

# **Operator's manual Bale processor**

## **Model Taarup BIO+ B4000 with options**

16655216\_EN





# CE certificate of conformity

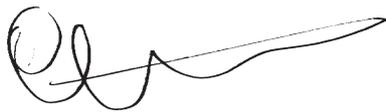
We,  
**Kverneland Group**  
**Gottmadingen GmbH & Co.KG**  
**Hauptstrasse 99**  
**D-78244 Gottmadingen**  
**Germany**

declare under our sole responsibility that the product:

Bale processor type Taarup B4000

to which this declaration relates corresponds to the relevant basic safety and health requirements of Directive 98/37/EU.

Gottmadingen, July 2006



Casper Böhme  
General Manager

**Enter here the serial number of your machine:**

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Kverneland Group manufacturers of farm machinery reserve the right to change designs and/or specifications without notice. This does not include an obligation to make changes to machines previously supplied.

# Guarantee

Taarup products are guaranteed for a period of one year from the date of delivery, against defects in material and workmanship.

Components not manufactured by Kverneland, i.e. electrics and hydraulics, PTO shafts and tyres are guaranteed according to the original manufacturer's recommendation.

The components listed below have limited guarantee due to their function:

- Tyres
- Pre-stretcher rollers
- Belts
- Knives
- Lamps
- Fuses
- Oil filter
- Hydraulic seals of motors, valves and cylinders.

Weakening due to wear and tear is considered to be normal for these parts. The product guarantees for these components are limited to manufacturing defects, breakage, poor workmanship, transport damage etc on new machines.

Any damage to bearings that are fitted with grease nipples is not covered under the standard product guarantee, if the damage is shown to be caused by rust or due to the ingress of liquids. Such damage is caused by insufficient lubrication or the use of low quality lubricants.

Any damage caused by the use of corrosive additives in or nearby the machine is also not covered.

If a failure is expected to be covered under the guarantee, the owner or its representative should inform the dealer when parts and/or repair work is required. Any guaranty claim should be applied for within the period of guarantee.

The dealer should fill in one guarantee claim form for each matter and forward it to the Kverneland sales company or importer before the 10th of the following month after the claim was raised.

The damaged parts should be marked with the number of the corresponding warranty claim and should be stored for 6 months by the dealer, available for inspection by the Kverneland sales company or importer if required.

Due to the operation of the Taarup products being out of the manufacturer's control, the guarantee covers the product quality only. Performance or any consequential losses are not covered.

The guarantee may be invalid if:

- a) spurious spare parts are used or the product is repaired or modified without the Kverneland authorisation.
- b) operator's and service instructions given by the manufacturer are not complied with.
- c) The machine is used for other purposes than those designed for.

The guarantee does not cover damage caused by normal wear.

Public safety regulations require from the manufacturer of this machine that all safety aspects regarding the use of the machine is thoroughly evaluated. As a result of these obligations Kverneland and its importer or sales company are not responsible for the function of components not shown in the spare parts catalogue covering this product.

Kverneland reserve the right to change the product with no obligation to previously supplied machines.

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## Introduction

We congratulate you on the purchase of your new Taarup product. You have chosen a product which will give you satisfaction through a network of efficient dealers where function, finish, after sales service and spare parts are always at hand.

All Taarup products are designed and tested in close co-operation with farmers and contractors to ensure optimal function and reliability.

Please read this manual before using your new machine.

We wish you all the best with your Taarup product.

Yours faithfully

**Kverneland Group**



**Kverneland Gottmadingen GmbH & Co.KG**  
Hauptstrasse 99  
D-78244 Gottmadingen  
Germany

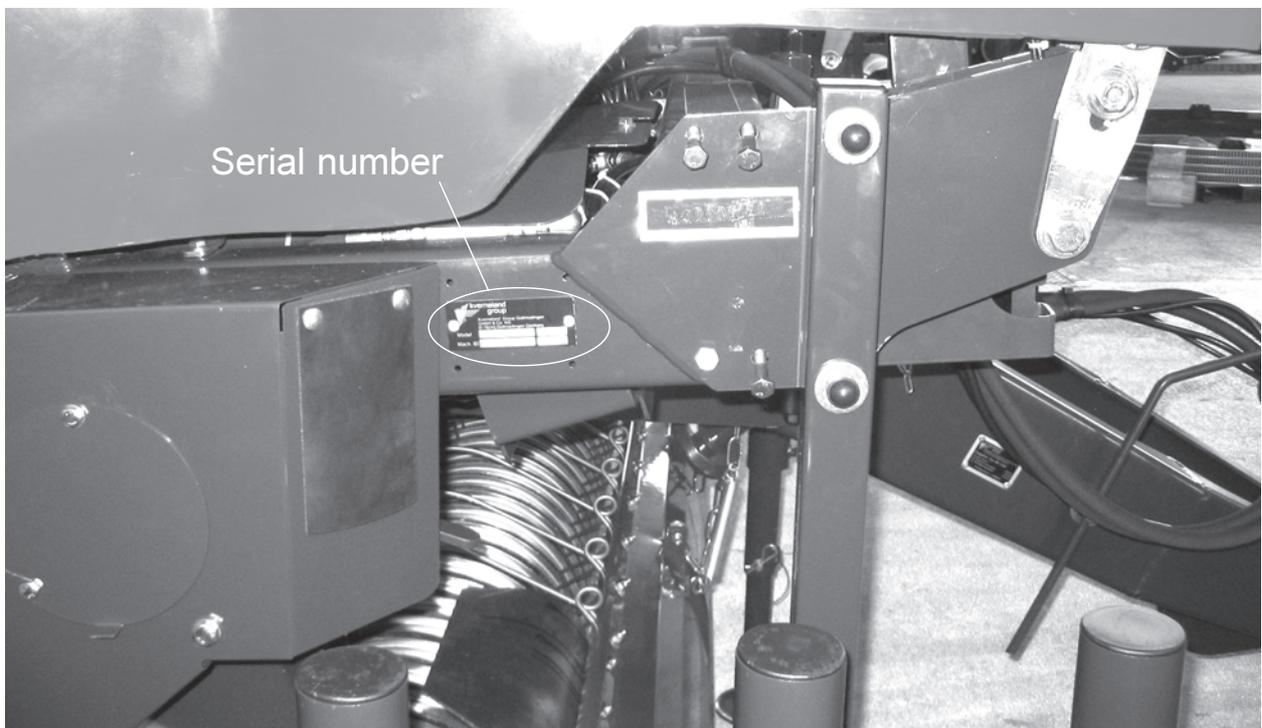
**The future of farming™**

# Machine identification

The machine's serial number and the manufacturer's address are found on the number plate of the machine. See illustration below.

The serial number and year of manufacture for this machine is given below. This number is important with regard to service and the correct supply of spare parts.

This marking, together with the enclosed CE certificate of conformity, means that the machine complies with all substantial health and safety requirements and is in accordance with directive 98/37/EU.



Serial number : \_\_\_\_\_

Year of manufacture : \_\_\_\_\_

# Technical specifications

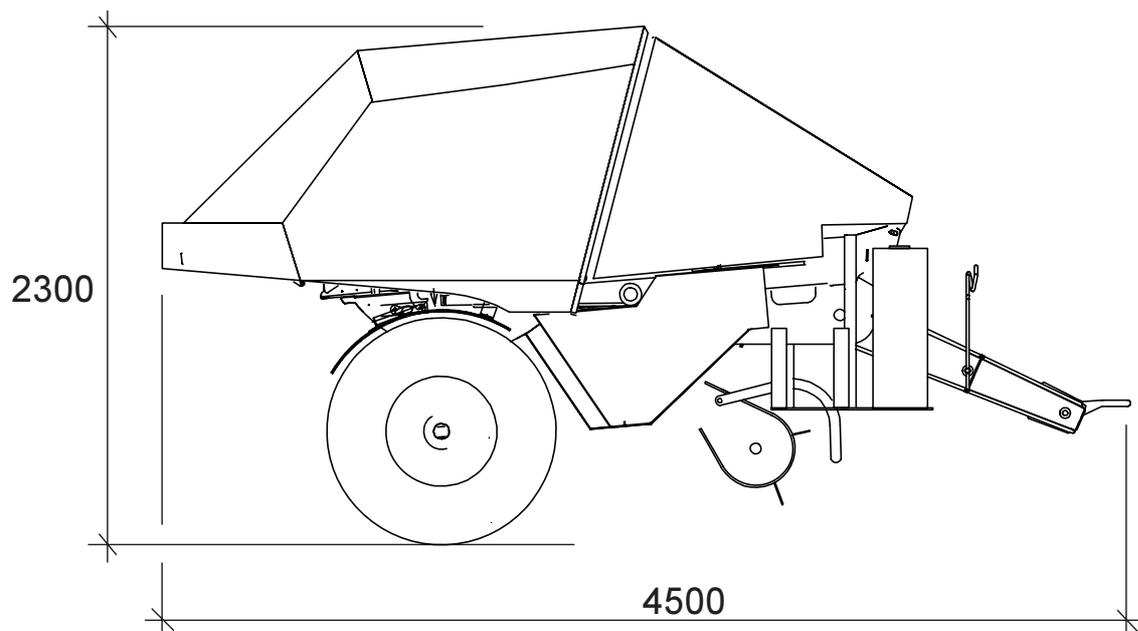
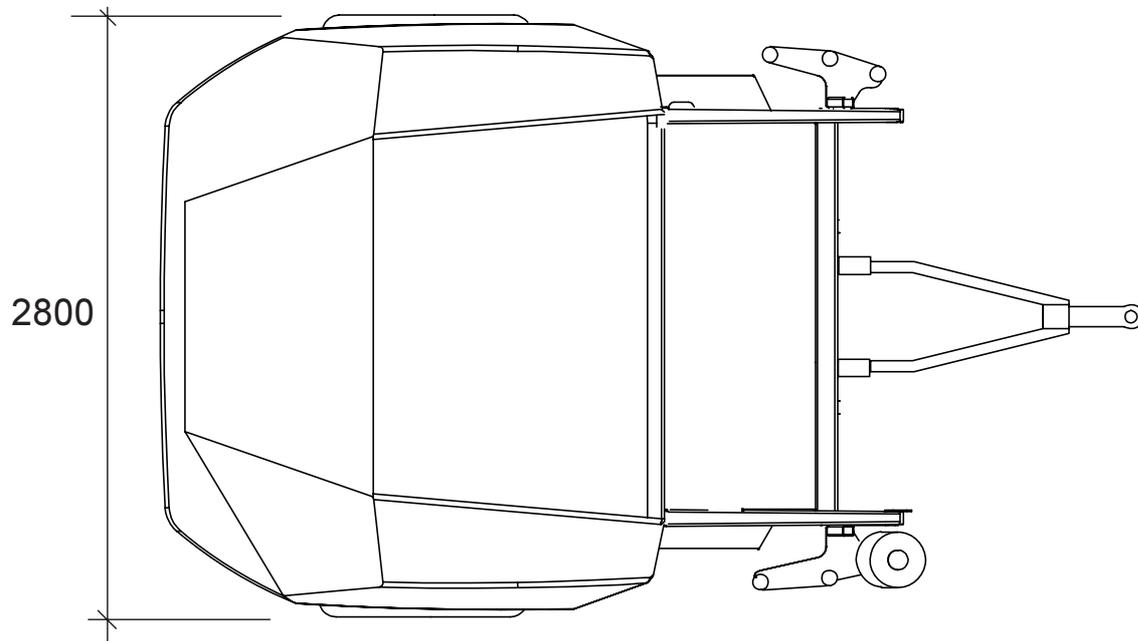
Valid for standard equipped machine with wheel size 500/50-17"

Description	Data
<b>Dimensions</b>	
Total length .....	4500 mm
Width .....	2800 mm
Height .....	2300 mm
Weight .....	3250 kg
<b>Wheel dimension</b>	
Regular .....	500/50-17"
Optional .....	500/45-22.5"
Optional .....	600/40-22.5"
<b>Tractor requirements</b>	
Hydraulic hitch/tractor drawbar .....	Ø52/Ø
Oil flow required (free return) .....	35 l/min
Oil pressure for ring speed 50 rpm .....	min. 190 bar
PTO connection .....	6 splines/540 rpm
Electric power supply .....	12V
<b>Pick-up</b>	
Working width .....	2100 mm
Number of tine rows .....	5
Support wheels .....	adjustable 12 positions
<b>Cutter unit</b>	
Number of knives .....	14
Knife distance .....	70 mm
Foreign body protection .....	Spring on every blade
<b>Bale chamber</b>	
Diameter .....	1250 mm
Width .....	1220 mm
Number of rollers .....	18
Roller diameter .....	190 mm
Low friction plates .....	Option
Chamber lock .....	Hooks
Chain lubrication .....	Automatic
Roller bearing lubrication, standard .....	5 nipple banks
Roller bearing lubrication, optional .....	6 nipple banks
Binding .....	Net
<b>Prestretcher</b>	
Film width .....	750mm
Nominal pre-stretch .....	approx. 70%
Max. pre-stretcher ring speed .....	approx. 50 revs/min
No. of film layers .....	2+2+...
Operating system .....	Programmable controls

# Dimensions

Valid for machine with wheel size 500/50-17"

All measures are in mm (1" = 25.4mm)



# Model descriptions

## Regular specifications

Fixed chamber bale processor provided with hydraulic operated pick-up. Mechanic drive of pick-up, cutting unit and roller chamber during baling. Hydraulic drive of baling chamber and pre-stretcher ring during stretch film wrapping. Computerised control of all hydraulic functions via solenoid valve bank. Lighting equipment.

## Options

Road lights

Low friction lining of roller chamber side panels

Drop mat

Bale turner

Extra set of knives

Knife grinding kit

Hydraulic rotor engagement

Film break sensor

½ speed of bale rotation

Kit for wrapping in sloping terrain

Ask your Dealer for further optional equipment.

# Summary of operator's instructions



This summary is intended to give a survey only. Before operation you must make yourself familiar with the safety advice and detailed descriptions as contained in the complete Operator's Manual.

a) Connect bale processor's drawbar to tractor's drawbar. Lift and secure the parking leg.

b) Connect hydraulic hoses to the single acting outlet with free return to tank, or to a double acting outlet.

The pump capacity should be set to maximum 35 litres/min at an engine speed offering PTO speed of 540 revs/min.

When connected to tractor featuring constant-pressure hydraulics (like John Deere 30-, 40- and 50-series), the centre line of the spool valve should be closed.

c) The electric/electronic controls require a steady 12V power supply. The battery cable included with the bale processor offers a steady supply when connected to the battery terminals. The brown wire shall be connected to the battery's positive terminal, the blue wire to the battery's negative terminal. The power supply should under no circumstances come from the lighter socket!

d) Connect machine to tractor's PTO shaft using 540 rpm gear.

e) Connect command panel and power supply.

f) Check the oil flow from the tractor at a PTO speed of 540 revs/min. At correct flow pre-stretcher speed on a new machine should be max. 50 revs/min and max. 50-53 revs/min on a machine being used for some time (corresponding to oil flow of 35 litres/min). Too high ring speed may cause inaccurate positioning of ring when approaching film cutting position. Too large oil flow may cause harmful oil heating.

g) Select desired mode (Manual or Auto).

h) Start baling. When chamber has reached 90% filling, a short alarm sounds. When chamber has reached 100% filling, a continuous alarm sounds. Stop baling to proceed with net and film wrapping (automatic or manual, depending on the selected operation mode).

i) If bale processor is operated in Manual mode, confirm by OK the required sequences to proceed.

j) When the bale is completely wrapped and unloaded continue baling.

k) The reacting speed of the cylinders can be adjusted by means of the set screws of the lever housings of the valve bank.



Remember that the operator is obliged to ensure that the product is baled & wrapped properly.

# Safety

Before operating, adjusting or servicing the machine it is important that the safety instructions in this manual are carefully read and understood by those, which are directly concerned. (Fig. 1)

Whilst all care and attention has been taken in the design and production of this machine, as with all machinery there remains a certain amount of risk to personnel whilst the machine is in use. It is strongly recommended that users and operators take all possible precautions to ensure both their own safety and that of the others that may be in the vicinity.

Read and observe the safety instructions in this manual. Safety is your responsibility!



Pay particular attention to this symbol. It means that there could be a serious hazard. It emphasises precautions, which have to be complied with in order to prevent accidents.

This symbol can be found throughout this manual and on the warning signs of the machine. They are for your safety and should be observed at all time.

## **Be careful when other people or animals are close by!**

Never start the machine when people or animals are close by tractor or machine. Never stand between the tractor wheels and machine. (Fig. 2)

Bear in mind regulations regarding the lower age of operators of this kind of machines.

## **Use of the machine**

The machine should be used only for the purpose it has been designed for.

## **Use personal protection devices**

Do not wear loose clothing, which might catch in any of the moving parts. In dusty conditions an approved mask must be used. (Fig. 3)

Take care of excessive noise level. Some tractor/implement combinations, depending on conditions, may cause noise level beyond 85dB at the operator's ears, even in a "Q" cab. In these conditions ear defenders must be worn. Keep cab windows and doors closed to reduce noise level.

## **The machine must be connected to a correctly sized tractor**

The weight of the tractor must correspond to the maximum weight of the machine when operated. Follow domestic law and regulations. (Fig. 4)

Make sure that the tractor has the correct PTO gear engaged. A machine designed for an input speed of 540 rpm. should never be connected to a tractor with 1000 rpm. output speed engaged. The normal PTO speed is given on a label close to the PTO input shaft.

## **Connecting machine to tractor**

must always be carried out as described in this manual. If connection should be carried out with drawbar, one of the parts (tractor or machine's drawbar) must have a clevis. The drawbar pin must be secured with a lock pin. (Fig. 5)

Observe national regulations regarding road transport. Some countries require the use of safety chain when a trailed machine is towed along public roads.

## **Think of safety while operating the machine**

Stop the tractor engine and remove the ignition key prior to carrying out repairs, cleaning, lubrication or maintaining the machine. (Fig. 6)

## **Safety guards**

Make sure all guards are in good order and fitted correctly. Do not attempt to start the machine before ensuring this. (Fig. 7)

Pay particular attention to the plastic guards of the PTO shaft. If damaged they must be replaced. The chain locks of the guards must always be fitted on a suitable place on the tractor and the machine to prevent the outer plastic guards turning.

## **Hydraulics**

Be very careful when dealing with hydraulics. Use eye protection and gloves. Escaping hydraulic oil under pressure might penetrate into the skin and cause serious infection. See a doctor if you have been exposed to injury. (Fig. 8)

Take care that nobody is close to the machine when the hydraulic functions are being operated.

