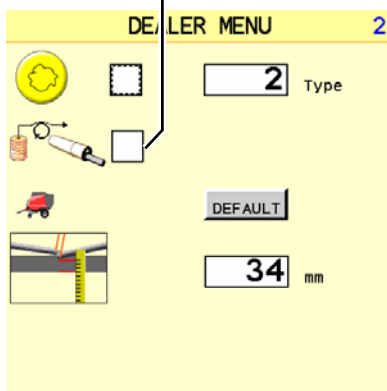


Only possible when mixed chamber control is switched on.  
→ Mixed chamber control [+], page 174

- > Read out the value on the valve
- > Push to go to the valve type
- > Push to enter the read-out value
- or
- > Push to enter the read-out value
- > Push to confirm

## Twine run control [+]

Twine run control

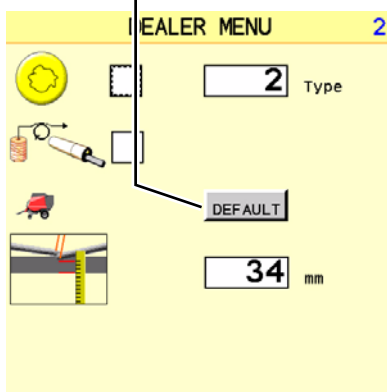


Twine run control checks if the twine is running or not.

- > Push to go to twine run control
- > Push to switch on twine run control
- or
- > Push to switch off twine run control
- > Push to confirm

## System default

Default button



Default re-initiation resets the electronic control system to the default factory settings.

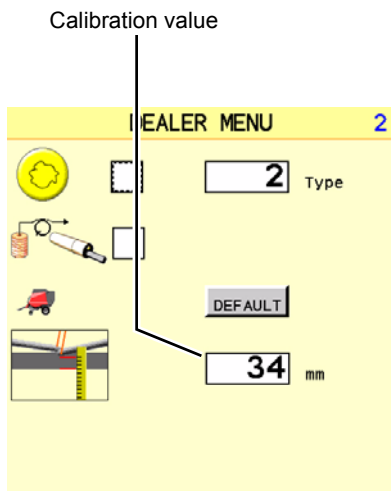
- > Push to reset the electronic control system to the factory setting

After default re-initiation:

- > calibrate the bale shape sensor  
→ Bale shape sensor calibration, page 172
- > calibrate the bale growth sensor  
→ Bale growth sensor calibration, page 173

## Twine tubes calibration

The twine tubes in rest position must have a certain distance to the frame of the twine binding device. Default distance is 34 mm.



> Push



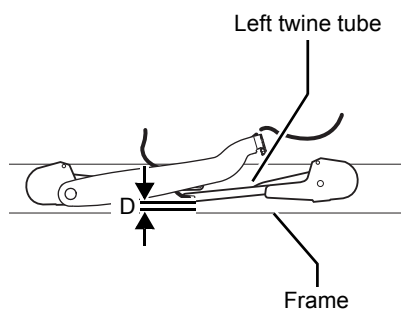
> Push

The mechanism fully retracts.



> Push to put the system in safe mode

The twine tubes are in rest position.



> Measure the distance D between the left twine tube and the frame

> Push to go to calibration value



> Push to enter the measured value of distance D

or



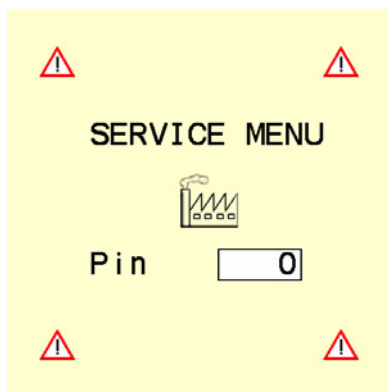
> Push to enter the measured value of distance D



> Push to confirm

## Service menu

The functions in the service menu are functions meant for reading and adjustment especially by an authorized service technician.



> Push to go to the service menu



> Push to return to the basic display  
→ Basic display, page 108



> Push to enter PIN



> Push to select the PIN code



> Push to confirm

# Cleaning and caring

## Safety

For all cleaning and caring activities applies:



### **Do not penetrate bearings and hydraulic parts**

Be careful when cleaning with a high-pressure cleaner. Bearings, sealings and bolted joints are not waterproof. To avoid machine damages never penetrate bearings, sealings and bolted joints with water.

### **Do not clean bearings, electronic and hydraulic parts with high pressure**

Do not clean bearings, electronic and hydraulic parts with a high-pressure cleaner. Bright metal parts will get degreased and start rusting. After every cleaning grease the bearings and grease bright metal parts.

## Cleaning

After every time of using the machine:

- > Empty and clean the machine of all accumulated crop

Cleaning can be done with low pressure with the high-pressure cleaner. Do not clean bearings, electronic and hydraulic parts while cleaning with the high-pressure cleaner.

## After cleaning

After cleaning with the high-pressure cleaner

- > grease all bearings

## Caring

When you observe the rules below, you will have a fully operational machine at the start of the next season:

- > Protect all bright metal parts with an oil film. Only use authorized biological oil, like rape oil
- > Repaint any paint damages

## Safety



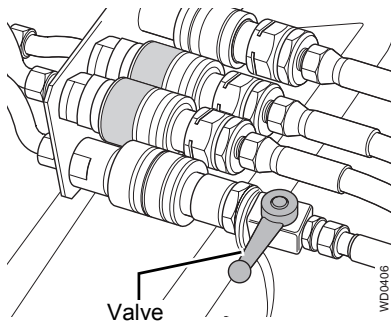
### Obey the safety instructions

Obey the safety instructions at the execution of all work. Ignoring the safety information can lead to serious or deadly injuries.

### Machine is no toy

Store the machine in an area away from human activity. Never allow children to play on or around the stored machine. Metal edges and parts of the machine can lead to serious injuries.

## General



Prior to detaching the machine from the tractor

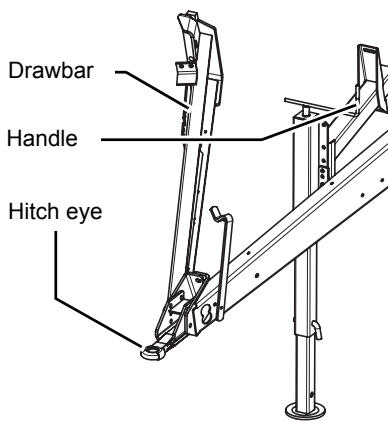
- > Close both valves

This in order to avoid hydraulic oil leaking from the cutting system cylinder to the pick-up cylinder.

# Storing the machine

## Unhitching and securing of the machine

- > Place the machine on a dry and stable ground
  - > Secure the tractor from rolling away
  - > Tighten the machine parking brake (if applicable)
  - > Put the wheel chocks [+] in place
  - > Place the pto drive shaft on the support provided
  - > Disconnect the hydraulic connections and store them in the support at the drawbar
  - > Disconnect the pneumatic connections [+]
  - > Disconnect the road lighting connection and store it in the support at the drawbar
  - > Disconnect the electric cables of the electronic control system
- 
- > Remove the spring clip, lower the support jack fully and mount the spring clip
  - > Unhitch the machine from the tractor



## After the season

After the season and at longer storage periods, the following work must be performed:

- Release the pick-up springs
  - Lower the pick-up
  - Remove all twine and net
  - Thoroughly clean the machine
- Cleaning, page 178
- Check all bolted joints and torque them
  - Lubricate the machine
  - Check the tyre pressure
  - Store the control box in a dry and dust free room free from rodents, insects and martens

## Safety

For all maintenance work applies:



### **Take care of the safety information**

Definitely take care of the safety information during all work. In case of negligence of the safety information serious or deadly accidents can occur.

### **Conditions for maintenance work**

Only carry out maintenance work if you do dispose of the necessary professional knowledge and of the suitable tools. Missing professional knowledge or unsuitable tools can cause accidents or damages.

### **Use original parts**

Use original parts for safety relevant components. Dimensions, strength, and material quality must be guaranteed. Building in of not original parts the warranty reduces to nil and void.

### **Protect the machine against unintentional use**

Carry out general repairs, maintenance and repair of function troubles at the hitched machine, in principle with switched off pto, switched off engine and removed ignition key! At unintended taking into use serious accidents can be caused.

## Protection measures in contact with oil or lubricants

Additives in oil and lubricants can have, under circumstances, harmful effects to health. Because an indication according to the danger order is not necessary, therefore in principle please pay attention to:



### **Avoid skin contact**

Avoid skin contact with these oil and lubricants. Protect your skin by skin protection creams or oil-resistant gloves. Skin contact can lead to skin diseases.

### **Do not use oil for cleaning**

Never use oil and lubricants for hand cleaning! Chips and waste in this oil and lubricants can extra lead to injuries.

### **Change dirty clothing**

Change extremely filthy oiled clothing as soon as possible. Oil can cause health injuries.

- TIP**
- Waste oil must be collected and recycled
  - in case skin diseases by oil or lubricants occur, immediately visit a doctor

# Maintenance

## General

This information is related to all maintenance work. At all maintenance work the machine must be secured in working position. In case the transport position is necessary for maintenance, you will find suitable tips to the maintenance work.

## Information of directions

Information of directions (left, right, front, rear, above, below) are to be seen in the direction of travel.

The direction of rotation has been defined as follows:

Direction	Description
Left	counterclockwards
Right	clockwards
Front	in the direction of travel
Rear	in the direction of travel
Rotation around a horizontal axis	as seen at right angles to the direction of travel from left to right
Rotation around a vertical axis	as seen from top to bottom
Rotation from bolts, nuts, etcetera	always as seen from the operating side

## Maintenance intervals



Before doing any maintenance, the following must be obtained:

- Empty the bale chamber before doing any repair work
- Clean the machine before doing any repair work
- Electronic control system must be switched off
- Never work on the machine while it is running
- Pto must be switched off
- Tractor engine must be stopped; ignition key must be removed
- Clean the machine with an air jet

	At beginning of the season	After the first 5 working hours	After 10 working hours	Every 10 working hours	Every 50 working hours	Every 3,000 bales	Every 10,000 bales	Grease	Oil	Check	Change	Clean	Sharpen	Page
<b>Attaching elements</b>														
Screwing bolts tighter		•												188
Special torques														188
<b>Lubrication</b>														
Pto drive shaft				•				•						192
Cam type slip clutch (OC + R)				•				•						193
<b>Pick-up/rotor</b>														
Pick-up overload clutch OC + R				•				•						193
Pick-up overload clutch WPU				•				•						193
Rotor cutting unit				•				•						193
Pick-up tines	•		•							•	•			193
Pick-up drive chains lubrication				•					•					194
Pick-up drive chains tension - OC + Rotor										•				194
Chain tensioners pick-up - WPU	•									•				194
<b>Opticut maintenance</b>														
Knife sharpening				•									•	197
<b>Bale chamber</b>														
Filter hydraulic system	•						•						•	198
Rollers		•		•						•			•	198
Tailgate locking pin				•					•					199
Tailgate lock hinge				•					•					199
Tailgate hinge				•				•						199
Top of tailgate cylinder				•				•						199
Attachment tailgate cylinder				•					•					200
Bottom end of tensioning cylinders				•					•					200
Lubrication of the drive roller				•				•						200
Lubrication of the extra drive roller [+]				•				•						201
Scraper adjustment				•						•				201
Bale chamber drive chains				•	•				•	•				202
Chain lubrication system [+]				•					•					195

# Maintenance

	At beginning of the season	After the first 5 working hours	After 10 working hours	Every 10 working hours	Every 50 working hours	Every 3,000 bales	Every 10,000 bales	Grease	Oil	Check	Change	Clean	Sharpen	Page
<b>Tension arm</b>														
Alignment of the tension arm	•						•			•	•			203
Hinge nuts tension arm										•	•			203
Spring tension of the tension arm				•						•	•			204
Lubrication tension arm				•					•					204
<b>Gearbox</b>														
Checking the oil level	•				•					•				205
Filling the gearbox					•		•		•		•			205
<b>Mechanical netbinder settings</b>														
Net roll pre-stress adjustment						•				•				206
Net brake tension						•				•				206
Clamping force stretch rollers						•				•				207
Top of the actuator				•					•	•				208
Bottom of the actuator				•					•	•				208
Knife protection plate						•				•	•			208
Knife catch				•					•	•		•		209
Duckbill braking catch				•					•	•				209
Knife assembly				•					•	•				209
Pressure rod				•					•	•				210
<b>Mechanical twine tie settings</b>														
Twine knife				•						•				211
Twine knife arm				•					•	•				212
Twine brake - twine boxes				•						•				212
Twine brake - twine tubes				•						•				212
Twine tubes position				•						•				213
Rubber stripper				•						•				214
Steel cable tension				•						•				215
Twine tubes synchronisation				•					•	•				215
<b>Belts and belt alignment</b>														
Adjustment of the guide roller											•			216
Endless belts (depending on machine version)										•	•			217
Maintenance of belts and lacings			•		•		•				•			217
Belt exchange											•			218
<b>Wheels/axle</b>														

		At beginning of the season	After the first 5 working hours	After 10 working hours	Every 10 working hours	Every 50 working hours	Every 3,000 bales	Every 10,000 bales	Grease	Oil	Check	Change	Clean	Sharpen	Page
	Tightness of wheel nuts			•		•					•	•			223
	Tyre pressure				•						•	•			224
	Wheels				•						•	•			224
	Bleeding hydraulic braking circuit				•						•	•			225
	Adjustment brake shoes (hydraulic/pneumatic brake)				•						•	•			225
<b>Drawbar</b>															
	Hitch ring				•					•					226
	Support jack				•					•					226
<b>Sensors</b>															
	Maximum bale diameter sensor						•				•				228
	Bale growth sensor						•				•				227
	Bale shape indication sensor						•				•				227
	Knife position sensor						•				•				228
	Tailgate lock sensor						•				•				229
	Actuator brake position sensor						•				•				229
	Net metering roller sensor						•				•				229
<b>Diagrams and schemes</b>															
	Hydraulic diagram														230
	Pneumatic brake [+]														231
	Hydraulic brake [+]														231
	Overview - bale chamber hydraulic system														232
	Drive schematic - bale chamber drive														233
	Overview rollers and scrapers														234

## Attaching elements

### Screwing bolts tighter

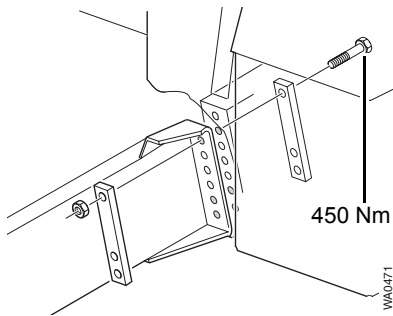
All bolts and nuts must be screwed tighter:

- after the first 5 working hours,
- depending on the usage frequency of the machine,
- at least once per season

### Special torques

Take care of the special torques for the following screwed joints:

- 450 Nm drawbar bolts



## Tightening torques

All screwed joints on this machine must be torqued in accordance with the values given in this table below unless indicated otherwise. On this machine, 8.8 is both standard and minimum quality used. If not indicated anyhow use this quality for determination of torque (in most cases the quality can be found on the head of the respective bolt).

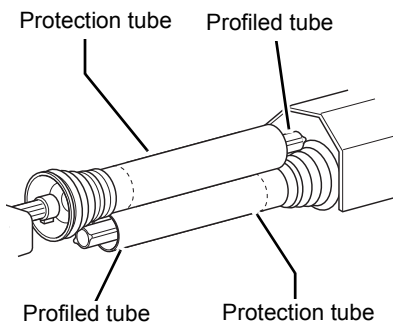
Thread	Torque value			Size of jaw*
	8.8	10.9	12.9	
	Nm			mm
M3	1.3	1.8	2.1	6
M4	2.9	4.1	1.9	7
M5	5.7	8.1	9.7	8
M6	9.9	14	17	10
M8	24	34	41	13
M10	48	68	81	17 (15)
M12	85	120	145	19 (17)
M14	135	190	225	22 (19)
M16	210	290	350	24 (22)
M18	290	400	480	27
M20	400	570	680	30
M22	550	770	920	32
M24	700	980	1180	36
M27	1040	1460	1750	41
M30	1410	1980	2350	46
M33	1910	2700	3200	50
M36	2450	2546	3063	55
M39	3200	4500	5400	60

\* Values in brackets = size of jaw of lock bolts and nuts with toothed flange are given in brackets if different from standard.

- TIP**
- The listed values are applicable for dry or slightly oiled joints
  - Do not use plated bolts/screws/nuts without grease
  - When a stiff grease is applied decrease the given value by 10%
  - In case lock nuts, lock screws or lock bolts are used increase the given value by 10%
  - Torque value of wheel nuts shall be 270 Nm

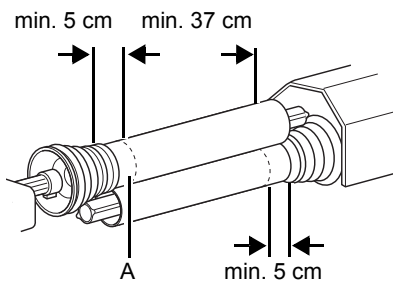
# Maintenance

## Pto drive shaft



The length of the pto drive shaft has to be adapted. This depends on the distance between tractor and machine.

## Checking length of the pto drive shaft



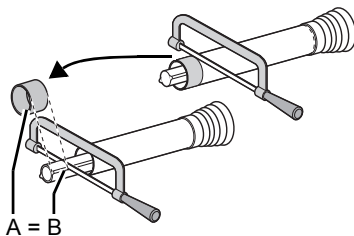
### Correct length

To long a pto drive shaft may seriously damage drive bearings of both tractor and machine. Which is beyond any warranty.

