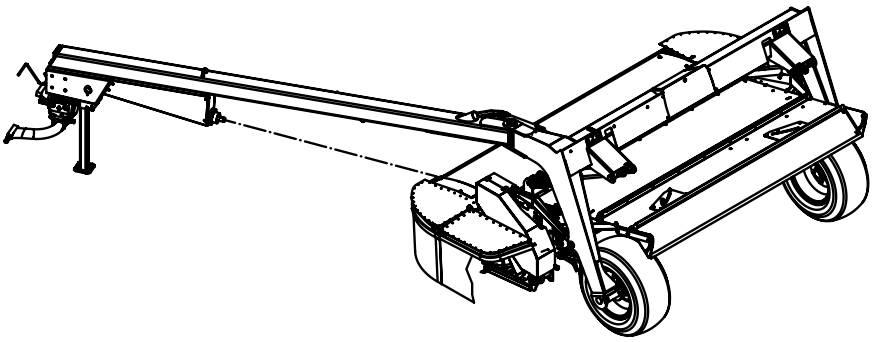
taarup



4228 LT-4232 LT-4232 CT-4236 LT-4236 CT

Operator's Manual

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Applicable as from machine No:	402.185
Reference No:	90000103EN
Index	118-02

kverneland group

Identification of machine

So that your dealer can help you as quickly as possible, he needs to have some information about your machine. Enter your information here.

Description	4228 LT - 4232 LT - 4232 CT - 4236 LT - 4236 CT
Working width	4228 LT: 2.8 m, 4232 LT-CT: 3.2 m, 4236 LT-CT: 3.6 m
Weight	4228 LT: 1520 kg, 4232 LT: 1690 kg, 4232 CT: 1980 kg, 4236 LT: 2040 kg, 4236 CT: 2090 kg
Machine number	
Accessories	
Dealer address	
Manufacturer address	Kverneland Group Kerteminde AS Taarupstrandvej 25 DK-5300 Kerteminde - Denmark Tel / Fax +45 65 19 19 00 / +45 65 19 19 99 web: www.kvernelandgroup.com

Contents

Target group

This manual is intended for trained farmers and others who are qualified to work in agriculture and who are familiar with assembling equipment.

For your own safety
Read this instruction manual thoroughly before use and assembly. This will enable you to have optimal working conditions and to work in safety.

For the employer
Every employee must be trained how to use this machinery at regular intervals (at least once a year) in accordance with the employer's insurance guidelines. Untrained or unauthorised members of staff may not use this machine.

Instructions

Your dealer will assist with the instructions on how to use and maintain this machinery.

The meaning of the symbols

We have used different symbols to make the text clear. An explanation follows:

- A dot symbol marks a list.

> A triangle marks an action you must carry out.

→ An arrow refers you to other parts of the text.

We have also used pictograms to help you find relevant places in the text.

TIP! The word 'tip' indicates tips or instructions on use.

NOTE! “Note” denotes information that requires particular attention.

A spanner marks tips concerning assembly and adjustment work.

A warning triangle indicates important safety instructions. If these are not adhered to, it may result in:

- Serious errors in the machine function.
- Damage to the machine.
- Injury or accident.

A star indicates examples that can be used for clarification.

For your safety

This chapter includes general safety instructions. In addition, each chapter in the instruction manual includes specific safety instructions not set out here. The safety instructions must be complied with

- For your own safety.
- For the safety of others.
- To ensure the safety of the machine.

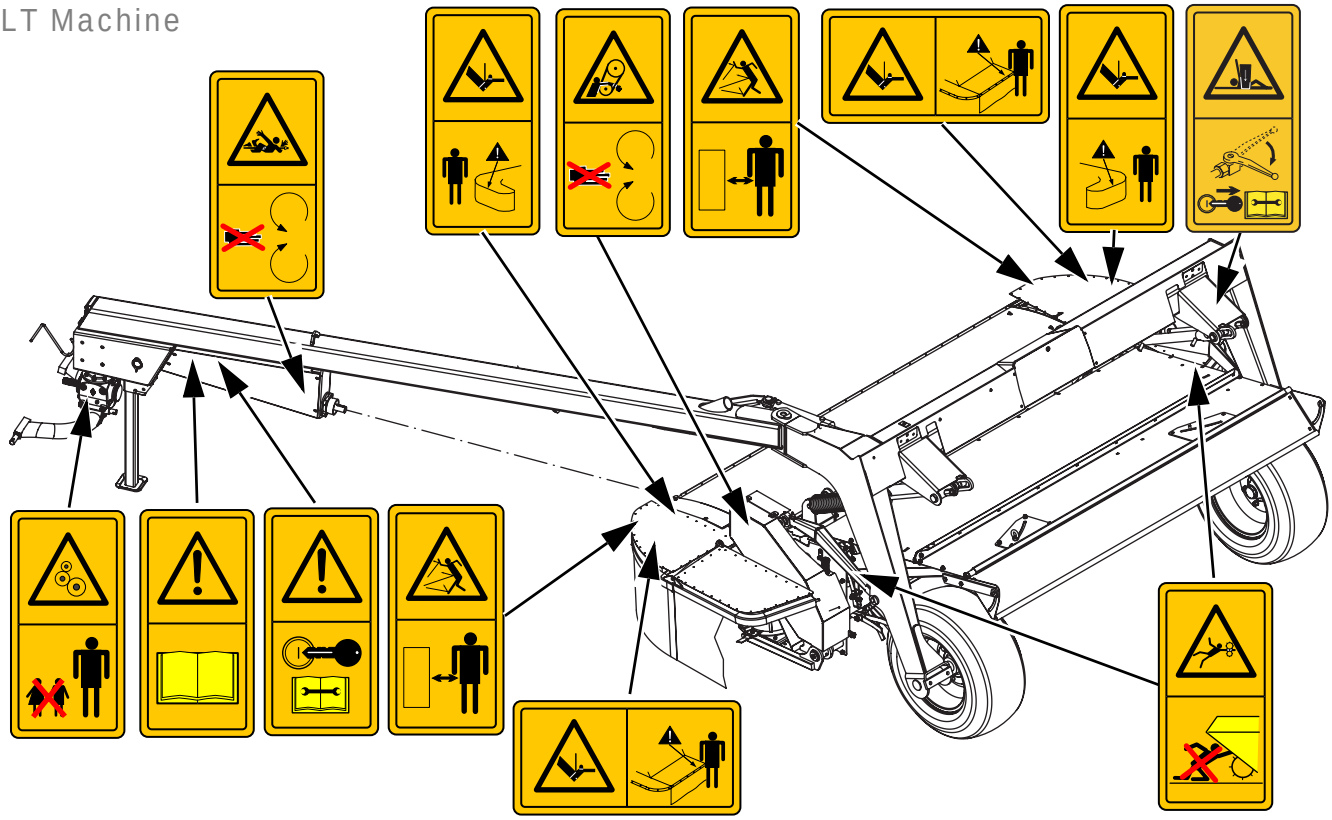
When working with agricultural machines, incorrect handling can result in various dangers. Therefore, you should always be very thorough and never work under pressure.

The operator must be receive regular training
Persons working with the machine must receive regular training on these safety instructions.
The safety instructions should be complied with in accordance with local legislation concerning agricultural machines.

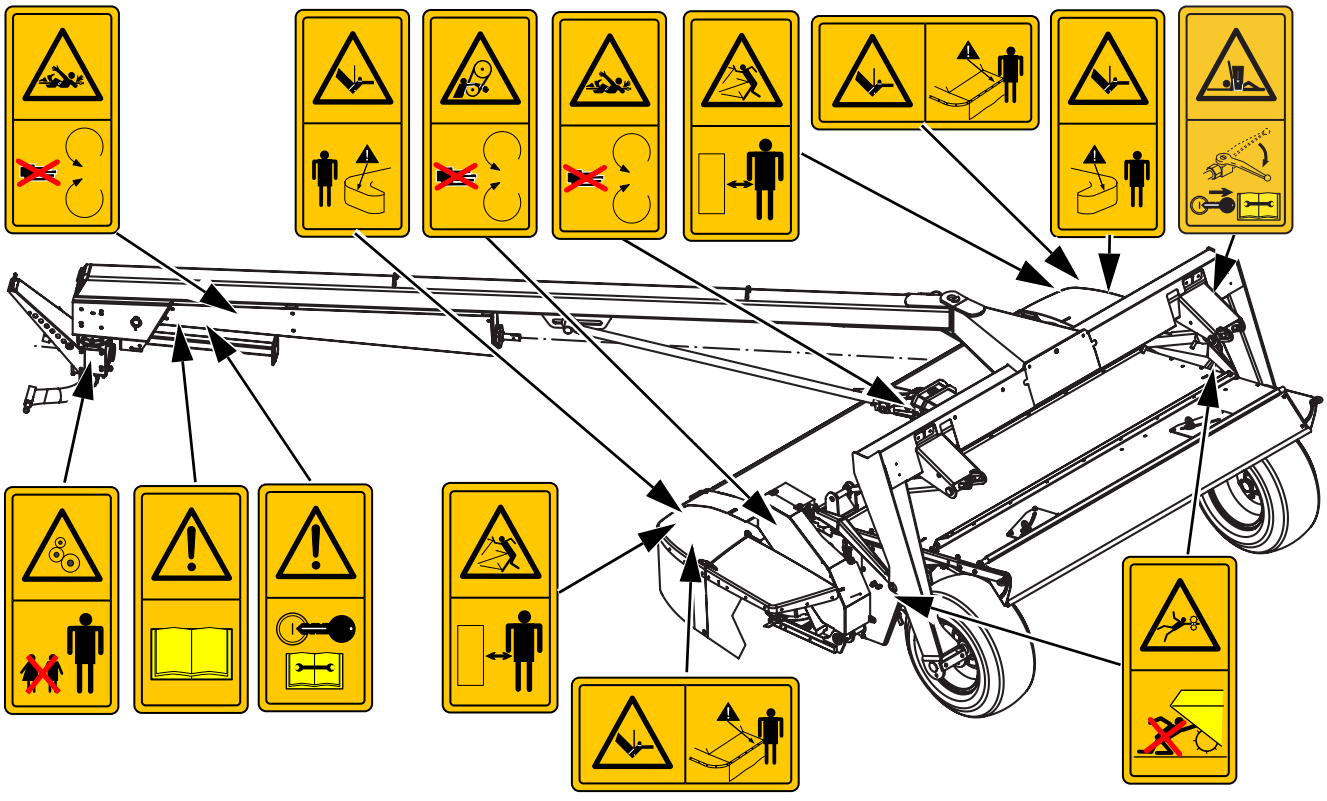
Safety symbols

On the machine you will find labels relating to your safety. These labels must not be removed. If the labels become illegible or detached, new labels can be ordered and affixed to the relevant areas.

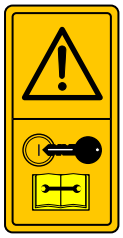
LT Machine



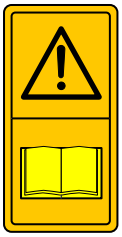
CT machine



The meaning of the symbols

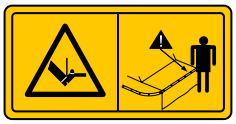


Stop the tractor before working on the machine
Be careful! The tractor engine must ALWAYS be stopped and the ignition key removed before carrying out repairs or maintenance, cleaning, or lubricating the machine.



Read and observe the instruction manual
Be careful! Read and ensure you understand the instruction manual before the machine is used.

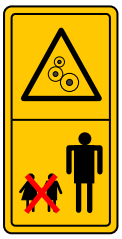
Ensure no clothing/body parts get caught in the PTO shaft
Guards may not be removed or opened until the machine has stopped rotating. The tractor engine must be stopped, the ignition key removed and the handbrake applied.



Risk of injury to feet
The safety guard must always be in place when the machine is working.

Risk from loose chippings
Keep a safe distance from the machine. Do not allow any persons near the machine when it is working. If the guard is damaged, it must be replaced.

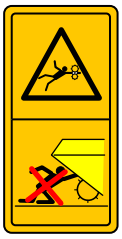
Danger of being crushed by the machine's cutting unit
The safety valve must always be closed during repair or maintenance operations on the machine's cutting unit. The tractor must always be stationary, with the ignition key removed before repair or maintenance operations are undertaken on the machine.