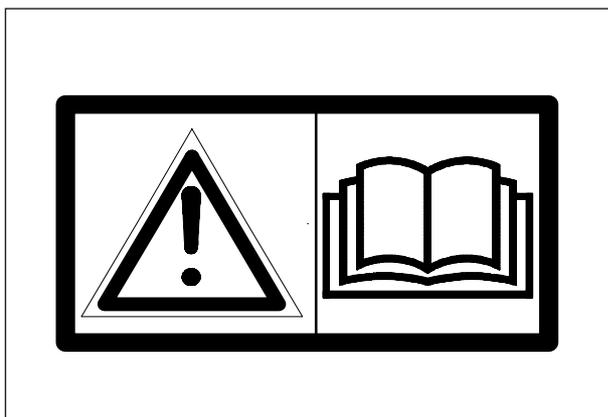


Fig. 1

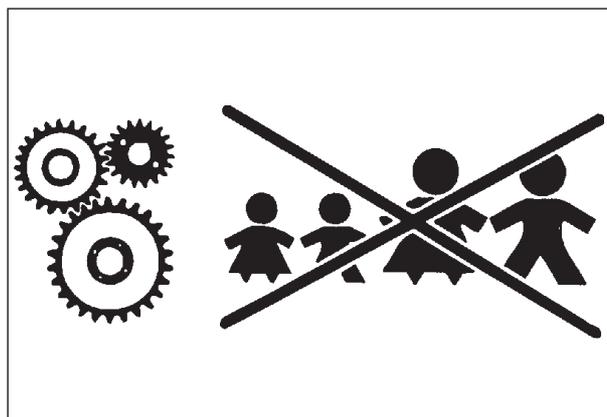


Fig. 2

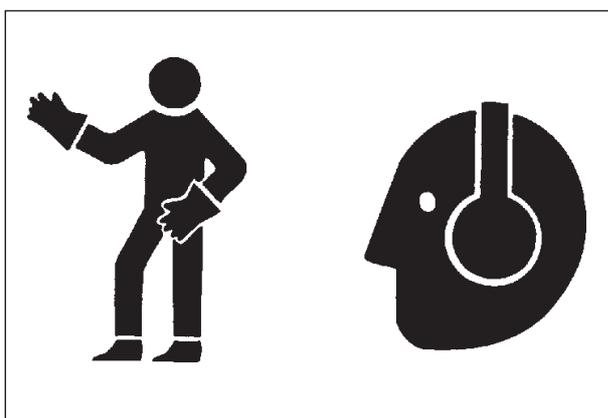


Fig. 3

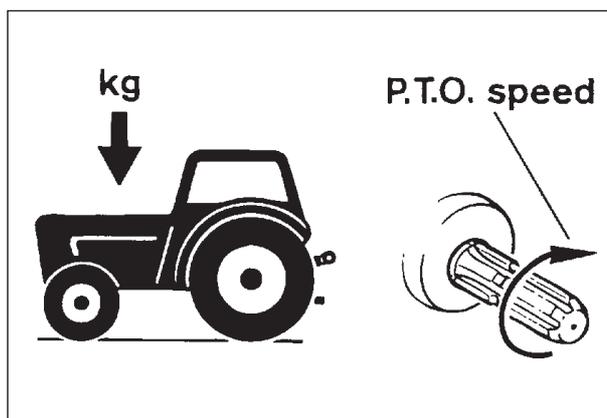


Fig. 4

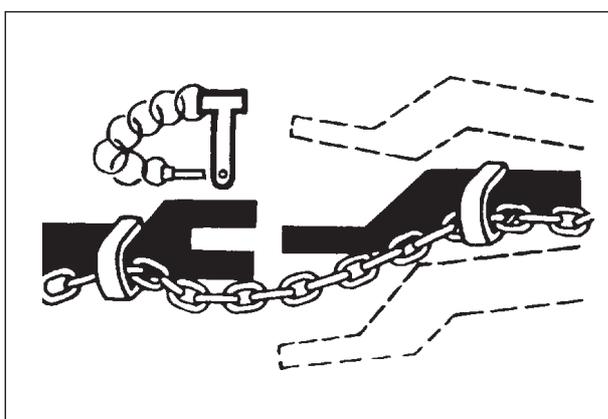


Fig. 5

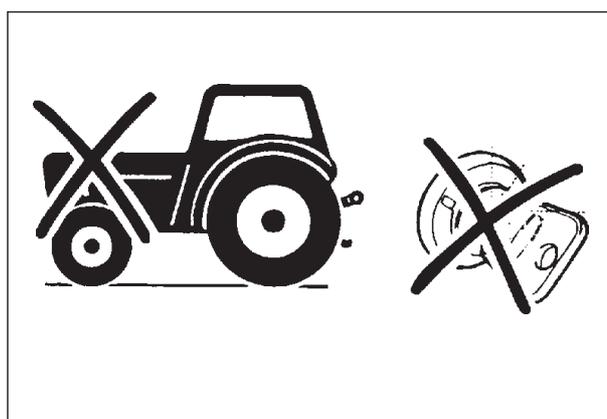


Fig. 6

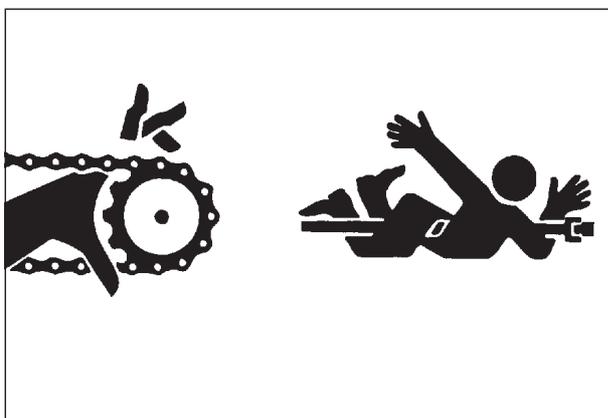


Fig. 7



Fig. 8

**When uncoupling machine and when leaving tractor/machine**

When uncoupling, all hydraulic functions must be in neutral position. The machine must be lowered to the ground and be safely secured. If the machine has parking chocks they should be used at the wheels. Never allow children to play or stay near agricultural machinery. (Fig. 9)

**Drive safely**

Beware of your responsibility, - carelessness or negligence may cause serious injury or even death. (Fig. 10)

Prior to transporting the machine along public roads, check wheel bolts and couplings. Disconnect or lock the hydraulic system.

Drive carefully. Reduce speed when turning and driving on uneven ground. Take care that trailed machine does not start swinging or become unstable.

Please be aware of the danger of overturning when working on slopes and in soft ground. Reduce load.

**Lights**

The owner and operator is responsible of providing correct lamps and reflectors on the machine when transported on public roads. Comply with public regulations. (Fig. 11)

**Safety equipment**

Always carry first aid equipment on the tractor. Also observe the regulations concerning fire extinguisher. When working with burning materials like hay and straw a fire extinguisher must be available at all times. (Fig. 12)

**Spare parts**

For safety reasons use only original spare parts. The use of spurious spare parts will cause the Taarup product guarantee to be invalid. (Fig. 13)

**Maintenance**

Take care that the machine is properly maintained and kept in good safe working condition. Never change the basic technical construction of the machine.

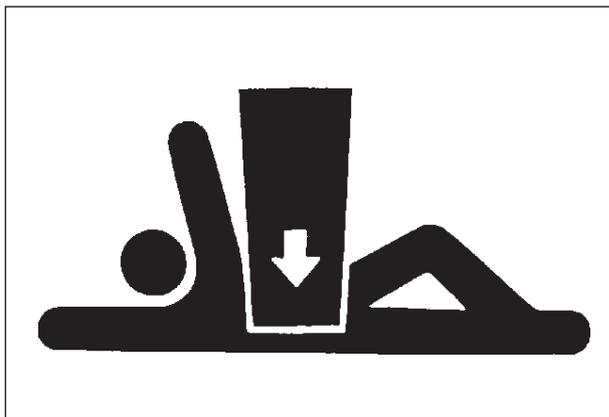


Fig. 9

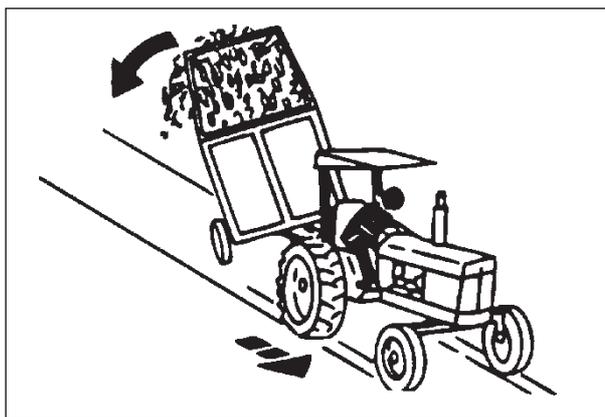


Fig. 10

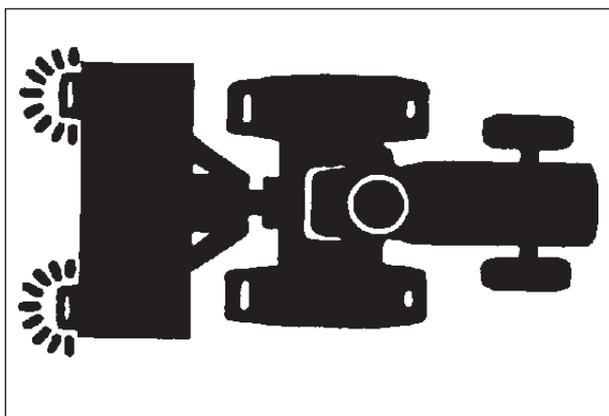


Fig. 11

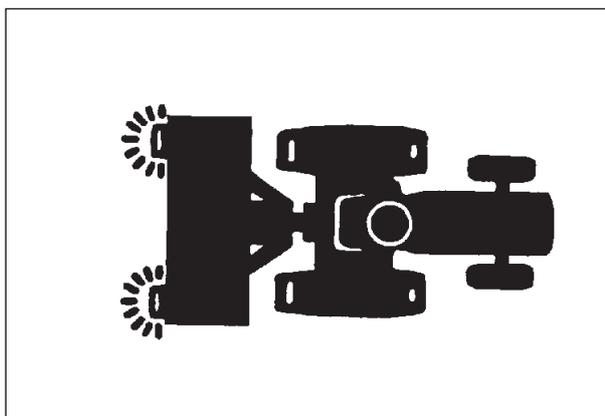


Fig. 12

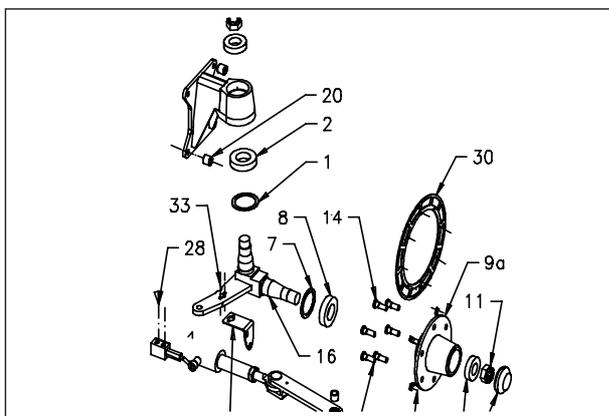


Fig. 13

# Supplementary safety instructions for the BIO bale processor

This machine is designed for the purpose of baling & stretch film wrapping of grass or other straw material in the form of round bales.



The machine is equipped with warning signs. If any of the decals are damaged, they must be replaced. Ordering numbers are shown on the illustrations in this paragraph.

**Warning sign UH220532.** Be careful! Read and understand the instructions in the manual before the machine is put into service and before attempting adjustment/maintenance.

**Warning sign UH220534.** Disconnect all electronics before welding commences.

**Warning sign UH220548.** Disconnect machine from tractor hydraulics ahead of any service on machine.

**Warning sign UH220900.** Stay away from the danger area while machine is working.

**Warning sign UH220524.** Danger of squeezing. Keep distance to machine when bale is tipped off.

**Warning sign UH220538.** Keep distance to the moving cutter arm. Hand or foot can be trapped and cut.

**Warning sign UH220543.** Squeeze risk. Keep away from rotating rollers.

**Warning sign UH220903.** Keep away from the pick-up zone when PTO shaft is rotating.

**Warning sign UH220902.** Keep away from the raised chamber top section if unless it is secured.

**Warning sign UH220901.** Before performing any work under the chamber top section or in the bale chamber, the hydraulic shut-off valve should be closed (valve is positioned at the front of the machine close to the hydraulic filter).

**Warning sign UH220528.** Danger of squeezing. Keep distance to rotating prestretcher ring.

**Warning sign UH220530.** Noise level near the pre-stretcher may exceed 90 dB. Ear defenders must be worn in this area.

## Lifting machine with crane

Only use approved lifting device. The weight of the machine is given in paragraph "Technical specifications".

Be careful! Make sure that nobody stands under or near the machine when it is being lifted.

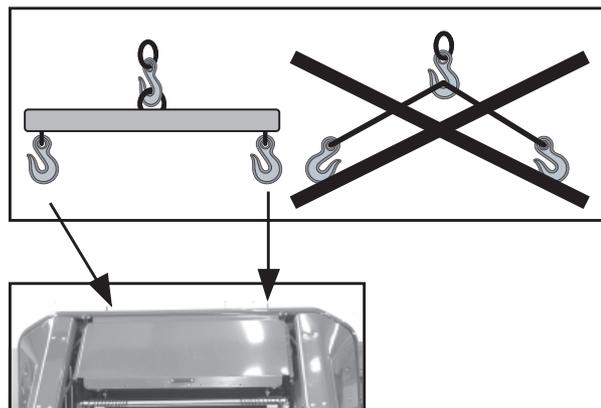
Fit the lifting straps supplied to the respective supports (see Assembly Instructions). Use only a crane-type lifting gear to prevent supports from deforming.

Attach the lifting straps by the "sling here" signs. A new machine includes a lifting spreader on top of the machine.

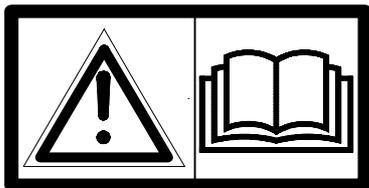
Check that the locking hooks of the baling

chamber are engaged before lifting.

Make sure that straps are securely fastened before lifting. Use a guide wire to keep machine in position.



UH220532



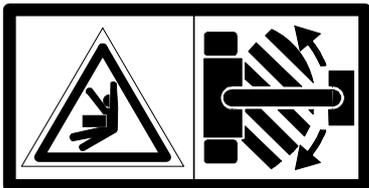
UH220534



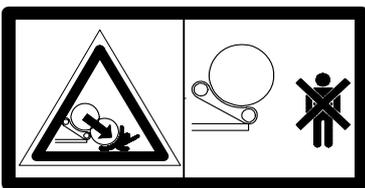
UH220548



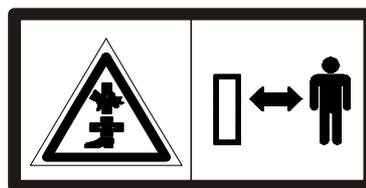
UH220900



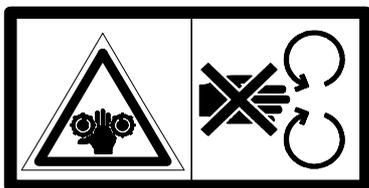
UH220524



UH220538



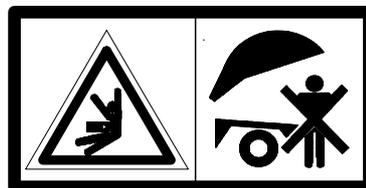
UH220543



UH220903



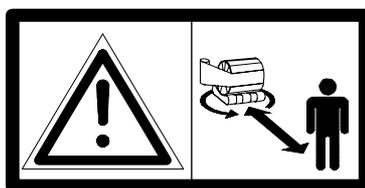
UH220902



UH220901



UH220528



UH220530



# New machine - be careful

Read the operator's manual. Great care must be taken when starting a brand new machine for the first time. Incorrect assembly, faulty operations etc. may cause expensive repairs and loss of profit. The Taarups product guarantee does not cover damage occurring when the instructions given in this book are not followed.



Pay particular attention to this symbol, - it emphasises operations where great care must be taken in order to avoid incorrect assembly, faulty operations etc.

Carefully do as described below when starting a new machine.

Check that the machine is mounted correctly and that it is not damaged. Assure that electric wirings have length and position that allow machine to move without causing any damage to the wirings.

Check the connections between tractor and machine.

Lubricate the machine according to lubrication chart.

Check wheel bolts torque setting - to be 210Nm (155lb ft).

## Cleaning

### General

We recommend the use of pressured air when cleaning the machine. Thus there is less risk of damaging the bearings of the machine. If high pressure water is used, keep clear of bearings and electric components.

### Pre-stretch rollers

It is important to keep the pre-stretcher's roller free from particles, dust, straw and tack. Use gasoline or similar. Dirty rollers may cause incorrect stretch of the film and incorrect coverage of the bale.

## Cylinders

Assure that piston rods are kept free from aggressive chemicals in order to avoid corrosion.



Remember that the operator is obliged to ensure that the product is baled & wrapped properly.

# 1 Preparing a new machine

## 1.1 Packing

Remove all kind of packing. Any equipment stored in the machine should be removed.

Remove the lifting spreader from the top of the machine prior to any kind of operation of the top section of the baler chamber.

## 1.2 Final assembly



Note! Make sure that the machine is stable during assembly.

- 1) Check wheel bolts, tension torque 210Nm (155 lb.ft).
- 2) Check that any options are correctly fitted.

## 1.3 Hydraulics

The hydraulics is ready for use.

The working speed of the hydraulic circuits can be adjusted by means of the set screws of the lever housings of the valve bank. See chapter 4.1.3.

## 1.4 Electronics

Connect system to tractor's power supply. Observe! Assure that power supply has sufficient capacity with stable connections. Any risk of short breaks in power supply will cause system to failure. The battery cable included with the bale processor offers a steady supply when connected to the battery terminals. The brown wire shall be connected to the battery's positive terminal, the blue wire to the battery's negative terminal. The power supply should under no circumstances come from the lighter socket!

Fit control panel in tractor cab.

Connect panel to machine's driver module. Switch on the screen. The current time is displayed.

# 2 Tractor requirements

The machine is connected to the tractor's drawbar/hitch.

One single-acting hydraulic outlet with free return to tank is required. A double-acting outlet with max 10 bar back pressure can also be used.

The pump capacity required is 35 litres/min at a pressure of 190bar with engine speed corresponding to PTO speed of 540 rpm.

The electronic controls require a steady 12V power supply. Use the power supply cable included with the machine connected to the battery. The solenoids can be operated at 11V power (measured at the solenoid), while the electronics require min. 11V input power (measured at the driver module (black box)).

Road lights require a standard 7 pin light plug.

# 3 Stretch film

<b>Film width:</b>	750mm only
<b>Tackiness:</b>	Good, on inner side only
<b>Strength:</b>	High flexibility for proper enclosure at corners and edges
<b>Film thickness:</b>	Must be at least 25 micrometers due to less thickness when stretched

**Max. roller diameter:**  
235 mm

## 4 Operating the machine

### 4.1 Connecting machine



#### Caution:

Adjusting, maintenance and repair work is only to be carried out when the motor is switched off and the machine is at a standstill. Remove ignition key.

#### 4.1.1 Connecting to tractor

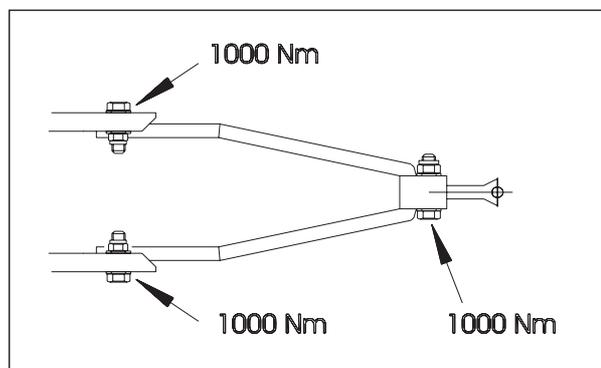
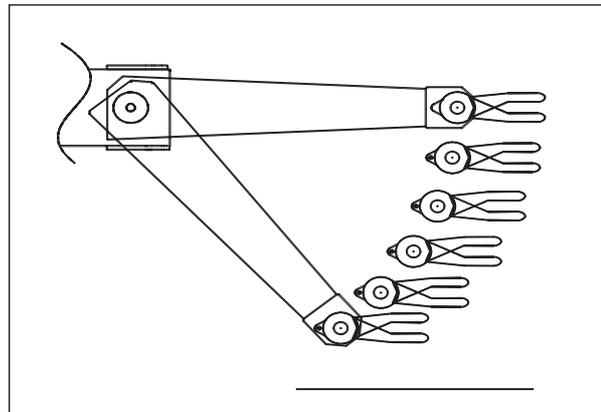
##### 4.1.1.1 Connecting & adapting the drawbar

Connect drawbar to tractor's drawbar/hitch. Use the drawbar eye bushing when connecting to tractor drawbar. Fit with ring and circlip on the upper side in order to avoid damage to bushing.