Prior to coupling the pto drive shaft check the length:

- > Correctly line-up tractor and machine
- > Ensure the tractor pto is clean and greased
- > Fit both pto drive shaft halves (not connected!)
- > Hold both pto drive shaft halves together, ensure
  - the protection tube shall be at least 5 cm shorter
  - the overlap of the profiled drive tubes shall be at least 37 cm

## Shortening the pto drive shaft



WD0410



- > Exactly determine the correct length of the shaft
- > Shorten the protection tubes
- > Shorten the profiled drive tubes

The length of both cut-off ends shall be identical.

- > Clean cut ends of both protection tubes and profile tubes to ensure they are all smooth and clean

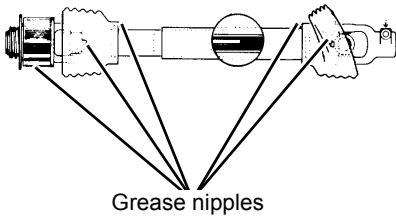
At the tractor side the pto drive shaft has a wide angle joint enabling an angle of up to 80°. Ensure the joints are not destroyed due to bottoming of the shaft halves in sharp turns.

## Lubrication

All grease nipples must be greased after every cleaning with a high-pressure cleaner.

## Pto drive shaft

An own operation manual of the manufacturer has been added to every pto drive shaft. This contains detailed information to the relevant pto drive shaft model.



### Check protective parts

All protective parts of the pto drive shaft must be checked visually on wear and damage. Exchange defective protective parts. An unprotected pto drive shaft or damaged protective parts can cause serious injuries during use.

- > Disconnect the pto shaft
- > Grease the grease nipples every 20 working hours
- > Check every 10 hours that the tubes of pto shaft are sliding correctly
- > Largely grease the 2 joints of pto shaft before commissioning the machine

# Maintenance

## General

### Lubrication marks

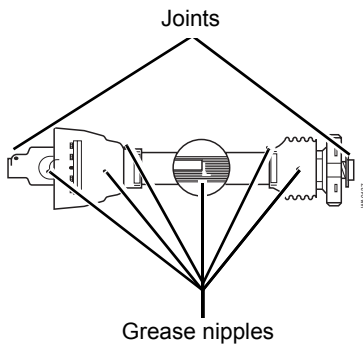
Grease / oil	Specification
Oil	Class NLGI2, K2k in accordance with DIN51825
Grease	Multipurpose

### Drive - lubrication

The machine is powered by the tractor through pto and pto drive shaft. Grease the tubes of the pto drive shaft

- before using the machine
- every 10 hours

### Pto drive shaft

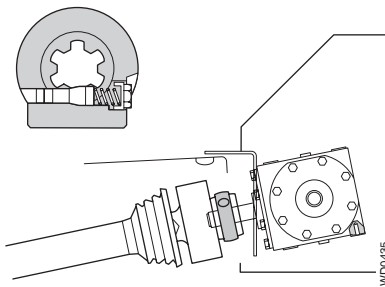


The tube of the pto drive shaft is equipped with grease nipples.

- > Disconnect the pto drive shaft and grease the grease nipples
- > Largely grease the 2 joints of pto drive shaft before commissioning the machine
- > Check every 10 hours that the tubes of pto drive shaft are sliding correctly

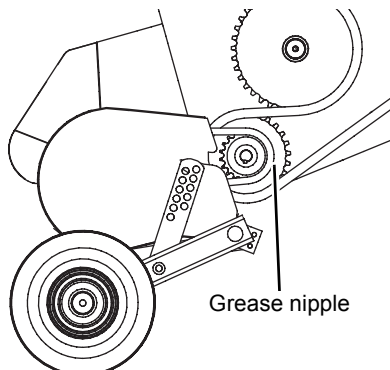
### Cam type slip clutch (OC + R)

Can not be adjusted.



## Pick-up/rotor

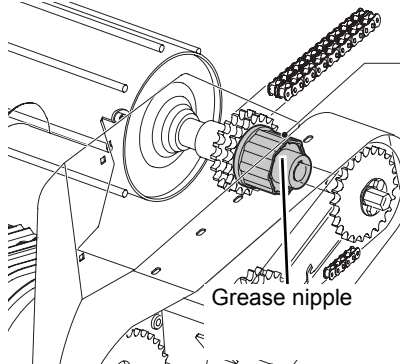
### Pick-up overload clutch OC + R



Raise the pick-up in the maximum position.

- > Grease the grease nipple

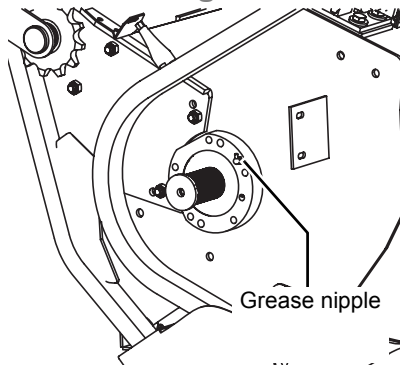
### Pick-up overload clutch WPU



Raise the pick-up in the maximum position.

- > Grease the grease nipple

### Rotor cutting unit



- > Grease the grease nipple at both sides of the machine every 10 working hours

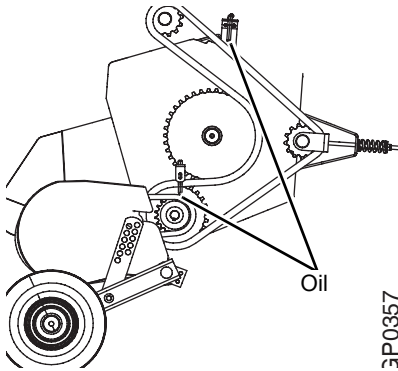
### Pick-up tines

The pick-up tines are subject to wear.

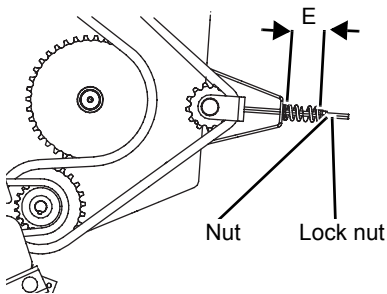
- > Check the condition and completeness of the pick-up tines
  - after every working day
  - at the beginning of the season
- > Replace them if necessary

# Maintenance

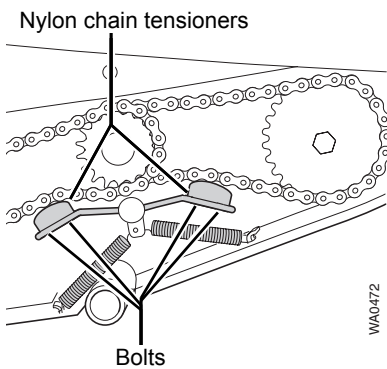
## Pick-up drive chains lubrication



## Pick-up drive chains tension - OC + Rotor



## Chain tensioners pick-up - WPU



- > Untension the chain tensioner
- > Oil the chain
- > Retension the chain tensioner
- Pick-up drive chains tension - OC + Rotor, page 194

The automatic chain tensioner of the pick-up drive is at the left side of the machine.

Pick-up drive:

- 1x left side: compression spring (1")
- 1x left side: automatic tensioner (3/4")

Correct the chain tension as follows:

- > Loosen lock nut
- > Loosen or tighten nut until a spring length E of 140 mm has been reached
- > Tighten lock nut
  
- > Check for wear on the tensioner pads on a regular base

Except regular lubrication the pick-up does not require special maintenance.

At the beginning of the season:

- > Check the nylon chain tensioners for excessive wear

The nylon chain tensioners as follows:

- > Loosen bolts
- > Exchange nylon chain tensioner
- > Tighten bolts

## Chain lubrication system [+]

When the automatic chain lubrication system is installed the chains are lubricated automatically.

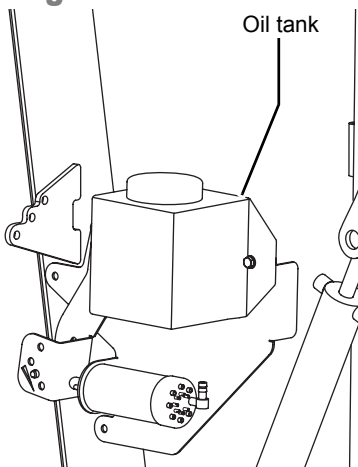
If not installed, the chains of the bale chamber must be lubricated with a chain lubricant once a day or after 200 bales, whatever occurs first. The chain lubrication system can be adjusted in two ways:

- total amount
- per lubrication tube

## Lubrication marks

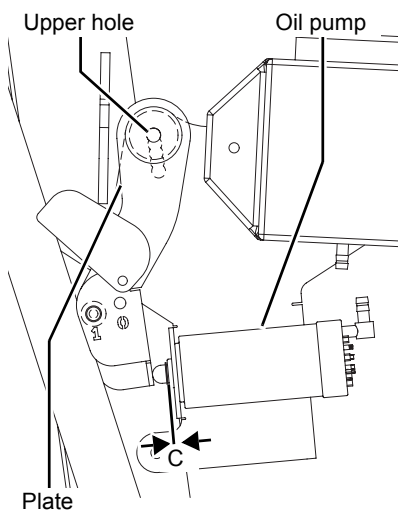
Oil	Specification
Oil	Bio degradable 10W30 - 15W40

## Filling



- > Open the right lateral door
- > Fill the oil tank with maximum 3.2 liter oil
- > Close the right lateral door

## Oil pump adjustment



The plate must be adjusted so, that the oil pump uses its full stroke during working.

Before adjusting, the plate must be in the upper hole.

- > Use the hydraulic tractor valve to close the tailgate

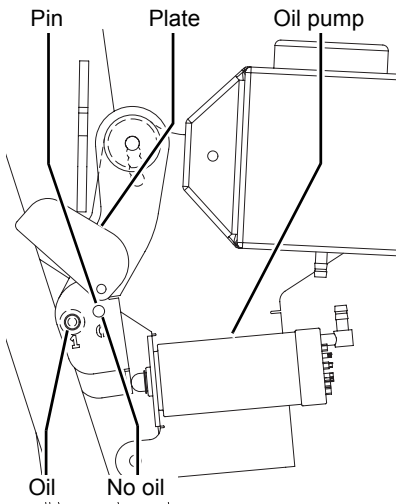
Distance C between the circlip and the oil pump housing must be 1 mm.

If distance C is not 1 mm

- > place the plate in the next lower hole so long, until the correct distance C is reached

# Maintenance

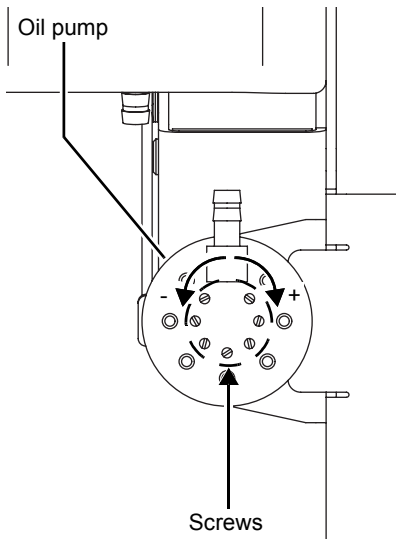
## General adjustment



The general setting is done by inserting the pin in a hole of the pattern.

- > Move up the plate
- > Remove the pin
- > Move and place the pin
  - to 1: switch on the oil pump
  - to 2: switch off the oil pump
- > Move down the plate fully

## Lubrication tube adjustment



The specific setting is done per lubrication tube, at the pump.

- > Use a screwdriver to turn the individual screw at the oil pump to adjust the volume of oil per lubrication tube
  - turning clockwards: increase the volume
  - turning counterclockwards: decrease the volume

## Opticut maintenance



Never try to push crop into or pull crop out of a running machine. Severe personal injuries can occur.

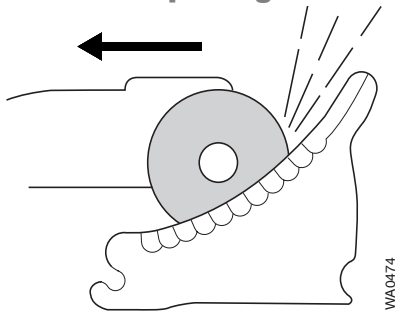
### **Wear safety gloves**

Knives are very sharp. Always wear safety gloves when handling knives. Not wearing safety gloves can cause serious injuries.

If the cutting system blocks

- > Shut off the pto
- > Stop the tractor engine
- > Remove the ignition key
- > Wait until all parts of the machine have come to stand still
- > Now the blockage can be removed safely

## Knife sharpening



### **Wear protective goggles**

Always wear protective goggles when sharpening the knives. Flying around sparks can cause serious injuries.

Sharpen the knives every 10 working hours at the smooth side. Never sharpen the undulated side of the cutting edge because of excessive wear.

The sharpness of the knives must be checked daily.

Proceed as follows:

- > Remove the knife
  - Removing the knives, page 60
- > Clamp the knife in the vice

Ensure the knife is not getting hot during sharpening, since that may weaken the steel! It is better to grind more frequently than a lot at once.

- > Sharpen the knife on the smooth side, using a grinder
- > Reinstall the knife
  - Installing the knives, page 62

# Maintenance

## Bale chamber

### Hydraulic system

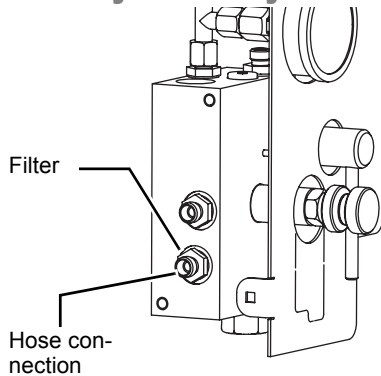


A hydraulic system is under high pressure. Never attempt to find or even to stop a hydraulic leakage with your hands. High pressure fluid easily penetrates skin and clothes, causing severe injuries: visit a doctor immediately when injured.

- Take care the hydraulic system stays clean.
- Cautiously (dis)connect the quick couplers. Dust, sand, metallic particles and other contamination destroy a hydraulic system; trapped air disables the control.

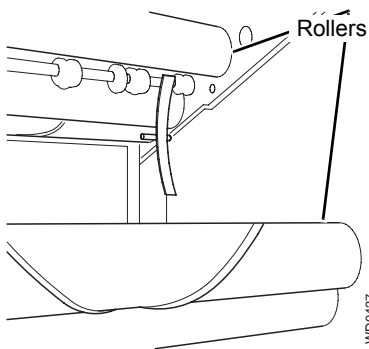
Renew worn, cut, abraded, squeezed or otherwise damaged/defective hydraulic lines as well as aged hoses.

### Filter hydraulic system



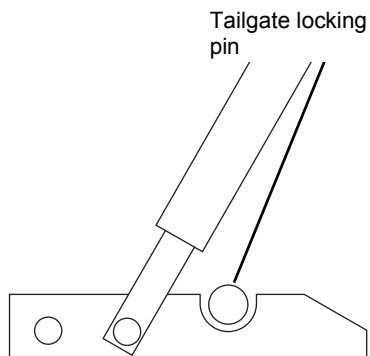
- > Clean the filter, depending on whatever occurs first
  - every 10,000 bales or
  - once per season
- > Remove the hose connection
- > Use a screwdriver to remove the filter
- > Mount the hose connection

### Rollers



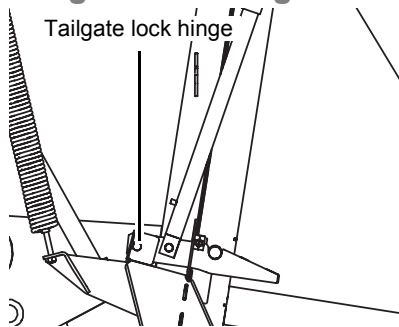
- > Daily check the (tension) roller bearing sealings for crop accumulation
- > Clean the bearing area as required
- > Check the rollers for easy and smooth (no sounds) rotation
- > Replace roller or bearing as required

## Tailgate locking pin



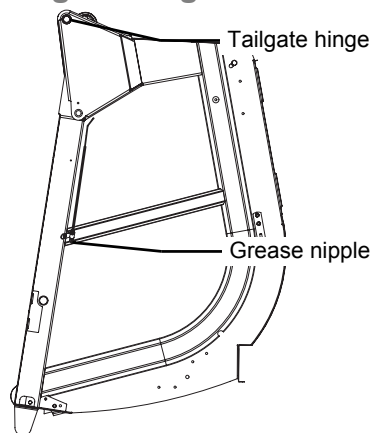
- > Oil tailgate locking pins at both sides every 10 working hours

## Tailgate lock hinge



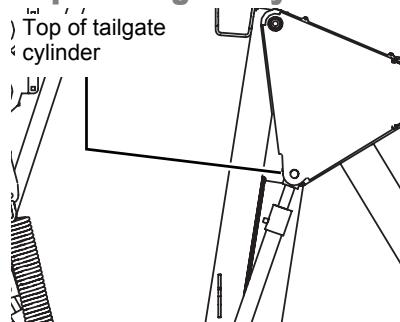
- > Oil the tailgate lock hinge at both sides of the machine every 10 working hours

## Tailgate hinge



- > Grease the tailgate hinge at both sides of the machine every 10 working hours

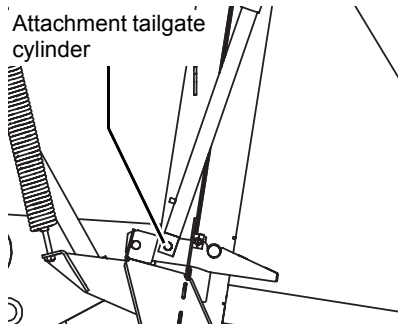
## Top of tailgate cylinder



- > Grease the top of the tailgate cylinder at both sides of the machine every 10 working hours

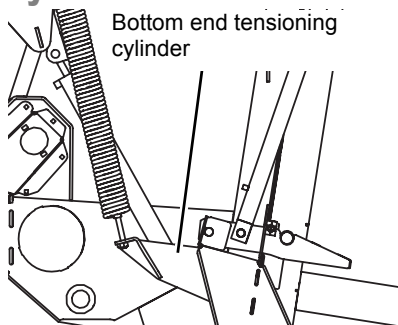
# Maintenance

## Attachment tailgate cylinder



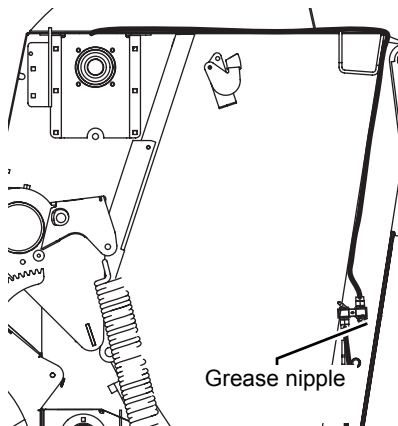
- > Oil the attachment of the tailgate cylinder at both sides of the machine every 10 working hours

## Bottom end of tensioning cylinders



- > Oil the bottom end of tensioning cylinders at both sides of the machine every 10 working hours

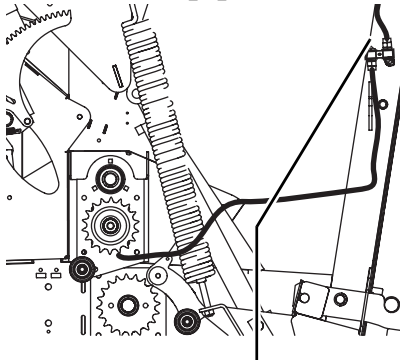
## Lubrication of the drive roller



Never lubricate on a running machine!