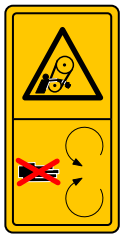
Danger: rotating machine parts.
Children must never be allowed near the machine. Only the operator is allowed near the machine.

Risk of injury to feet
The safety guard must always be in place when the machine is working.

Risk of injury to feet
The safety guard must always be in place when the machine is working.



Ensure no clothing/body parts get caught in the machine.
No work may be carried out on the machine's rotors or cutterbar until the machine has stopped rotating. The tractor engine must be stopped, the ignition key removed and the handbrake applied.



Ensure no clothing/body parts get caught in the V belt transmission.
Guards may not be removed or opened until the machine has stopped rotating. The tractor engine must be stopped, the ignition key removed and the handbrake applied.

Fingers or hands can be caught in the V-belt transmission
Guards may not be removed or opened until the machine has stopped rotating. The tractor engine must be stopped, the ignition key removed and the handbrake applied.

Who can operate the machine?

Operators of this machine should only be trained farmers and others who are qualified to work in agriculture and who are familiar with assembling equipment.
Untrained or unauthorised members of staff may not use this machine.

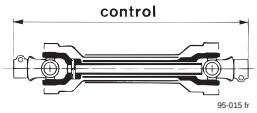
Connecting

Correct attachment of the machine
The machine must be correctly connected, following the instructions.
If the machine is incorrectly attached, it can become disconnected from the tractor.
Incorrect attachment can lead to accidents.

When attaching the machine to the tractor you must therefore:

- Make sure that the tractor cannot roll.
- Make sure that the tractor and the machine belong to the same category.
- Never stand between the tractor and the machine during attachment.
- Use the hydraulic three point suspension slowly and carefully.

Following the above instructions will protect you and others from injury.
Failure to follow the above instructions may result in serious injuries.



PTO shaft check
Refer to the manufacturer's maintenance and safety instructions delivered with the PTO shaft.

Make electrical connection after attachment
When fitting the lighting device, the power supply to the tractor must be turned off.
This will prevent short circuits and damage to the electric circuit.
There is a risk of burns and other serious injuries if the electrical systems short circuit.

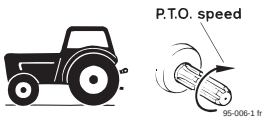
Only connect the hydraulics when system is depressurised
You should only connect the hydraulic hoses to the tractor's hydraulics when the hydraulic system on both the tractor and the machine is depressurised.
There is a risk that the machine will move accidentally.
Unintentional movement of the machine may result in serious injuries.

The hydraulic system should be checked regularly
All hoses and fittings should be checked regularly for visible damage.
Hydraulic hoses also wear without any visible damage.
Defective hydraulic hoses can cause injury or fire.

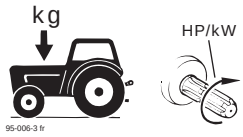
Colour marking of the hydraulic connections
The hydraulic connections between the tractor and the machine must be marked in different colours.
By marking the hydraulic connections you prevent the machine from being incorrectly operated.
Incorrect operation or unintentional movement of the machine may result in serious injuries.

Load capacity

Compliance with total weight, axle pressure, carrying capacity of the tyres, and minimum weight.
Neither the tractors total weight, axle pressure or the carrying capacity of the tyres may be exceeded with front mounted and rear mounted machines.
To ensure the manoeuvrability of the tractor, the load on the front axle must be at least 20% of the tractors own weight.
Failure to do so can result in a loss of driving control and accidents.

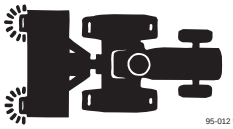


Be careful when working around the PTO shaft
When working on the PTO shaft, the tractor PTO outlet must be disconnected, the tractor must be stopped and the ignition key should be removed.
This prevents the PTO shaft from suddenly starting to rotate.
If the tractor and the PTO shaft have not been disconnected according to the instructions, serious accidents causing damage to limbs can occur.



Weight/power ratio between machine and tractor
The machine may only be connected to a tractor with of the correct size and performance.
The tractor's size and P.T.O outlet must correspond to the power consumption of the machine and its weight.
Wrong weight/power ratio can result in damage to both machine and tractor.

Transport on public roads



Ensure that the machine meets the Road Traffic Act's requirements concerning its condition.
When driving on public roads, the machine must comply with the Road Traffic Act's current requirements.
This ensures your safety and that of other road users.
Failure to meet the requirements can result in accidents.

Compliance with the Road Traffic Act's current requirements includes, for example:

- Attachment of lights, warning devices and safety equipment.
- Compliance with permitted transport width, weight, axle pressure, tyre carrying capacity and total weight.

Carrying passengers on the machine is prohibited
It is dangerous and illegal to carry passengers on the machine.
The machine is not approved for personal transportation.
Transporting persons on the machine may result in serious injuries and death.

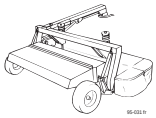
Attaching machines alters the driving and braking abilities of the tractor
Take the altered driving and braking characteristics into account when driving with a machine attached.
You should be especially aware of the machine's width and length when driving around bends and turns.
Serious accidents and a loss of driving control may result if this is not taken into account.

Adjust the speed according to the road conditions
Adjust driving speed according to the conditions on the road.
Poor road conditions and high speeds can lead to parts of the tractor and machine being overloaded.
Driving too fast can lead to accidents and damage both the machine and the tractor.

Use

The operator should receive careful instructions before using the machine

The machine should only be used if the operator has been given thorough instructions.
Thorough machine instruction allows safe usage.
Insufficient training may lead to incorrect usage of the machine and accidents.



Check that the machine has no technical faults

Only use the machine if it has no technical faults.
This ensures that the machine is operating correctly and safely.
A machine with technical faults and defects can be dangerous.

Do not remove the protective guards

Check that all protective guards are in place before use.
This ensures that the machine will give maximum protection to the operator.
If the safety guards are removed or not used, it may result in serious injuries and accidents.

Check the tyre pressure regularly

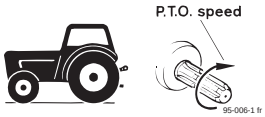
Carry out regular checks of the tyre pressure.
This ensures the machine is being driven under optimum conditions and prevents accidental banking on curves or corners.
Careening on bends and turns can lead to accidents.

Carrying passengers on the machine is prohibited

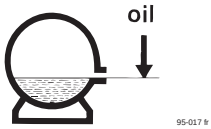
It is dangerous and illegal to carry passengers on the machine.
The machine is not approved for personal transportation.
Transporting persons on the machine may result in serious injuries and death.

Check the surrounding area before starting to use the machine
Check the surrounding area before driving and using the machine.
This prevents persons and animals in the vicinity from being harmed.
If the surrounding area is not checked, it may result in serious injuries to persons or animals.

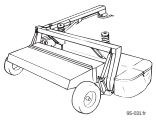
Checking bolts on moving parts
Check that all bolts on moving parts are correctly tightened.
Tightening parts prevents moving parts jarring.
Parts which are not correctly tightened can work loose and damage the machine.



Maintain the rotational speed on the tractor PTO outlet
It is dangerous to connect a tractor with PTO = 1000 rpm to a machine intended for PTO = 540 rpm.
The machine is not designed for this speed.
It can result in damage to the machine and be dangerous to any persons in the vicinity.

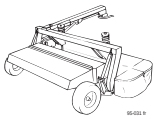


Check the transmission oil level regularly
Check that the transmission is filled with oil and that the oil level is correct.
A correct oil level ensures the transmission a long and trouble free service life.
An incorrect oil level will damage the transmission.



Stop the machine immediately in case of malfunction
In case of malfunction, the machine should be stopped immediately.
A machine malfunction can be endanger any persons and animals in the vicinity.
Malfunctioning machines can cause dangerous situations to arise.

Disconnection



Increased risk of injury when disengaging
There is an increased risk of injury when disengaging the machine from the tractor.
Following the above instructions will protect you and others from injury.
Failure to follow the above instructions may result in serious injuries.

Therefore, when disconnecting:

- Make sure that the tractor cannot roll.
- Never stand between the tractor and the machine during disconnection.
- Use the hydraulic three point suspension slowly and carefully.
- Make sure that the machine is standing on a safe, level surface.
- When depressurising the hydraulic system for both tractor and machine, first disconnect the hydraulic hoses.

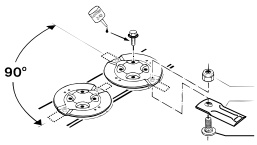
Maintenance

Comply with the service and maintenance intervals given in the instructions

Comply with the intervals for service and maintenance as given in the instructions.

By complying with the maintenance intervals you ensure that the machine will operate without malfunctions and provide maximum protection for the environment.

An incorrectly maintained machine is a danger to the environment.



Always use original spare parts on the machine

Always use original spare parts.

Original spare parts should be used for safety reasons

The manufacturer takes on no warranty responsibility in cases where non-original spare parts are used.

High risk when performing service and maintenance work

When performing service or maintenance work there is a higher risk of injury.

Following the above instructions will protect you and others from injury.

Failure to follow the above instructions may result in serious injuries.

Therefore, when you perform maintenance work:

- Disconnect the P.T.O shaft.
- Depressurise the hydraulic system.
- Stop or disconnect the tractor.
- Check that the machine is parked safely, support it if necessary.
- Do not use parts of the machine to climb onto it, the correct units for climbing must be used.
- Make sure that the machine can not start rolling.

Disconnect the power source when working on the electrical systems

Always disconnect the power source before you start working on the electrical system.

This will prevent short circuits and damage to the electric circuit.

There is a risk of burns and other serious injuries if the electrical systems short circuit.

Replacing the hydraulic hoses

Replace the hydraulic hoses at least once every 4 years.

Hydraulic hoses also wear without any visible damage.

Defective hydraulic hoses may cause serious injury.

Be careful when cleaning with high pressure cleaning equipment
Only use low pressure cleaning equipment to clean bearings, hydraulic hoses, plastic components, electrical control boxes and electrical equipment.
Using low water pressure to clean will protect the sensitive equipment on the machine.
Using high water pressure to clean could damage vital parts of the machine.

Disconnect the battery and the alternator before welding
The tractor battery and alternator should be disconnected before performing
welding work on the machine.
This will protect the tractor alternator during welding work.
The tractor alternator could be damaged or destroyed if the electric connections are not disconnected before welding.


95-018 fr

Tighten all fittings on moving parts
Check that bolts on moving parts are tightened after performing maintenance work.
Tightening parts prevents moving parts jarring.
Parts which are not correctly tightened can work loose and damage the machine.


95-014 fr

Do not alter the machine construction
The technical construction of the machine should not be altered and machine maintenance should be performed.
A well maintained machine will offer maximum protection.
An incorrectly maintained machine will not offer correct protection and could be dangerous.

Further safety instructions

Follow the instructions when working on the machine
The machine safety instructions should always be complied with. This will protect you and others from injury.
Failure to follow the safety instructions may result in serious injuries.

In addition to the safety instructions the following should be complied with:

- Environmental legislation.
- The general technical, medical and road traffic regulations.
- Instructions in this instruction manual.
- Instructions for use, maintenance and service.

This chapter includes general information about your machine. In addition, the following information is included:

- The machine's field of application.
- The machine characteristics.
- View of the machine.
- Technical data.

The machine's field of application

4228 LT - 4232 LT - 4232 CT - 4236 LT - 4236 CT is a towed disc rower intended for swath laying of common grass and corn crops.

4228 LT - 4232 LT - 4232 CT - 4236 LT - 4236 CT is intended for use mounted on the tractor's lift arms.

Correct usage of the machine

Incorrect usage of the equipment for purposes such as:

- Harvesting corn.
- Cutting grass in park facilities.

are outside the intended applications of the machine.
The manufacturer is not liable for any damages caused by incorrect usage of the machine. The user is wholly liable for the machine.

Machine characteristics

Solid construction
Thanks to a solid construction and its flexibility, the machine is both strong and reliable.