The drawbar is to be adjusted in such a way that the bale processor frame is slanting approx. 5° to the rear when hooked up. The posts of the film roll magazines should be vertical when machine is correct adjusted standing on horizontal surface.

The drawbar height is set by loosening the fastening bolt and adjusting the toothed disks.

- Bring the bale processor into correct position using the support leg - adjustable crank. Locate towards the protective cover.
- Loosen the right and left drawbar fastening bolts (on the device) and tilt the drawbar to hitch height (centre of the ring-hitch fastening bolt to centre of drawbar coupling/ upper edge of pending attachment)



- The ring hitch is to be brought into horizontal position by loosening the ring-hitch fastening bolt.
- Ensure that the three fastening bolts are tight = 1000 Nm



#### Caution:

When adjusting the drawbar, prevent the bale processor from rolling away by placing parking blocks at the heels.

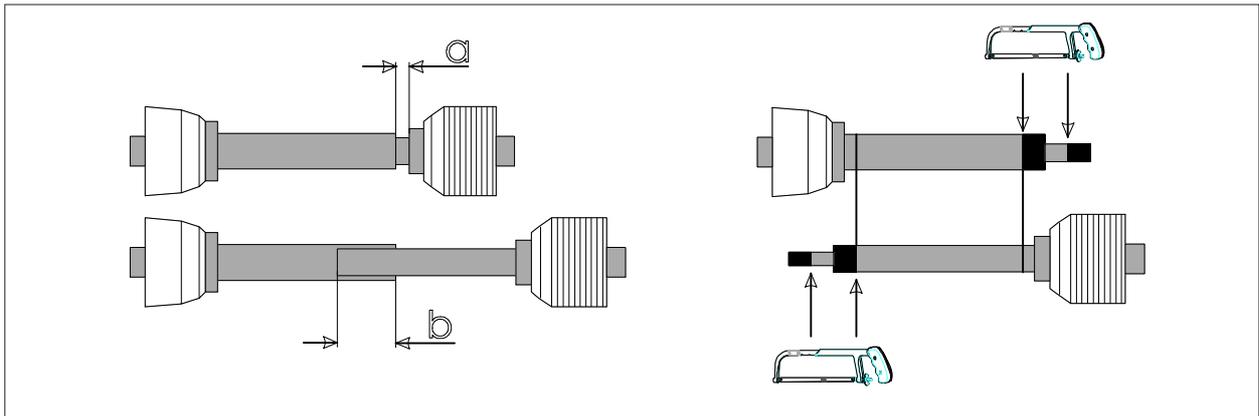
##### 4.1.1.2 Adapting & connecting PTO shaft

A single wide-angle joint universal drive shaft with integrated ratchet clutch is supplied with the bale processor. If the bale processor is overloaded, it switches the driving torque to zero causing machine to stop. Coupling re-engages automatically when PTO speed drops below 200 rpm.

Torque of 1900 Nm  $\pm$  10% (for a PTO speed of 540 rpm) are preset by the universal drive shaft manufacturer.

Interference of any kind to the coupling mechanism shall nullify all guarantees for damage caused by such interference.

The safety guard at the gearbox input shaft includes mounting openings so that the safety clutch end of the universal drive shaft can be pushed onto the central-gear drive shaft and clamped. The torque moment of the bolts is 85 Nm. Both mounting openings are then to be properly closed with the covers.



It is sometimes necessary to correct the length of the universal drive shaft due to the different hitching possibilities and various tractor types.

To check and correct the length, proceed as follows:

- hitch the bale processor to the tractor
- drawbar must be set as described above
- pull apart the universal drive shaft and mount the halves to the tractor and machine
- hold the universal drive shaft halves under each other

- when taking all curves and when driving straight, ensure that:
  - a minimum overlap of  $b = 200$  mm is guaranteed,
  - the universal drive shaft is not sitting on the block, minimum distance  $a = 20$  mm,
  - there is sufficient clearance between the drawbar and the universal drive shaft
- if it is necessary to shorten the length, saw the same amount off both the sliding and protective tubes
- carefully burr the pipe ends, remove shavings and grease sliding points well

#### 4.1.1.3 Connecting hydraulics

- Connect the pressure hose to an outlet with possibility to adjust the oil flow. (Yellow cap, connected to the oil filter).
- The return hose should be connected to a free return connection (blue cap).

Connecting through the double acting outlet can cause operation problems on the machine due to high hydraulic backpressure.

#### 4.1.1.4 Connecting computer control system

**Connect the driver module to the power supply of the tractor using the battery cable provided. Some tractors are standard equipped with a direct connection from the battery. This connection might be used in-stead-of the battery cable included with bale processor.**

Connect the control panels to the driver module.

Protect the command panel from rain and moisture. The driver module (black box) should under no circumstances be left open, with the risk of moisture, dust etc. damaging the electronics.

## 4.1.2 Continuous hydraulic motor drive on tractors with closed centre system

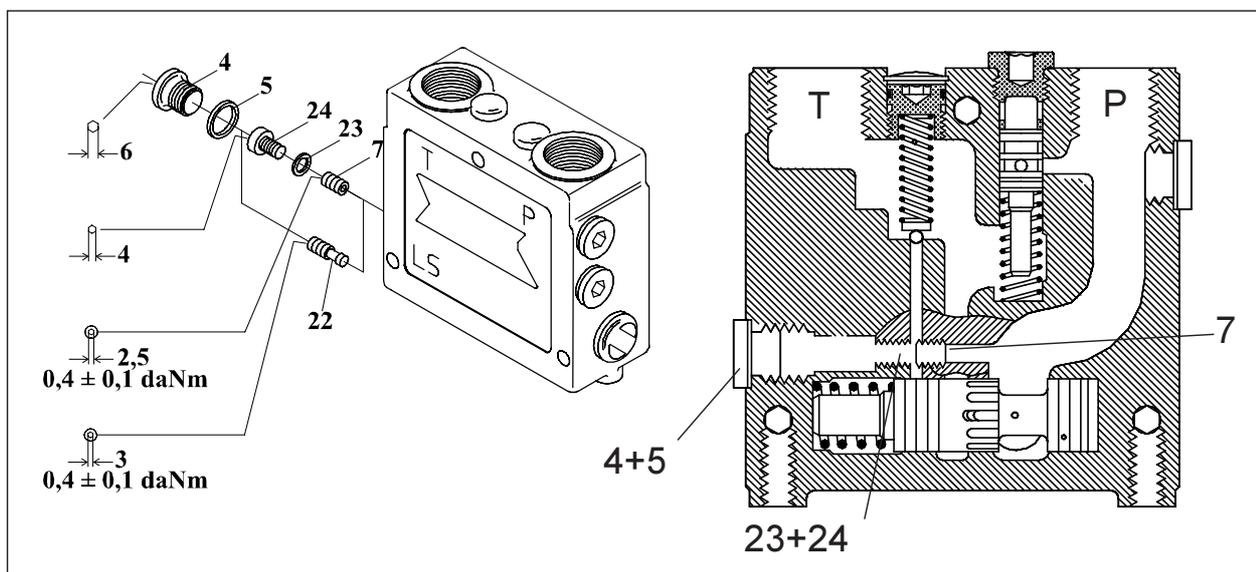
When connected to a tractor with constant pressure hydraulics (such as John Deere 30, 40 and 50 series), the control section of the valve must be rebuilt according to the following description:

- Unscrew coverplug 4 and plug 22.
- Mount orifice 7 and plug 24 with sealring 23.
- Refit coverplug 4 and sealring 5.

When connected to a tractor with open centre hydraulics, plug 24 with sealring 23, and orifice 7 must be replaced by plug 22. If not, all oil will pass with full pressure over the

tractor hydraulic's safety valve with a risk of damaging the tractors hydraulic pump!

The oilflow from the tractor should be adjusted to approx 35 l/min. (See chapter 5.7.12) Excessive oilflow will generate heat in the tractor hydraulics and can cause damage! For tractors where it is impossible to adjust the oilflow properly, (contact your tractor dealer), a oilflowdivider kit (UH58084) can be supplied.



## 4.1.3 Tractors with load sensing system

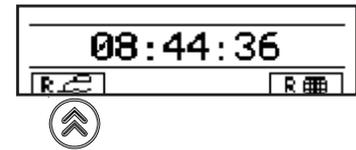
When connected to a tractor with load sensing system, item 4 of the hydraulic block must be rebuilt according to the following description:

- Unscrew plugs 4 and 24.
- Fit plugs 22 (with orifice) and 24 with sealring.
- Fit the 3<sup>rd</sup> control line in the place of plug 4 and connect to tractor coupler (optional equipment, see Operator's Manual of the tractor).

## 4.1.4 Pressurize hydraulic cylinder circuits

During stand still over a period pressure of vital hydraulic circuits might have been released. By simply pushing Select key no. 1 while (within 5 seconds) system is powering up, hydraulic pressure will be activated for a short time on film cutters, chamber top section and chamber bottom section in order to make sure that components are in correct position with check valves closed.

- Switch on power supply to control panel.
- While Pressurize hydraulics icon is shown on select key 1, press this key once.
- Hydraulic cylinders of film cutters, chamber top & chamber bottom sections are activated for a short time to make sure they are in initial (closed) position with check valve activated.



Notify: This function is disabled if the top section is lifted.

## 4.2 Use clean hydraulic oil!

Clean hydraulic oil will prevent excessive wear and premature failure of components. Change the tractor filter and oil as per manufacturer's instructions.

### 4.2.1 Integrated oil filter

A high-pressure oil filter is applied in the pressure line, in front of the valve bank.

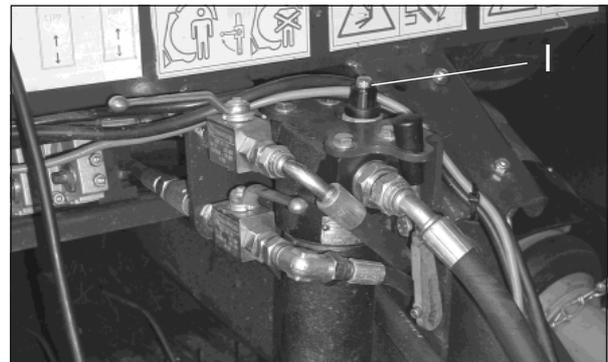
For replacement of the filter element - see chapter "Maintenance".

#### Filter visual indicator (I)

Green - filter element is clean  
Red - change filter element

Check the filter when the oil is warm (at tractor engine rpm as for ordinary wrapping). Cold oil may give wrong indication.

Note! On tractors with closed centre system, the pre-stretcher ring must rotate in order to get correct indication (oil must flow through the filter). Be careful. Beware of the moving pre-stretcher ring.



## 4.3 Set-up of pick-up

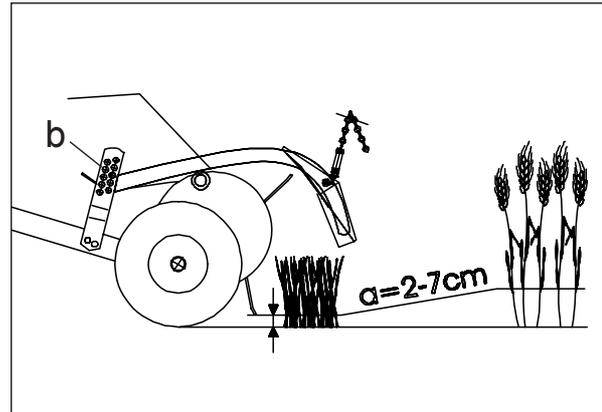
### 4.3.1 Pick-up height

The pick-up is raised and lowered hydraulically being operated from the control panel's joystick keys.

The working height of pick-up is set using two support wheels (right and left).

The height at which material is lifted up cleanly is to be set in accordance with the ground conditions and the quality of the baling material.

The distance between the tine tips at their lowest position and the ground is the decisive factor. Recommended clearance (a) is minimum 2 cm for green crops and hay or maximum 7 cm for straw. The tines should not come into contact with the ground to prevent contamination of straw material and excessive wear of tines.



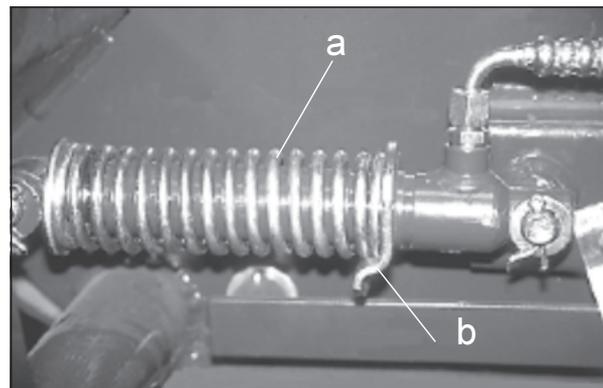
The distance between the tines and ground is set using 2 x 6 borings at the support wheel stem stay (b). Ensure that the setting at the right and left support wheel is the same.

### 4.3.2 Setting pick-up support wheel ground pressure

The ground pressure of the pick-up support wheels can be set using the right- and left-hand compensation spring (a). The springs are compressed by the hydraulic cylinders of the pick-up lift. The relief can be pre-set by positioning the sliding clip (b) into one of the four positions.

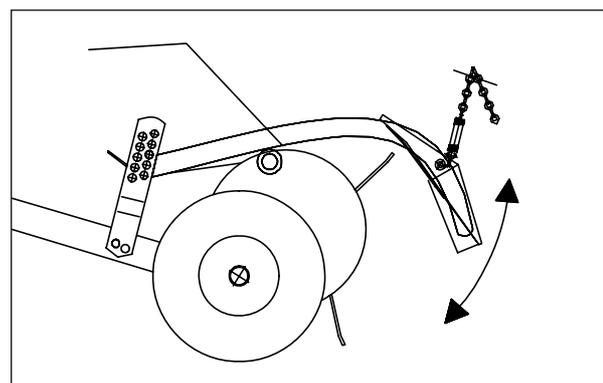
Reduced ground pressure is recommended for soft ground in order to avoid damage to surface. Set sliding clip to the rear position for minimum ground pressure.

To shift the sliding clips into different positions, the pick-up must be raised to its limit.



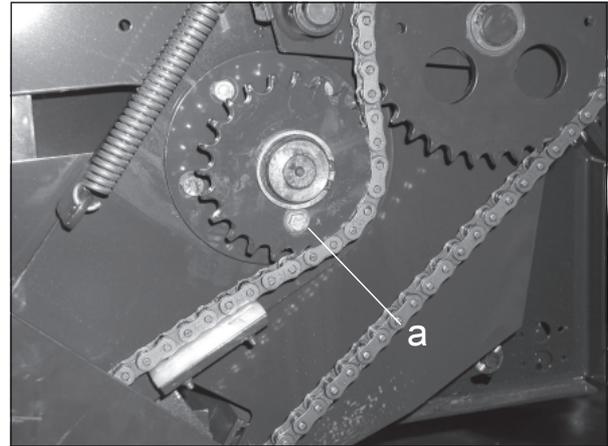
### 4.3.3 Set pick-up baffle plate

The function of the baffle plate is to hold down the baling material in order to achieve an even flow of material. The height of the baffle plate can be adjusted using two chains to suit the type of material and its volume.

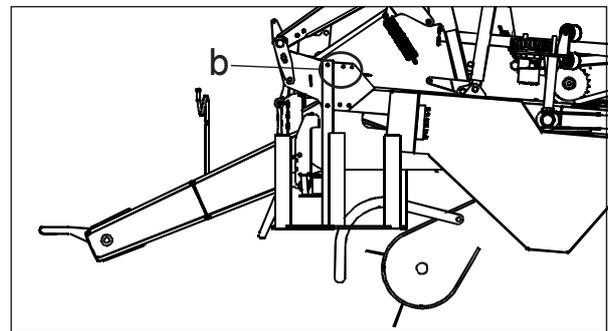


### 4.3.4 Pick-up overload protection feature

In order to prevent damage, the pick-up is equipped with a torque protector in the drive mechanism. When there is overloading, the power flux is interrupted by the breaking of shear bolt M8 x 45 8.8 DIN 931 (a) and pick-up stops. When shear bolts are being changed, only top quality bolts are to be used.



Spare bolts are stored at the left-hand forward corner of the main frame (b).



OC23 has a torque limiter incorporated in the pick-up drive system. When overload occurs, power is interrupted by an outwardly-acting pin type safety clutch causing the pick-up to stop.

## 4.4 Crop cutting system

### 4.4.1 General

Feed drum (1) with double tines configured in a spiral (2) ensures a regular drawing cut of the blades (3).

The OptiCut cutting system gives the option to have the crop cut to a theoretical length of 70 or 45 mm at a maximum of 14 or 23 cutting points. The complete blade unit can be retracted from the conveyor channel using hydraulic power. The number of blades can be chosen freely to obtain the desired cutting length. Engaging and disengaging the blade unit is possible at any time.

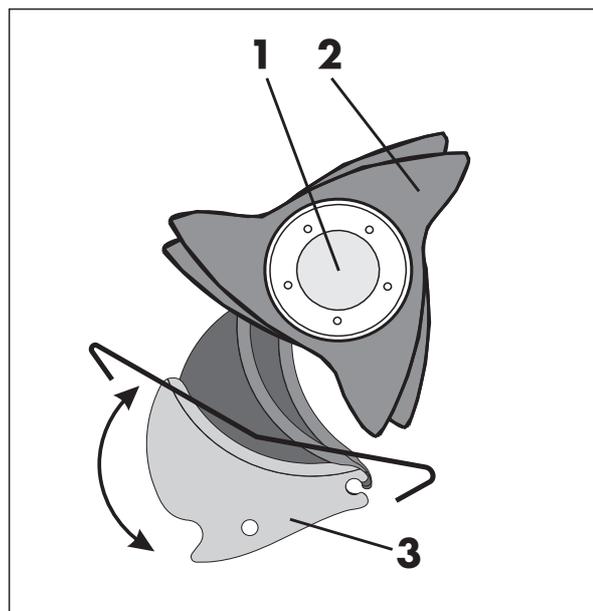
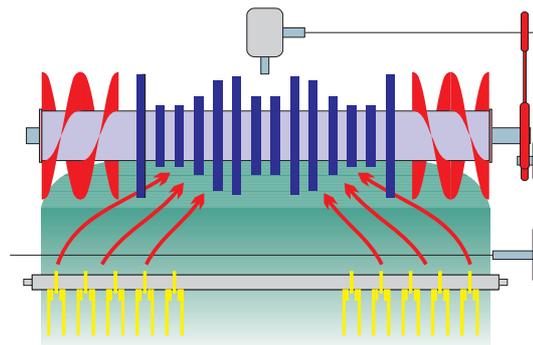
Each blade has its own protective device against foreign objects. When a foreign object enters the conveyor passage, the blade is retracted into the floor of the cutting unit and then automatically returns to the cutting position. This function is ensured by spiral springs on OptiCut 14 and by pre-loaded hydraulic rams on OptiCut 23.



#### Note:

When there is a danger of blockage due to excessive crop density, it is advisable to swing out the cutting system for a short time using hydraulic power to allow the crop to pass through more easily.

When swinging out the cutting system at the end of the baling process, a final layer of uncut crop is laid around the bale. That will minimise the loss of broken crop and increase bale stability.



Manual engaging/disengaging of knives are done by means of the joystick.