- > Grease the grease nipple at both sides of the machine every 10 working hours

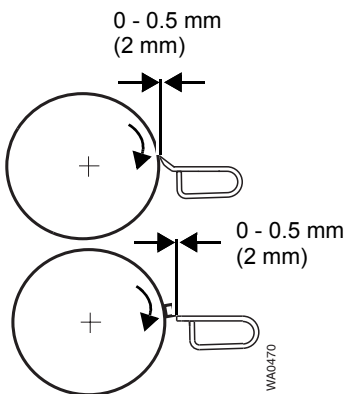
## Lubrication of the extra drive roller [+]



Grease nipple

- > Grease the grease nipple at both sides of the machine every 10 working hours

## Scraper adjustment



When dry crop is baled, all scrapers shall be set to a distance of 2 mm. This in order to avoid fire.

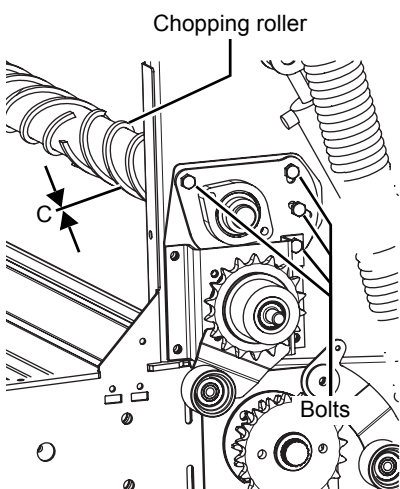
Standard settings:

- scraper for dry crop: 2 mm
- scraper for silage: 0 - 0.5 mm

If crop accumulates at the scraper decrease distance between scraper and roller. The scraper shall just touch.

**TIP** It is recommended to have a fire extinguisher at hand in the tractor with a capacity of at least 5 kg. Have the fire extinguisher checked every year by the approved authority.

## Chopping roller adjustment



The standard setting of the chopping roller must be 2 mm, measured nearby the side wall.

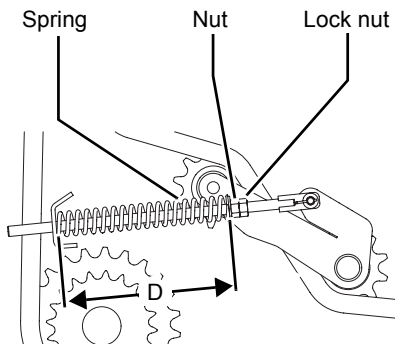
The adjustment must be done for both left and right side.

- > Loosen the 4 bolts one turn
- > Move the chopping roller up or down to adjust the chopping roller
- > Tighten the 4 bolts

# Maintenance

## Bale chamber drive chains

### Standard version



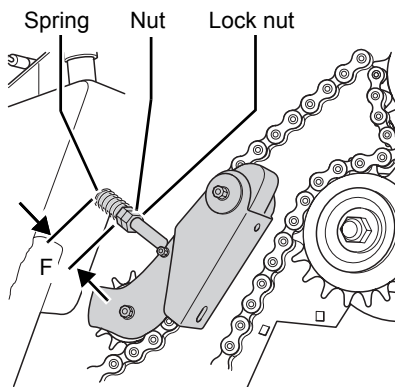
Two drive chains on the right side of the machine are tensioned by spring loaded tensioners.

- > Check the spring length every 1,000 bales

The length D of the spring must be  $265 \text{ mm} \pm 10 \text{ mm}$ .

- > Loosen lock nut
- > Tighten nut: spring length decreases
- or
- > Loosen nut: spring length increases
- > Tighten lock nut

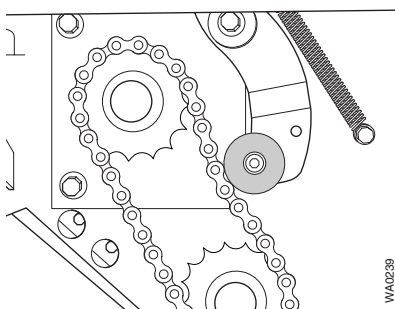
### Spring starter roller drive



The length F of the spring must be 55 mm.

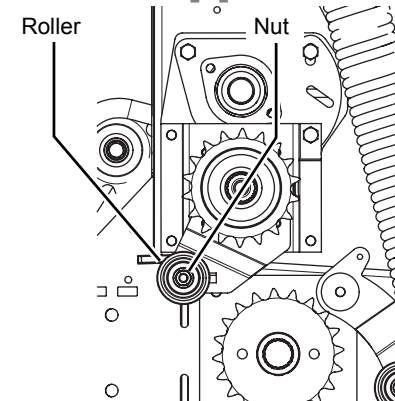
- > Loosen lock nut
- > Tighten nut: spring length decreases
- or
- > Loosen nut: spring length increases
- > Tighten lock nut

### Chain on the left side



Can not be retensioned.

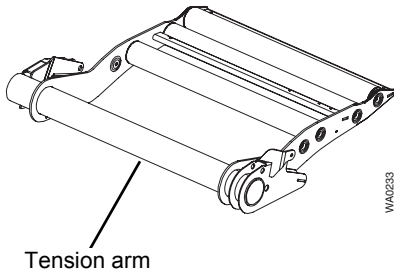
### Extra drive [+]



The extra drive [+] chain on the left side of the machine is tensioned by a roller.

- > Untighten the nut
- > Move the roller to tension the chain
- > Tighten the nut

## Tension arm

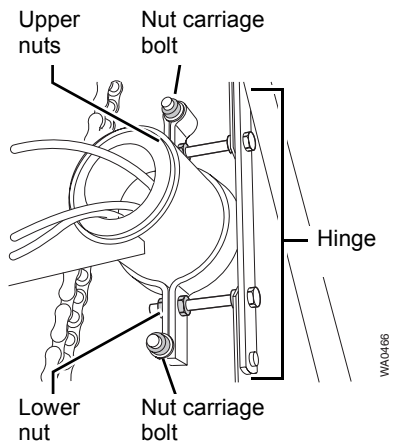


The tension arm:

- builds up the starting chamber
- determines the belt tension

The set-up ensures the most effective build up of the bale pressure with help of the hydraulic tension cylinder and a spring.

## Alignment of the tension arm



The tension arm can be aligned by adjusting the tension arm hinge at the right side of the machine.

The tension arm has to be adjusted to ensure the distance between tension arm and machine wall is identical at either side.

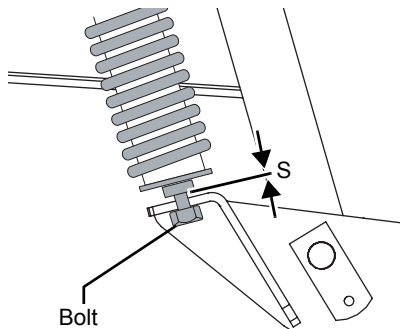
- > Open tailgate hydraulically
- > Close safety valve in front of the machine
- > Slacken nuts of both carriage bolts
- > Slacken upper nuts
- > Slacken lower nut
- > Align tension arm (use shims as required)
- > Retighten nuts of both carriage bolts
- > Retighten lower nuts
- > Retighten upper nuts
- > Open safety valve in front of the machine
- > Close tailgate hydraulically

## Hinge nuts tension arm

The tension arm hinge nuts must be checked and tightened as required after 100 bales after aligning the tension arm.

# Maintenance

## Spring tension of the tension arm

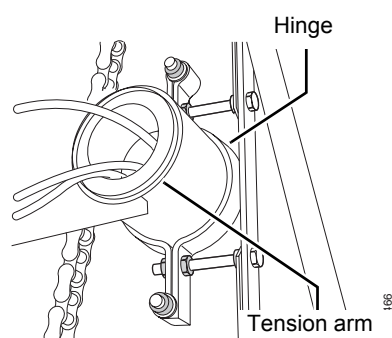


The spring tension of the tension arm can be adjusted using bolt. Distance S must be 5 mm.

The tension arm must be in the bottom position.

- > Turn bolt until distance S is 5 mm

## Lubrication tension arm



- > Oil the tension arm at both sides of the machine between tension arm and hinge every 10 working hours

## Gearbox

The machine contains one gearbox. This gearbox is filled with oil. The oil level must be checked

- after the first 50 working hours
- once a year
- in case of excessive oil loss

The oil must be changed

- after the first 50 working hours
- once per 2 years or
- after 20,000 bales
- in case of excessive oil loss

## Contents

Gearbox	Content (l)	Specification
	2.3	B 80W90



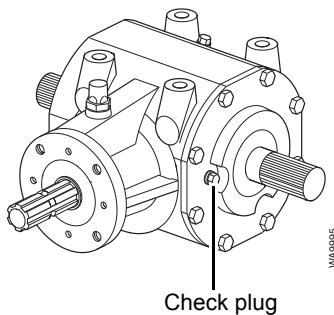
### Correct checking the oil level

Checking the oil level may only take place

- when the machine has stand still for a long time and
- when the machine stands horizontal

Otherwise a false oil level can occur. A false grease level can cause serious machine damages.

## Checking the oil level



- > Remove the check plug

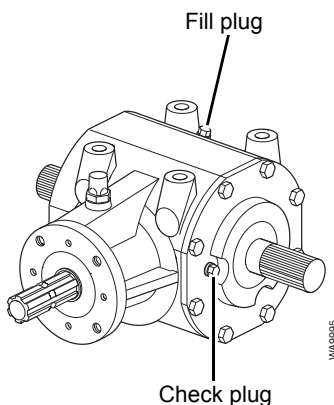
If oil comes out the gap, the level is ok.

- > Replace the check plug

If no oil comes out, the gearbox must be filled.

→ Filling the gearbox, page 205

## Filling the gearbox



- > Remove the check plug

- > Remove the fill plug

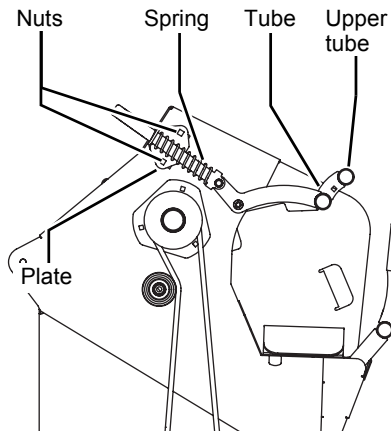
- > Insert oil via the opening of the fill plug, until a little oil comes out the gap of the check plug

- > Replace the check plug

- > Replace the fill plug

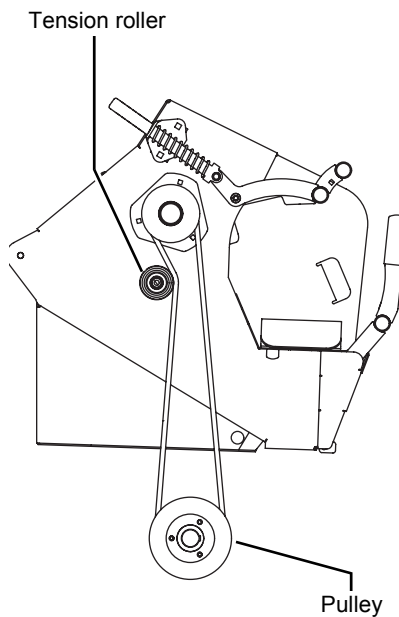
## Mechanical net-binder settings

### Net roll pre-stress adjustment



- > Remove the net roll
- > Lower the tube completely, using the upper tube
- > Loosen the nuts
- > Set the plate for more or less spring tension on the pre-stressor
- > Tighten the nuts

### Net brake tension



The net brake tension is set via the pulley. The net brake tension must be adjusted

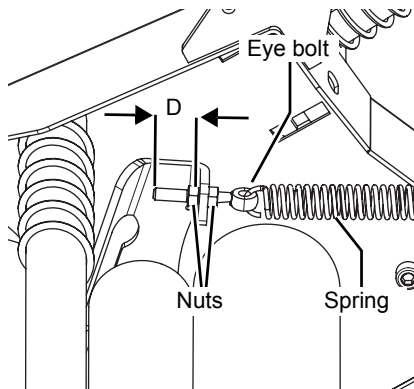
- every 1,000 bales
- when a different net quality is used

- > Loosen the tension roller

The V-belt is released.

- > Dismantle the pulley
- > Place or remove filler discs
  - More filler discs: a higher net brake tension
  - Fewer / no filler discs: a lower net brake tension
- > Assemble the pulley
- > Tighten the tension roller

## Clamping force stretch rollers

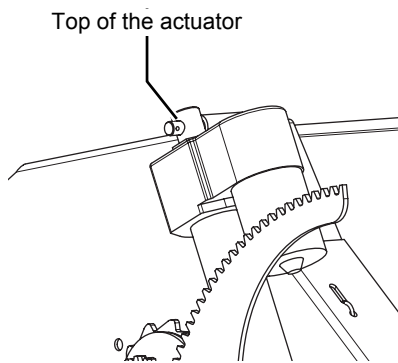


The clamping force of the stretch rollers can be adjusted by the spring tension. Distance D between the end of the eye bolt and the plate must be 30 mm.

- > Tighten or loosen the nuts to adjust distance D to 30 mm

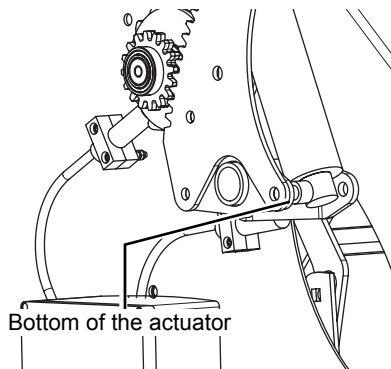
# Maintenance

## Top of the actuator



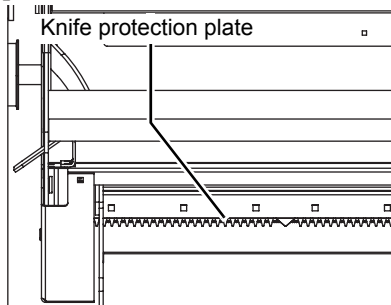
- > Oil the top of the actuator every 10 working hours

## Bottom of the actuator



- > Oil the bottom of the actuator every 10 working hours

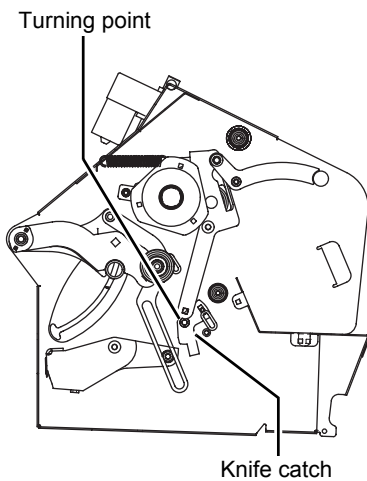
## Knife protection plate



- > Check and clean the knife protection plate every 3,000 bales

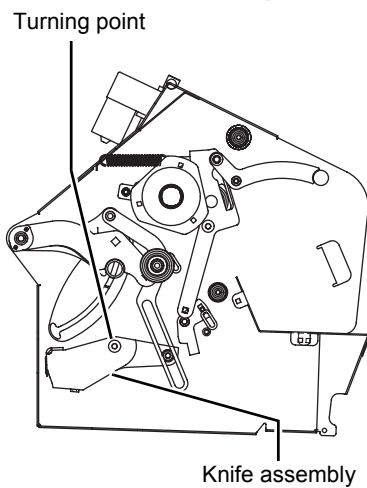
## Knife catch

- > Oil the knife catch turning point every 10 working hours



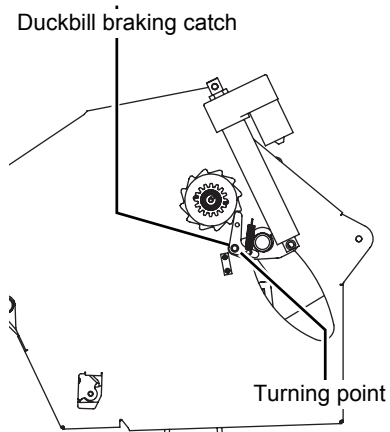
## Knife assembly

- > Oil the knife assembly turning point every 10 working hours



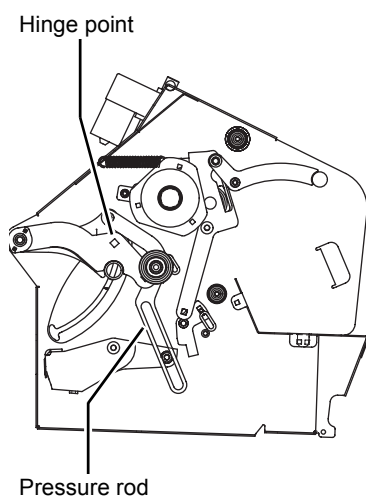
## Duckbill braking catch

- > Oil the turning point of the duckbill braking catch every 10 working hours



# Maintenance

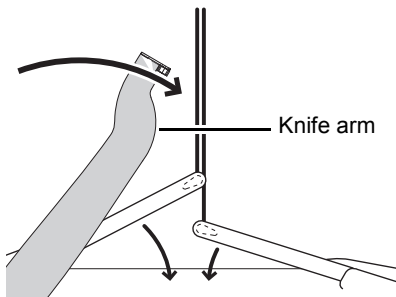
## Pressure rod



- > Oil the hinge point of the pressure rod between the duckbill and the knife every 10 working hours

## Mechanical twine tie settings

### Knife arm



#### Wear safety gloves

The twine knife is very sharp. Always wear safety gloves when handling the twine knife. Not wearing safety gloves can cause serious injuries.