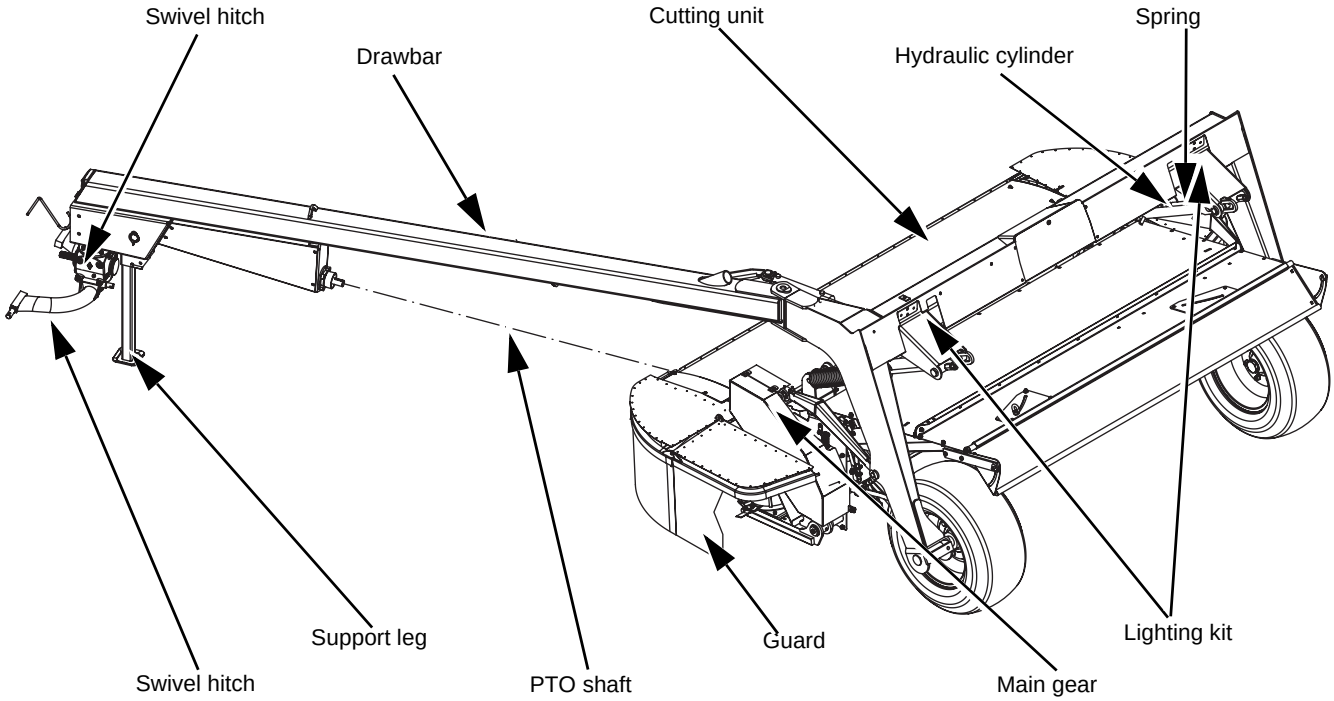
Quick and easy lifting of the cutterbar when turning on the headland
The machine's cutterbar is raised hydraulically without the use of tools on the headland.

Available machine connections
4228 LT - 4232 LT - 4232 CT - 4236 LT - 4236 CT: Can be connected to the tractor's lift arms.

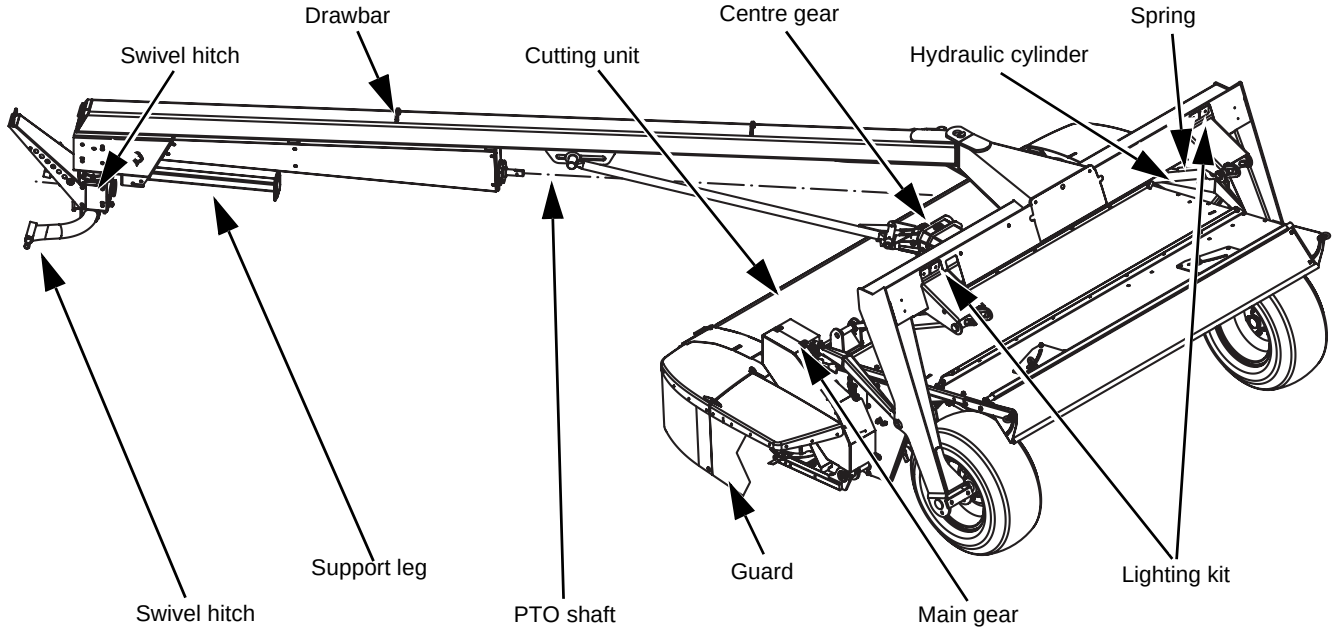
Your safety when using the machine
To make working with the machine as safe as possible the machine complies with EC regulations. The machine is CE marked.