When moving out the cutting system at the end of the baling process, a final layer of uncut crop is laid around the bales, which can minimise losses of broken crop and increase bale stability. Operator can select automatic disengaging/re-engaging of knives from the user menu of the control system. When chamber sensor is indicating bale chamber is full, knife unit will automatically be disengaged. Continue baling for a few meters to complete bale with a layer of uncut material, stop baling and continue binding and film wrapping. When discharging bale knives will automatically return to cutting position.

The hydraulic lock valve on the right-hand side of the machine (at the rear of the pick-up) is to be closed when the cutting system is used for an extended period in the disengaged position.

## 4.4.2 OptiCut 14

The OptiCut 14 has 14 knives and a theoretical cutting length of 70 mm.

The knives can be installed in two different positions:

Blade shaft, pos. 1

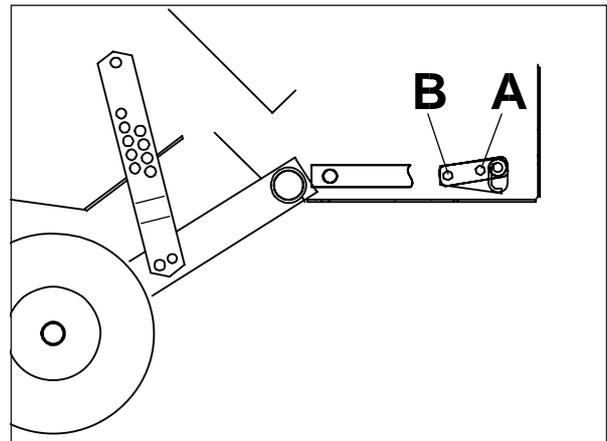
- steep cutting angle for 'precision cutting'

Blade shaft, pos. 2

- flat cutting angle for 'normal cutting' (approx. 20% lower power consumption)

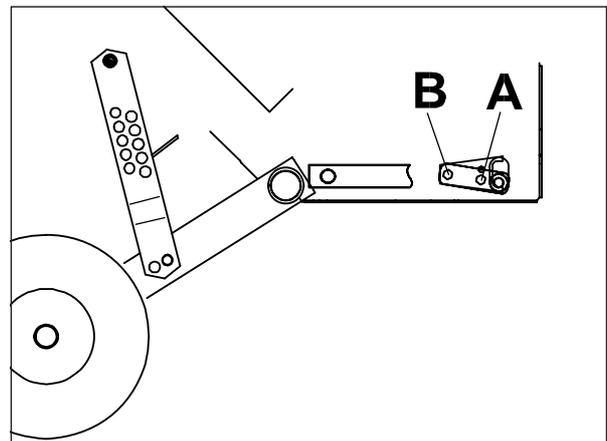
### 4.4.2.1 Adjusting the cutting angle from 'normal' to 'precision' cutting

- Move out the cutting system hydraulically, switch off the tractor engine
- Unscrew fixing bolt M10 (A) on the left and right-hand sides
- Undo the hinge screw M10 (B) on the left and right-hand sides
- Move in the cutting system hydraulically, switch off the tractor engine
- Assemble fixing screws (A) in the upper position
- Tighten the fixing and hinge screws (A & B) at the left and right



### 4.4.2.2 Adjusting the cutting angle from 'precision' to 'normal' cutting

- Move in the cutting system hydraulically, switch off the tractor engine
- Unscrew fixing bolt M10 (A) on the left and right-hand sides
- Undo the hinge screw M10 (B) on the left and right-hand sides
- Move out the cutting system hydraulically, switch off the tractor engine
- Assemble fixing screws (A) in the lower position
- Tighten the fixing and hinge screws (A & B) on the left and right-hand sides



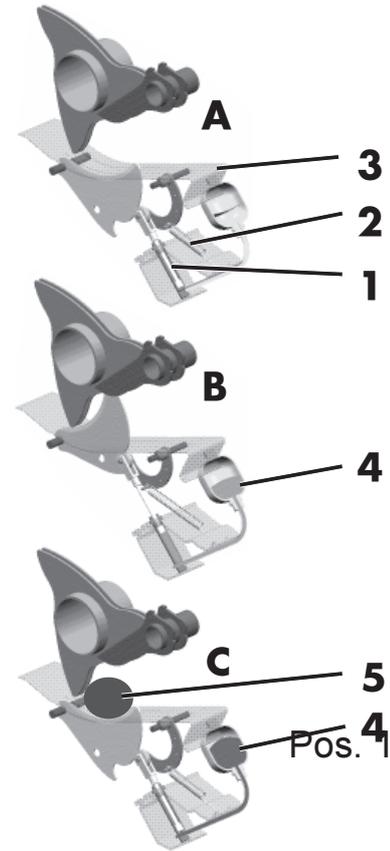
### 4.4.3 OptiCut 23

The OptiCut 23 system is fitted with 23 blades giving 45 mm theoretical length of cut. Knives are individually secured against foreign objects by hydraulic rams (1).

(A) When depressurized the hydraulic rams are held in retracted position by a spring. Blades are immersed in the floor of the cutting unit.

(B) Hydraulic pressure on the system moves the blades to cutting position and causes the hydraulic accumulator (4) to be filled.

(C) Foreign objects (5) entering the feed unit will cause the blades to swing clear. The retraction stroke of the hydraulic ram causes the blade to swing into the floor of the cutting unit. After the foreign object has passed through, hydraulic accumulator (4) will extend the ram and the blade returns to cutting position.



**Note:**

A leakage on the single-acting hydraulic rams (1) cannot be excluded, but does not impair the proper function. It is essential to extend the rams before storing the machine.

#### Controlling the crop cutting system

Blades can be swung in or out during the baling process using the joystick (the hydraulic circuit must be activated).

- Move joystick → (to the right)  
Blades are engaged
- Move joystick ← (to the left)  
Blades are swung out of position

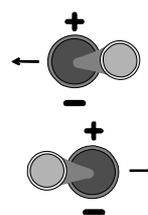
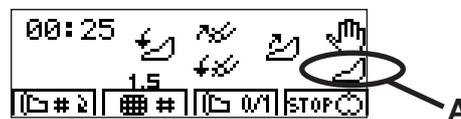
Blade icon (A) shows the state of the blades:

- Icon visible = Blades engaged
- Icon not visible = Blades swung out of position



**Note:**

The icon starts flashing and a warning beep is audible when the blades are in an intermediate position, i.e. neither engaged nor swung out. In this case the joystick has to be operated once more in the desired direction.



Pos. 2



## Note:

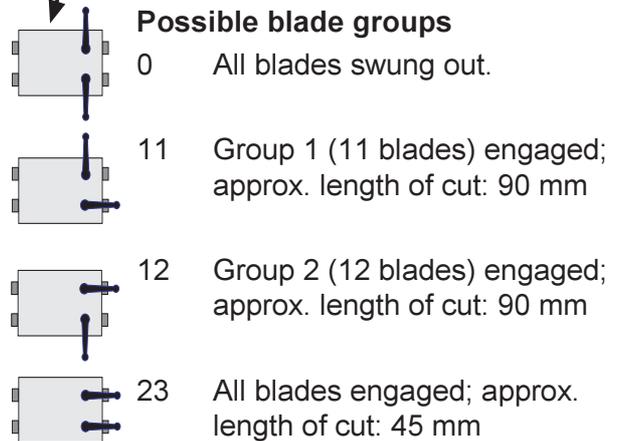
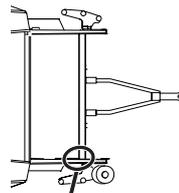
Swinging the blades out during crop collection will speed up the process.

### Variable blade engagement in groups

The 23 blades of the OptiCut crop cutting mechanism can be engaged in different groups. Using the two taps on the right-hand machine side it is possible to preselect 0, 11, 12 or 23 blades.

### Procedure:

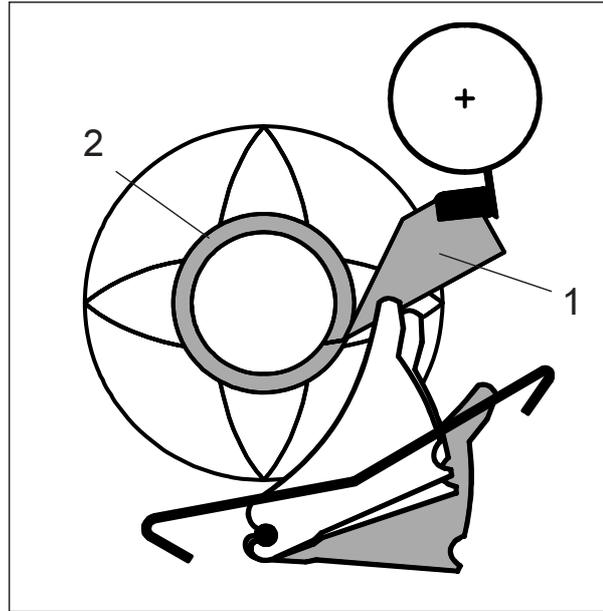
- Open both taps (23).
- Switch on the Autoform control box.
- Engage the hydraulic circuit.
- Swing out the blades moving the joystick to the left ←.
- Close the tap for the blade group to be engaged.
- Activate the preselected blade group by moving the joystick to the right →.



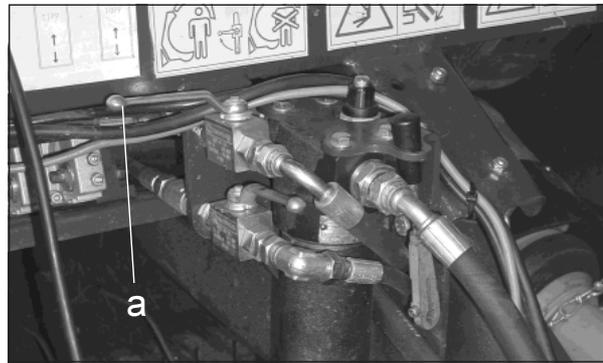
### 4.4.4 Adjusting the conveying drum scrapers

Re scrapers (1) position relative to conveyor drum (2).

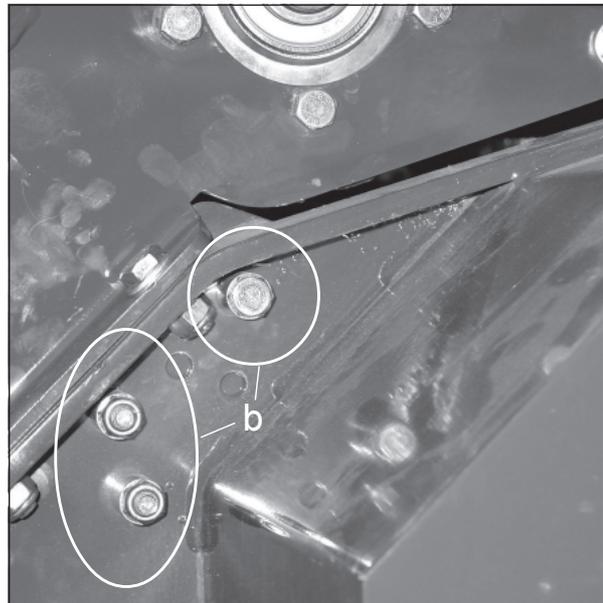
- Move out the cutting system hydraulically
- Open the chamber top section hydraulically



- Secure the top section - close the upper lock valve in front of the machine (a)
- Switch off the tractor engine



- Loosen bolts (b) of scraper beam on both sides
- Push scraper towards the drum by means of a wooden box or similar. Retighten bolts while scrapers are kept in position



## 4.5 Net binding

### 4.5.1 General

The numbers of net wraps should be selected with the control panel. For bales that are wrapped with stretch film, 1.5 wraps of net is required as a minimum, while 2.5 net wraps are required for bales with no further film wrapping. If bales are to be shifted several times, further net wraps are recommended in any case.

Range of net wraps is 1.5 – 9.9, and the option for automatic or manual binding start-up are carried out using the control panel, see paragraph 5.

A second net roll can be located in front of

the bale processor together with the film rolls.

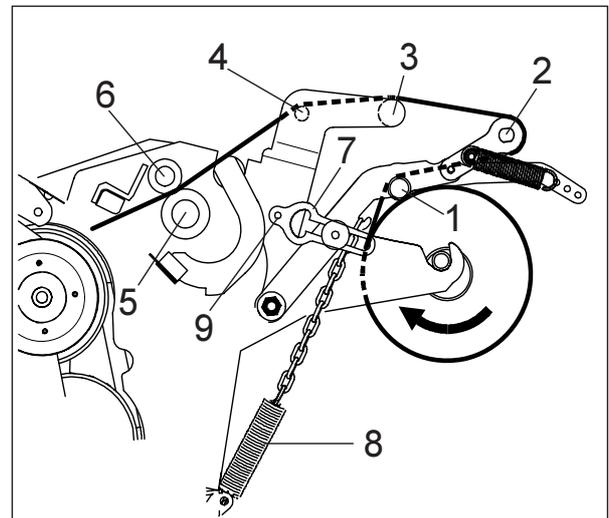


#### Warning:

When inserting new rolls of net and when threading the net, switch off the tractor engine and wait for the machine to come to a standstill. Remove the ignition key. Do not reach into the anvil and blade area - the blade is under tension each time the top chamber section is activated. There is a risk of injury.

### 4.5.2 Installing the net roll, inserting the net

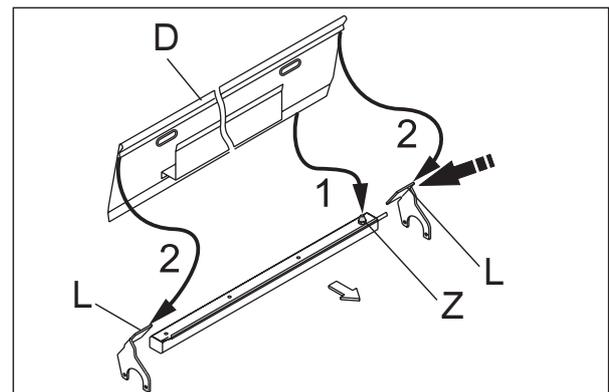
- Open front panel of the top section. Position new net roll on floor underneath the net binding system, located with net end underneath roll with end heading backwards
- Move net brake unit to upper, locked position. Remove empty net tube with net roll shaft.
- Slide net roll shaft into the new roll of net, hook up chain and lift net roll onto it's holders.
- Unroll the net from the roll, place to the rear of the brake tube (1), around the flex guide (2), over the guide tube (3) and the plastic net spreader (4). Release and lower the brake unit onto net roll.
- Spread the start of the net folded in half and insert between the rubber roller (5) and the aluminium roller (6), turn the rubber roller (6) by hand or with an Allen key on the mount (left-hand side) until the net is securely gripped.



#### Note:

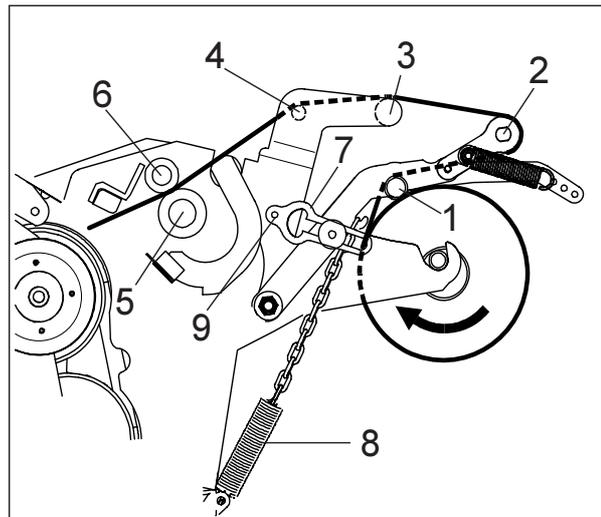
After any work on the net wrap system close cover (D) as follows: First introduce the cover into the rear plug (Z) and then slide over the straps (L).

Be sure the cover is properly seated. If not it can get loose and cause damage to the machine.



### 4.5.3 Adjusting the net roll brake

- Brake springs (8) should be set hard enough to make flex guide (2) be in rear (tensioned) position during regular feeding of net.
- If the net brake unit starts vibrating (especially at nearly empty net roll), tension the bolts (9) of the lock & stabilising bars (7).



### 4.5.4 Adjusting the net cutting knife

Check the parallelism of anvil (1) and cutting bar (2) to ensure that the net is cut correctly. To adjust proceed as follows:

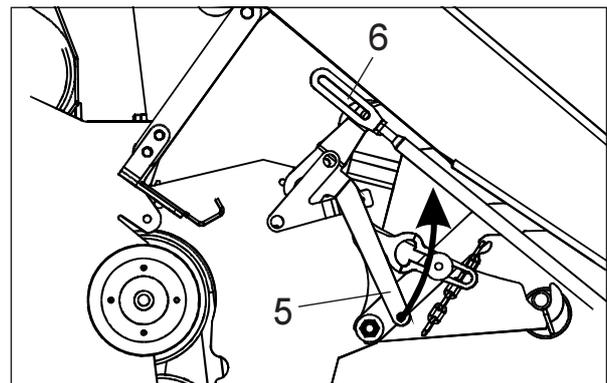
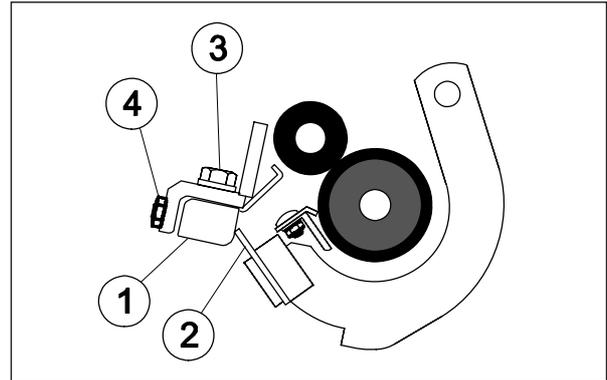
- Cutting bar must be released (in contact with the anvil)
- Undo the securing bolts (3) of the anvil
- Release the lock nuts and use setting screws (4) until the anvil is parallel to the cutting bar
- Be sure there is no gap between anvil and cutting bar and tighten the lock nuts and the securing bolts (3)

Test by putting a sheet of paper into knife. Release knife and check if paper is cut. Check hole length of knife. Be careful!

The cutting bar can be reversed three times.

The hoop with the beating arm can be tensioned manually. Operate lever (5) of the bearing shaft until it engages firmly.

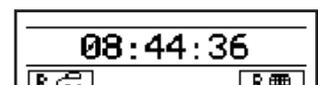
OBSERVE! Make sure that knife releaser does not touch the bottom of the slot (6) of the tensioning stay when knife is being released. Otherwise net cutting is not performing well. Adjust length of stay if malfunctioning.



### 4.5.5 Resetting net binding system

There is a reset function in case of defects in the binding procedure. Resetting is basically checking the actuator positioning function.

- Switch on power supply to control panel.
- While Net binding reset icon is shown on select key 4, press this key once.
- Binding system is reset while actuator is moved to extreme positions



Observe! Net knife has to be tensioned after resetting using lever 5.