At the end of the twine tie cycle the knife arm moves to both twine threads cutting them almost simultaneously.

### Focus



> Push



> Push

The twine tubes move to their basic position.

### Tellus



> Push



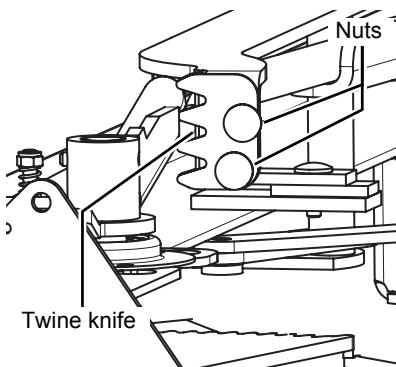
> Push

Ensure the cutting edge is sharp since the correct function depends on it.

The twine knife is dull if

- one or both twine threads are not cut
- the cutting profile is long and fuzzy

### Twine knife

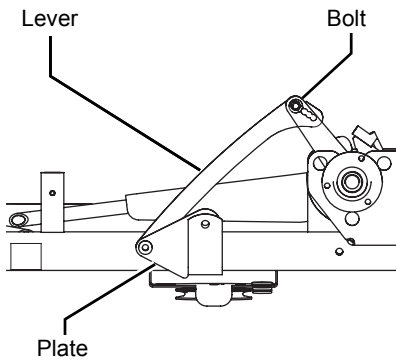


In case of a dull twine knife, it can be exchanged.

- > Switch off the pto
- > Switch off the electronic control system
- > Shut down the tractor engine
- > Remove the ignition key
- > Loosen the nuts
- > Take out the dull twine knife
- > Place a new twine knife
- > Tighten the nuts

# Maintenance

## Twine knife arm



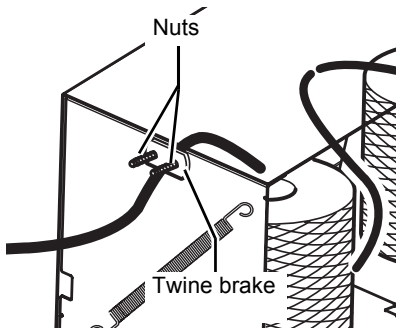
The twine knife arm can be synchronized. When the twine tubes are in the rest position, the plate must be against the frame. If not, this can be adjusted by placing the lever into another hole.

- > Remove the bolt
- > Place the lever into another hole

The plate must now be against the frame.

- > Mount the bolt

## Twine brake - twine boxes



Do not use the twine brake on the twine boxes to increase twine tension. This twine brake just serves to prevent the twine from unnecessary rolling off the spools during transport and work.

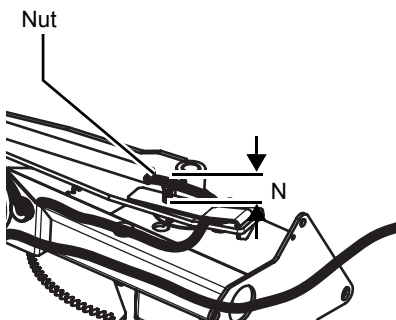
It is possible to adjust the twine brake according to the twine used (diameter, different brands and quality).

Adjust as follows:

- > Loosen the nuts to increase the spring length
- > Tighten the nuts to decrease the spring length

The spring must just stay under minimum pressure.

## Twine brake - twine tubes



Basic adjustment of the spring length N of the twine brakes: 20 mm. It is possible to adjust this length according to the twine used (diameter, different brands and quality).

Adjust as follows:

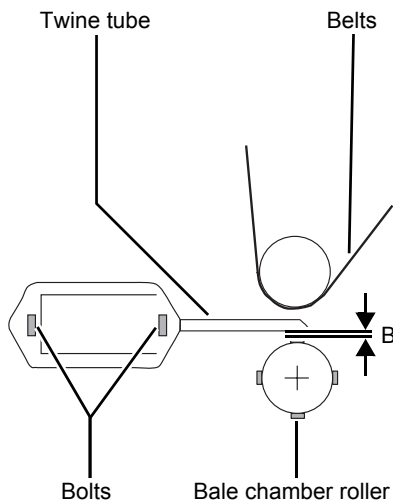
- > Check spring length N is 20 mm
- > Loosen the nuts to increase the spring length
- > Tighten the nuts to decrease the spring length







**TIP** Do not divert too far from the basic setting. The spring is quite stiff and thus you easily reach a too high or too low tension.

## Twine tubes position

The position of the twine tubes with respect to the bale chamber roller is important. The distance between belts and bale chamber roller is small. A correct adjustment prevents the twine tubes from touching the belts or the bale chamber roller.

### Focus



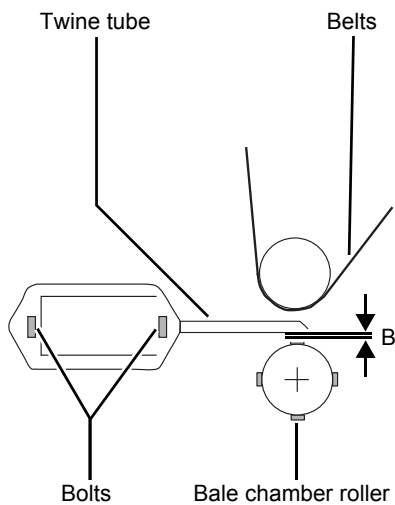
-  > Push to 1
-  > Push to unlock the system and to enter the operating display
-  > Push to choose twine tie
-  > Push to extend the twine tubes
- or
-  > Push to intend the twine tubes
-  > Push to 0  
The system will shut down.






The distance B between the maximum diameter of the bale chamber roller and the twine tube must be 4 mm. It can be checked by putting a metal strip of 4 mm between the bale chamber roller and the twine tube.


- > Loosen the bolts
- > Move twine tube so distance B appears
- > Tighten the bolts

# Maintenance

## Tellus



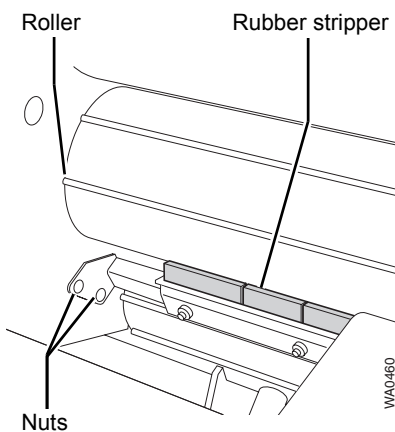
-  > Push
-  > Push to put the system into operation mode
-  > Push to choose twine tie
-  > Push to extend the twine tubes
- or
-  > Push to intend the twine tubes

-  > Push  
The system will shut down.

The distance B between the maximum diameter of the bale chamber roller and the twine tube must be 4 mm. It can be checked by putting a metal strip of 4 mm between the bale chamber roller and the twine tube.

- > Loosen the bolts
- > Move twine tube so distance B appears
- > Tighten the bolts

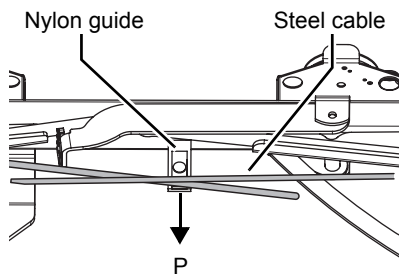
## Rubber stripper



In order to prevent twine from wrapping around the bale chamber roller the correct setting of the rubber stripper is important. Adjust the rubber stripper to such an extend that the rubber just touches the roller.

- > Turn the roller till the stripper touches a smooth edge of the roller
- > Loosen nuts
- > Adjust rubber stripper
- > Tighten nuts

## Steel cable tension



The steel cable shall be tensioned in the right way.

- > Check the cable:
  - firstly after 1,000 bales
  - after every 5,000 bales

Proceed as follows:

- > Use a steelyard to apply a force of 55 N

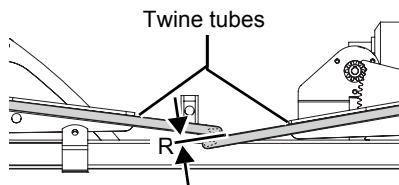
The steel cable must have a play P of 1 cm at the nylon guide.

- > Tension the cable if necessary

After tensioning the cable

- > recheck the twine tubes synchronisation

## Twine tubes synchronisation

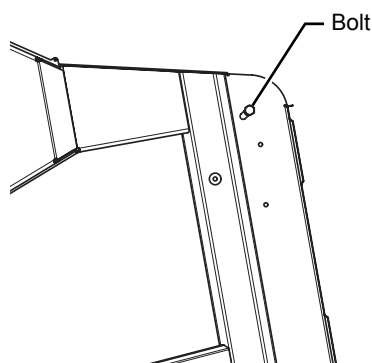
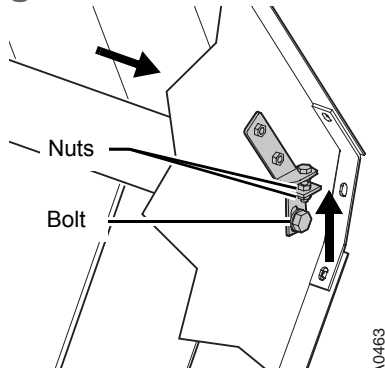


When both twine tube are in rest position, the play R between the twine tube ends must be 1 mm.

- > Regularly clean the twine tie system
- > Regularly check the twine tie system for excessive wear

## Belts and belt alignment

### Adjustment of the guide roller



The belts are driven by a rubber roller in the front section of the machine. This roller is shaped slightly convex in every belt track thus assisting the belt alignment.

It is important the belts run aligned and do not wear through rubbing along the belt guides. An adjustable guide roller in the rear section of the machine enables correction of the belt alignment.

- > Slacken the bolt one turn
- > Adjust the roller into the desired direction using the nuts
- > Tighten the bolt

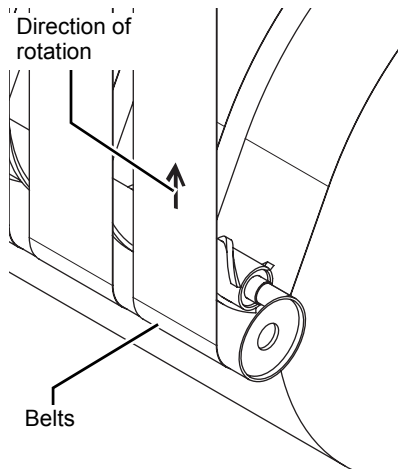
#### **RL machine only:**

A second guide roller can be adjusted as well, this in order to get optimum belt alignment.

If the belt alignment can not be corrected sufficiently when adjusting at one side, the guide roller can be adjusted at the other side as well.

- > Loosen the bolt
- > Adjust the roller
- > Tighten the bolt

## Endless belts (depending on machine version)

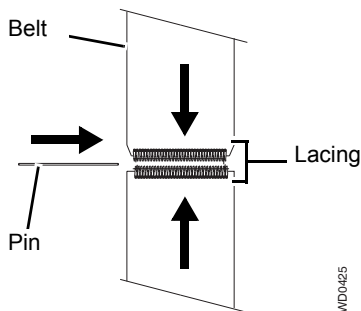


Belts without lacings provide an exceptional long life span in heavy conditions. When exchanging these belts, some rollers must be removed

→ ask your dealer

Install endless belts in such a way that the side with the most profile will be at the bale.

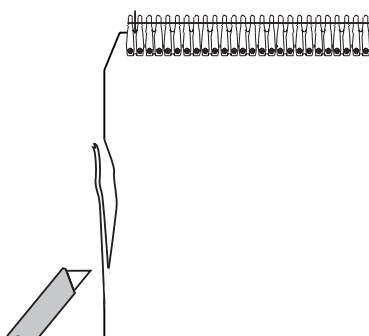
## Maintenance of belts and lacings



Daily inspect the condition of belts and lacings, pay special attention to wear.

Renew lacing pins every 1,000 - 2,000 bales. If you do not, you risk lacing damage.

In order to facilitate exchange of the pins clean the lacings prior to the removal with a high pressure cleaner! In every case release the belts.



Regularly inspect belts for wear, cut away frain parts with a knife. Sharp stones may damage belts!

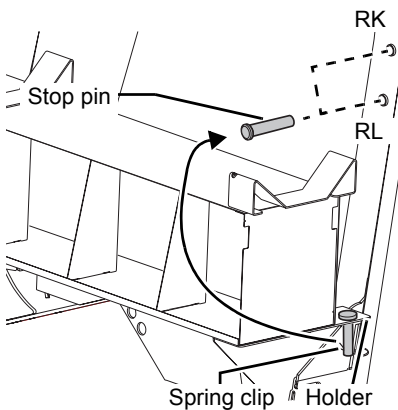
Check belt length after every 10,000 bales (disassemble and check length, then re-assemble). The difference shall not exceed 5 cm.

For the correct belt length

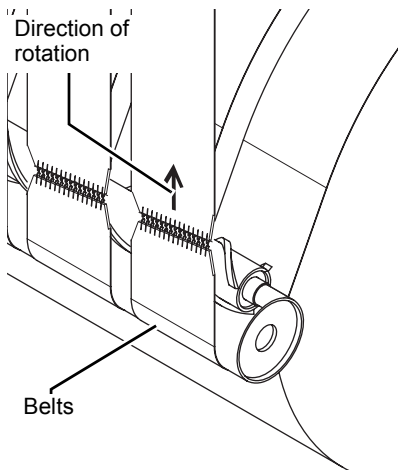
→ Spare parts manual

# Maintenance

## Belt exchange



- > Open the tailgate fully
- > Fit the stop pins into the lateral wall on both sides of the bale chamber.
- > Lower the tailgate pressureless  
The tension arm will rest on the stop bolt and slacken the belts.
- > Do not lower the tailgate too far: the bale chamber must stay accessible
- > Close the tailgate safety valve
- > Remove the belt(s)

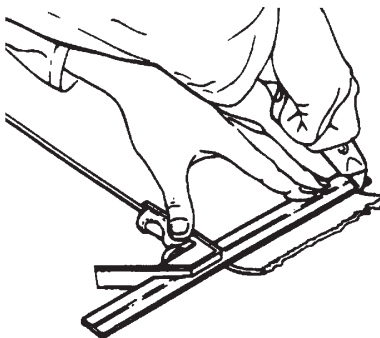


- > Install the new belt(s) paying attention to the direction of running when visible  
For this reason the leading edge of a belt has trimmed off corners.
- > Unlock the tailgate safety
- > Fully the open tailgate
- > Remove the spring clip
- > Remove the stop pin of the side wall
- > Place back the stop pin in its holder
- > Place the spring clip
- > Close the tailgate
- > Check the belt alignment
- > Correct as necessary

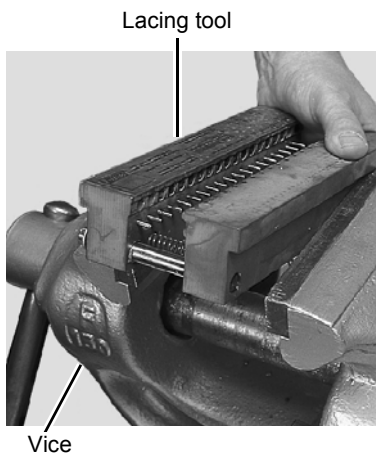
## Renewing /exchanging of a lacing

For renewing the belt lacings the following tools and parts are necessary  
→ Spare parts manual

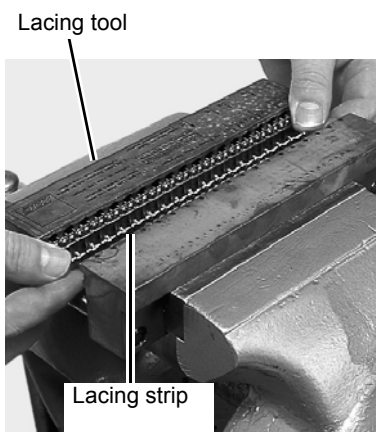
Never shorten a belt more than 10 cm with respect to the original length.  
The difference in length between two used belts of one machine shall not exceed 5 cm.