Synopsis

LT Machine



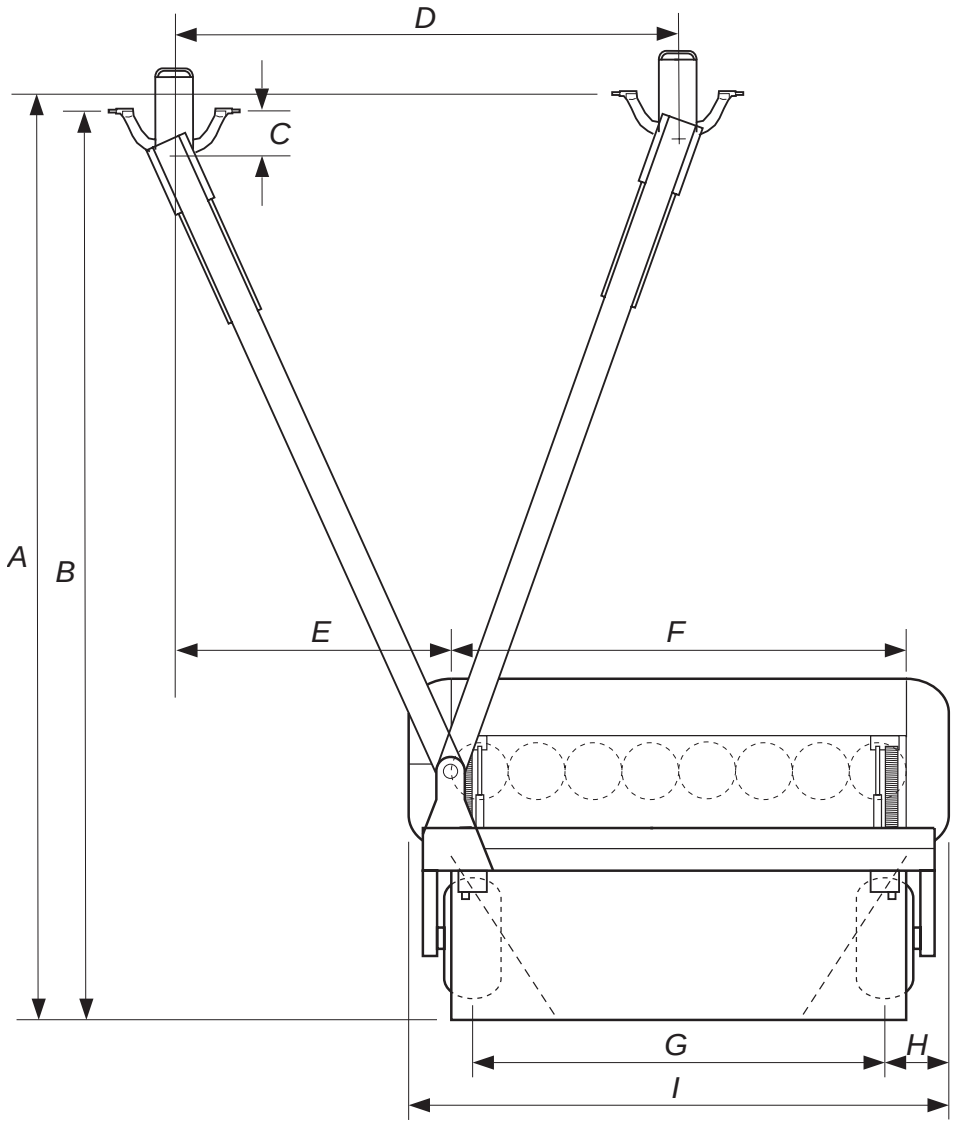
CT machine

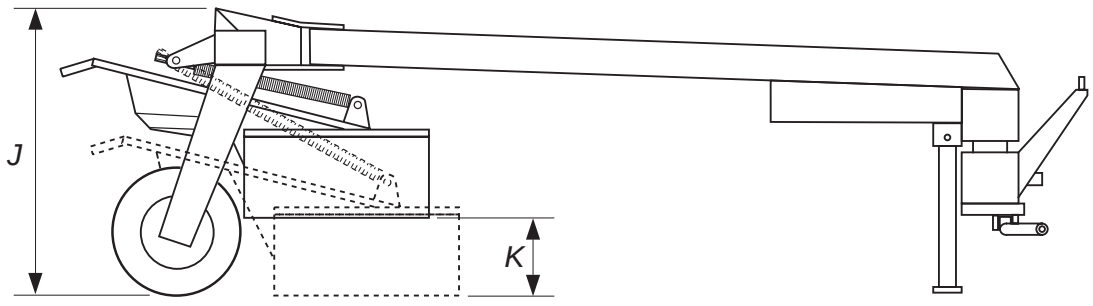


Technical data

Machine dimensions

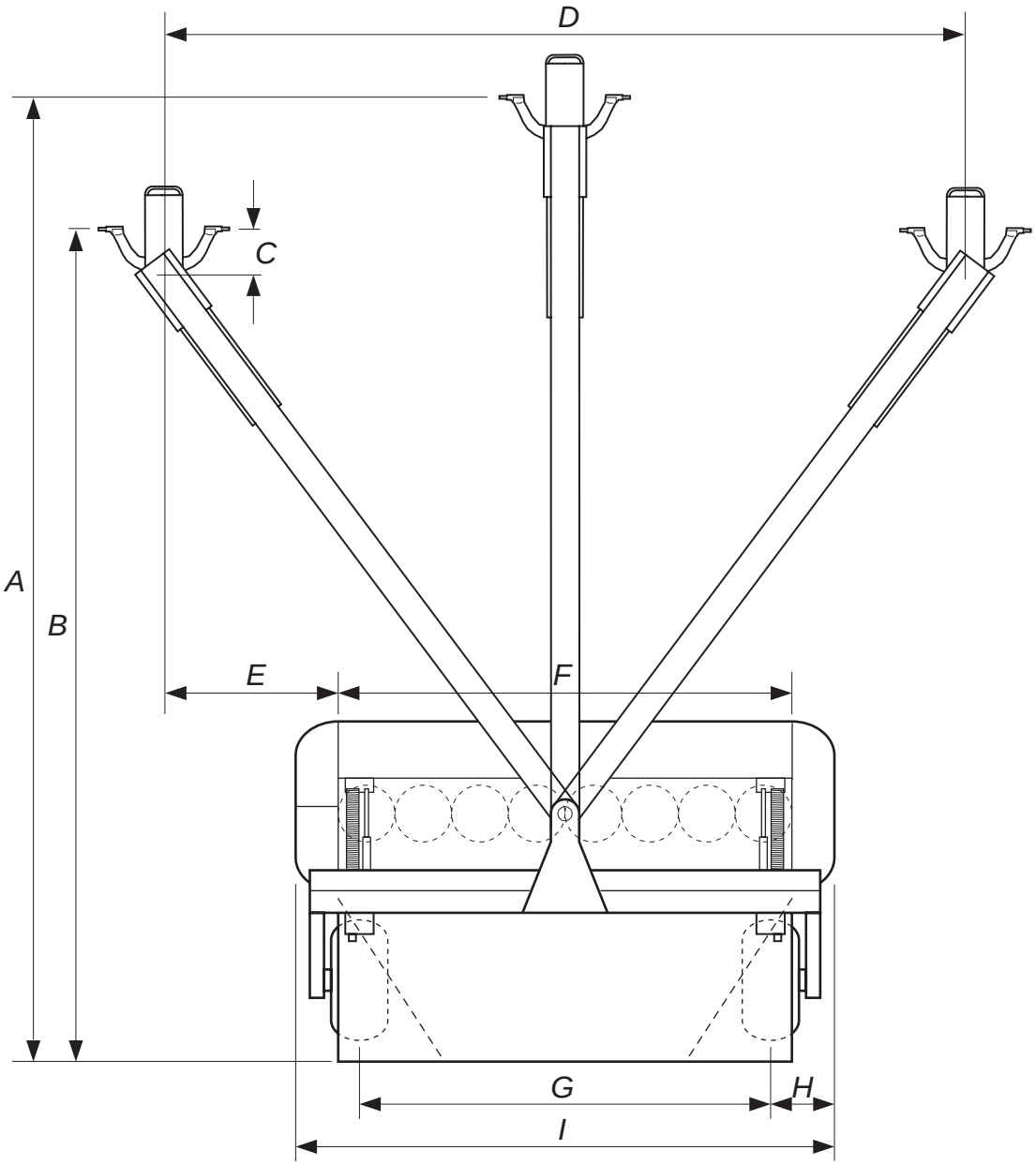
LT Machine

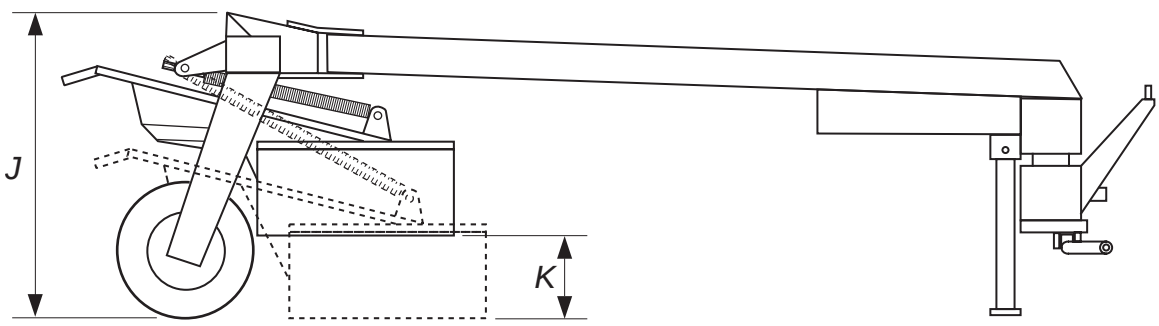




Dim.	Unit	4228 LT	4232 LT	4236 LT
A	mm	5200	5650	5650
B	mm	5125	5600	5600
C	mm	350	350	350
D	mm	2700	3050	3050
E	mm	1200	1400	1400
F	mm	2800	3200	3600
G	mm	2100	2400	2800
H	mm	675	675	675
I	mm	3450	3750	4150
J	mm	1700	1700	1700
K	mm	425	425	425

CT machine





Dim.	Unit	4232 CT	4236 CT
A	mm	7225	7225
B	mm	6250	5900
C	mm	350	350
D	mm	6000	6875
E	mm	1425	1650
F	mm	3200	3600
G	mm	2400	2800
H	mm	675	675
I	mm	3750	4150
J	mm	1700	1700
K	mm	425	425

Machine specification

	Unit	4228 LT	4232 LT-CT	4236 LT-CT
Unladen weight LT machine	KG	1520	1690	2040
Unladen weight CT machine	KG	-	1980	2090
PTO (Power takeoff)	RPM	540/1000	540/1000	540/1000
Power requirement, minimum	kW/HK	50/70	60/80	70/90
Number of cutting discs	parts	7	8	9
Number of knives	parts	14	16	18
RPM, cutting discs	RPM	3000	3000	3000
RPM, rotors	RPM	450*/600/ 900/1015*	450*/600/ 900/1015*	450*/600/ 900/1015*
Stubble height	mm	15 - 50	15 - 50	15 - 50
Hydraulic pressure	bar	150	150	150
Wheel	dim	380/55-17	380/55-17	380/55-17
Tyre pressure	bar	3.5	3.5	3.5
Noise level	dB(A)	90	90	90
Cutting width	m	2.8	3.2	3.6
Cutting speed	kph	6 - 15	6 - 15	6 - 15
Transport width	m	2.7	3.0	3.4

* Optional equipment.
→ »Rotor« Page 53.
→ »Extra equipment« Page 140.

Tractor requirements

Tractor weight and size
The tractor must be of the appropriate weight. Local legislation governing this ratio must be observed.
The correct ratio between tractor and machine ensure correct braking functions and manoeuvrability.
An incorrect ratio between tractor and machine can be dangerous.

Preparing the machine

The machine is divided into its main components for transport to the user. The machine must be assembled in accordance with the specific assembly instructions delivered with each machine.

The following chapter is for initial assembly and shortening of the PTO shaft, etc. For further assembly, only the defined attachment points should be used.

Initial connection of the machine
Exercise caution when a new machine is connected for the first time.
Ensure that all safety instructions are complied with.
Following the safety instructions will increase your personal safety.
Failure to follow the safety instructions may result in serious injuries and accidents.

Swivel hitch

Checking the rpm

Maintain the rotational speed on the tractor PTO outlet
It is dangerous to connect a tractor with PTO = 1000 rpm to a machine intended for PTO = 540 rpm.
The machine is not designed for this speed.
It can result in damage to the machine and be dangerous to any persons in the vicinity.

The swivel gear can be switched to 2 modes, so that both rotational speeds, 540 rpm or 1000 rpm, can be used.
From the factory the machine is adapted to tractors that run at 1000 RPM on the PTO.

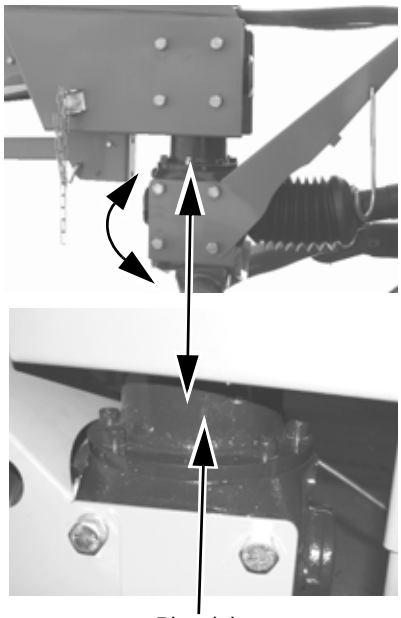
TIP! Whenever possible, one should always aim to run the PTO outlet at 1000 rpm.
It is especially recommended that tractors with power above 70 kW on the PTO run at a rotational speed of 1000 rpm, as high rpm provides less load on the PTO shaft.

The swivel gear's rpm can be checked in 2 ways:

The swivel gear is factory-fitted with a sign that gives the tractor's PTO shaft rpm.

- If the sign shows 1000 rpm, the machine must run at a rotational speed of 1000 rpm.
- If the sign shows 540 rpm, the machine must run at a rotational speed of 540 rpm.

PTO shaft rpm



The swivel gear's rpm can also be checked by observing the gear's pivot joint.
Check the swivel gear in the following way:

> Turn the lower part of the swivel gear from side to side and observe the pivot joint in the middle of the swivel gear.

- If the pivot joint turns together with the lower part of the swivel gear, the machine should be run at a rotational speed of 1000 rpm.
- If the pivot joint does not turn together with the lower part of the swivel gear, the machine should be run at a rotational speed of 540 rpm.

Number of revolutions on the PTO

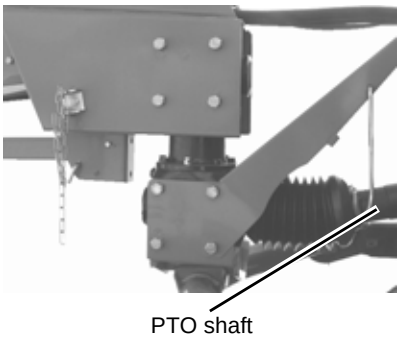
1000 RPM.

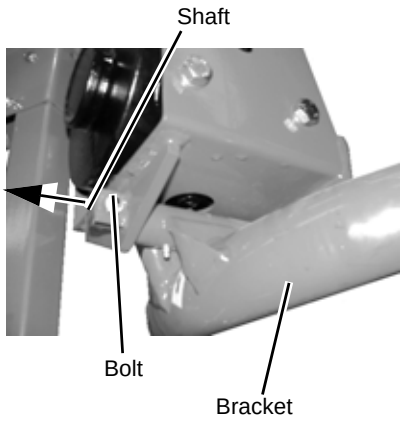
From the factory the machine is adapted to tractors that run at 1000 RPM on the PTO.

540 RPM.

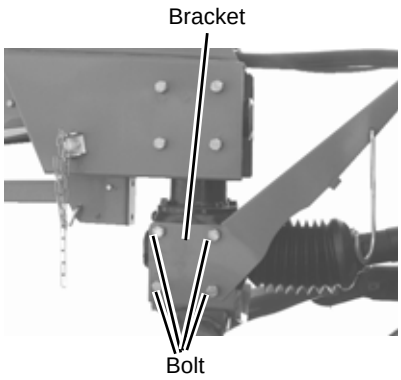
If the machine is to be fitted to a tractor's PTO shaft running at 540 RPM, the following procedure must be followed:

> Remove the PTO shaft.

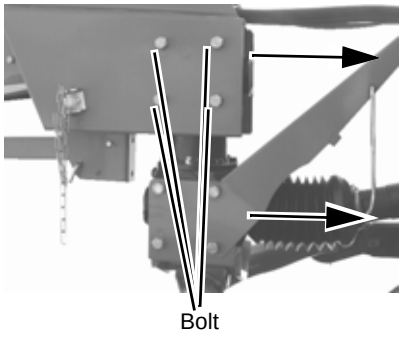




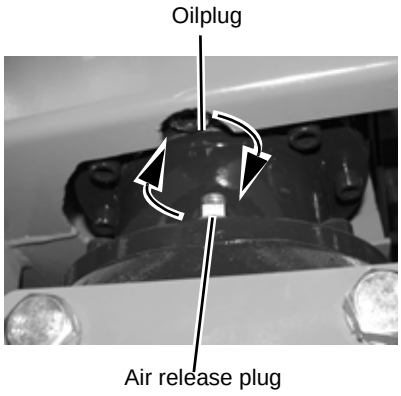
> Use suitable tools and remove the bolt as shown.
> Remove the shaft.
> Remove the bracket.



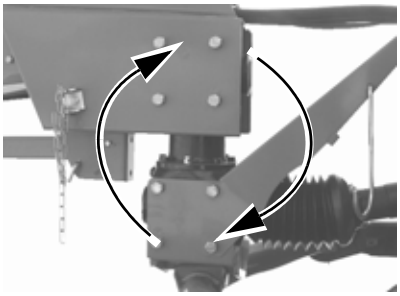
> Remove the bolts shown on both sides of the transmission.
> Remove the bracket.