### 4.5.6 Tensioning the v-belt of the net binding system

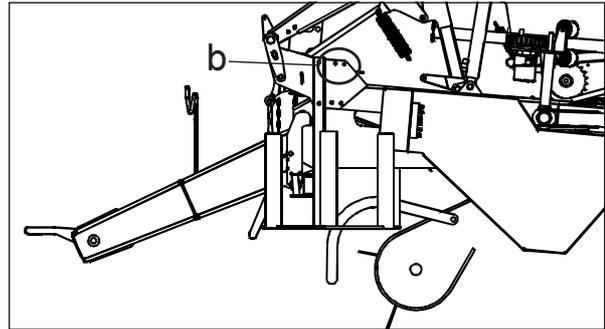
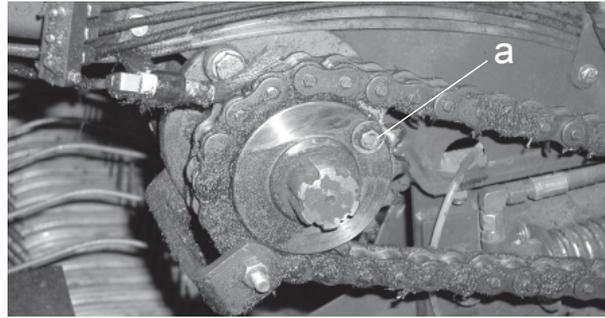
Due to the normal elongation of the v-belt, tensioning pulley might at the end touch the surrounding details. In order to prevent damage due to this situation, spacers should be removed from in-between the two halves of

the driving pulley. Split the wheel and move spacers to the outside. Numbers of plates to be moved depends on the elongation of the v-belt. After adjustment, the net binding system must be reset!

## 4.7 Shear bolts on roller drive

In order to avoid damage to the rollers, two shear bolts M10 x 50-8.8 act as main safeguard (one each in the upper and lower section of the baling chamber) in the roller drive. Both shear bolts are located in the double chain drive on the left-hand side of the machine at the front. Should the shear bolts break, the corresponding hole position can be found using the reverse lever (set to hexagon).

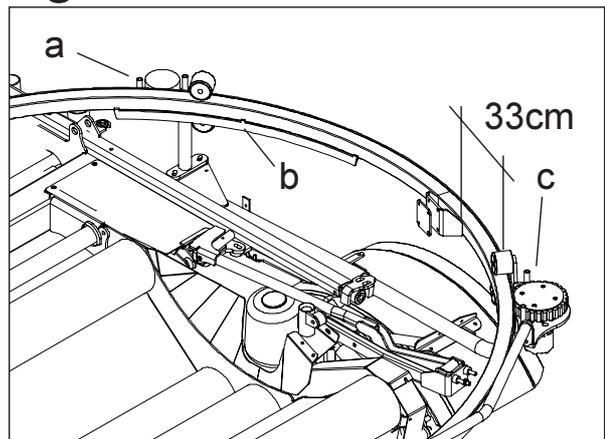
Spare bolts are stored at forward corners of the main frame of the machine (b).



## 4.8 Prestretcher positioning

The control system is automatically monitoring the prestretcher's positions, refusing top section to close if there is a risk of damage to the prestretcher. This is checked by means of the safe sector sensor (a) and the cam (b).

The positioning sensor (c) controls the exact position for cutting and parking. The number of pulses required is checked/set by means of the control panel.

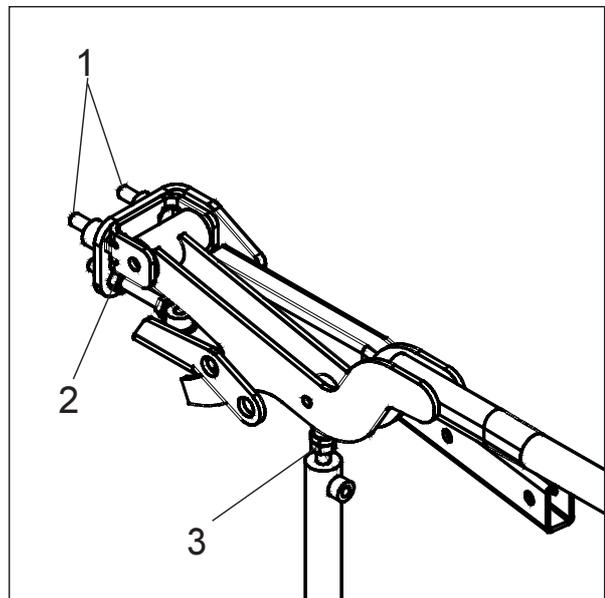


## 4.9 Film cutter

The film cutter collects film and cuts it before bale is discharged. Film end is gripped and hold ready for wrapping of next bale.

### 4.9.1 Adjusting open cutter position

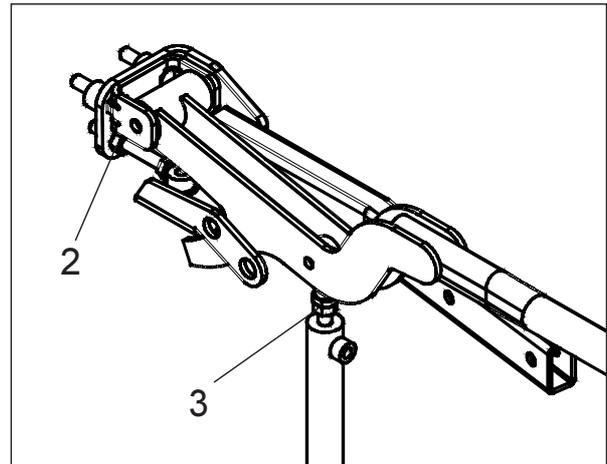
- Open cutters completely. Check distance from end of grip roller to prestretcher roller. End of cutter arm roller should touch the pre-stretch roller while a *full* film roll is fitted.
- Required adjustment is done by means of screws (1). Slide cutter arm in slotted holes and re-lock.



## 4.9.2 Adjusting closed cutter position

### 4.9.2.1 Sidewise positioning

- Close cutters completely. Check positioning of grip roller at the corrugated grip block. Inner end of plastic roller should be aligned with inner end of grip block.
- Required adjustment is done by means of screw (2). Re-lock with nut.

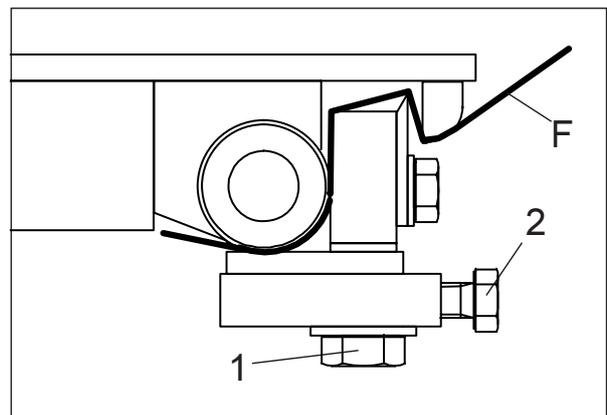


### 4.9.2.2 Vertical positioning

- Close cutters completely. Arm should be slightly tensioned (approx. 7 mm) by the cylinder force. If not, adjust cylinder piston length:
- Open cutter. Loosen lock nut (3) on piston rod end joint. It rod turns with nut, open cutter completely and loosen nut while pressure is on cylinder. Partly close and adjust by turning piston rod. Test and re-tension lock nut.

## 4.9.3 Adjusting film grip

- If film slips from cutter arm grip during start of wrapping, or if one of the cutter arms seems to be delayed during the opening sequence, grip block position should be checked.
- Move cutters down till grip roller rest on block. Check that roller is parallel to block. Loosen bolts (1) and adjust in or out with bolts (2).



## 4.10 Processing bales

### 4.10.1 How the BIO bale processor functions

During baling the bale processor is driven by the PTO shaft providing required power to pick-up, cutting system and chamber rollers. During the wrapping rollers and prestretcher ring are powered by the tractor hydraulics. All hydraulic functions are powered from the tractor pump and operated/monitored by means of the control panel installed in the tractor cab. The computer programme in the driver module fitted on the bale processor reads information from sensors and panel, returning messages to the panel screen and directing solenoid valves.

The bale processor compresses green matter, hay and straw lying in swaths into round bales. The baling material is taken up by the pick-up and the pressure of the baffle plate feeds it to the conveyor channel. The two exterior augers bring wide swaths together to the width of the bale chamber. The conveyor drum is equipped with spirally configured double tines and guarantees continuous filling of the bale chamber. The baling material is directed over the 14 blades and cut. Each blade has foreign body protection and automatically moves back into cutting position once a foreign body has passed. The knives can be set to two different cutting positions (precision cutting or normal cutting, see paragraph 4.4.3). Compression into firm, dimensionally stable bales occurs in the baling chamber.

When chamber has reached 90% filling, a short alarm sounds. When chamber has

reached 100% filling, a continuous alarm sounds. Stop baling to proceed with net and film wrapping (automatic or manual, depending on the selected operation mode).

Depending on the choice, net binding can be started automatically or manually by operating the OK-switch (depending on set-up).

Once the binding process is over, chamber top section is lifted automatically.

**Stop PTO shaft when top section is half-way raised.**



**OBSERVE!** If PTO clutch can be disengaged by an external electric signal, the bale processor's control system can automatically do this by connecting driver module to clutch system. Default disengaging time is 2.5 sec. after start lifting top section.

Depending on the choice, prestretcher ring starts automatically or manually by operating the OK-switch (depending on set-up), applying the pre-set number of film wraps around the bale.

When wrapping is completed, film is gripped and cut.

Depending on the choice, discharging starts automatically or manually by operating the OK-switch (depending on set-up).

The chamber top section is then lowered automatically or by operating the OK switch (depending of set-up).

Baling of next bale can start.

### 4.10.2 Operation in the field

Extensive protection against possible accidents is provided with the bale processor. However, sufficient care and caution should be taken when working with the machine. Checks should be made each time the machine is used to see that all protective devices are mounted and intact.



#### **Warning:**

Never repair functional errors during operation. Particular care should be taken when opening and closing the top section. No persons may remain in the top section swinging

range. Shut the hydraulic shut-off tap before entering the bale chamber.

#### 4.10.2.1 Before start working

- Insert net and thread
- Check the height of pick-up support wheels
- Check the ground pressure of the pick-up support wheels
- Reset the daily bale counter to zero
- Cutting system on/off
- Select PTO speed 540 rpm

#### 4.10.2.2 Working speed

The tractor engine speed/oil flow should be adjusted to achieve approx. 540 revs/min on PTO shaft while baling and 50 revs/min of the prestretcher ring while wrapping (with warm oil).  
If oil flow exceeds this level, there will be no

further speed increase of pre-stretcher due to the flow restrictor integrated in the spool valve block.

When processing silage bales, it is of great importance to make high density bales. Reduce forward speed in high yield crops.

#### 4.10.2.4 Driving

Make sure that the bale chamber is filled with crop optimally to make the most of the bale processor's capabilities. Uneven filling of the chamber can result in a conical bale, which can tip sideways when the top section opens. The chamber is filled evenly by driving in a suitable way, i.e. driving alternately on the left and right-hand sides of the swath when the swaths are middle-sized or small.

When riding over big swaths, be aware of the risk of heaps to form due to crop becoming caught up.

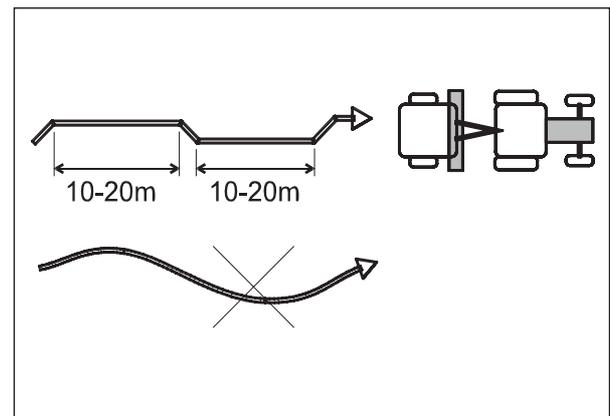
When turning sharp corners, e.g. when turning round, make sure that no deviation is greater than 80° on the wide-angle of the universal drive shaft (on the tractor). Otherwise there is a danger of breakage during operation or when at a standstill.

The regular lowering of pick-up brings pick-up hydraulics into floating position (frame around joystick symbol), which is important to obtain the best possible ground contour following.

Following guidelines will reduce the risk of bale stopping when baling in straw and hay:

- Drive straight ahead in the swaths, do not drive alternately on the left- and righthand side of the material.
- Move the cutter blades out at 90% chamberfilling (USER setting)
- Mount low friction sideplates in the bale-chamber. Part no.: UH44070
- Fit the straw baling kit on the machine. Part no.: UH44078 (only available for SN: 4000325 and up). For earlier machines a 'teardrop' tube is available. Part no.: VF16650304

To avoid too much expansion of the bale, 4 layers of net is recommended as a minimum for straw baling.



#### Note:

Material density and bale shape is improved if you reduce the driving speed during the last seconds of the baling sequence.

Lifetime of PTO clutch is increased when reconnected at low engine speed.

#### 4.10.2.5 Tips for practical use

**Number of net wraps:**

minimum 1,5 wraps are required in order to achieve proper binding of wrapped bales. In case of baling without any film wrapping 2.5 net wraps are required. For dry straw 4 wraps is recommended in order to avoid any expansion of bale. When excluding film wrapping, net wrapping will automatically be increased by the computer programme.

**Bale density:**

silage requires high density to obtain top quality and minimum loss of nutrition value. Reduced forward speed will increase bale density.

**Bale rotation in chamber:**

for very dry, brittle straw, reduce the baling density or move cutter blades out to prevent a standstill of the bales. Optional low friction side wall linings are recommended.

## 4.10.3 Quick introduction to control system ver. 1.14

### 4.10.3.1. Operating modes

#### Idle mode:

Bale processor is in safe/stop situation, light at STOP key

#### Process mode:

Bale processor can be operated manually or automatically. Light at Stop key off.

«Manual» operation is shown by an indicator light at the key. 

#### Edit mode:

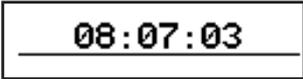
The operator can change parameters/set-up of the machine. Flashing parameter in screen and flashing light at =/OK switch

### 4.10.3.2 Key & joystick functions

Symbol	Idle mode	Process mode	Edit mode	Symbol	Idle mode	Process mode	Edit mode
	Start machine process mode.	Selects Auto or Manual mode.  Press  simultaneously to select Tool mode			Activates the counter selection screen. Screen shows counter no., bales and total rotation time for this job.		
	Stops machine process mode immediately in any case. All outputs will be disabled. Emergency stop key. Light above key ON = 'safe' idle mode.				Left-hand key:	Editing number of film wraps	
		<b>Tool mode:</b> Selects joystick function group.			Second from left:	Editing number of net wraps. x.x B (net only) x.x BW (net & film)	
		Clears the error code in screen.	Sets edited value back to the min. value allowed.		Third from left:	Press to select film wrapping ON/OFF When set to OFF, net wrap is automatically increased to preset x.x BW	
		<b>Auto:</b> Continue after interruption <b>Manual (depends on setting):</b> a. Starts net binding b. Starts film wrapping c. Starts discharging <b>Tool:</b> Start a 'finish wrap cycle'	Confirm the edited value. Quit editing of the current field.		Right-hand key:	Press to move the prestretcher ring to initial position (prestretcher at film cutters. Interrupt the wrapping cycle. Shall be used for exchange of film rolls.	
		See screen display	Adding value to parameter.			See screen display	Deducting value from parameter.
		See screen display	Step to previous screen or previous variable when editing. Escape current edit field.			See screen display	Step to next screen or next variable when editing. Escape current edit field.

### 4.10.3.3 Parameter change procedure

Start from Idle mode:



Enter	Select	Edit	Save	Exit	Parameter
	← or →	Clear: C Add: + Deduct: =			General setting of user functions See list
& +	← or →	Clear: C Add: + Deduct: =			General setting of dealer functions See list
& =	← or →	Clear: C Add: + Deduct: =			General setting of service functions Observe: PIN code required

### 4.10.3.4 Setting number of net wraps

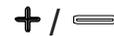
Start from Process mode:



Press Select key no. 2:



Adjust wrap numbers B (net only):



Save settings:



Adjust wrap numbers BW (net wrap with film wrapping):

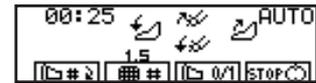


Save settings and exit:



### 4.10.3.5 Setting film wraps

Start from Process mode:



Press Select key no. 1:



Adjust wrap numbers:



Save settings and exit:

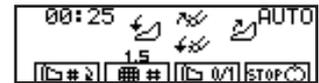


**Recommended number of film wraps:**

- 4 layers 750mm film ..... 17 wraps
- 6 layers 750mm film ..... 25 wraps
- 8 layers 750mm film ..... 33 layers

### 4.10.3.6 Disengaging and re-engaging film wrapping

Start from Process mode:



Press Select key no. 3 for ON/OFF:



Selecting OFF, net wrap is set to value B (icon on left-hand Select key disappears)

Selecting ON, net wrap is set to value BW

### 4.10.3.7 Operating pick-up

Move joystick up/down



Note! Lower lock valve at the pressure filter need to be open in order to operate the pick-up!

When joystick is moved to DOWN position, directional valve will remain in floating position in order to allow pickup to move freely, controlled by the depth wheels. Floating mode is indicated by the frame around the icon.

See even paragraph 4.10.3.15.

### 4.10.3.8 Operating cutting knives

Press joystick keys right-hand/left-hand



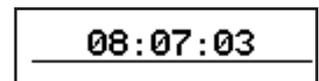
Note! Lock valve at rh side behind the pickup need to be open in order to operate the knives!

When joystick is moved to KNIVES IN (rh) position, directional valve will remain in floating position in order to allow knives to be pressed in by the springs. Floating mode is indicated by the frame around the icon.

See even paragraph 4.10.3.14.

### 4.10.3.9 Activating program

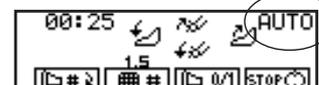
Start from Idle mode:



Press Auto key till desired mode is activated:

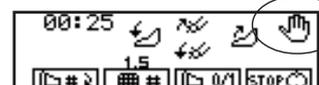


Process mode display shows Auto mode



Process mode display shows Manual mode

For Tool mode press  &  simultaneously, then press 



twice



Process mode display shows Tool mode



### 4.10.3.10 Manual set-up

Select User functions screen 5:

Control of net wrapping, film wrapping, discharge & closing of baling chamber

0 = auto      1 = controlled by OK switch

3 = operate OK switch once for discharging and once more to close chamber (valid value for discharging set-up only)

Confirm set-up



### 4.10.3.11 Interrupt any procedure

For immediate stop (emergency stop), press:



For stop of prestretcher ring in initial position (prestretcher at film cutter) (recommended at exchange of film rolls), press:



After interruption of wrapping sequence 3.5 wraps of film will be automatically added to the preset number, in order to compensate for film tear or film roll exchange.



### 4.10.3.12 Continuing after interruption

Press:

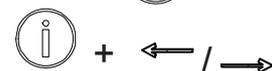


### 4.10.3.13 Counter setting

View active counter



Select counter



Reset selected counter



### 4.10.3.14 Automatic dis- and re-engagement of cutting knives

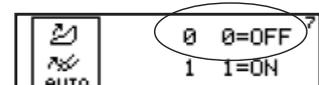
When this function is activated, knives automatically move out when sensor indicates chamber is 90% full. Continue baling till chamber is full. The surface of bale is now covered with uncut material. Thus bale can withstand more handling with less risk of net wrap to break apart..

Select User function 7:

0 = function not activated, knives being operated by joystick

1 = function activated

Confirm by:



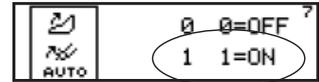
### 4.10.3.15 Automatic lifting and lowering of pick-up

With this function activated, pick-up is automatically lifted when net binding starts. Pick-up is lowered to working position when chamber is closed for next baling sequence.

Select User function 6, lower parameter:

0 = function not activated, pick-up being operated by joystick

1 = function activated



Confirm by:



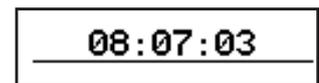
### 4.10.3.16 Operating individual function using Tool mode



For manual testing only

Start from Idle mode

Press simultaneously:



Press to select proper joystick key functions



Operate joystick keys



For completion of wrapping procedure (prestretcher ring leaves



"safe sector" once and complete the film application and cutting sequence, i.e. machine is ready for next baling and wrapping sequences):



Observe! Due to risk of damage on machine, illegal operations are automatically prevented by control system.