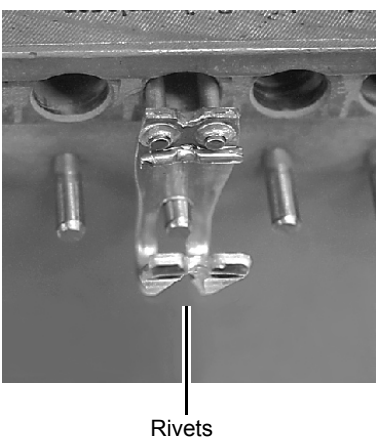
- > Cut the belts square as close as possible to the lacing



- > Fully open the lacing tool
- > Position the lacing tool into a vice: the holes pointing to you



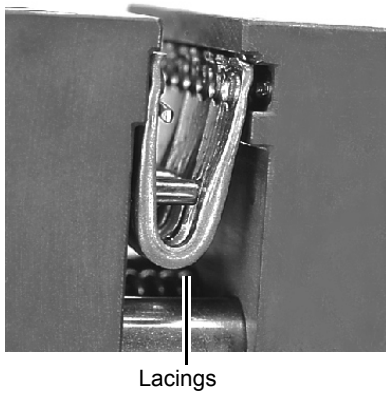
- > Position a lacing strip into the lacing tool



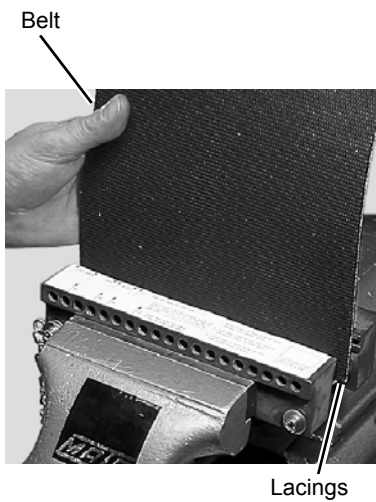
Every hole shall contain two rivets.

# Maintenance

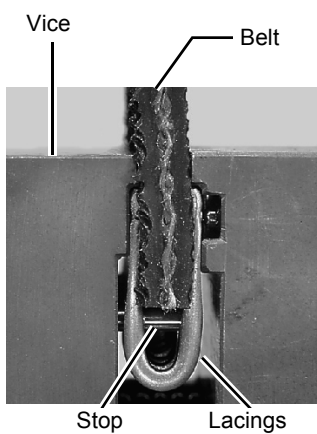
- > Close the vice just to allow the belt fit between the lacings



- > Slide the belt end between the lacings
- > Pay attention to the correct position of the belt



- > Force the belt down onto the stop
- > Close the vice till the lacings sit against the belt

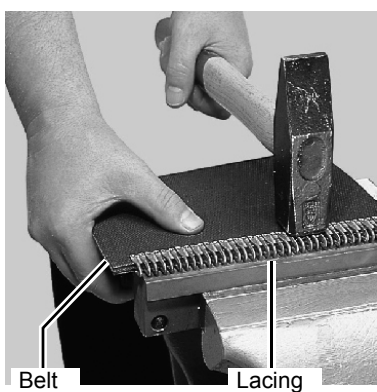




- > Using a hammer and a punch drive the first and the last and thereafter all the other rivets through the belt till the punch hits the stop



- > Open the vice
- > Take out the belt



- > Put the belt with the lacing on a solid surface
  - > Flatten the rivet heads ensuring the lacing ayes are not damaged
  - > Repeat the procedure at the other end of the belt
- The belt must be positioned into the vice with same side forward.

# Maintenance



Edge corners

- > Trim off the leading edge corners of the belt with a size of 0.5 x 2 cm



In order to ensure good working

- > Use a small but not too hard steel brush to clean the special tool thoroughly after every lacing removing all dust and crumbled material

## Wheels/axle



### Correct repairwork only

Repairwork on wheels and tyres must only be carried out

- by professionals
- with the correct fitting equipment

Mounting wheels and tyres requires sufficient knowledge and availability of prescribed tools and equipment being in perfect condition. Serious personal injuries or machine damages can occur.

### Tyre dimensions as described

Do not fit other tyre dimensions than prescribed. Fitting other tyre dimensions can cause accidents. Personal or machine damages can occur.

### Pre-scribed tyre pressure only

Only use the pre-scribed tyre pressure. Using the false tyre pressure can cause serious personal or machine damages or traffic accidents.

When working on the wheels make sure that the machine

- has been placed on the ground safely (use support jack)
- is secured by chocks against unintentional rolling

## Tightness of wheel nuts



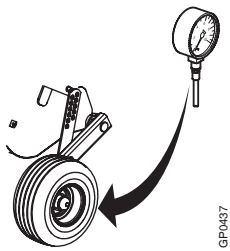
Tighten the wheel nuts:

- after the first 10 working hours
- every 150 working hours
- after every tyre / wheel renewal

Tightness of wheel nuts is 270 Nm.

## Tyre pressure

### Gauge wheels

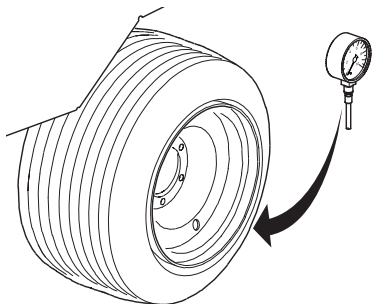


Tyre pressure pick-up gauge wheels

Tyre size	Pressure
15 x 6.00 - 6	1.75 bar

> Check the tyre pressure regularly: ensure the prescribed value

### Wheels



Tyre pressure in accordance with speed

	Speed/pressure
<b>Tyre size</b>	25 km/h
11.5/80-15	3 bar
15.0/55-17	2 bar
19.0/45-17	1.5 bar
500/50-17.0 14PR	1.5 bar

> Check the tyre pressure regularly: ensure the prescribed value

## Brakes

### Hydraulic brakes



#### Hydraulic oil under high pressure

Hydraulic oil is under high pressure. Outcoming oil can cause severe injuries.

### Bleeding hydraulic braking circuit

The brake circuit is a hydraulic single acting system connected to the tractor by a hose with a quick coupler.

- > Loosen coupling of the hose at the brake cylinder one turn
  - > Push the tractor's brake pedal gently
  - > Repeat this until no more air escapes at the coupling
  - > Fit the coupling of the hose at the brake cylinder
- Pneumatic brake [+], page 231

### Adjustment brake shoes (hydraulic/pneumatic brake)

The brake shoes must not touch/rub against the drums in the rest position.

Proceed as follows:

- > Adjust the position of the brake shoe levers on their splines
  - > Make a running check by advancing the machine 10 metres
- > Frequently clean brake drums and brake shoes

# Maintenance

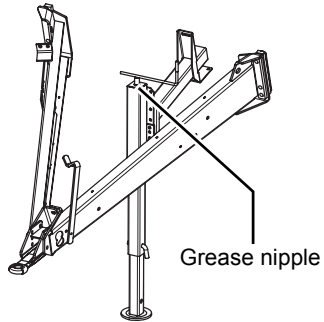
## Drawbar

### Hitch ring

The hitch ring in the hitch eye is fitted with a wearing sleeve. It must be changed as soon as wear appears.

- > Grease underside of the hitch ring every 500 bales

### Support jack



Grease the nipple of the support jack from time to time.

- > Grease the nipple

## Sensors

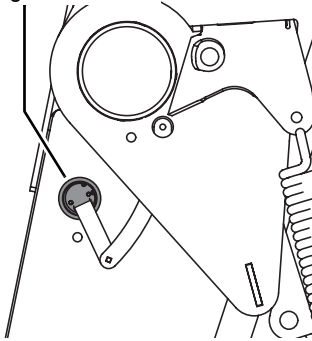
There are different types of sensors used in this machine:

- Rotational sensor (like bale diameter sensor)
- Proximity sensors (like tailgate lock sensor)

### Rotational sensors

#### Bale growth sensor

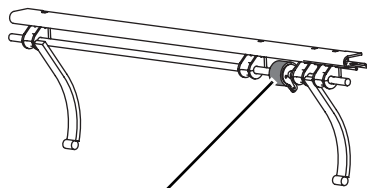
Bale growth sensor



The bale growth sensor must send correct information to the electronic system. If it does not, calibration is required.

After producing a bale of the required diameter, the bale diameter indicated on the display must match the actually produced bale diameter.

#### Bale shape indication sensor



Bale shape indication sensor

The bale shape indication sensor must send correct information to the electronic system.

If arrows appear in case the bale chamber is empty, calibration is required.

Make sure there is no pollution underneath the left/right sensor indicator.

# Maintenance

## Proximity sensors

The proximity sensors trace metal objects. Therefore they must be set according to a certain distance, depending per sensor.

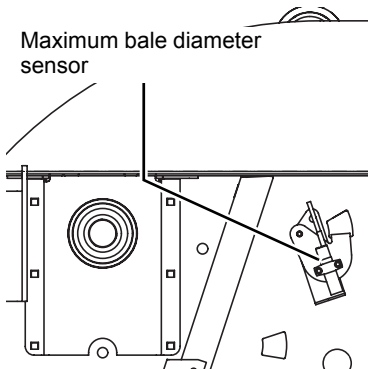
All proximity sensors must have a distance A of 3 - 5 mm.

Proceed as follows:

- > Loosen the two bolts
- > Adjust the sensor by moving it, until the required distance has been reached
- > Tighten the two bolts

## Maximum bale diameter sensor

The maximum bale diameter sensor must send correct information to the electronic system.

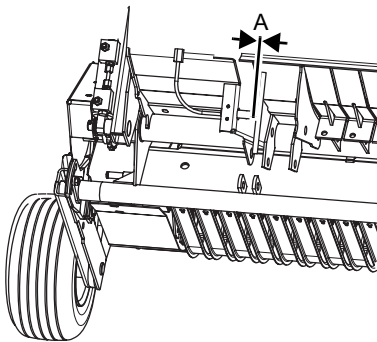


## Knife position sensor

The knife position sensor detects if the knives are in cutting position or in rest position.

Situated at the left side of the cutting device.

If the sensor detects metal, the connected sensor indicator light will be on.

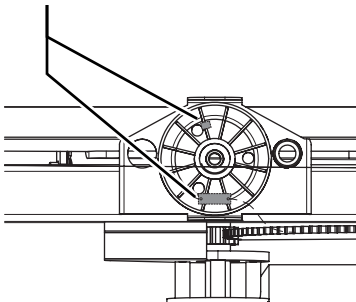


## Twine running sensor [+]

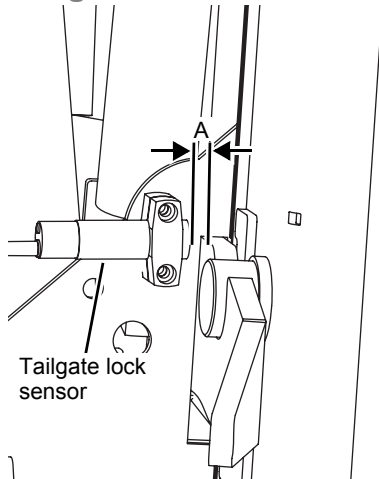
The twine running sensor detects the running of the twine.

Situated at the twine pulley on top of the twine wrap device.

Twine running sensor

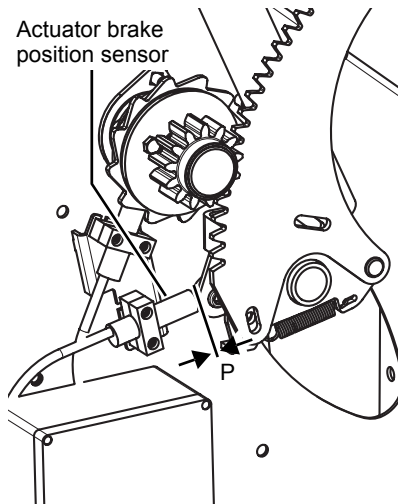


## Tailgate lock sensor



The tailgate lock sensor detects whether the tailgate is locked or not. Situated at the both sides of the tailgate.

## Actuator brake position sensor



Check, clean and adjust the actuator brake position sensor every 3,000 bales.

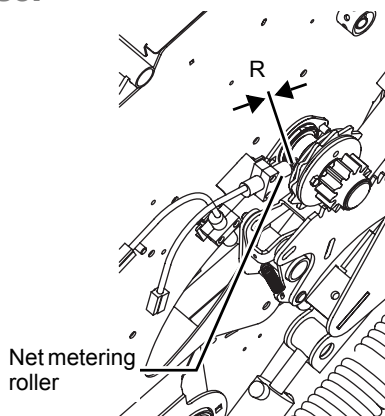
Situated at the left side of the machine.

Distance P of the actuator brake position sensor must be 4 mm.

Adjust the actuator brake position sensor as follows:

- > Loosen the bolts
- > Adjust the sensor to distance P
- > Tighten the bolts

## Net metering roller sensor



Check, clean and adjust the net metering roller sensor every 3,000 bales.

Distance R between the net metering roller sensor and both springs must be 4 mm.

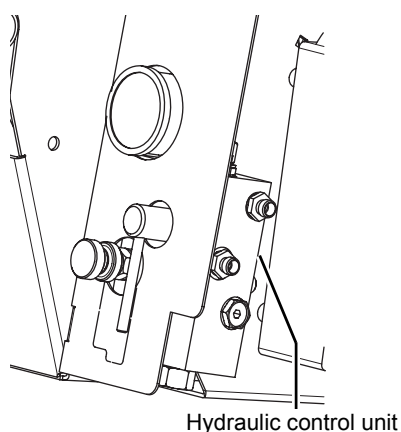
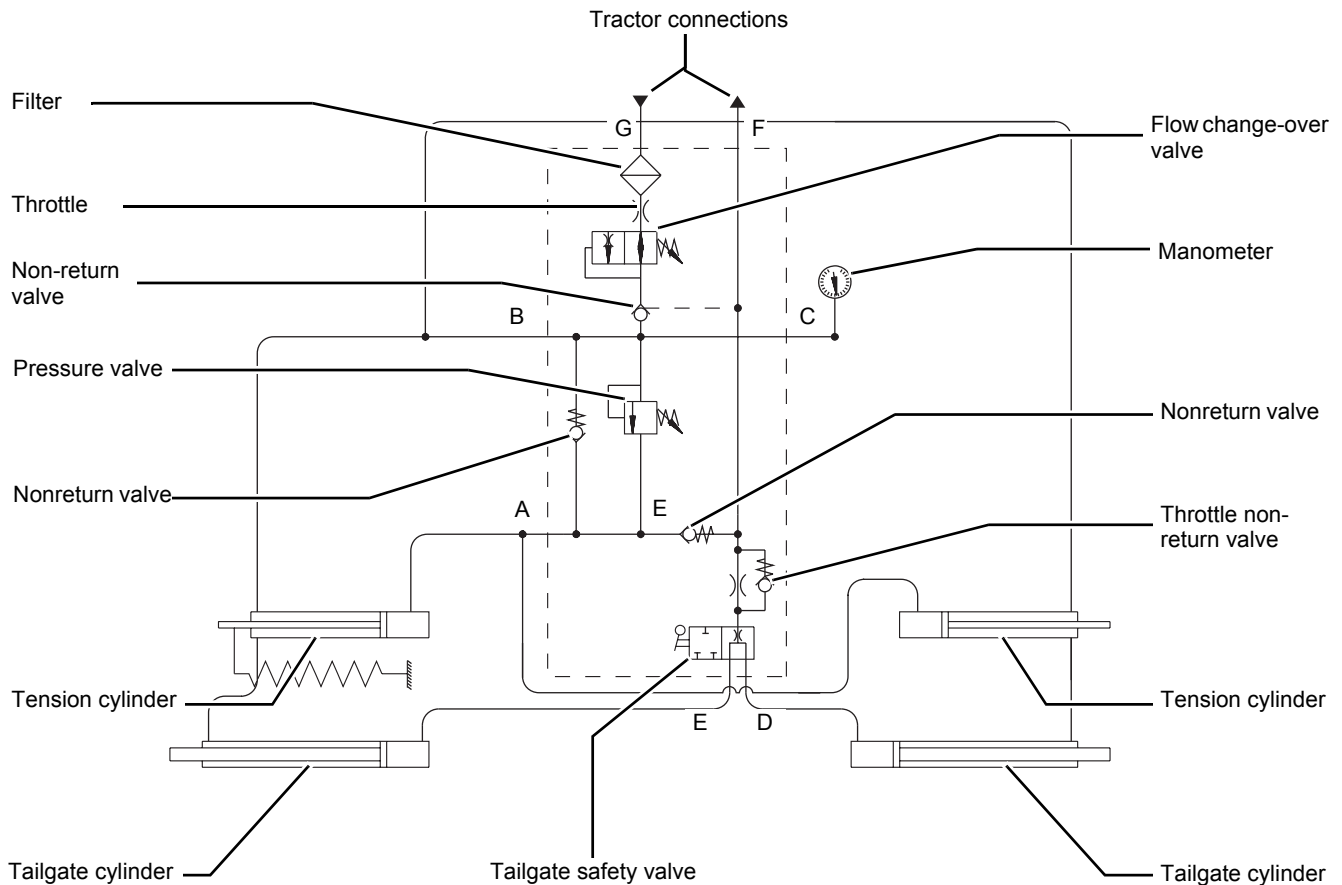
Situated at the left side of the machine.

Adjust the net metering roller sensor as follows:

- > Loosen bolts
- > Adjust the sensor to distance R
- > Tighten bolts

## Diagrams and schemes

### Hydraulic diagram



The hydraulic control unit at the front of the baler directs the hydraulic pressure through lines to activate functions.