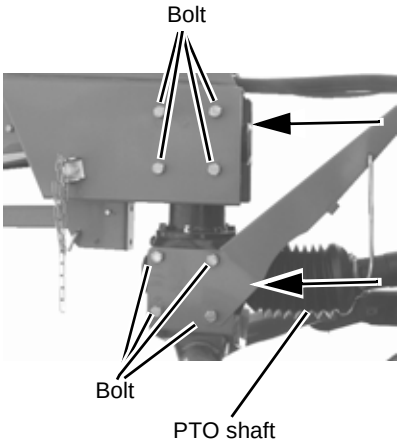
> Remove the bolts shown on both sides of the transmission.
> Remove the transmission.



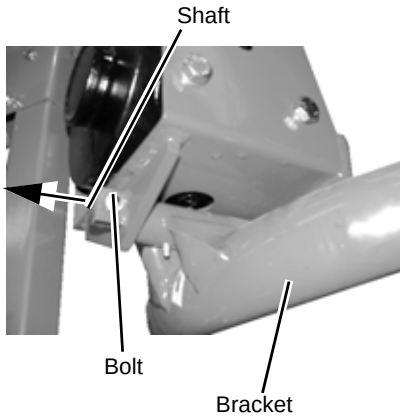
> Remove the air release plug and the oilplug and switch them over.



> Rotate the transmission 180 degrees.



> Fit the transmission.
> Fit the bolts on the transmission.
> Fit the PTO shaft.



> Fit the bracket and the shaft.
> Fit the bolt.

Coupling a tractor and a machine
There is an increased risk of injury when attaching the machine to the tractor.
Attention to the task will ensure your safety and that of others.
Failure to follow the safety instructions may result in serious injuries.

Therefore, when connecting the machine and the tractor you should:

- Make sure that the tractor cannot roll.
- Make sure that the tractor and the machine belong to the same category.
- Never stand between the tractor and the machine during attachment.
- Use the hydraulic three point suspension slowly and carefully.

Attachment of the machine
There is an increased risk of injury when coupling the machine to the tractor.
Attention to the task will ensure your safety and that of others.
Failure to follow the safety instructions may result in serious injuries.

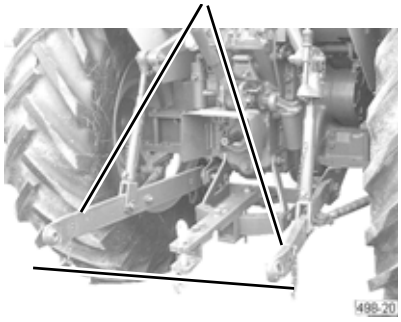
When carrying out an attachment you must make sure that:

- The machine is be placed on an even surface with the wheels locked.
- The machine is be secured by a firm support.

Attachment of the tractor

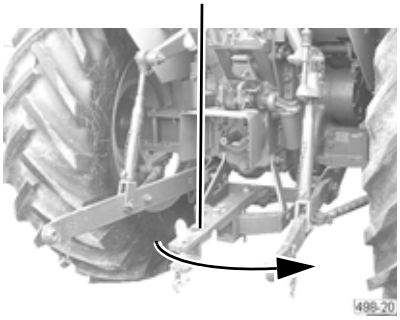
Lock the tractor's lift arms.
Lock the tractor's lift arms at the correct height.
If the lift arms are at the correct height,it will prevent damage to the PTO shaft and injury to persons in the vicinity.
Lowering or raising the lift arms can lead to injury and can damage the PTO shaft.

Lifter

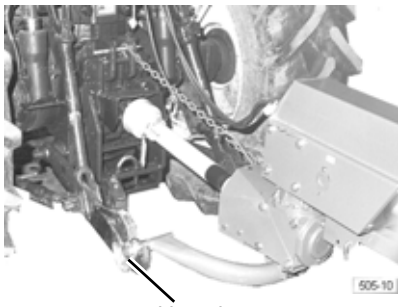


> Adjust the right and left lift arm so they are at the same height.

Lower link crossbar



> Swing the lower link crossbar to the side or remove the lower link crossbar.
> Raise or lower the tractor's lift arms until the swivel hitch can be mounted on the tractor's lift arms.
> Fit the swivel hitch on the tractor's lift arms.



Locking pin

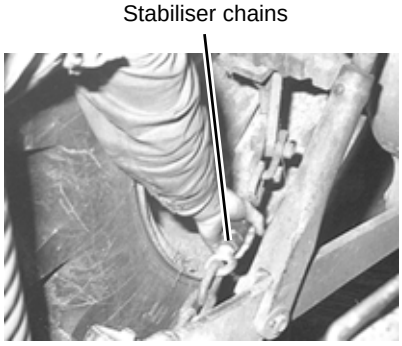
> Secure the attachment with the locking pin on both lift arms.

Connecting the machine
When connecting the machine there is an increased risk of injury.
Attention to the task will ensure your safety and that of others.
Failure to follow the safety instructions may result in serious injuries.

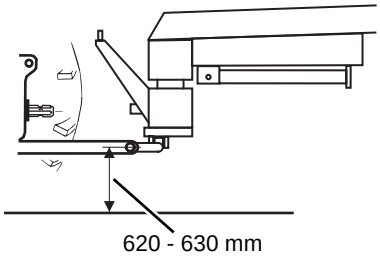
Secure the attachment with the locking pin
The attachment must be secured to the machine with the locking pin.
The locking pin secures the machine against becoming detached from the tractor.
Attachment without the locking pin can result in the machine becoming detached, leading to serious or fatal injury.

Therefore, when connecting the machine you should be sure that:

- The machine cannot become detached from the tractor.
- The coupling is secured with the locking pin.
- The tractor PTO shaft should be 1 3/8” , with 6 splines and able to run at 540/1000 rpm.



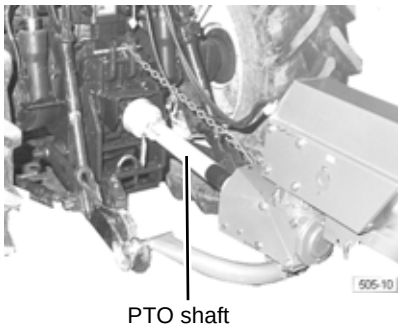
> Tighten the tractor's stabiliser chains.



> Adjust the tractor's lift arms to the height shown.

> Lock the lift arms with a chain or solid bar between the lift arms and highest point.

* Optional equipment.
→ »Extra equipment« Page 140.



> Attach the PTO shaft to the tractor.

NOTE! When checking and shortening the PTO shaft, refer to the manufacturer's instructions, delivered with the PTO shaft.

Hydraulic

Safety

Only connect hydraulics when the system is depressurised
You should only connect the hydraulic hoses to the tractor's hydraulics when the hydraulic system on both the tractor and the machine is depressurised.
There is a risk that the machine will move accidentally.
Unintentional movement of the machine may result in serious injuries.

Avoid mixing oil
Avoid using different tractors with the same machine.
It can lead to various oil types being illegally mixed.
Illegal mixing of various oil types can damage the hydraulic system of the tractor.

The hydraulic system should be checked regularly
All hoses and fittings should be checked regularly for visible damage.
Hydraulic hoses also wear without any visible damage.
Defective hydraulic hoses can cause injury or fire.

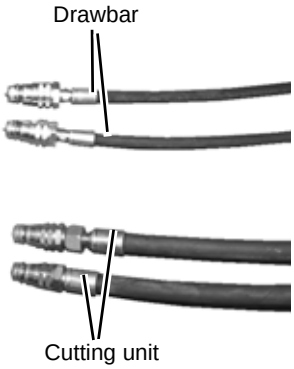
Colour marking of the hydraulic connections
The hydraulic connections between the tractor and the machine must be marked in different colours.
By marking the hydraulic connections you prevent the machine from being incorrectly operated.
Incorrect operation or unintentional movement of the machine may result in serious injuries.

Connecting hydraulics
When connecting the hydraulics there is an increased risk of injuries.
Following the above instructions will protect you and others from injury.
Failure to follow these instructions may result in serious injuries.
When attaching hydraulics, make sure that the tractor is fitted with double acting hydraulic outlets.

Securing the hydraulics in transport position
The tractor hydraulic system must not be activated accidentally in transport position.
Accidental activation of the tractor hydraulic system can result in unexpected movement.
Unexpected movement can result in injuries.

Connection

Hydraulic connection



The tractor must be fitted with 2 sets of double acting hydraulic outlets, which are connected as follows:

Hydraulic hose for:	Function
Drawbar	Drawbar right/left
Cutting unit	Cutting unit raised/lowered

When connecting the hydraulic hoses you should check that:

- The hydraulic hoses are connected in pairs to the tractor's hydraulic pressure and return outlet on the tractor.

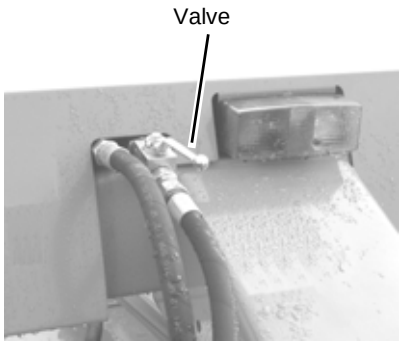
First start-up of machine

The initial test drive of the machine is important
When the machine is connected to the tractor for the first time it must be test driven.
Attention to the task will ensure your safety and that of others.
Failure to follow the safety instructions may result in serious injuries.

Do not remove the protective guards
Check that all protective guards are in place before use.
This ensures that the machine will offer maximum protection to the operator.
If the safety guards are removed or not used, it may result in serious injuries and accidents.

The side guard for the cutting unit must be correctly positioned before start up
The side guard for the cutting unit must be folded out and correctly positioned before the machine is started.
This ensures that the machine will give maximum protection to the operator.
Moving objects may cause serious injuries and accidents.

> Check that the machine's guards are in place.
> Check that the side guard on the cutting unit is folded out and correctly positioned.



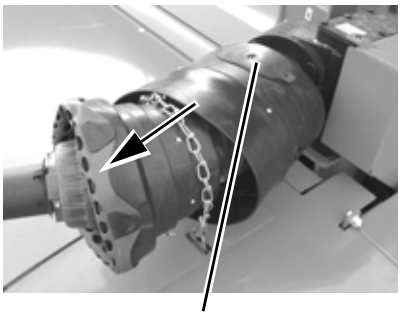
> Check that the mechanical safety valve is open.
> Carefully connect the tractor's PTO shaft
> Carefully increase the speed on the PTO shaft to 540/1000 RPM.
> Check that the machine runs smoothly without any vibrations.
> Return the PTO shaft to idle speed.
> Attach the tractor hydraulic system.
> Activate all the hydraulic functions of the machine, one by one.
> Disconnect the tractor hydraulic system.
> Disconnect the tractor shaft.

Friction clutch

Only carried out when staring for the first time

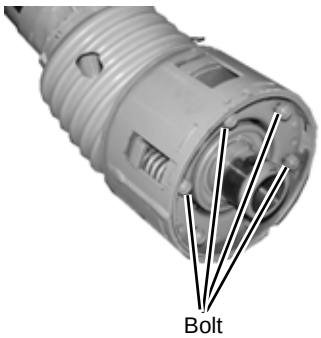
The friction clutch is bled in the following way:

LT Machine



Open the hatch

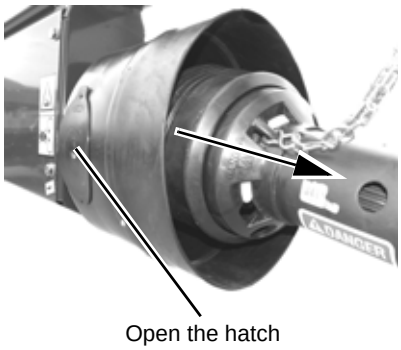
> Open the hatch shown and use a suitable tool to remove the lock on the friction clutch.
> Pull the PTO shaft back, free of the main gear.