### 4.10.3.17 Correcting film wraps at interruption

#### of wrapping sequence

When interrupting the wrapping sequence (see paragraph 4.10.3.11 & 4.10.3.12), 3.5 wraps will be added automatically in order to compensate for the film break or film roll exchange.

## 4.10.4 Reversing conveyor drum

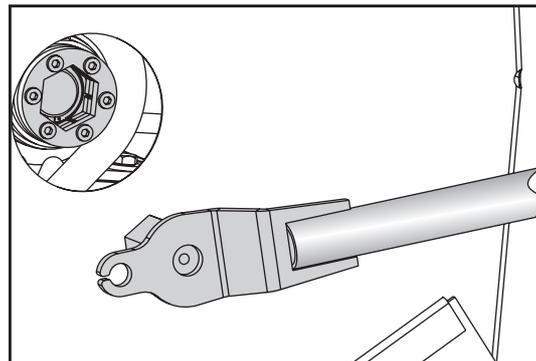
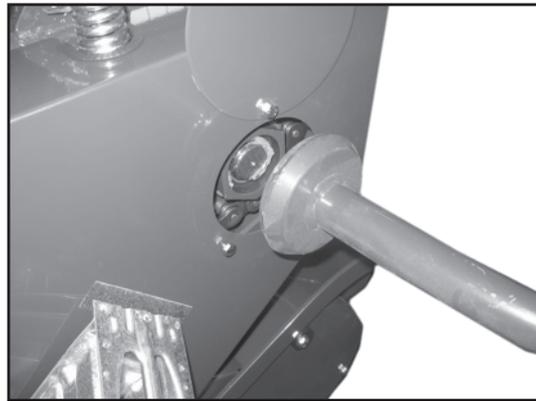
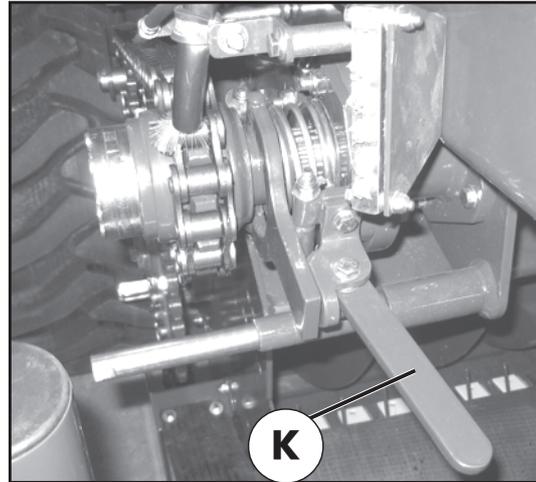
Experience shows that when the bales are nearly finished, the system can become obstructed or the cam coupling can be triggered.

It is possible to bind and wrap these bales without having to eliminate the obstruction in the vicinity of the cutting rotor. To do so, disengage the conveyor drum by operating the claw coupling, re-engage the PTO shaft at low speed, run the net wrapping and film wrapping process and discharge. Then stop the PTO shaft, re-engage the conveyor drum and eliminate the obstruction at a low PTO speed.

When the feed unit is blocked, the ratchet clutch disconnects the PTO torque. If the blockage can not be cleared by restarting the PTO shaft at a speed below 200 rpm, the conveying channel is to be freed of blocked crop by reversing the feed drum.

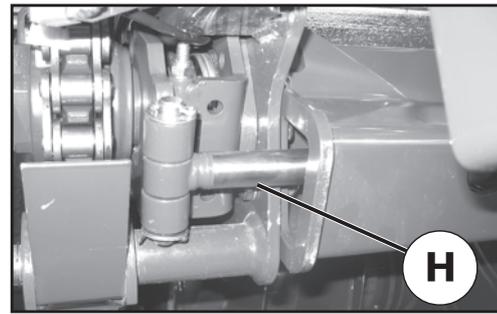
Proceed as follows to reverse:

1. Move the knives out of the conveying channel hydraulically
2. Shut off the PTO shaft, stop the tractor engine, and remove the ignition key
3. Disconnect the claw coupling by means of the lever
4. Remove the reverse lever from the drawbar beam and place on the hexagon
5. To reverse, turn anti-clockwise to move the crop out of the conveying channel by turning the feed drum backwards
6. When conveyor is free, turn the reverse lever briefly in the opposite direction to tighten the drive chain
7. Fit lever to its support on the drawbar and re-engage the claw coupling
8. Re-engage the cutting knives



#### 4.10.4.2 Hydraulic (option)

Hydraulic cylinder (H) available as an option can be used to disengage the drive system between feed unit (pick-up / feed roller) and bale chamber from the tractor cab. For all other steps follow the procedure as described in section 4.10.4.1.



## 4.11 Parking

Lower and secure the parking leg. Disconnect command panel and store protected from moisture and aggressive chemicals.

## 4.12 Out of season storage

Thoroughly clean and lubricate the machine (according to paragraph "Maintenance").

Leave cylinders in inner position.

Store control panel in a dry place at ambient temperature.

Store machine under cover.

## 5 The computerised control system

The computerised control system for the BIO bale processor includes two main components. A driver module (black box) fitted on the bale processor and a command panel fitted in the tractor cab.

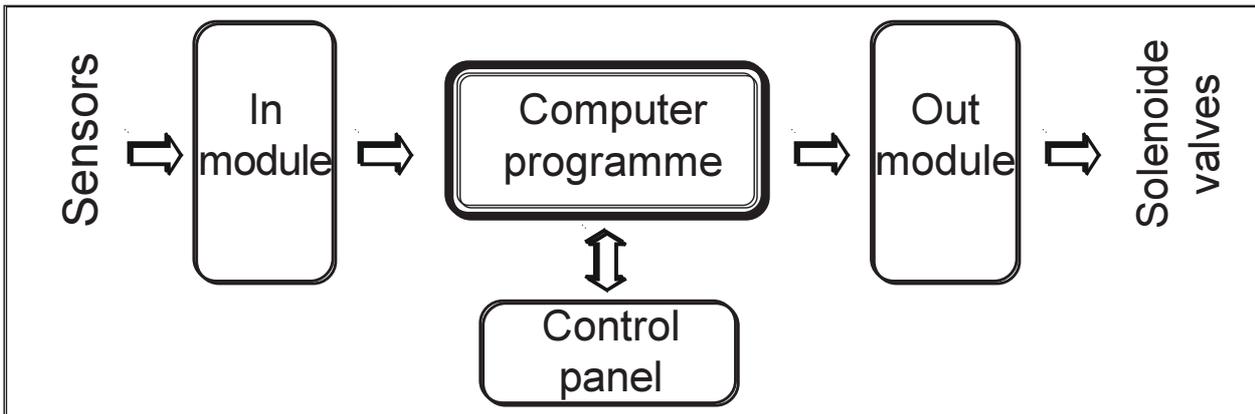
The machine can be operated in:

- Automatic mode
- Manual mode (process continues when op-

erator's approval is given by the OK switch)  
- Tool mode (by pressing manual keys and joysticks).

When machine is checked in Tool mode the sensors are monitoring the positions of the machine elements, denying any illegal function to be performed.

### 5.0 Mode of operation - sensors and valves



The program operates continuously, reading information from inputs (sensors) and panel, comparing information and setting outputs (spool valves) in relation to the pre-defined programme.

### 5.1 The command panel

The control system includes three modes:

#### a. Idle mode:

Bale processor in safe/stop situation. Light at STOP key is on.

#### b. Process mode:

Bale processor can be operated manually or automatically. Light at Stop key is off.

#### c. Edit mode:

Operator can change parameters/set-up of the machine. Indicated by flashing parameter in screen and flashing light at '=/OK' switch.

The **keyboard** is used for operating the machine and to determine if fully automatic or partly automatic operation. The various key symbols are explained below.

The **joystick** is used to select parameters and to operate the selected joystick functions.

The **toggle switch** right has an approval

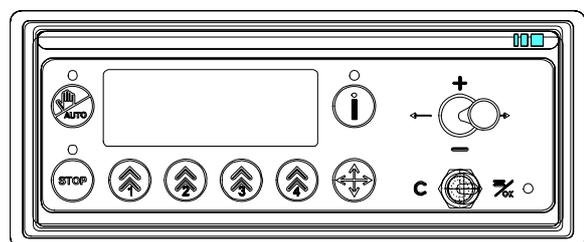
function (**OK**).

1. Start a programme sequence in Manual mode, i.e. start the process from the current programme step.
2. Stop wrapping *before* the pre-set number of wraps is reached. The programme jumps to the final step.
3. Zero setting of programme.

The **toggle switch** to the left has a clear/delete function (**C**).

1. Clears (resets to zero) the error code in the screen.
2. Sets the edited value back to the minimum value available for the current parameter.

### 5.2 Symbols



## 5.2.1 Single functions

### 5.2.1.1 Manual/Auto key

■ Idle mode:

Start the machine process mode.

■ Process mode:

Selects type of process mode (indicated in upper right-hand corner of screen)

Tool mode – light ON: Manual/Auto key + Joystick Function Key give access. Joystick function key is then used to select joystick function group. The selected functions are designated to the function shown in the display.

Automatic

Manual



### 5.2.1.2 Info key

■ Any mode:

Activates the counter selection screen (totally 8 bale counters). Screen shows counter (job) no., bales wrapped and total prestretcher rotation time for this job.

Delete by operating the C switch to clear and =/OK to confirm. Repeat to clear prestretcher running time.



### 5.2.1.3 Stop key

■ Emergency stop key

Stops the machine process mode immediately in any case and all outputs will be disabled.



### 5.2.1.4 Select keys

**Select key no. 1 in Process mode:**

Access to editing of number of film wraps. Current wraps and programmed wraps are in upper-left corner of screen.



**Select key no. 2 in Process mode:**

Access to editing of net wrap numbers.

x.x B = no of wraps when applying net only

x.x BW = no of wraps when applying net and film



**Select key no. 3 in Process mode:**

Press to select film wrapping ON/OFF

When film wrapping is set to OFF, no. of net wraps is automatically switched to x.x B, i.e increased to give proper wrapping for net covered bales only.



**Select key no. 4 in Process mode:**

Press to stop the prestretcher ring in initial position (prestretcherers at film cutters). Only applicable during ring movement.

**5.2.1.5 Joystick function key**

■ Process Mode in Tool:

Select joystick function group for manual control (in Tool mode only). Selected functions are shown as a graphic image on screen.

**Joystick function groups:**

When Automatic or Manual mode is selected, joystick function will automatically be set to operate Pick-up up & down/Knives in & out, since other function groups are not allowed to be operated when processing bales.

**5.2.1.6 Clear switch**

■ Process Mode:

Clears (reset to 00) the error code in the screen.



■ Edit Mode:

Sets the edited value back to the minimum value allowed for that parameter.

**5.2.1.7 Enter/OK switch**

■ Process mode:

1. Starts the next process sequence if Manual mode is selected.
2. When an automatic cycle has been interrupted by the stop key, the system will go the idle mode. When restarted entering the process mode again, the light next to the Enter switch will flash to indicate that the interrupted cycle can be continued by selecting this switch. Entering Tool mode will quit this 'OK to continue' function.
3. In Tool mode activating this switch will start a 'Finish wrap cycle'. This is a useful function when machine has been operated by the manual keys, since it is difficult to do cutting and positioning of the prestretchers simultaneously.



■ Edit mode:

The key is used as an 'Enter' key to confirm the edited value and to quit editing of the current field. When there is a next edit field, the edit mode will continue with the next parameter.

### 5.2.1.8 Joystick +/-up

- Process Mode in Auto or Manual:  
Pick-up up
- Process Mode in Tool:  
Depending on selected joystick function group
- Edit Mode:  
The plus switch will increase the edited value by the pre-programmed step value (usually 1). When the switch remains active the value will continue to increase using a larger step size.



### 5.2.1.9 Joystick -/down

- Process Mode in Auto or Manual:  
Pick-up down
- Process Mode in Tool:  
Depending on selected joystick function group
- Edit mode:  
The minus switch will decrease the edited value by the pre-programmed step value (usually 1). When the switch remains pressed the value will continue to decrease using a larger step size.



### 5.2.1.10 Joystick left

- Process Mode in Auto or Manual:  
Cutting knives in
- Process Mode in Tool:  
Depending on selected joystick function group
- Edit Mode:  
Step to the previous screen or the previous variable in a screen when editing in User Functions, dealer Functions or Service Functions screens. When editing a variable this action can be used to 'escape' the current edit field.



### 5.2.1.11 Joystick right

- Process Mode in Auto or Manual:  
Cutting knives out
- Process Mode in Tool:  
Depending on selected joystick function group
- Edit Mode:  
Step to the next screen or the next variable in a screen when editing in User Functions, dealer Functions or Service Functions screens. When editing a variable this action can be used to 'escape' the current edit field.



## 5.2.2 Special keys and key/switch combinations

The following sections describe special key or key/switch combinations. Key or key/switch combinations mentioned below have to be activated at the *same* time.

### 5.2.2.1 Joystick function & Joystick +/up

■ Idle mode:

Activates the dealer functions. Give access to programmable parameters at dealer level.



### 5.2.2.2 Joystick function & Joystick –/down

■ Idle mode:

Activates the service functions. Give access to programmable parameters, which are at the service level.



### 5.2.2.3 Joystick function & Info

& switching the control system ON:

■ Power-up:

Reset all parameters to default values. Make a note of the values to be able to go back to your own adjustments.



### 5.2.2.4 Stop key & =/OK switch

& switching the control system ON:

■ Power-up:

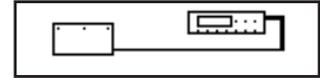
Upload all the graphical images from the machine box to the control box. A standard screen with a bar graph will indicate this.



## 5.3 Display information regarding panel connection

### 5.3.1 Power-up

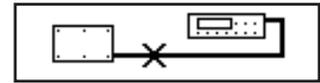
The power-up screen indicates a correct communication between panel and driver module.



### 5.3.2 Connection error

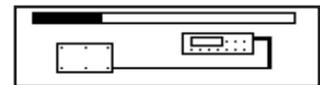
If connection takes too long time, flashing screen indicates connection error. After a timeout period of 6 seconds this will stop. Then the following error screen is shown:

The error message is indicating a break of cable or contact failure. Please call your dealer if no exterior damage is shown on the cable.



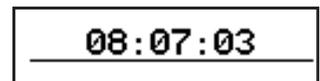
### 5.3.3 Uploading

When connection between machine box and control panel has been established, graphical images in the control panel are checked. If not OK, or if a new version of the machine box software is installed, the system starts to upload the graphics to the control box. The following screen indicates this.



## 5.4 Idle mode

From this screen the user can access the User functions (PROG), the Dealer functions or the Service functions. When this screen is shown all outputs are disabled and turned off. Pressing the Manual/Auto key from this screen will start the Process mode.



When this screen is shown, the system is also in the Idle mode. This situation occurs when the operator interrupts a bale processing cycle by pressing the STOP key. Pressing STOP again when this screen shows will bring up the clock again.



## 5.5 User functions screen displays

User function screens offer parameters that may be changed/configured by the operator.

The user functions can be activated when the Joystick function key  is pressed in the Idle mode. The screens that appear are listed in the next section. Stepping to the next screen can be accomplished by operating the joystick. Moving the joystick to the right will step to the next screen, stepping to the previous screen is done by moving the joystick to the left. When a parameter has to be changed/edited, activate any of the four edit switches: clear (C switch), plus (joystick up), minus (joystick down) or enter ('=/OK' switch).

Pressing the STOP key in any step of this mode will finish the editing/monitoring and return to Idle mode screen.

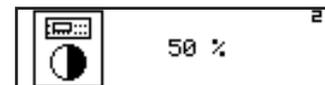
### 5.5.1 User functions activated

Shows that user function screens are activated.



### 5.5.2 Screen contrast

Allows editing of the screen contrast, min. 35 %/max. 65 %. During editing the screen contrast changes according to the current value in the screen.

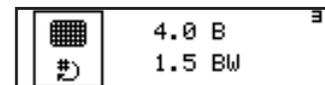


### 5.5.3 Net wrap setting

Allows editing of the net wraps.

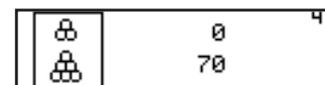
x.x B (no. of net wrap when film wrapping is excluded)

x.x BW (no. of net wraps when film wrapping is included)



### 5.5.4 Bale counters

First value shows current job counter, value can only be reset by operating Info key. Second value shows the total counter of the machine. This value can neither be reset nor edited by the operator.



### 5.5.5 Manual configuration

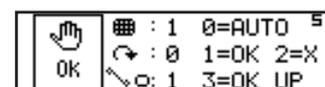
Allows operator to change any of the Manual steps (net binding start, film wrapping start, discharge start, close chamber) in the complete bale processing cycle.

0 = automatic progress

1 = progress by operating =/OK switch

2 = not included

3 = operate OK switch once for discharging and once more to close chamber (valid value for discharging set-up only)



## 5.5.6 Film break sensor

Activates film break sensor and eventually ½ speed by film end.

0 = Film break sensor not activated

1 = Film break sensor activated

Film break is notified by audio signal, the ring continues to rotate until STOP is pressed by the user.

When film break is solved, go back to operating screen restart wrapping again with OK.

2 = Film break sensor is activated.

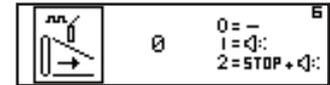
Film break is notified by audio signal and the satellite stops.

If the operator wants to continue wrapping with one film roller only, reset error message with the C-key and activate the process with OK. The system will automatically reduce the table speed to ensure correct film overlap with only one film roll if the ½ speed kit is fitted.

If the operator wants to continue with two rollers, he has to replace the roller before error message is reset. The process is resumed by activating the OK-key.

The system will start with reduced speed, but will automatically speed up within one rotation when it detects that both filmrollers are OK.

Lost film application caused by the film break is corrected due to added satellite rotations.



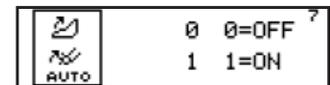
## 5.5.7 Automatic cutting knives & pick-up operation

First parameter gives access to the setting of the automatic cutting knives operation, i.e. disengaging knives automatically when chamber has reached 90% filling.

Second parameter gives access to the setting of the automatic pick-up operation, i.e. automatic lifting of pickup when net binding starts and lowering of pick-up when chamber closes for next bale

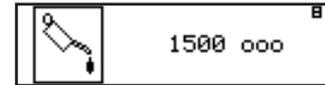
0 = disengaged, knives/pick-up operated by joystick

1 = engaged



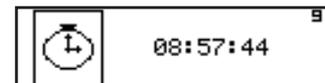
## 5.5.8 Next lubrication

The next lubrication time (processed no. of bales) is presented in this screen. The operator can edit this value. When the internal lubrication timer reaches zero, a lubrication warning will appear in any of the main process screens.



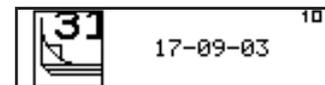
## 5.5.9 Clock

The current time can be read and adjusted in this user screen.



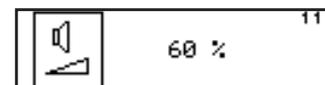
## 5.5.10 Date

The current date can be read and adjusted in this user screen.



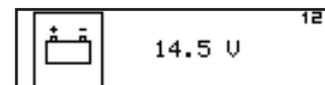
## 5.5.11 Beeper volume

Allows editing of the beeper volume. During editing the beeper volume changes according to the current value in the screen.