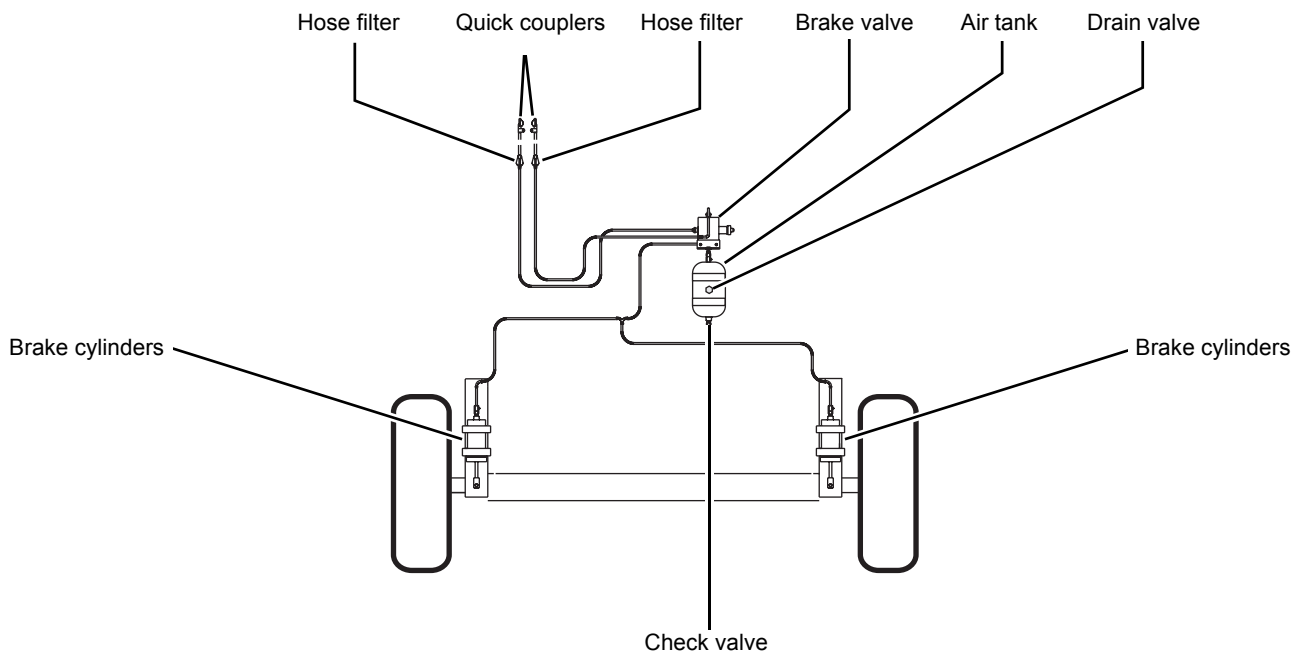
The bale growth in the bale chamber extends the tension cylinders. Hydraulic oil from the top side of the piston is pressed through an adjustable pressure valve and then flows back into the tension cylinders underneath the piston.

The hydraulic control unit directs the hydraulic pressure through lines E and D to the tailgate cylinders. When the tailgate opens the tension cylinders move freely up. A throttle non-return valve in the hydraulic system enables a sufficient flow in order to open the tailgate quickly.

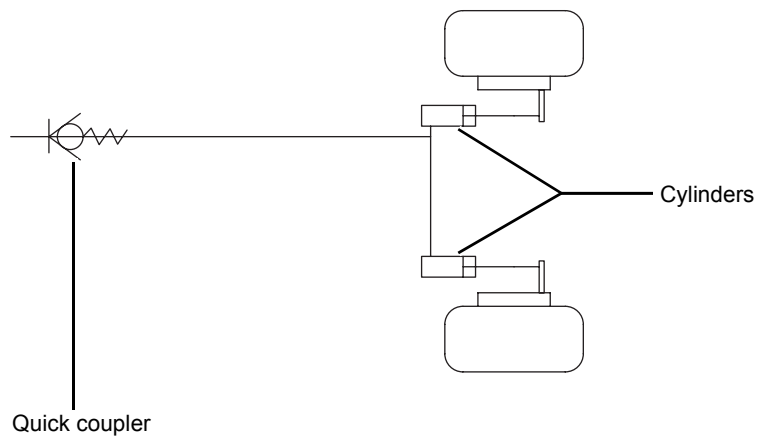
When the tailgate is to close the hydraulic pressure is directed on top of the tailgate cylinders: the tailgate closes. Just before the tailgate is closed the flow changeover valve is connected in between (little flow) and acts to brake the motion of the tailgate and at once prevents a sudden depression in the system.

Each tailgate cylinder has a substantial shock absorber at the end of its stroke.

## Pneumatic brake [+]

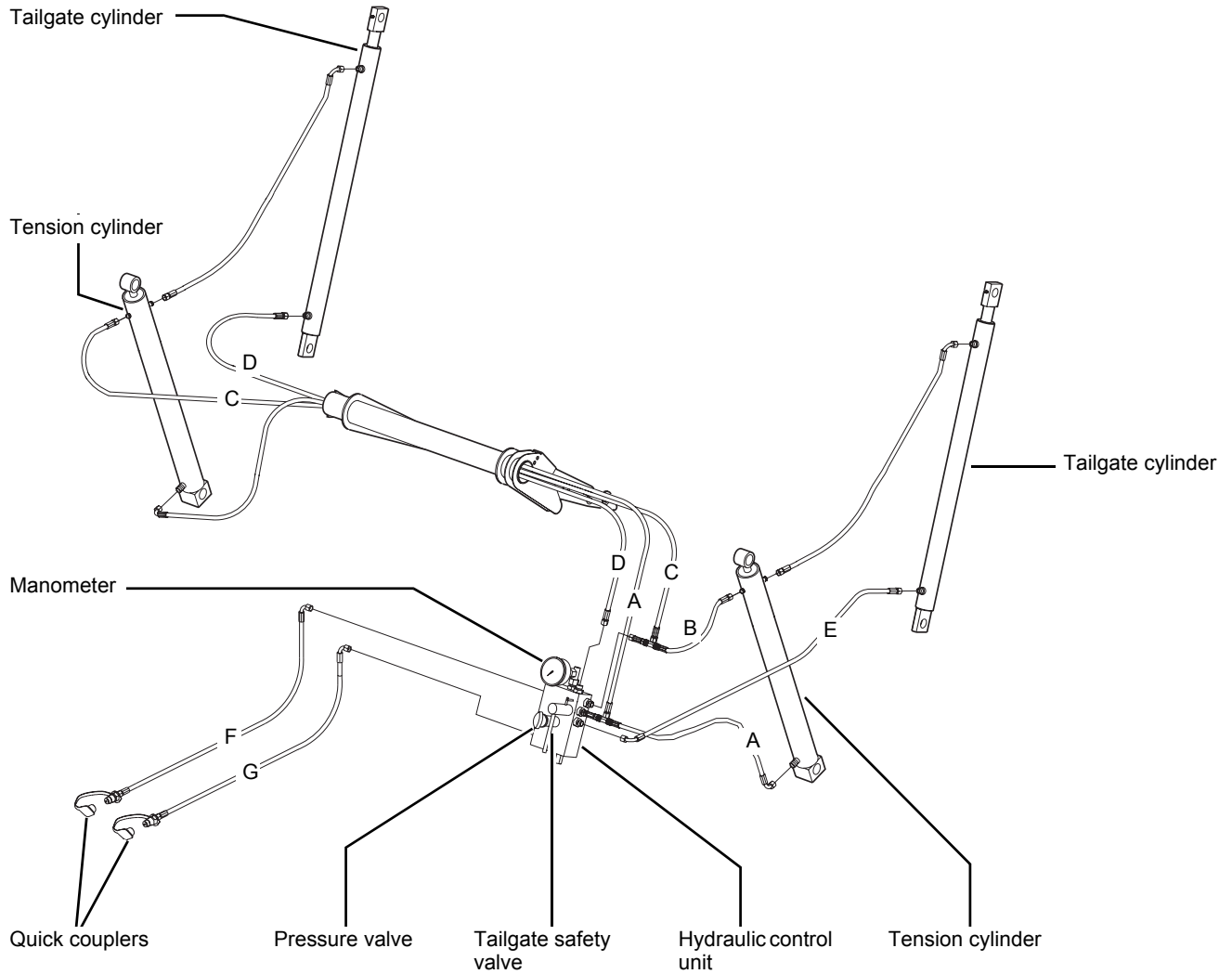


## Hydraulic brake [+]



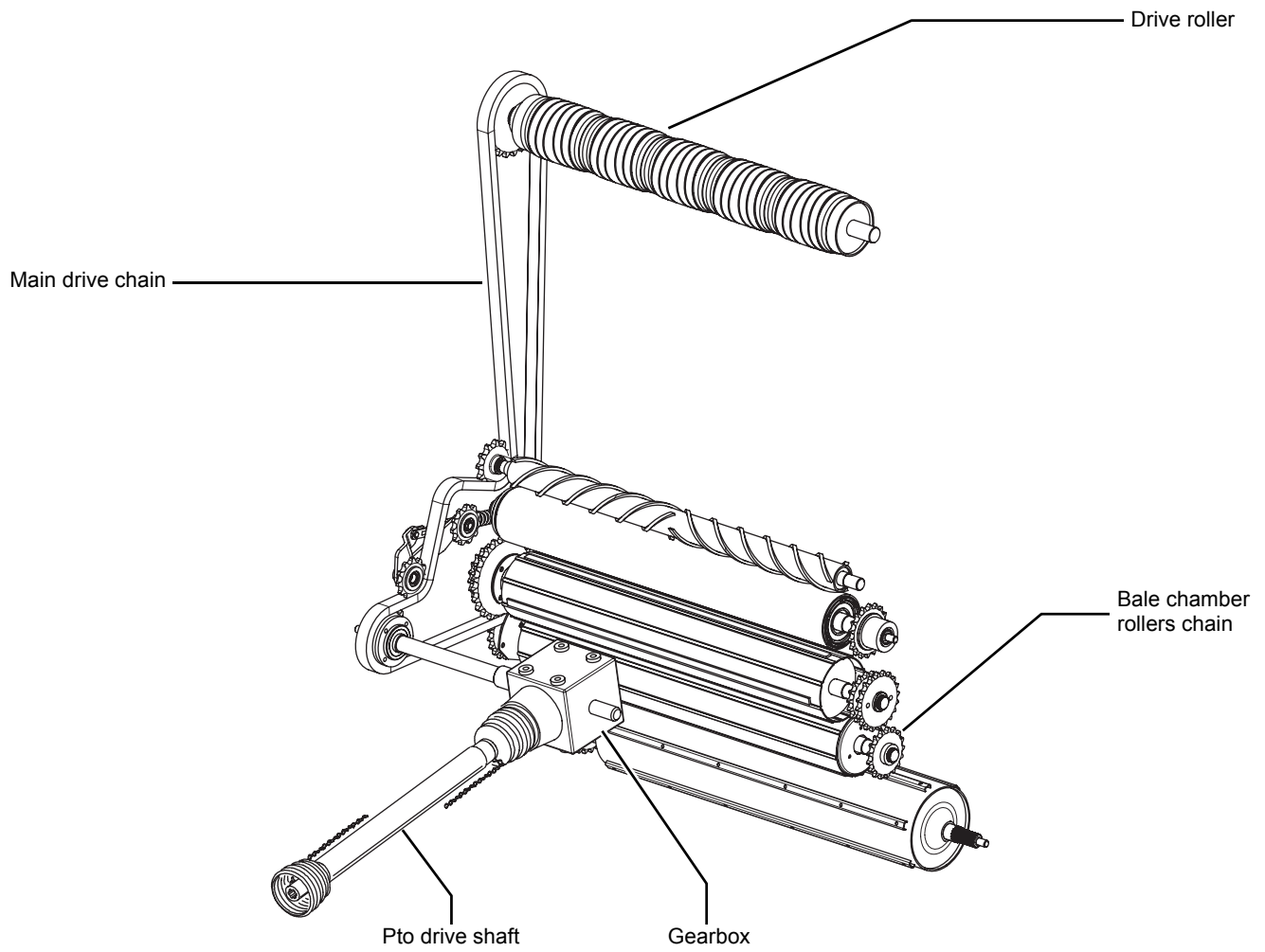
# Maintenance

## Overview - bale chamber hydraulic system



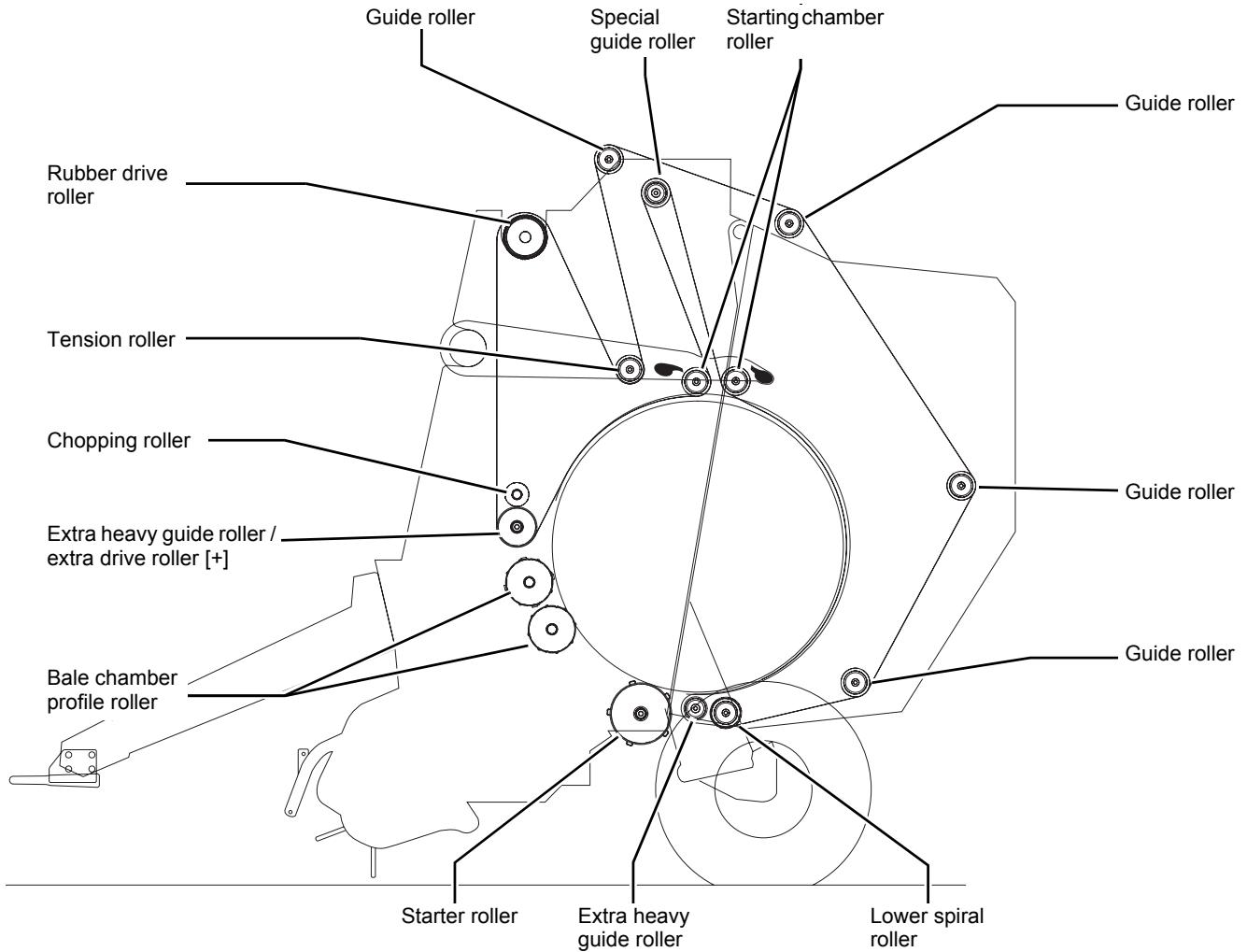
**TIP** A through G: connection codes on hydraulic control unit.

## Drive schematic - bale chamber drive



# Maintenance

## Overview rollers and scrapers



Roller	Quantity	Function
Rubber drive roller	1	<ul style="list-style-type: none"> <li>• Drive</li> <li>• Belt alignment correction</li> </ul>
Tension roller	1	Transmission of hydraulic pressure onto the belts
Starting chamber roller	2	Building up of the starter chamber
Chopping roller	1	Removes pollution
Guide roller	4	Guides the belts
Lower spiral roller	1	Keeps the belt segment clean
Starter roller	1	Compresses the crop together with the bale
Bale chamber profile roller	2	<ul style="list-style-type: none"> <li>• Builds up an optimum bale chamber</li> <li>• Increases bale stability</li> <li>• Improves bale shape</li> </ul>
Extra heavy guide roller / extra drive roller [+]	1	Guides the belts
Special guide roller	1	Guides the belts

## General

Where parts are to be changed, only use genuine original spare parts. When ordering, quote the machine identification numbers. Trained people only must carry out the use, maintenance and repair of the machine. Consult your dealer for any additional advice.

In addition, the warranty will be automatically annulled if the machine has been equipped with accessories or spare parts not authorised by the manufacturer.