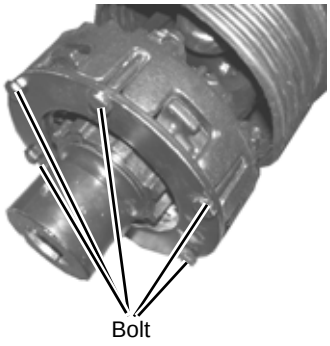
Bolt

> Tighten all bolts on the friction clutch.
> Fit and tighten the PTO shaft fully on the main gear.

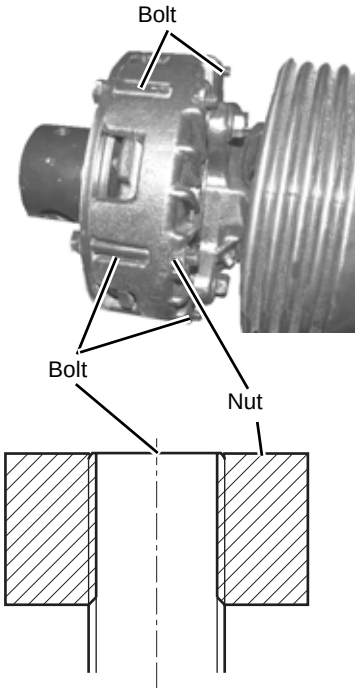
CT machine



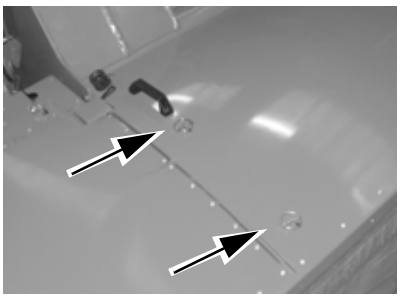
> Open the hatch shown and use a suitable tool to remove the lock on the PTO shaft.
> Pull the PTO shaft back, free of the drawbar.



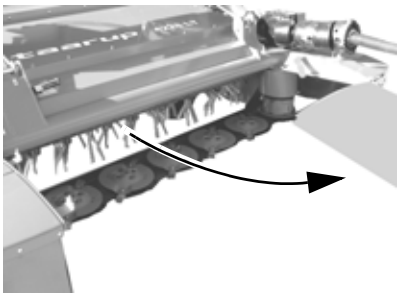
> Loosen the bolts shown.



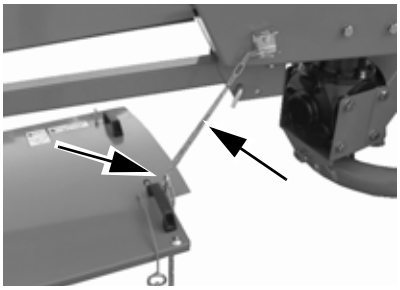
> Loosen the bolts until the end of the bolt is flush with the side of the nut as shown.
> Fit and tighten the PTO shaft fully on the drawbar.



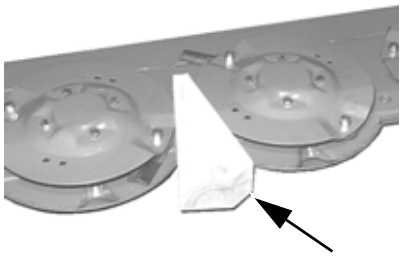
> Remove the linchpins shown here.



> Open the first guard.



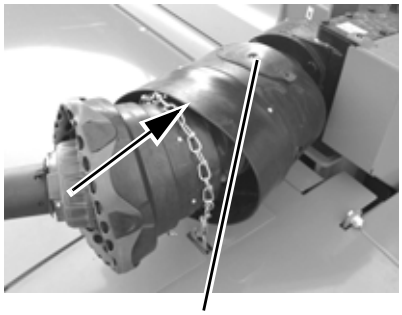
> Suspend the guard in the chain as shown.



> Block the cutterbar by placing a wooden block between the two cutting discs.
> Start the tractor and connect the tractor's PTO outlet
> Allow the friction clutch to freely rotate until it is warm.
> Disconnect the PTO outlet and stop the tractor.
> Remove the PTO shaft from the main gear/drawbar.

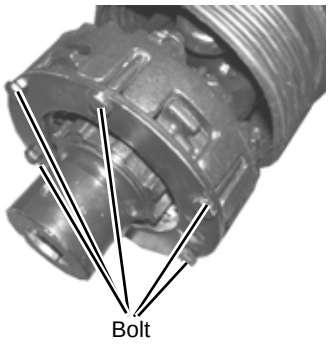
LT Machine

> Loosen all the bolts on the friction clutch.

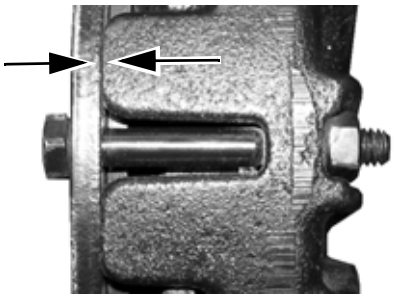


> Fit and tighten the PTO shaft fully on the main gear.
> Close the hatch on the guard.

CT machine



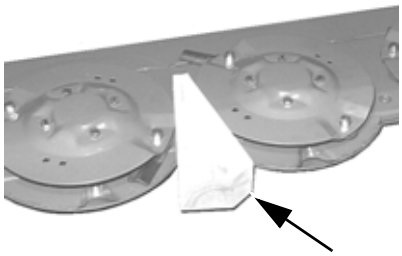
> Tighten the bolts shown on the friction clutch.



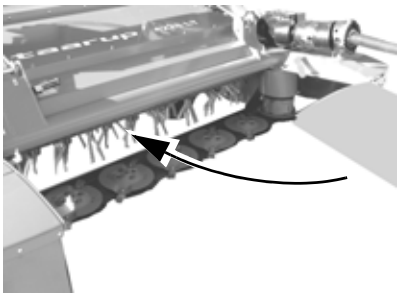
> Tighten the bolts until the friction clutch is fully tightened to contact.

NOTE! The setting for the clutch cannot be adjusted.

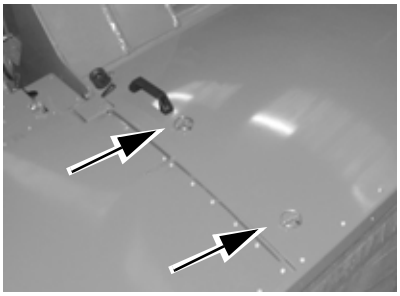
> Fit and tighten the PTO shaft fully on the drawbar.
> Close the hatch on the guard.



> Remove the wooden block from the cutter bar.

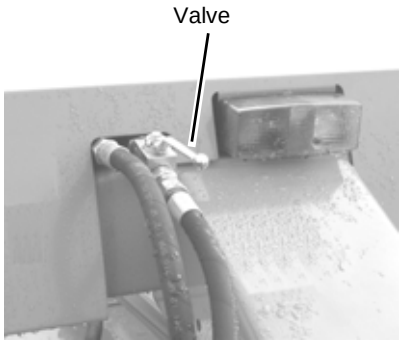


> Close the machine's first guard.



> Fit the linchpins shown here.

The machine in its transport position

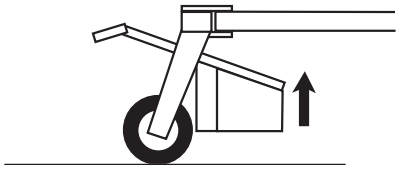


Check the surrounding area before starting to use machine
Check the surrounding area before driving and using the machine. This prevents persons and animals in the vicinity from being harmed. If the surrounding area is not checked, it may result in serious injuries to persons or animals.

The machine is placed in its transport position in the following way:

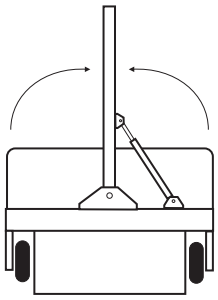
> Check that the mechanical safety valve is open.

> Connect the tractor's hydraulic system.



> Activate the tractor hydraulics and raise the cutting unit of the machine

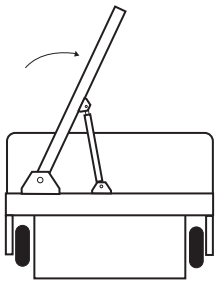
CT machine



> Activate the tractor's hydraulics and set the machine's drawbar as shown.

> Disconnect the tractor's hydraulics.

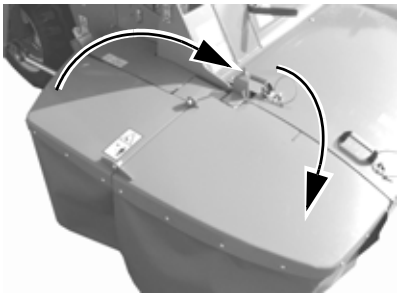
LT Machine



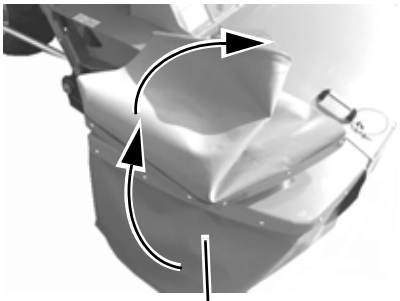
> Activate the tractor's hydraulics and set the machine's drawbar as shown.

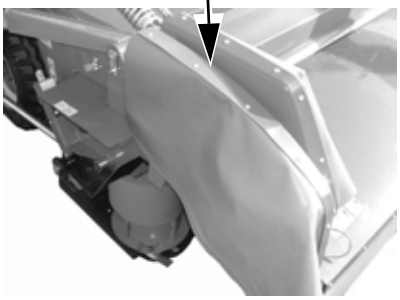
> Disconnect the tractor's hydraulics.

Guard
Right-hand side

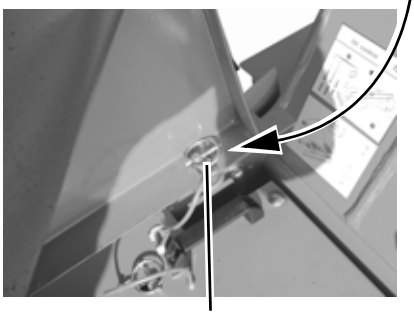


> Swivel the guard round as shown.



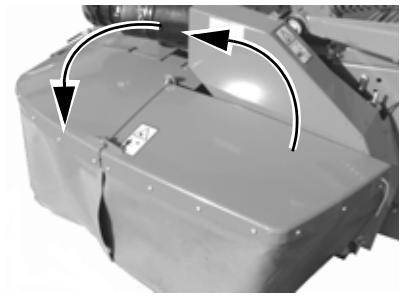


> Tilt the whole guard up as shown.

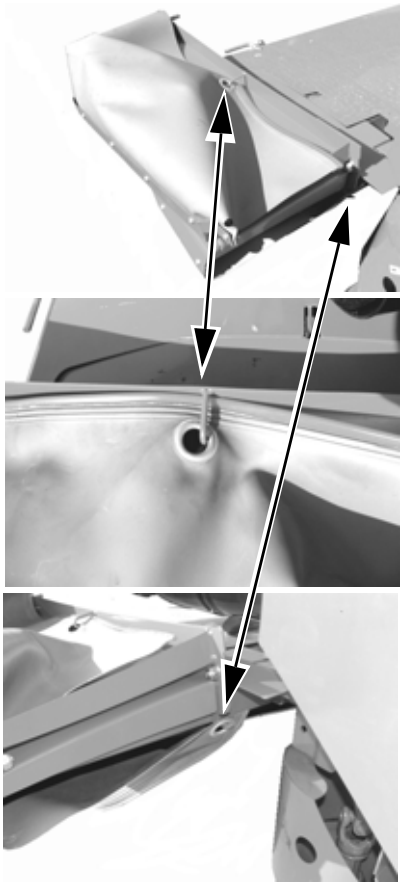


> Fit the linchpin as shown.