## 5.5.12 Battery voltage

The actual battery voltage is presented in the screen. This screen can be used by the operator to check and monitor the battery condition.



## 5.5.13 Exit User functions

This screen indicates the final User function screen. Move joystick once more to the right to return to the Idle mode screen.

Pressing the STOP key in any step of this mode will finish the editing/monitoring and return to Idle mode screen.



## 5.6 Process mode screen displays

### 5.6.1 Tool mode screens

 &  simultaneously, then press  twice



Process screens with all manual joystick operation modes:

The first process screen shows that the joystick manual control is assigned to the pick-up and cutter knives adjustment. To change selection, press the Joystick function key.



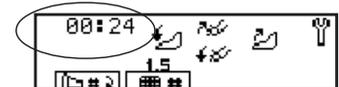
Then next screen will show up and indicate that the joystick function is assigned to control of bottom and top chamber sections.



The last joystick function is assigned to operate the prestretcher ring and the film cutters.



The upper-left part of the screen shows the current number of laps done and the programmed number of laps. The programmed number of laps can be edited by pressing the left-hand Select key and add/deduct numbers by operating the +/- joystick function.



### 5.6.2 Automatic process screen

The automatic process screen is indicated by the text AUTO in the upper right corner of the screen. The joystick operation will be assigned to pick-up and cutter knives.



### 5.6.3 Manual process screen

The manual process screen is indicated by the manual icon (open hand) in the upper right corner of the screen. The manual mode can be configured in the User function screen number 5. The three main subcycles Net binding, Film wrapping and Unloading can be programmed to start either automatically or by confirmation using the =/OK switch.

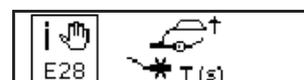


## 5.6.4 Error/warning codes

The following table gives an explanation on the error codes:

Error message	Symbol	Description	Remarks
01		No pulse from net roll during net binding sequence	
02		Net is applied without net binding sequence being activated	
03		Net knife not under tension	
04		No pulse from net actuator	May occur at short circuit in the sensor.
06		No pulse from "prestretcher ring drive" sensor	Prestretcher ring not turning.
08		Top section of bale chamber not opened	
09		Top section down error	Too long time without any signal of top section having reached lower position
10		Bottom section open / ring up error	Too long time without any signal of bottom section having reached upper position
12		Cutter down error	Cutter has not activated Cutter closed sensor
13		"Top section position" sensor not activated	One of the sensors is faulty
14		Voltage drop	Occurs when voltage drops below the level set in Dealer menu 4
15		Film break is detected	Occurs if the machine is fitted with film break sensors, and the film roll is empty
27		Prestretcher ring outside Safe sector	Safe sector sensor not activated
28		Top section not raised	Occurs when a function requiring top section stay open, is activated while top section is not completely raised
30		Bottom section not raised/ ring not lowered	Occurs when a function requiring bottom section is raised, is activated while bottom section is not completely raised
32		Cutter not closed	Occurs when a function requiring film cutters are close, is activated while cutters are not completely closed

If an error occurs the control panel will activate an alarm signal for a few seconds. The error code or restriction that caused the alarm signal can then be read in the screen. The error code in the screen can be cleared at any time by operating the Clear switch. The following screens are examples that can show up:



## 5.6.5 Process states

The following paragraphs are describing the symbols being displayed during ordinary operation. For every symbol it is indicated in which mode of operation this can occur: Tool, Automatic or Manual.

### 5.6.5.1 Pick-up down

The pick-up is lowered.

Mode: Tool, Automatic and Manual.



### 5.6.5.2 Pick-up up

The pick-up is raised.

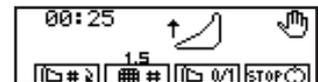
Mode: Tool, Automatic and Manual.



### 5.6.5.3 Cutter knives in

The cutter knives are engaged.

Mode: Tool, Automatic and Manual.



### 5.6.5.4 Cutter knives out

The cutter knives are disengaged.

Mode: Tool, Automatic and Manual.



### 5.6.5.5 Prestretcher ring rotates

The prestretcher ring is controlled forwards.

Mode: Tool, Automatic and Manual.



### 5.6.5.6 Prestretcher ring reverses

The prestretcher ring is controlled backwards.

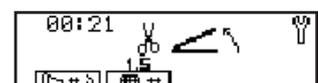
Mode: Tool, Automatic and Manual.



### 5.6.5.7 Film cutters up

The film cutters are going up or waiting in the upper position.

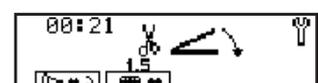
Mode: Tool, Automatic and Manual.



### 5.6.5.8 Film cutters down

The film cutters are going down.

Mode: Tool, Automatic and Manual.



### 5.6.5.9 Chamber top section up

The top section is raised.

Mode: Tool, Automatic and Manual.



### 5.6.5.10 Chamber top section down

The top section is lowered.

Mode: Tool, Automatic and Manual.



### 5.6.5.11 Chamber bottom section up

The bottom section is raised and the ring is lowered.

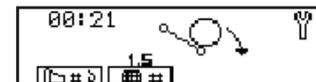
Mode: Tool, Automatic and Manual.



### 5.6.5.12 Chamber bottom section down

The bottom section is lowered and the ring is raised.

Mode: Tool, Automatic and Manual.



### 5.6.5.13 Automatic wrapping

The satellite/rollers are rotating in regular direction. No. of applied layers of film and satellite speed is displayed on screen.

Mode: Tool, Automatic and Manual.



## 5.7 Dealer functions

Dealer function screens offer parameters that may be changed/configured by dealer level service people.

The dealer functions can be activated when the [Joystick Function key & Joystick Up switch] combination are activated at the same time in the Idle mode. The screens that appear are listed in the next section.

Stepping to the next screen can be accomplished by operating the joystick. Moving the joystick to the right will step to the next screen, stepping to the previous screen is done by moving the joystick to the left. When a parameter has to be changed/edited, activate any of the four edit switches: clear (C switch), plus (joystick up), minus (joystick down) or equal (=/OK switch).

Pressing the STOP key in any step of this mode will finish the editing/monitoring and return to Idle mode screen.

### 5.7.1 Dealer functions activated

This screen shows that the dealer function screens are activated.



### 5.7.2 Simulating mode

To be used at stationary demonstration of the machine functions.

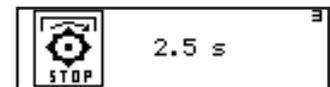
The «net running» sensor is not considered for one cycle.



### 5.7.3 Automatic disengaging of PTO

In this screen time controlling automatic disengaging of PTO is set.

Timer starts when chamber top section is leaving the Top section closed sensor.



### 5.7.4 Ring start & stop parameters

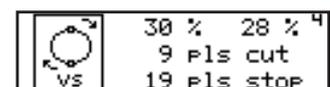
This screen displays parameters for speed and position of prestretcher ring during film cutting sequence.

30% = start speed of ring    28% = ring speed towards cutting position

9 pls cut = ring position when cutter arms are raised

19 pls stop = ring position when cutter arms are lowered

It is only possible to set stop positions in this screen. Speed is set in Service modus.



### 5.7.5 Ring reposition at discharge

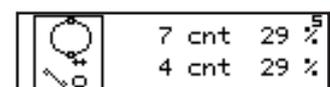
These parameters control the turning of prestretcher ring at discharge to give slack and retention according to bottom section tilting

Upper line shows parameters controlling the reversing sequence

Lower line shows parameters controlling the retensioning sequence

cnt = no. pulses (1 pulse = approx. 4cm)

% = the speed of the sequence



## 5.7.6 ½ speed sensor

If a film break occurs at one of the rollers, the bale can be finished using the other film roller.

1/2 = ½ speed automatically activated on film break

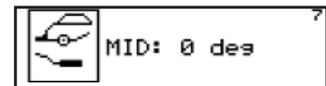
1/2 F = ½ speed is always activated

— = Full speed is always activated



## 5.7.7 Top section opening angle

MID : defines the opening angle of the top section when baling only - editable.

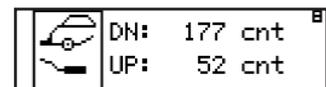


## 5.7.8 Calibration of top section

Values for closed and opened top section have to be defined. Adjustment is to be made first with closed and then with opened bale chamber. Use the manual hydraulic function to close and open the bale chamber.

Confirm each final position with the  key and then store with the

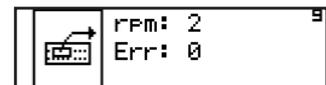
 key.



## 5.7.9 Screen information

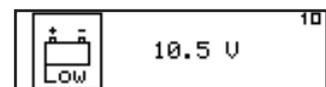
RPM : 0, no info. 1, show ring RPM in the screen. 2, show filmbreak-pulses in the screen

ERR : 0, normal display of error messages. 1, the last error message is shown as a number in the right hand side of the display.



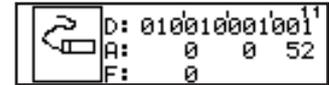
## 5.7.10 Voltage alarm

Sets the lowest voltage level for releasing the voltage drop alarm.



### 5.7.11 Sensor input test

This screen shows all the digital and analogue input values in real-time. The line on top (D:) shows the digital input sensors starting on the left with input 1. The line below (A:) shows the values of the analogue inputs in counts (range 0-255, 8-bit). Used on machines with serial no from 525 onwards.



### 5.7.12 Oilflow calibration

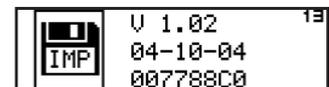
Use this screen to adjust the oilflow from the tractor.

Lift the tophat completely up by the lever on the valveblock. Press the key under START (softkey 4). The ring will ramp up to 100% speed, the speed will be shown in the display. Set the tractors engine speed corresponding to 540 rpm on the PTO. If the RPM in the display is 50 or above, adjust the oilflow from the tractor until the RPM just starts to drop. If the RPM in the display is under 50, adjust the oilflow from the tractor gradually up until the RPM is not increasing anymore. The oilflow from the tractor is then correct adjusted to 35 litres/min, and you can press softkey 1 to stop the ring rotation.



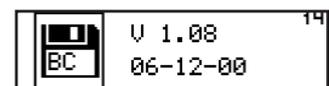
### 5.7.13 Program version

This screen shows the version of the implement (driver module) software and the creation date of that version.



### 5.7.14 Control panel version

This screen shows the version of the control panel software and the creation date of that version.



### 5.7.15 Exit Dealer functions

This screen indicates the final Dealer function screen. Move joystick once more to the right to return to the Idle mode screen.

Pressing the STOP key in any step of this mode will finish the editing/monitoring and return to Idle mode screen.



## 5.8 Service functions

Service function screens offer parameters that may be changed/configured by service people from the Factory/sales company/importer organisation.

The service functions can be activated when the Joystick Function key & Joystick Down switch combination are activated at the same time in the Idle mode. The screens that appear are listed in the next section. Stepping to the next screen can be accomplished by operating the joystick. Moving the joystick to the right will step to the next screen, stepping to the previous screen is done by moving the joystick to the left. When a parameter has to be changed/edited, activate any of the four edit switches: clear (C switch), plus (joystick up), minus (joystick down) or equal (=/OK switch).

Pressing the STOP key in any step of this mode will finish the editing/monitoring and return to Idle mode screen.

### 5.8.1 Service functions activated

This screen shows the user that the Service function screens are activated.



### 5.8.2 Pin code

Only authorised service people are allowed to make changes to the service level parameters, therefore a pin code protection is added in the service function screens.



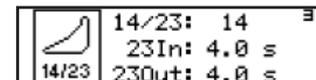
### 5.8.3 Setting the crop cutting system

14/23      Preselects 14 or 23 blades.

The following values concern the OptiCut23 system only:

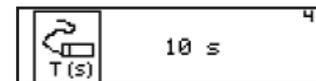
23in Duration of hydraulic pressure when blades are swung in (recommended value = 4.0 s)

23out Duration of hydraulic pressure when blades are swung out (recommended value = 9.0 s)



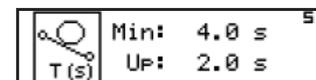
### 5.8.4 Sensor time-out

This parameter configures the overall sensor timeout value. In the automatic or manual cycle sensors are used to detect certain positions or conditions. If due to e.g. a sensor failure this signal does not come the cycle would wait "forever" for the signal to come. Therefore a parameter is added which is used as an overall "safe" timeout value. If a sensor timeout occurs during a process cycle this will be presented on the control panel by an error code in the screen (more on this later) and an alarm beep.



### 5.8.5 Chamber bottom section set-up

The parameters of the discharge cycle are set here. This time should be set to a value, which allows the bale to be dropped onto the field properly before bottom section is returning to raised position again. The time can be programmed in steps of 0.1 sec. Up is the time where cylinder remain activated after having reached end position in order to activate the check valve.

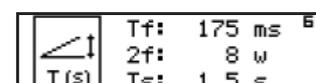


### 5.8.6 Film cutter timing

In this screen the parameters for the film cutters can be configured. Tf = film release time, steps of 25millisec (the time the cutters open during the film release)

2f = ring position at second film release (w = half ring laps)

Ts = time where cutter cylinders remain activated after sensor position has been detected (cutter closed).



### 5.8.7 Ring start & stop parameters

This screen displays parameters for speed and position of prestretcher ring during film cutting sequence.

30% = start speed of ring    30% = ring speed towards cutting position

8 pls cut = ring position when cutter arms are raised

19 pls stop = ring position when cutter arms are lowered

	30 %	28 % ?
VS	9 pls cut	19 pls stop

### 5.8.8 Bale counters

The first value shows the current job counter, this value can only be reset by operating the Info key and the C switch. The second value shows the total counter of the machine. This value can not be reset. See description of Info key regarding selection of counter.

	40	8
	70	0

### 5.8.9 Ring rotation time

Shows the total rotation time for the ring.

	0000:01 hh:mm	9
---	---------------	---

### 5.8.10 Bale density

Not in use.

Bale Density	0	10
	9 cnt	
	1 cnt	

### 5.8.11 Pulse width modulation

Not in use.

PwM	500 cnt	11
	42 %	

### 5.8.12 Activating the different outputs

Not in use.

	#: 0	12
	x: 0	

### 5.8.13 Exit Service functions

This screen indicates the final Service function screen. Move joystick once more to the right to return to the Idle mode screen.

Pressing the STOP key in any step of this mode will finish the editing/monitoring and return to Idle mode screen.

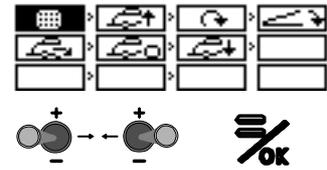
		12
---	--	----

## 5.9 PIA mode

### Description

PIA mode = Process independent activation.

PIA mode displays all individual functions of a complete cycle with icons. The desired function is preselected using the joystick and then activated by pressing the OK key. Functions can be controlled independently from the process mode.



### Key combinations:

Press the MAN/AUTO & FUNCTION keys simultaneously to activate the PIA mode.



### NOTE:

Any information on the state of the baling & wrapping process is deleted.

### Starting the binding process

The net is running for 6 seconds (net pulses are not considered). The amount of net material wrapped around the bale depends on the baler speed (540 RPM correspond to approx. 3 turns). When the binding process is completed, the control system will automatically pass to the next icon:



### Opening the top section of the bale chamber

When the sensor gives the «top section open» message, the control system will automatically pass to the next icon:



### Starting the film wrapping cycle

The preselected number of turns is applied to the bale. When the wrapping process is finished, the control system will automatically pass to the next icon:



### Film cutting

Satellite and film cutter are operated so that the films are cut off accurately. When the «film cutter down» sensor is activated, the control system will automatically pass to the next icon:



### Unloading the bale

Once the ring raised and the bottom section of the bale chamber lowered, the control system will automatically pass to the next icon:



### Swinging up the bottom section of the bale chamber

Once the ring lowered and the bottom section of the bale chamber raised, the control system will automatically pass to the next icon:



### Closing up the top section of the bale chamber

When the «top section closed» sensor is activated, the control system will automatically pass to STOP mode:



Press the STOP key to finish PIA in any step of this mode.



#### NOTE:

The display will not pass to the next function if one of the functions should not be operated properly.

In this case the function of the sensor concerned must be checked.

# 6 Maintenance



## Warning:

Never carry out adjustment or repair work, or service and maintenance work, on the machine when in operation. Switch off the tractor engine, remove the ignition key and wait for the machine to come to a standstill before working on moving machine parts. Shut the hydraulic shut-off tap before entering the bale chamber. Take care when opening and closing

the chamber section. No persons may remain in the moving area while chamber sections are operated.

To ensure the efficient running of the bale processor and to avoid premature repairs, make sure that the machine is well looked-after and that repairs are carried out in time.

## 6.1 Maintenance of mechanic components

### 6.1.1 Welding on machine

Disconnect the command panel and the electric cabinet before any welding is done on the machine.

### 6.1.2 Re-tensioning bolts

Check thoroughly all bolts of drawbar, top section's hinge pins, wheels and wheel shafts after 1 hour of use and thereafter weekly. All other bolts and nuts should be checked after 8 hours of use and thereafter weekly.

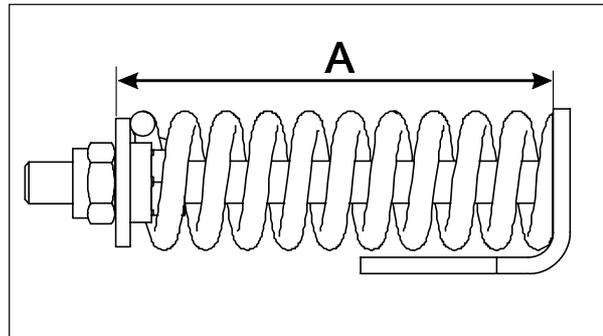
#### Bolt tensioning torque

Ø	Material 8.8	Material 8.8
M5	5.7 Nm	50.5 lb.in
M6	9.9 Nm	7.3 lb.ft
M8	24 Nm	17.7 lb.ft
M10	48 Nm	35.4 lb.ft
M12	85 Nm	62.7 lb.ft
M16	210 Nm	155 lb.ft
M20	400 Nm	295 lb.ft
M24	1000Nm	737 lb.ft

### 6.1.3 Chain tensioning

All drive chains are tightened elastically by spring-loaded chain tensioners. The chain tensioners are to be assembled in the chain row so that they can move freely with no torsion and that the wear on chains and chain wheels is reduced to a minimum.

The given spring lengths of the chain tensioner are to be checked regularly and re-adjusted if necessary.



#### Chain tensioner spring lengths:

Cutting system drive, right-hand side	120 mm
Chain tensioner for roller drive bottom section	120 mm
Chain tensioner for roller drive top section	250 mm

## 6.1.4 Lubrication

See lubrication chart next page.