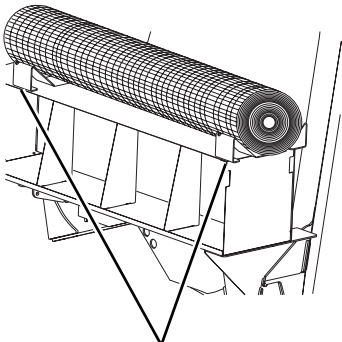
Attach optional equipment

- in accordance with the mounting instructions and
- to the appropriate attaching points only

For details of the optional equipment

→ Spare parts manual

## Extra net roll storage

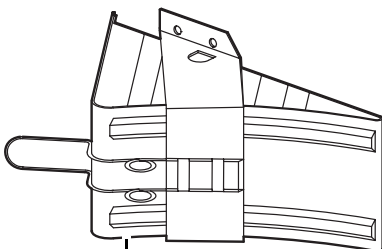


Net roll storage support

For machines having net wrap there is a net roll storage support behind the right lateral door.

On machines with net wrap only this is also possible on the left side.

## Wheel chocks



Wheel chock

To secure the machine from rolling away, wheel chocks can be placed.

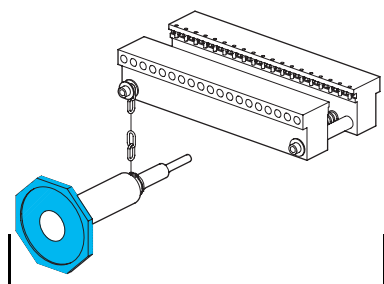
# Optional equipment

## 2 wheels with extra wide tyres

## Automatic chain lubrication system

The chains on the machine can be lubricated automatically.

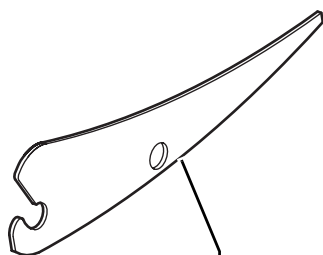
## Belt repair tool



Belt repair tool

## Belt repair set (5 belts)

## 14 dummy-knives, set (OC only)

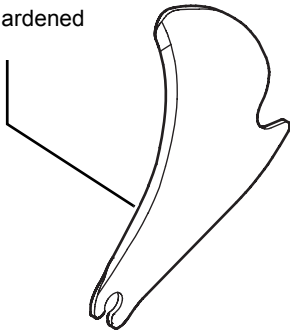


Dummy knife

## 14 knives (OC only)

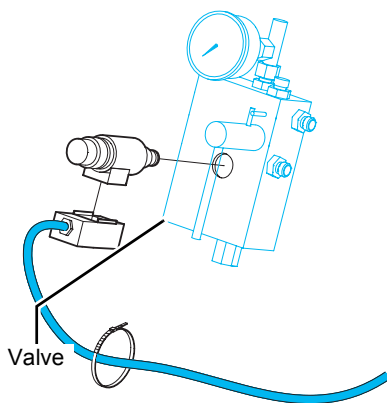
### Extra hardened knives (OC only)

Extra hardened knife



### Guiding “Tear-drop” plate

### In-cab “mixed chamber” control



Mixed chamber control gives the possibility to control the hydraulic pressure of the belt tensioning system from the tractor cab.

In standard cases manual setting

- is not used during function
- is turned fully counterclockwards (= lowest pressure setting)

In case of electronic failure it is possible to control pressure manually with the valve.

## 23 knives (FC only)

### Extra drive

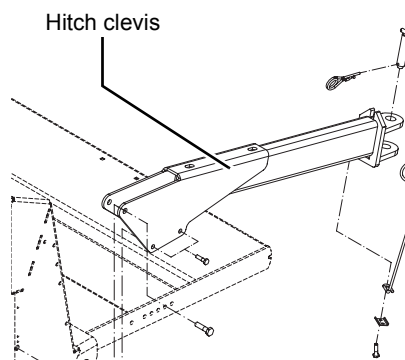
# Optional equipment

## Super silage set

## Net binder

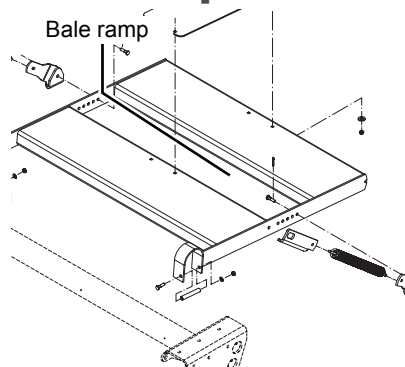
## Flax kit

## Hitch clevis



The hitch can only be mounted on machines without hydraulic or pneumatic brakes.

## Bale ramp



## Troubleshooting table electronics

Troubles can mostly be easily and quickly be remedied. Before you make an appeal to the service department, please check with help of the table, if you can remedy the trouble by yourself.

- Most malfunctions are caused by incorrect connections
- The machine box may only be opened by people with sufficient expertise
- Make sure no dirt gets into the opened central operating panel
- Only restart the machine once the cause of the failure has been identified. Otherwise, parts damaged as a result will not be covered by warranty

Problem	Cause	Solution
No message on the control box	No power supply to the control system	<ul style="list-style-type: none"><li>• Switch on the device</li><li>• Check the system power</li><li>• Check fuses</li></ul>
Internal control system problem		Consult your dealer

# Troubleshooting

## Error messages - Focus

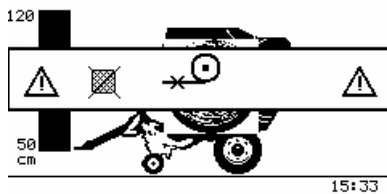


The buzzer warns when an error occurs. Every error indication appears separately on the control box display in order of priority. If an error occurs:

- > Stop baling immediately
- > Remedy the error before continuing work

Ignoring the fault message and continuing work may cause considerable material and financial damage!

### Net not running



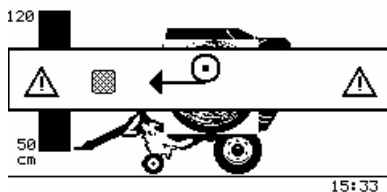
This message appears when the net is not running although it should do so.

- > Check if the net has been broken

The net is not running although it should do so. This is indicated some seconds after initiation of the wrapping procedure.

- > Check the net routing
- > Correct the net routing if necessary

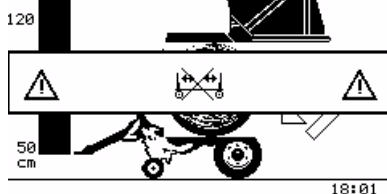
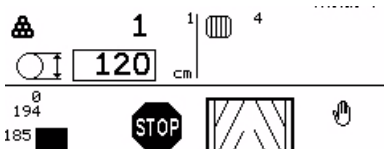
### Net running



This message appears when the net is running although it should not.

- > Check if the net has been cut
- > Check whether the net is pulled by the bale

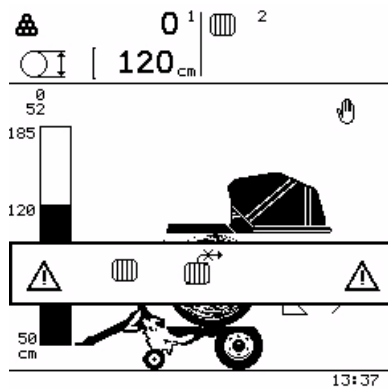
### Twine tubes position



This message appears when:

- no twine binding device is available at the machine
- the twine tubes do not move due to a blockage
- the twine tubes do not move due to an electrical storage
- the twine tubes do move but a sensor failure

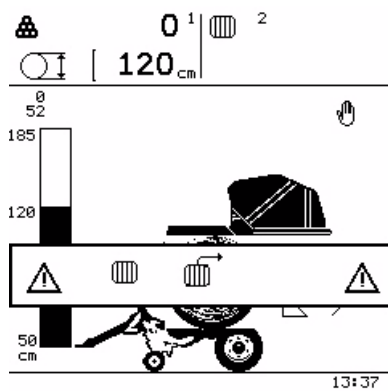
## Twine not running [+]



This message appears when the twine is not running although it should do so.

- > Check twine guiding
- > Correct twine guiding if necessary
- > Pay attention to the correct position of the twine tubes
- > Proceed with job

## Twine running [+]

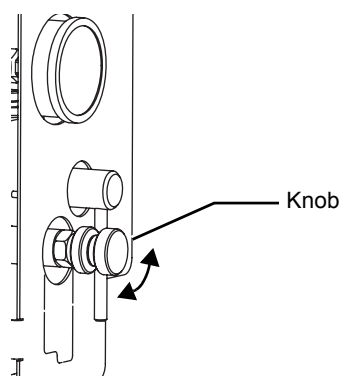
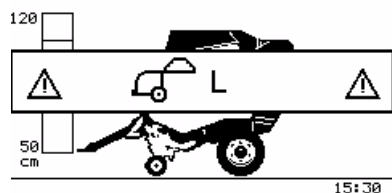
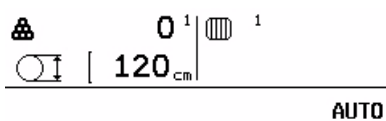


This message appears when the twine is running although it should not do so.

- > Check twine guiding
- > Correct twine guiding if necessary
- > Pay attention to the cutting length and quality of cutting
- > Proceed with job

# Troubleshooting

## Left tailgate lock



This message appears when the left tailgate lock is not properly closed.

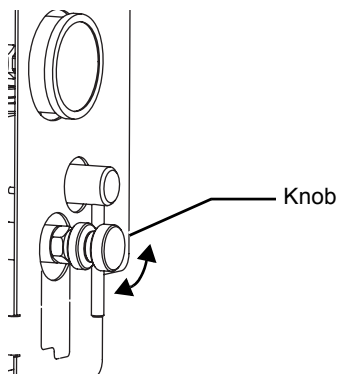
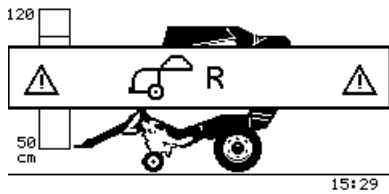
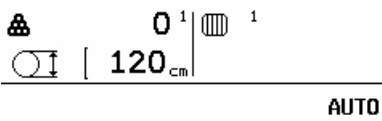
- > Check for mechanical obstructions and remove if occurring
- > Check if the hydraulic pressure is below 60 bar

> Adjust the hydraulic pressure by turning the knob

- > Check both tailgate sensors
- > Renew a faulty sensor as soon as possible

If the left tailgate sensor is faulty, the sensor can be switched off:  
→ Tailgate lock sensor switch off, page 134

## Right tailgate lock



This message appears when the right tailgate lock is not properly closed.

- > Check for mechanical obstructions and remove if occurring
- > Check if the hydraulic pressure is below 60 bar

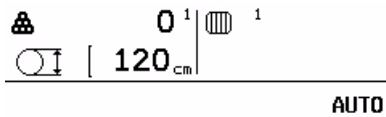
- > Adjust the hydraulic pressure by turning the knob

- > Check both tailgate sensors
- > Renew a faulty sensor as soon as possible

If the right tailgate sensor is faulty, the sensor can be switched off:  
→ Tailgate lock sensor switch off, page 134

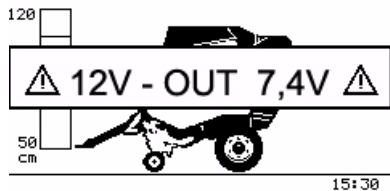
# Troubleshooting

## Battery tension too low



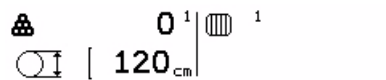
This message appears when during baling the battery tension drops below 10.5 V (= default value).

- > Switch off the electronic control system
- > Check the power supply
- > Start the tractor



**TIP** Switch off some tractor lights.

## Oversize warning

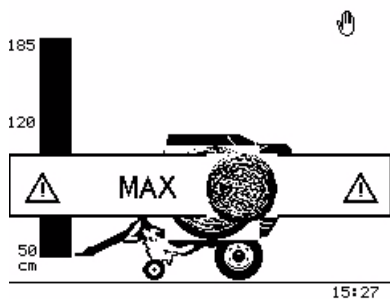


This message appears when the maximum bale diameter oversize sensor has been activated.

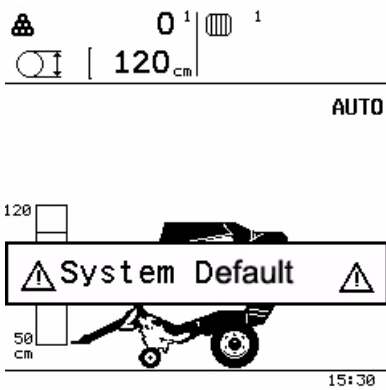
Possible cause:

- the maximum bale diameter has been reached

- > Check and adjust the maximum bale sensor
- > Correct the bale diameter in the dealer functions



## System default



## Non-confirmable error displays

This message appears when the system has been restored to its default settings.

Calibration of the following sensors is required:

- bale growth sensor  
→ Bale growth sensor calibration, page 133
- bale shape sensor  
→ Bale shape sensor calibration, page 132

Strong electromagnetic radiation / fields may generate electronic errors. Non-approved transmitters may be the cause.

The system may show not-identifiable errors: if the error cannot be confirmed/identified at the machine, ignore it and proceed your work.

# Troubleshooting

## Error messages - Tellus

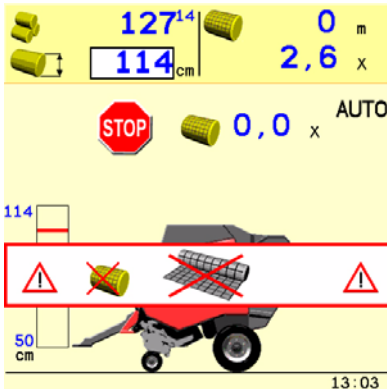


The buzzer warns when an error occurs. Every error indication appears separately on the control box display in order of priority. If an error occurs:

- > Stop baling immediately
- > Remedy the error before continuing work

Ignoring the fault message and continuing work may cause considerable material and financial damage!

### Net not running



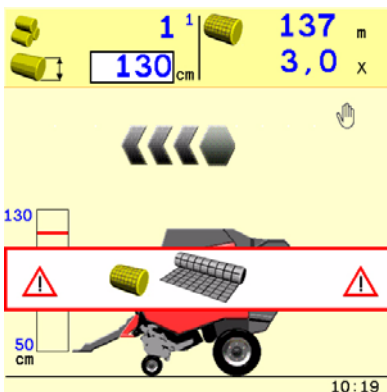
This message appears when the net is not running although it should do so.

- > Check if the net has been broken

The net is not running although it should do so. This is indicated some seconds after initiation of the wrapping procedure.

- > Check the net routing
- > Correct the net routing if necessary

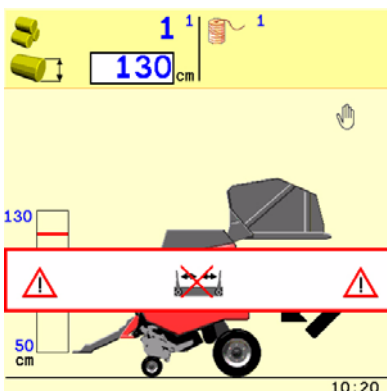
### Net running



This message appears when the net is running although it should not.

- > Check if the net has been cut
- > Check whether the net is pulled by the bale

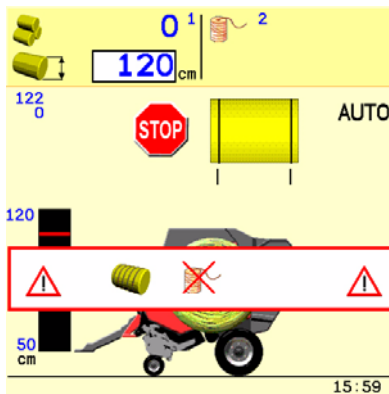
### Twine tubes position



This message appears when:

- no twine binding device is available at the machine
- the twine tubes do not move due to a blockage
- the twine tubes do not move due to an electrical storage
- the twine tubes do move but a sensor failure

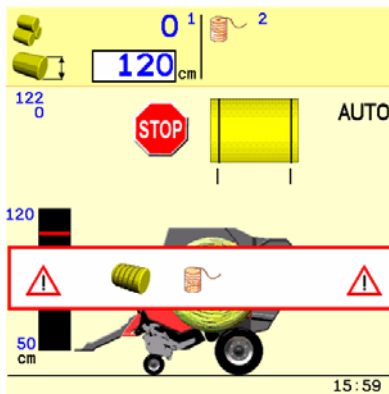
## Twine not running [+]



This message appears when the twine is not running although it should do so.

- > Check twine guiding
- > Correct twine guiding if necessary
- > Pay attention to the correct position of the twine tubes
- > Proceed with job

## Twine running [+]

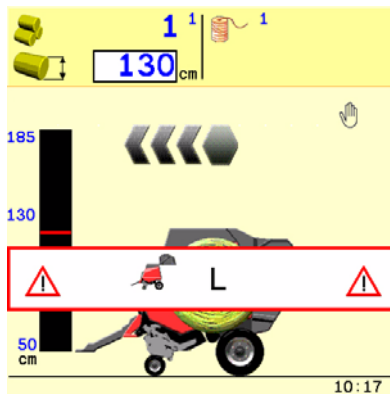


This message appears when the twine is running although it should not do so.

- > Check twine guiding
- > Correct twine guiding if necessary
- > Pay attention to the cutting length and quality of cutting
- > Proceed with job

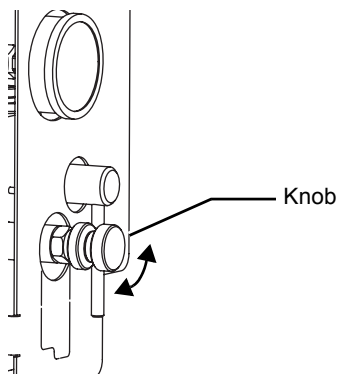
# Troubleshooting

## Left tailgate lock



This message appears when the left tailgate lock is not properly closed.