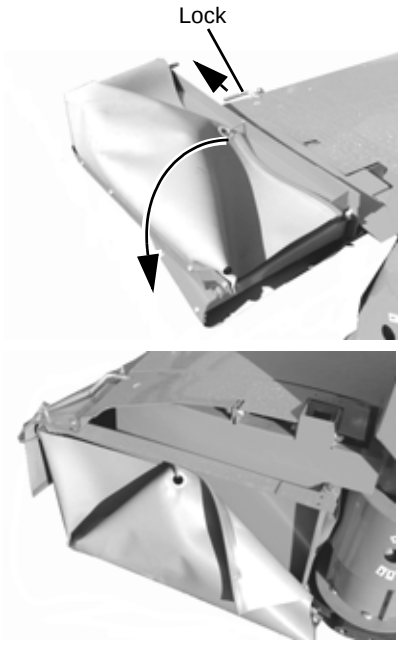
Left-hand side



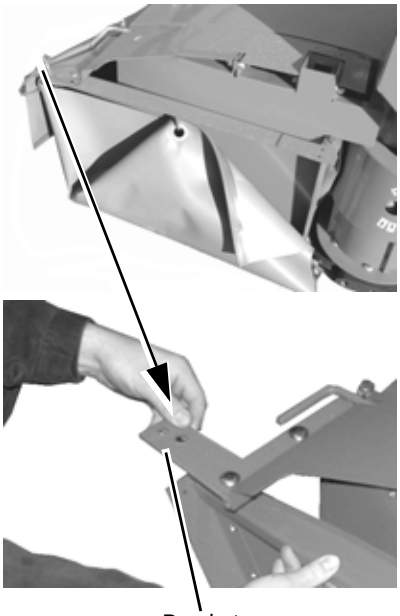
> Swivel the guard round as shown.



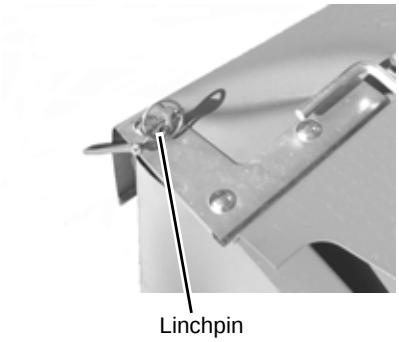
> Fasten the tarpaulin as shown.



> Press the lock shown in and tilt the whole guard downwards as shown.



> Lock the guard in place with the bracket shown.



> Fit the linchpin.

NOTE! If the side guards are in the transport position, the machine must not be started.

Safety

Read the safety instructions carefully before driving on public roads
Before driving on public roads, you must read the safety instructions carefully.
This will ensure that dangerous situations and accidents are avoided. Lack of information can cause accidents.

General

- Comply with local legislation concerning lights, warning and safety units.
- The driver and/or the owner of the machine is responsible for complying with the Road Traffic Act.
- The tractor's manoeuvrability should not be adversely affected. The steering shaft of the tractor should be loaded with at least 20% of the tractor’s unladen weight.
- Carrying passengers on the machine is strictly prohibited.

Before travelling on public roads

- All of the hydraulic functions of the machine should be placed in neutral and in locked position.
- The tractor hydraulics should be disconnected.
- Be sure there are no children in the machine's hazard area.
- Check the surrounding area before starting the machine.

Checking the machine

Before travelling on the road the machine should be checked according to this check list:

- Is the machine in the transport position?
- Is the mowing device lifted all the way up?
- Are all hydraulic functions in neutral and shut down?
- Are the tractor's hydraulics disconnected?
- Are the machine attachment points secured by a pin?
- Is the tyre pressure of the transport wheels correct?
- Does the lighting kit of the machine work correctly?

Travelling on public roads

- Check the area around the machine before you start. Be sure there are no children in the machine's hazard area.
- Do not exceed the maximum permitted speed.
- Adjust the speed according to the road conditions.
- Avoid sudden sideways movement of the machine.
- Make sure that steering and braking ability is sufficient.

Safety

Read the safety instructions before using the machine
Before using and loading the machine the operator should read the safety instructions carefully.
→ »Safety« Page 5.
Attention to the task will ensure your safety and that of others.
Failure to follow the instructions may result in serious injuries.

Work on the machine should only be carried out by persons who have received correct training
The machine should only be operated if the operator has been given thorough instructions.
Thorough machine instruction allows safe usage.
Insufficient training may lead to incorrect usage of the machine and accidents.

Do not remove the protective guards
Check that all protective guards are in place before use.
This ensures that the machine will offer maximum protection to the operator.
If the safety guards are removed or not used, it may result in serious injuries and accidents.

Before operating

Make sure that the initial start of the machine is unhindered
Make sure the area around the machine is checked before start up.
Paying attention to the area around the machine will prevent injury to persons or animals.
Insufficient attention to the area around the machine can result in serious injuries.

Make a specific check for children
Make sure the area around the machine is checked before start up.
Paying attention to the area around the machine will prevent injury to children.
Insufficient attention to the surrounding area can result in serious injuries.

The following instructions should be complied with:

- Check all points mentioned in the “maintenance” section.

→ »Specific safety information« Page 72.
→ »Lubrication safety and use of oil« Page 72.

- Check blades are not worn down. The knives can be turned so as to gain the opposite rotational direction.

→ »Knives« Page 100.

Operation

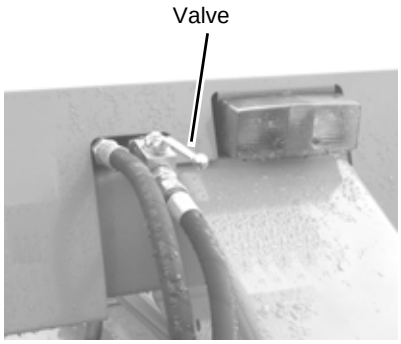
Safety

The operator should receive careful instructions before using the machine
The machine should only be used if the operator has been given thorough instructions.
Thorough machine instruction allows safe usage.
Insufficient training may lead to incorrect usage of the machine and accidents.

The side guard for the cutting unit must be correctly positioned before start up
The side guard for the cutting unit must be folded out and correctly positioned before the machine is started.
This ensures that the machine will give maximum protection to the operator.
Moving objects may cause serious injuries and accidents.

The machine is operated in the following way:

> Make sure that there are no persons in the surrounding area.
> Fasten all the guards on the machine.
> Check that the side guard on the cutting unit is folded out and correctly positioned.
> Set the tractor and the machine in a straight line.



> Check that the mechanical safety valve is open.
> Carefully connect the tractor's PTO shaft
> Carefully increase the speed of the PTO shaft to 540/1000 RPM.
> Use the tractor's machine handle to operate the hydraulic functions.

NOTE! If none of the machine's functions are working:

> Stop the tractor’s forward drive.
> Stop the tractor.
> Disconnect the PTO shaft immediately.
> Disconnect the tractor's hydraulic system immediately.

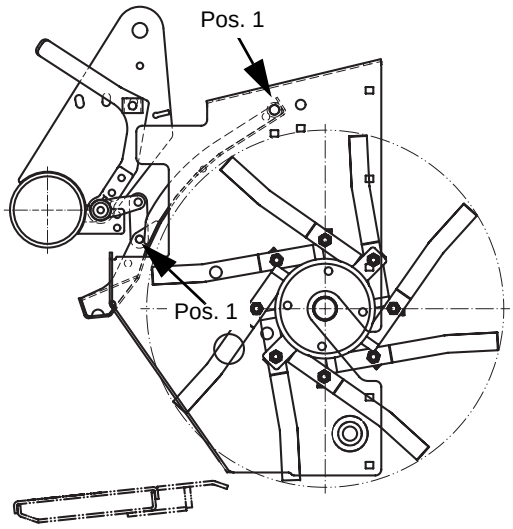
NOTE! If the machine is too noisy or vibrates too much, stop the machine immediately.
→ »Troubleshooting« Page 145.

Setting

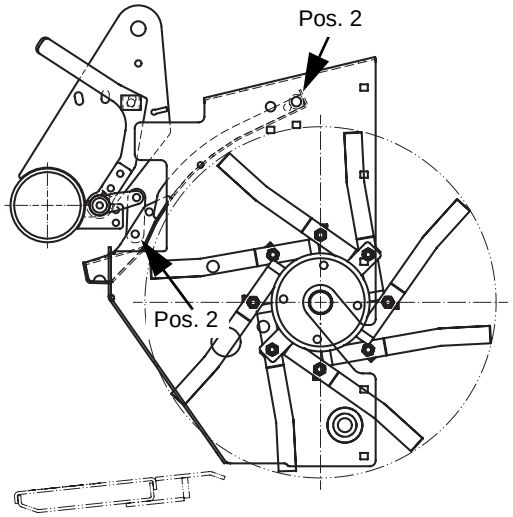
Conditioner plate

Basic setting of the conditioner plate

The conditioner plate has 2 basic settings:

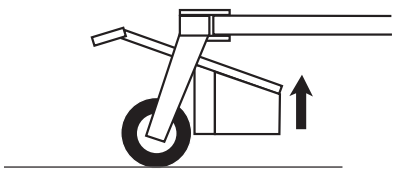


Pos. 1:
This setting is recommended for light crops, e.g.: from normal, clean grass crops to grass crops with moderate amounts of leaves. In this position, the intake is made with the first part of the conditioner plate and the rotor slightly open and gives optimal conditioning of light crops.
This setting should be used for light crops, e.g.: from clean grass crops to grass crops with moderate amounts of leaves.



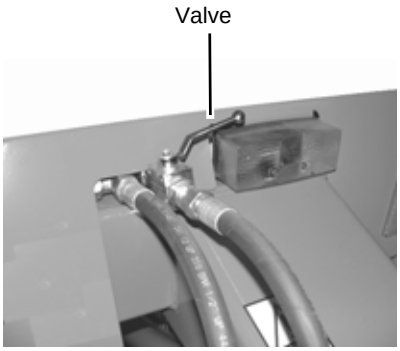
Pos. 2:
This setting is recommended if problems occur relating to blocking of the rotor and the flow of the crop through the machine with heavy crop. In this position, the intake is made with the first part of the conditioner plate and the rotor more open and gives better and smoother passage of heavy crop through the machine.
This setting should be used for heavy crops, e.g.: from grass crops with moderate amounts of leaves to lush and leafy spring crops.

NOTE! The conditioner plate is factory-fitted in position 2.

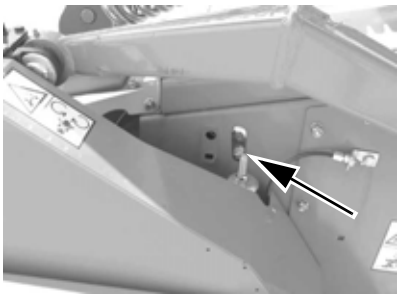


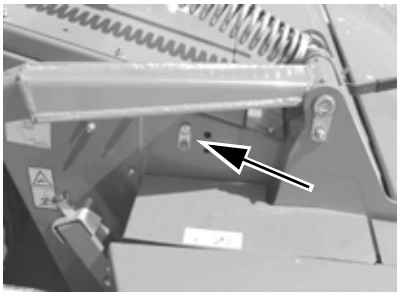
If the conditioner plate is needed in position 1, carry out the following:

> Activate the tractor hydraulics and raise the machine's cutter bar.

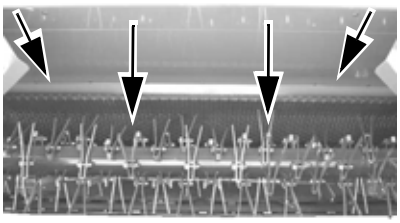


> Close the mechanical safety valve.

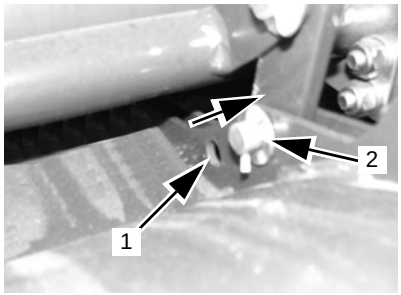




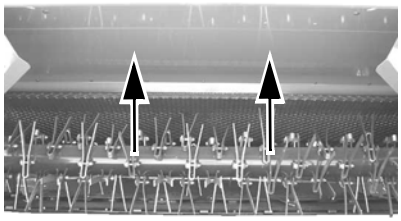
> Use an appropriate tool and remove the pin bolt on both sides of the machine.