Detail		Working conditions		
		Good	Average	Bad
		Little dust, no aggressive materials	Dusty, no aggressive materials	Wet, aggressive materials
1.	PTO shaft	Daily	Daily	Daily
2.	Gear box	1.3 litres gear oil SAE 90, after first season and thereafter only in case of repair		
3.	Clutch conveyor drum	4000 bales	2000 bales	Daily
4.	Main drive shaft rh	4000 bales	2000 bales	Daily
5.	Idle sprocket on chain transmission of top section drive, lh side front	4000 bales	2000 bales	Daily
6.	Idle sprocket on top section roller drive lh side	4000 bales	2000 bales	Daily
7.	Pivoting point of rear roller unit on top section, both sides	4000 bales	2000 bales	Daily
8.	Lower end lifting cylinders of top section	4000 bales	2000 bales	Daily
9.	Chains	Check central lubrication system daily Keep plastic tank full, use chain saw oil		
10.	Chamber roller bearings	4000 bales	2000 bales	Daily
11.	Conveyor drum	4000 bales	2000 bales	Daily
12.	Hydr. bottom section drive unit, outer sprockets, free wheels & gear	4000 bales	4000 bales	4000 bales
13.	Prestretcher gears	4000 bales	4000 bales	4000 bales
		<i>Observe! Limit the greasing to two pump strokes. Excessive lubrication may cause damage to bearing seals.</i>		

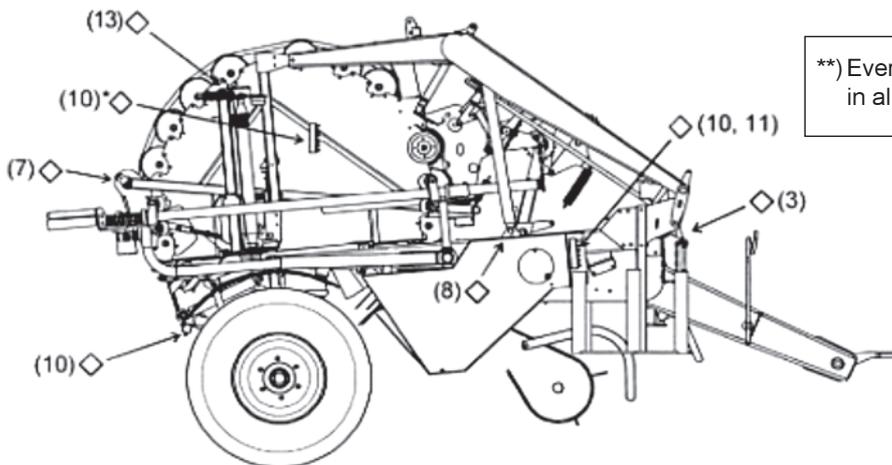
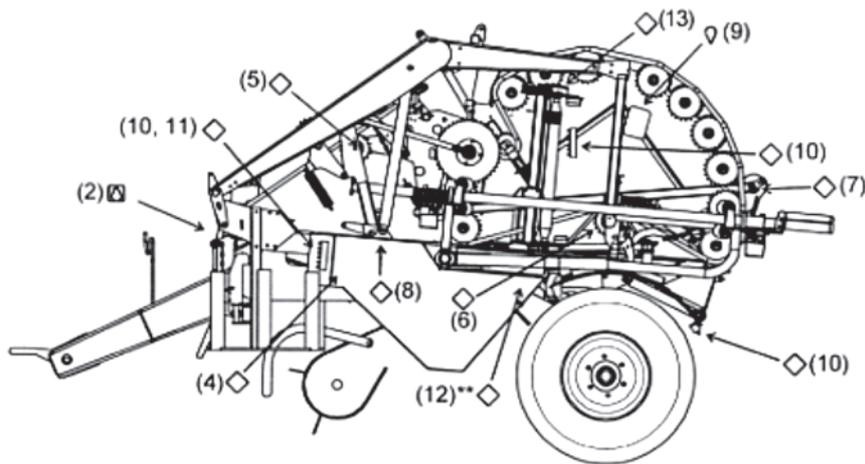
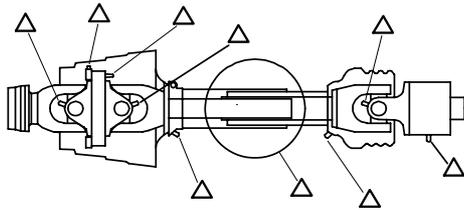
Use high quality grease only. We recommend a Calcium grease (NLGI 2), which is not water-soluble in the same way as the regular Lithium grease types.

*Observe! The machine shall under all circumstances be lubricated once per year, after cleaning with high pressure cleaner and before winter storage.*

### Lubrication chart BIO bale processor

- △ Grease daily
- ◇ Grease:            Good conditions            Average conditions            Bad conditions  
                                  4000 bales                            2000 bales                            daily  
                                  and after cleaning with high pressure cleaner & before winter storage
- ⊠ Oil 1.3l gear oil SAE90 after first season and thereafter at repairs
- ▽ Oil daily

(1)



\*\*\*) Every 4000 bales in all conditions

\*) Optional extra. When this block is not fitted, rh bearings of chamber rollers of top section have nipples fitted to the bearing housings (12 pcs.)

## 6.1.5 Grinding of cutter knives

Blunt cutter knives causes increased fuel consumption and increased risk of conveyor drum blocking. Knives might be pressed away from the conveyor drum, causing material to remain uncut.

Grinding interval length depends highly on the type and contamination of the straw material. If straw material is mixed with sharp and hard particles, it might be necessary to grind knives every 250 bales.

Knives should be ground on the *plain* side only. Use a disc for knife grinding, not a regular cutting disc.

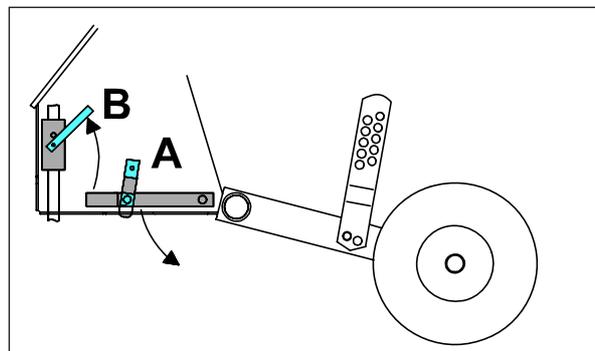
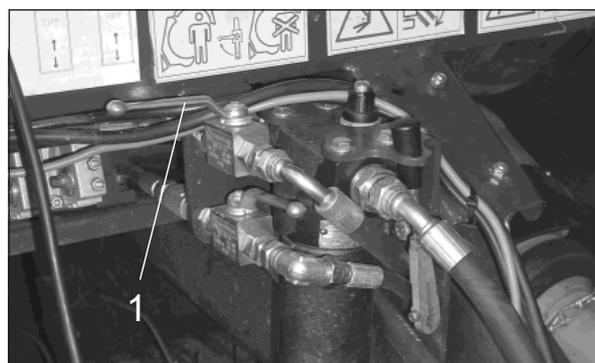
### 6.1.5.1 Changing the blades OC14



**Warning:**

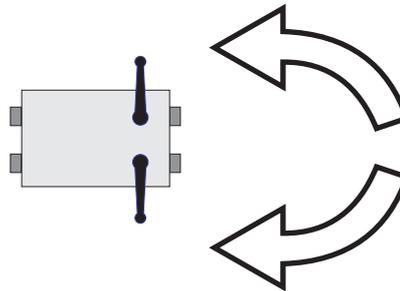
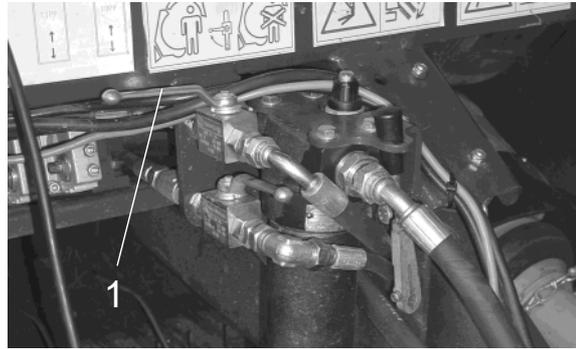
During all work on the cutting system, switch off the engine and wait for the machine to come to a complete standstill. Close the cutting system hydraulics with the lock valve. Always wear protective gloves when working with the blades and never touch the blades on the cutting edge.

- Move out the cutting system hydraulically
- Open the chamber top section hydraulically
- Secure the top section - close the upper lock valve in front of the machine (1)
- Close the lock valve (B) of the cutting system located on the right-hand side of the machine
- Switch off the tractor engine
- Turn the blade shaft, lower the lever (A)
- Grip the blade at the end and pull out upwards, alter the position of the conveying tines by turning the conveying drum, if necessary
- Sharpen the blades (only when disassembled)
- Mount the blades in the reverse order



## 6.1.5.2 Changing the blades OC 23

- Open the top section of the bale chamber using hydraulic power.
- Close tap (1) to lock the top section.
- Swing out the cutting unit using hydraulic power.
- Close both taps for the variable blade engagement in groups on the right-hand machine side.
- Turn the blade shaft by moving lever (d) down.
- Grip blade at the end, pull out upwards clear of the blade shaft and then remove to the bottom.
- When necessary turn the feed drum to alter the position of the tines.
- Sharpen the blades (only when disassembled!).
- Install the blades in the reverse order.



### NOTE:

Work only with sharp blades. This will considerably reduce power requirement.

## 6.1.6 Tyre air pressure

Tyre size	Normal Pressure	Max pressure
500/50-17", 8 ply	1.2 bar (17psi)	1,6 bar (22psi)
500/45-22,5", 8 ply	0.7 bar (10psi)	1,6 bar (22 psi)
600/40-22.5", 8 ply	0.8 bar (11psi)	1.6 bar (22 psi)

### 6.1.7 Check for wear

Inspect moving parts for wear.

Check tyres for wear and damage.

### 6.1.8 Cleaning

#### General

We recommend the use of pressured air when cleaning the machine. Thus there is less risk of damaging the bearings of the machine.

#### Pre-stretch rollers

It is important to keep the pre-stretcher's roller free from particles, dust, straw and tack. Use gasoline or similar. Dirty rollers may cause incorrect stretch of the film and incorrect coverage of the bale.

#### Cylinders

Keep away from aggressive chemicals etc. in order to avoid damage to the piston surface.

## 6.2 Maintenance hydraulics

### 6.2.1 Oil filter

#### Filter visual indicator (I)

Green - filter is clean

Red - change filter element

Check the filter when the oil is warm (at tractor engine rpm. as for ordinary wrapping).

Cold oil may give wrong indication.

*Note! On tractors with closed centre system the pre-stretcher satellite must rotate in order to get correct indication (oil must flow through the filter). Be careful. Beware of the rotating pre-stretcher satellite.*

#### Filter exchange intervals

Check the filter element every 3000 bales or at least once a season. The filter element should be replaced for every 8000 bales being wrapped and always once a season.



#### Caution!

Release pressure in the system before opening the filter housing.

### 6.2.2 Hydraulic tractor oil replacement

Keep hydraulic oil clean! Clean hydraulic oil will prevent excessive wear and premature failure of components. Replace the tractor filter and oil as per manufacturer's instructions.

### 6.2.3 Ventilating the hydraulic system:

- Connect the hydraulic lines to the tractor
- Unscrew the line between the filter housing and hydraulic block to let air escape
- Move the control lever in the direction "close top section" until oil comes out of the union
- Tighten the union

## 6.3 Maintenance electrics & electronics

### 6.3.1 Controls

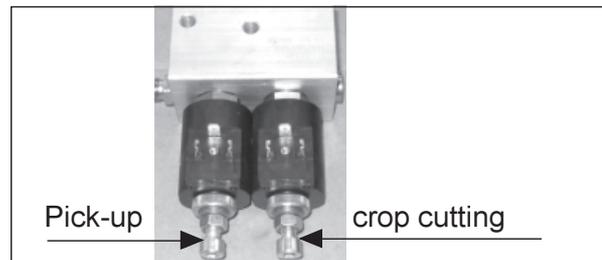
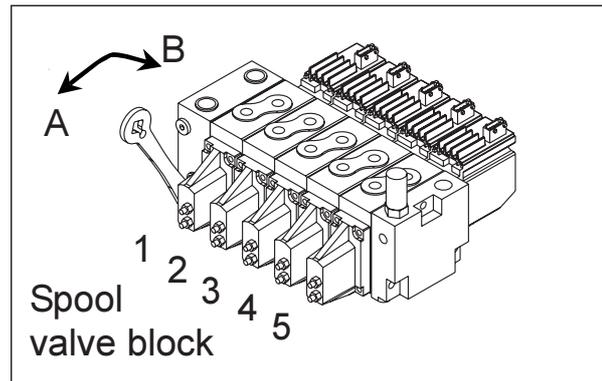
Check wirings for damage or corrosion. Check all plugs and sockets.

### 6.3.2 Cleaning

Keep command panel and electric cabinet clean. Use a moist cloth. Avoid flowing water.

## 7 Troubleshooting

It is important to clarify whether the fault is due to mechanic, electrical or hydraulic factors. If a function will not work properly, check whether there is voltage on the solenoid. If so, the fault lies with the valve. If the function does not stop working when the power supply is interrupted, the fault lies with the hydraulic valve. If the function stops working, the fault is electric. *Look for error messages in the command panel display.*



### Spool valve overview

Valve	Position A	Position B
1	Prestretcher ring regular drive	Prestretcher ring reverse
2	Cutter knives disengaged Pick-up down	Cutter knives engaged Pick-up up
3	Film cutter closed	Film cutter released
4	Bottom chamber section lowered	Bottom chamber section raised
5	Top chamber section lowered	Top chamber section raised

All valves may be manually operated by the lever included with the machine. Fit lever on the valve casing. Be aware of moving parts!

Pour la commande du ramasseur ou du système de coupe, présélectionner la soupape respective en vissant le bouchon à six pans creux. Une fois le relevage manuel terminé, dévisser le bouchon à six pans creux.

Furthermore you will find these ball valves:

Valve	Positioned	Function
7	Upper valve positioned in front	Locking upper chamber section
8	Lower valve positioned in front	Locking pick up
9	Right-hand side bottom	Locking knife beam

## 7.1 Troubleshooting hydraulics

### a. Oil flow block in quick-release couplings to tractor.

This may, for example, produce pressure on return pipe (blocked return coupling). Try quick-release coupling adapted to tractor.

### b. Intensive heating of oil.

Oil temperatures of up to 80° C are not unusual during continuous operations. 60° C feels very hot when touched. Check that the plug for closing the centre of the central unit (John Deere plug) is being used correctly (only on tractors with variable hydraulic pumps, i.e. mainly John Deere).

### c. Fault in spool valve unit.

Check that the actual spool is moving smoothly. See spool valve overview.

Fit spool handle and ease the malfunctioning spool back and forth a few times first.

*Observe! Reduce oil flow from the tractor to a minimum before testing and keep your distance from moving parts on the machine.*

If the functions can be operated, the problem is electrical.

### d. Contaminated oil.

Badly contaminated oil is extremely detrimental to the hydraulic system. Bear in mind the timed intervals for checking and replacing filter and oil - see sections 6.2.1 and 6.2.2.

Contaminated oil can contain large amounts of particles, which cannot be filtered, but can nevertheless cause wear to the motor seal and blocking of valve spools.

Experience shows that the hydraulic oil in the tractor is often badly contaminated by particles and water.

### The fault is impossible to repair.

Contact your Taarup dealer. Any kind of information regarding faults found is useful for a quick repair.

## 7.2 Troubleshooting electrics

A stable power supply is necessary for the electrical control unit to function satisfactorily. Any drop in voltage from cables and switches must not result in an operating voltage lower than 11V on the command panel and the solenoids.

Use the original Taarup battery power cable only.

### Sources of electrical fault:

Generally: Look for error messages in the command panel display.

### a. Poor power supply from battery (large voltage drop, brief power failure).

Needs particular checking when a fault arises as a result of changing tractors.

### b. Damage to cables/switches.

Check the connection with a multimeter (resistance measurement/W).

### c. Poor connection in connectors.

Tighten the collar in order to achieve proper contact.

### d. Fault on sensors.

Check that light of sensor flashes when power is on and sensor is activated, or check with a multimeter (resistance measurement/R) and steel piece ("magnet"). When the steel piece is held near the sensor, the resistance should be approximately equal to zero (short circuit).

Check even that the respective control light (X) in the driver module is activated when a piece of steel is approaching the sensor. Remove the module cover to observe the control lights.

### e. Fault on command panel.

Possible remedy:

Check wiring - particularly the cable between the black box and the command panel ("data transfer cable").

Check for any short circuit on the sensor cables.

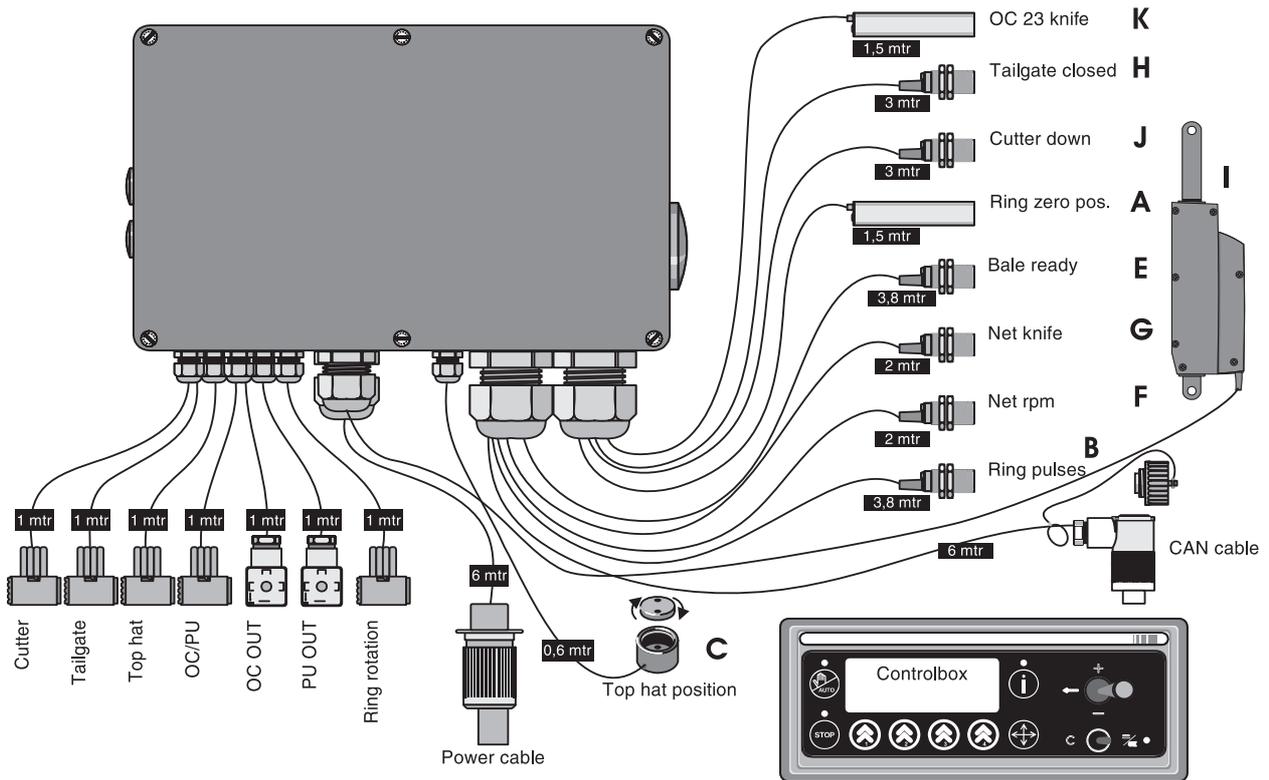
### 7.2.1 Sensors' position

See overviews on next page. When a sensor is activated the red light (at the cable entrance) is on.

The gap between sensor and inducting steel/magnet should be 3-6 mm.

#### Sensors

Sensor	Positioned	Function
A	Rh side at ring support	Indicating prestretchers in safe sector
B	Rh side at ring motor	Exact stop position of prestretchers
C	Rh side at top section joint	Indicating top section completely raised
C	Rh side at top section joint	Indicating top section completely lowered
E	Rh side at chamber lock	Indicating chamber full
F	Rh side at net feeding roller	Indicating net feeding
G	Rh side at net knife releaser	Indicating net cutting knife release
H	Rh side at ring support	Indicating bottom roller section raised
I	Rh side integrated in actuator	Actuator positioning
J	Rh side on film cutter	Indicating film cutter closed
K	Lh side of blade holder	Swings cutting blades in and out











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