- > Check for mechanical obstructions and remove if occurring
- > Check if the hydraulic pressure is below 60 bar

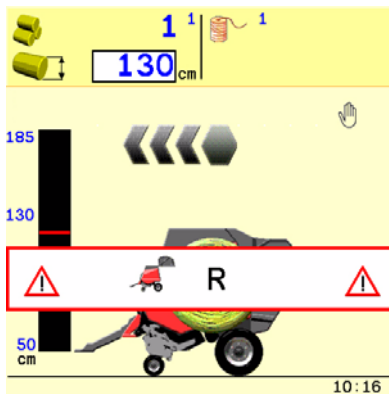


- > Adjust the hydraulic pressure by turning the knob

- > Check both tailgate sensors
- > Renew a faulty sensor as soon as possible

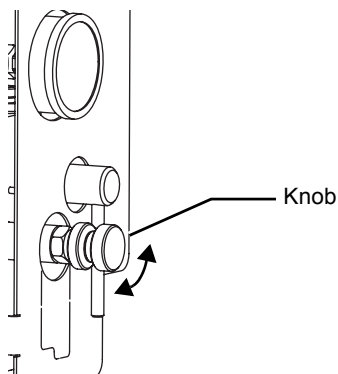
If the left tailgate sensor is faulty, the sensor can be switched off:  
→ Tailgate lock sensor switch off, page 174

## Right tailgate lock



This message appears when the right tailgate lock is not properly closed.

- > Check for mechanical obstructions and remove if occurring
- > Check if the hydraulic pressure is below 60 bar



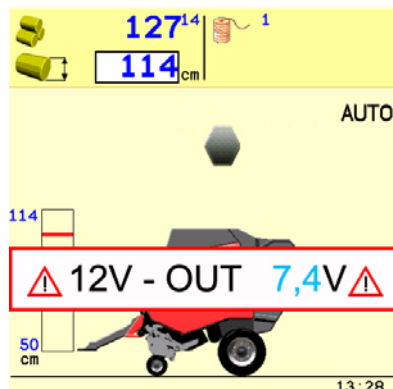
- > Adjust the hydraulic pressure by turning the knob

- > Check both tailgate sensors
- > Renew a faulty sensor as soon as possible

If the right tailgate sensor is faulty, the sensor can be switched off:  
→ Tailgate lock sensor switch off, page 174

# Troubleshooting

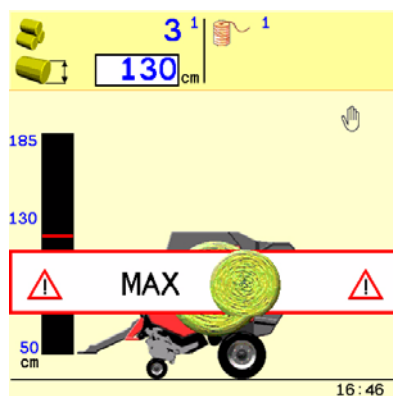
## Battery tension too low



This message appears when during baling the battery tension drops below 10.5 V (= default value).

- > Switch off the electronic control system
- > Check if all tractor lights are switched off
- > Start the tractor

## Oversize warning

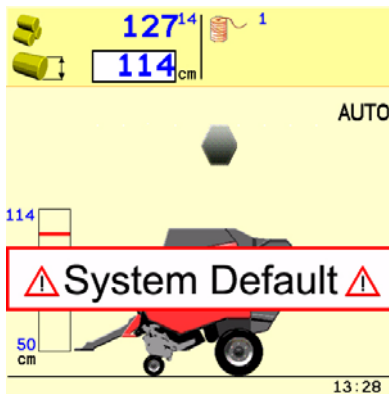


This message appears when the maximum bale diameter oversize sensor has been activated.

Possible cause:

- the maximum bale diameter has been reached
- > Check and adjust the maximum bale sensor
  - > Correct the bale diameter in the dealer functions

## System default



## Non-confirmable error displays

This message appears when the system has been restored to its default settings.

Calibration of the following sensors is required:

- bale growth sensor  
→ Bale growth sensor calibration, page 173
- bale shape sensor  
→ Bale shape sensor calibration, page 172

Strong electromagnetic radiation / fields may generate electronic errors. Non-approved transmitters may be the cause.

The system may show not-identifiable errors: if the error cannot be confirmed/identified at the machine, ignore it and proceed your work.

# Troubleshooting

## Security systems



Before approaching the machine

- switch off the electronic control system
- switch off the pto
- stop the tractor engine; remove the ignition key

Do not start up the machine again until the cause of the problem has been identified and the problem resolved. Otherwise, parts damaged as a result will not be covered by warranty.

Security systems protect the machine from

- overload
- exceeding the capacity
- damage by foreign objects

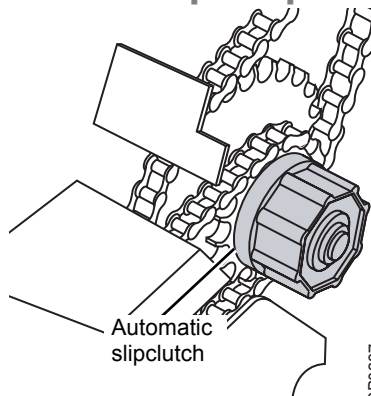
## Pick-up protection



The pick-up protection will operate

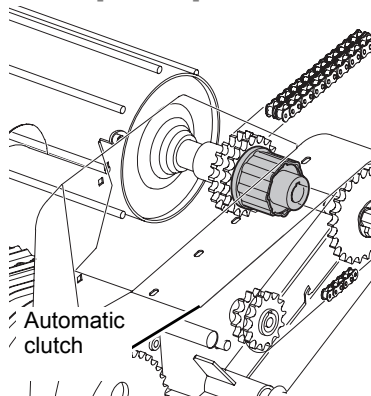
- in case of excessive input
- when the pick-up setting is too low or
- when the forward speed is too high

### OC + Rotor pick-up



The OC + Rotor pick-up is protected by an automatic camtype clutch.

### Wide pick-up



The wide pick-up is protected by an automatic camtype clutch.

## Overload safety

The complete intake unit [OC/R/WPU/XL-R/FC] is protected through a cam-type slip clutch in the pto drive shaft. In case of an overload this clutch slips announcing this by an audible rattling.

## Blockage and reversing

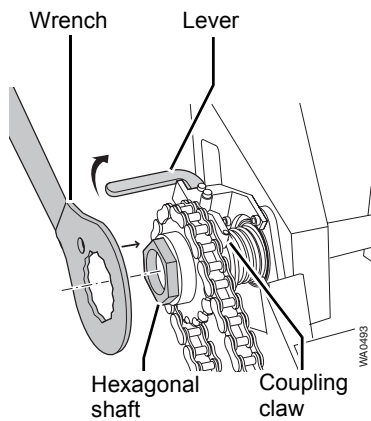
- > Switch off the pto
- > Retract knives
- > Switch on the pto
- > Let the pto run at a lower speed
- > Try to reengage

If the blockage stays effective:

- > Stop the engine and remove the ignition key
- > Then proceed to reversing procedure

# Troubleshooting

## Reversing the OC drive - OC/R/XL-R/FC



The lever is situated on the left side in the drawbar.

- > Move the lever to disengage the coupling claw
- > Place the wrench onto the hexagonal shaft
- > Rotate the hexagonal shaft ccw using the wrench
- > Remove the crop from the intake area
- > Place back the wrench into its stowing position
- > Reengage the coupling claw with the lever

When the blockage occurs at a moment when the desired bale diameter has been obtained, the bale must be wrapped and ejected.

Proceed as follows:

- > Move the lever to disengage the coupling claw
- > Switch on the pto at low speed
- > Wrap the bale
- > Eject the bale
- > Switch off the pto
- > Reengage the coupling claw with the lever
- > Try to remove the blockage through reengaging at lower pto speed

## Crop flow

Problem	Cause	Solution	Page
Breakage of pick-up tines	Pick-up setting too low	> Adjust the pick-up height	58
	Suspension incorrectly adjusted	> Adjust the pick-up suspension	59
	Missing tine guards	> Replace the tine guards	
Noisy pick-up	Cam roller broken or missing	> Replace the cam roller	
	Tine guards badly aligned/damaged	> Correct the tine guard alignment > Replace the tine guard if necessary	

## Hydraulics

Problem	Cause	Solution	Page
Hydraulic pressure not increasing	Dirty oil	> Drain, clean out the circuit and refill with new oil	
	Proportional valve not working correctly	> Check the proportional valve	

# Troubleshooting

## Opticut + rotor

Problem	Cause	Solution	Page
Blockage in front of the rotor	Too high a driving speed	> Decrease the driving speed	
	Low rpm	> Increase the pto speed	
	Machine is set too low	> Level the machine	48
	Irregular crop flow	> Adjust the crop guard	
Crop loss	Crumbling crop	> Reduce the number of knives	• 60
Blockage behind the rotor	Too short a cutting length	> Reduce the number of knives	• 60
Crop wrapping around the rotor	Cross scraper support poorly adjusted	> Adjust the cross scraper support	
Excessive power requirement of the machine	Blunt knives	> Sharpen the knives	197
	Too low pto speed	> Increase the pto speed	
	Too high driving speed	> Reduce the driving speed	
	Cross scraper support clogged or dirtied	> Remove one or several knives	• 60
The knives cannot be engaged in the cutting position	Dirt between or around knife mechanism, blocking knife movement	> Check the electro-hydraulic circuit > Check the free mobility of the knives	
Blockage behind the rotor	Too short a cutting length	> Reduce the number of knives	• 60

## Pick-up

Problem	Cause	Solution	Page
Windrow is not picked up	Pick-up is up or is set too high	<ul style="list-style-type: none"> <li>&gt; Lower the pick-up or</li> <li>&gt; set the pick-up wheels or chains</li> </ul>	
	Overload safety activated	<ul style="list-style-type: none"> <li>&gt; Remove the blockage</li> </ul>	
	<ul style="list-style-type: none"> <li>• Drive chain is broken</li> <li>• The sprocket is jumped off</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Check the chain, replace as required</li> </ul>	
	Too high a driving speed	<ul style="list-style-type: none"> <li>&gt; Adapt the driving speed</li> </ul>	
	Windrow too small / thin	<ul style="list-style-type: none"> <li>&gt; Make bigger windrows</li> </ul>	79
	Pick-up tines bent or broken	<ul style="list-style-type: none"> <li>&gt; Straighten the tines or</li> <li>&gt; replace the tines</li> </ul>	
Irregular crop feed	Too high a pressure of wind guard	<ul style="list-style-type: none"> <li>&gt; Reduce the pressure of the wind guard</li> </ul>	
Wind guard bounces	Wind guard rides on windrow	<ul style="list-style-type: none"> <li>&gt; Adjust the wind guard to a higher position</li> </ul>	
The pick-up is blocked		<ul style="list-style-type: none"> <li>&gt; Switch off the pto</li> <li>&gt; Shut down the tractor engine and remove the ignition key</li> <li>&gt; Wait until the machine has come to a real stand still</li> <li>&gt; Remove the crop</li> </ul> <p>Do not attempt to push or pull the material into or out of the machine while it is operating! Regularly remove accumulated materials to reduce fire hazard and interference with the operating parts!</p>	

# Troubleshooting

## Net wrap

Problem	Cause	Solution	Page
The actuator spindle moves too slow	Too low a battery tension (voltage)	> Check the battery	
	Poor electrical connections	> Check the electrical connections	
	Hinges of too difficult motion	> Clear to free motion > Oil the hinges	
Net around bale but lacerated	Bad quality of net	> Use the recommended net quality	
Net does not cover full bale width	Bale conical	> Ensure uniform feed	
	Net tension not sufficient	> Increase the net brake force	206
Net not tight around the bale	Insufficient quantity of net around the bale	> Correct the number of wraps	
	Brake force not sufficient	> Adjust the pulley	206
Net wrap system stays inactive	System set in manual mode	> Set to automatic mode	
	No electrical connection	> Ensure the electrical supply	
Net tears prior to end of wrapping cycle	Net brake force set too high	> Remove one or more disc(s) in the pulley	
	Poor net cutting	> Adjust the knife catch	
Net is not cut	<ul style="list-style-type: none"> <li>• The knife is dirty</li> <li>or</li> <li>• The knife is damaged</li> </ul>	> Clean the knife > Replace the knife	
	Mechanical obstruction when retracting	> Check the mechanism	
	Electrical power supply not sufficient	> Ensure the power supply	
	No net tension	> Check the net tension during the cutting procedure	
	Pto switched off	> Switch on the pto	

## Bale chamber hydraulic system

Problem	Cause	Solution	Page
Tailgate opens during baling	Tailgate not locked	> Apply the hydraulic tractor valve longer when closing	
	Tailgate cylinder leaking	> Renew the cylinder seal(s)	
	Tension cylinders leaking	> Renew the cylinder seal(s)	
	Pressure < 60 bar	> Increase the pressure	
Pressure gauge shows pressure drop	Pressure valve leaking	> Clean or renew the valve	
	Tailgate cylinder leaking	> Renew the cylinder seal(s)	
	Tension cylinders leaking	> Renew the cylinder seal(s)	
	Line leakage	> Inspect the hoses and tubes for leakage and repair	

# Troubleshooting

## Tailgate

Problem	Cause	Solution	Page
Tailgate opens during baling	Tailgate not correctly closed and locked	<ul style="list-style-type: none"><li>&gt; Inspect the tailgate locks</li><li>&gt; Check the electronic system if the tailgate is really closed and locked</li><li>&gt; Renew cylinder seals</li><li>&gt; Thoroughly clean closing sills of tailgate</li></ul>	
Tailgate does not lock when closed	Tailgate locks dirty	<ul style="list-style-type: none"><li>&gt; Thoroughly clean tailgate locks</li></ul>	

## Rollers

Problem	Cause	Solution	Page
Crop sticks onto the rollers	Crop is wet and sticky	<ul style="list-style-type: none"><li>&gt; Check scraper settings</li><li>&gt; Add another set of scrapers as required</li></ul>	

# Disposal of the machine

When the real life of the machine has finished, its separate parts must be properly disposed. Please observe the local current and valid waste disposal regulations.

## **Metal parts**

All metal parts have to be delivered to a metal recycling company.

## **Oil**

The hydraulic oil must be disposed at a used-oil recycling company.

## **Plastic parts**

All plastic parts can be recycled.

## **Rubber**

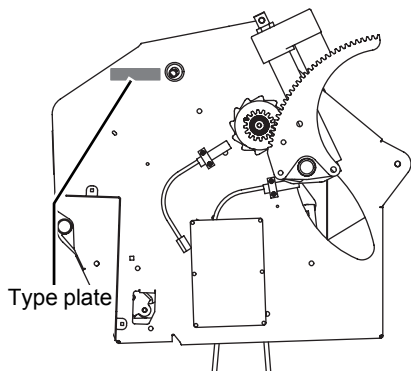
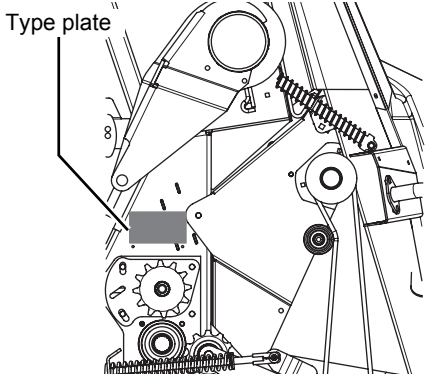
Rubber parts, like hoses and tyres, have to be delivered at a rubber recycling company.

## **Electronic scrap**

Electronic scrap, like the electronic control box and the machine box, have to be delivered to a specialized company.

# EC Declaration of conformity

In accordance with EU Directive, 98/37/EC



We

**Kverneland Group Geldrop BV**  
**Nuenseweg 165**  
**5667 KP Geldrop**  
**The Netherlands**

declare under our sole responsibility that the product

**RV 2160 / RV 2190 and accessories**

to which this declaration relates, conforms to the relevant basic safety and health requirements of EU Directive 98/37/EC.

For the relevant implementation of the safety and health requirements mentioned in the EU Directive, the following standards have been taken into account:

- EN 12100-1;2 (04/2004);
- EN 294 (06/1992)

Kverneland Group Geldrop BV  
Geldrop, 23.03.2007

A handwritten signature in black ink, appearing to be 'Casper Böhme'.

Casper Böhme  
Business area manager

<b>A</b>		<b>T</b>	
Attachment of the machine	56	Technical specifications	27
<b>B</b>		Trouble shooting	239, 246
Bale length setting	89	Security systems	252
<b>C</b>		Technical alarms	252
Cleaning, caring and storing the machine		<b>U</b>	
Winter storage	178	Use at the field	89, 94
<b>D</b>		Bale length setting	89
Dis / engaging knives	89	Dis / engaging knives	89
Disposal of the machine	261	Driving	94
Drawbar adjustment		End of baling	100
Moving the drawbar	46, 47	Pre-chamber density setting	89
Moving the hitch eye	46	Prior to baling	85
Driving	94	<b>W</b>	
<b>E</b>		Windrow dimensions	79
EC Certificate of conformity	262		
Electric lighting	54		
Error indications - Autoform			
Baling process alarms	246		
<b>M</b>			
Maintenance	182		
General	184		
Safety	182		
<b>O</b>			
Opticut cutting unit	60		
Removing the knives	67		
Optional equipment	235		
Changing press chamber height	100		
General	235		
<b>P</b>			
Parking the machine			
Safety	179		
Pick-up	58		
Pre-chamber density setting	89		
Preface			
Symbols used	7		
Preparation for road transport			
Bale chute	83		
Preparation for use	54, 56,		
58,	60, 79		