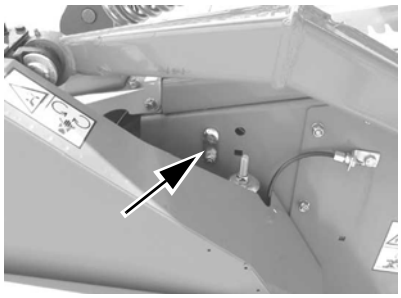
> Allow the conditioner plate to drop down on top of the rotor so there is access between the conditioner plate and the upper plate on the machine.

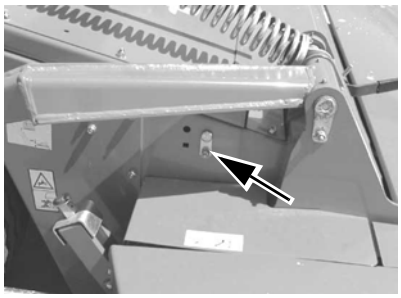


> Remove the pin bolt shown on both sides of the conditioner plate.
> Move the linkage back on the conditioner plate [1→2] as shown and fit the pin bolt to both sides of the conditioner plate.

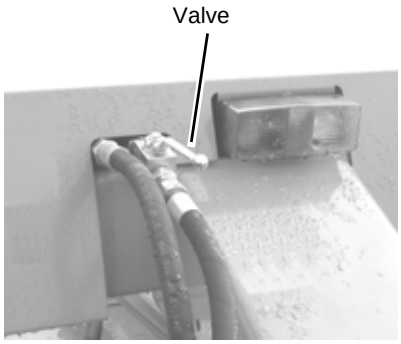


> Lift the conditioner plate up from the rotor.

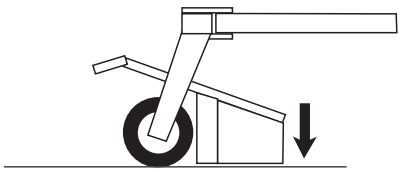




> Move and fit the pin bolts in the first position and fit the conditioner plate to both sides of the machine.

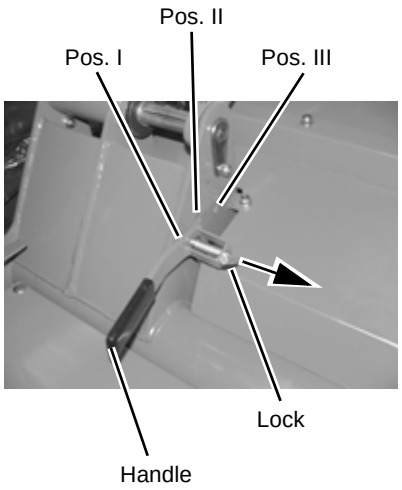


> Open the mechanical safety valve.



> Activate the tractor hydraulics and lower the cutting unit of the machine.

Fine adjustment of the conditioner plate



The conditioner plate can also be adjusted to 3 positions with a handle, regardless of its basic setting.
→ »Basic setting of the conditioner plate« Page 49.

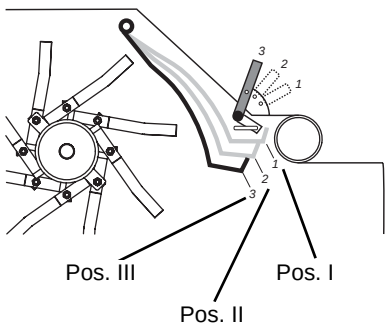
The conditioner plate is fine-tuned in the following way:

> Pull out the lock.

> Move the handle to the desired position.

> Release the lock.

> Check that the handle is locked in the desired position.



The fine tuning can be adjusted to suit the crop using the following settings:

	Pos. I	Pos. II	Pos. III
Conditioning of crop	Light	Moderate	Heavy
Length of crop	Short	Moderate	Long

NOTE! The diagram is only given as a guide

NOTE! The rotor's rpm also has an influence on the condition of the crop, conditioning the same length of crop.
→ »Rotor« Page 53.

Rotor

The rotor can be set to 2 speeds: 600 RPM or 900 RPM.
As extra equipment, the rotor can be set to 450 rpm or 1015 rpm.

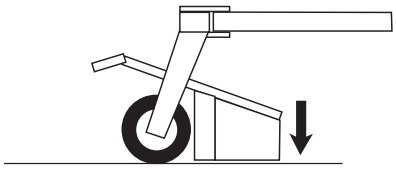
The recommended rpm for the rotor should be as follows:

Type of crop	Rotor RPM	Diameter Pulley on the transmission	Diameter Pulley on the rotor
Normal, clean grass crops and crops with moderate amounts of leaves	900	ϕ230 mm	ϕ200 mm
Lush and leafy spring crops as well as alfalfa and clover	600	ϕ200 mm	ϕ230 mm
Difficult crops and/or Bx equipment fitted*	1015*	ϕ230 mm	ϕ170 mm*
Whole seed*	450*	ϕ150 mm*	ϕ230 mm

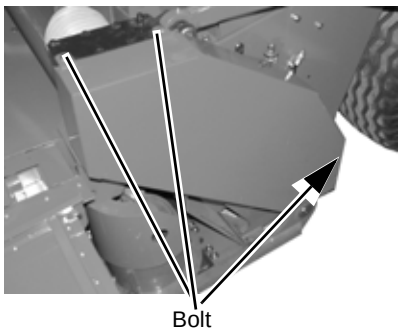
* Optional equipment.
→ »Extra equipment« Page 140.

To ensure the correct conditioning and length of the crop, it is recommended that the conditioner plate's setting is checked.
→ »Basic setting of the conditioner plate« Page 49.
→ »Fine adjustment of the conditioner plate« Page 52.

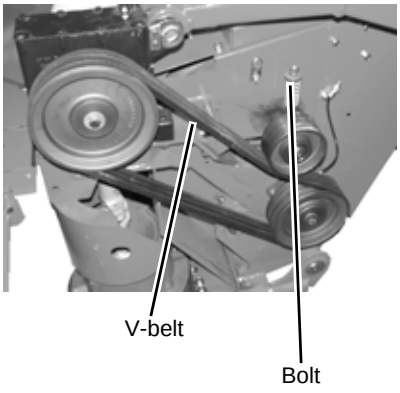
The rpm for the rotor can be changed in the following way:



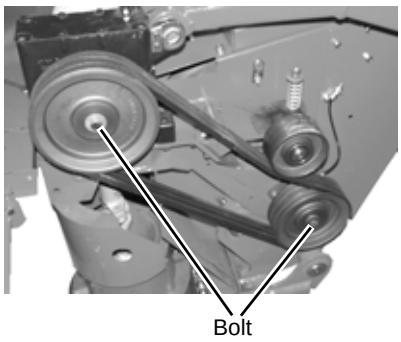
> Activate the tractor hydraulics and lower the cutting unit of the machine.



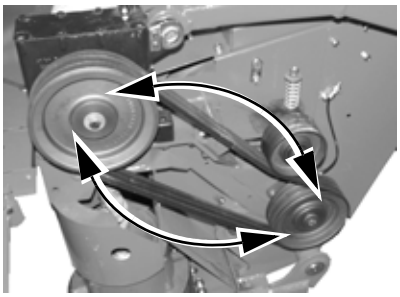
> Remove the guard around the transmission.



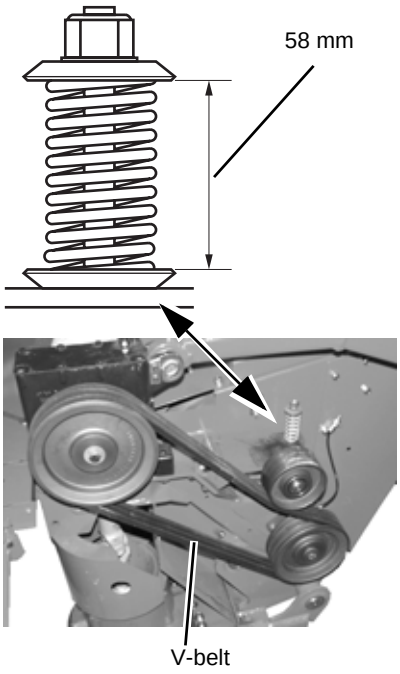
> Completely loosen the bolt on the spring.
> Remove the V-belts.



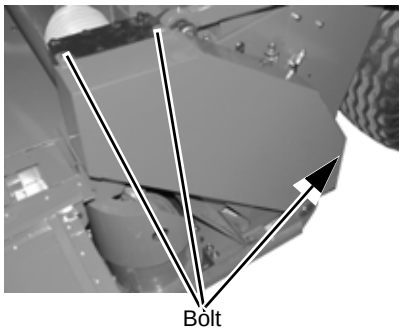
> Remove the bolt for the pulley.



> Swap the pulleys.

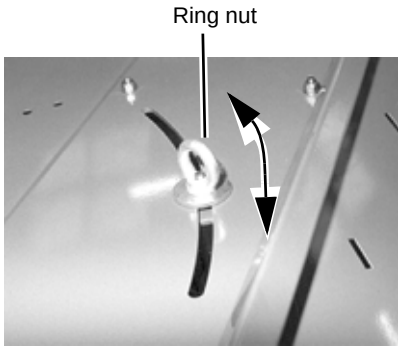


> Fit the V-belts.
> Tighten the springs to the level shown.



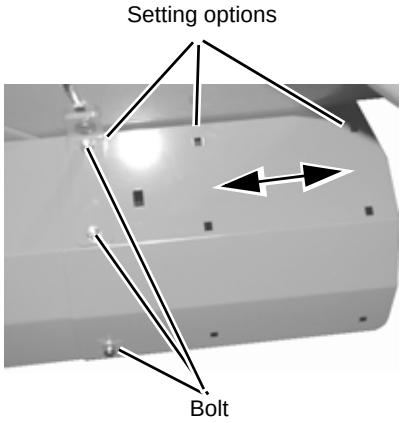
> Fit the guard.

Deflector plates



The machine is fitted with 2 deflector plates, making it possible to adjust the cutting swath to suit the following chopper.
The cutting swath should be as broad and even as possible.

> Use a suitable tool and loosen the ring nut.
> Adjust the deflector plates to the desired cutting swath.
> Tighten the ring nut on the deflector plates.



To ensure that the swath is gathered in the best possible way, it is recommended that the deflector plates are extended as close to the end plates as possible.
The deflector plates have 3 setting options.

The length of the deflector plates is set as follows:

> Remove the bolts shown and move the plates to the required length.
> Fit the bolts and tighten them.

Stubble height

The machine has 2 basic settings:

- Short stubble height.
- Long stubble height.

These 2 setting options can be combined with fitting high skids* which can be used to set the stubble height as follows:

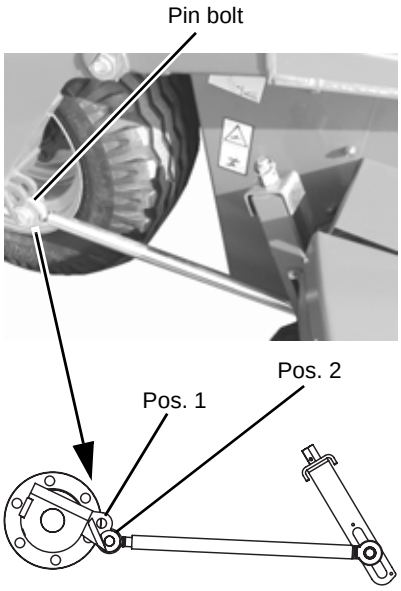
Stubble height	Setting - see chapter:	Page
15 - 45 mm	»Short stubble height«	56
25 - 50 mm	»Long stubble height«	58
50 - 110 mm	»Long stubble height« + 40 mm skids* fitted	58,141
100 mm or more	»Long stubble height« + 80 mm skids* fitted	58,141

* Extra equipment
→ »Extra equipment« Page 140.

NOTE! When high skids* are fitted, the basic setting of the machine must always be “Long stubble height”.

> »Long stubble height« Page 58.

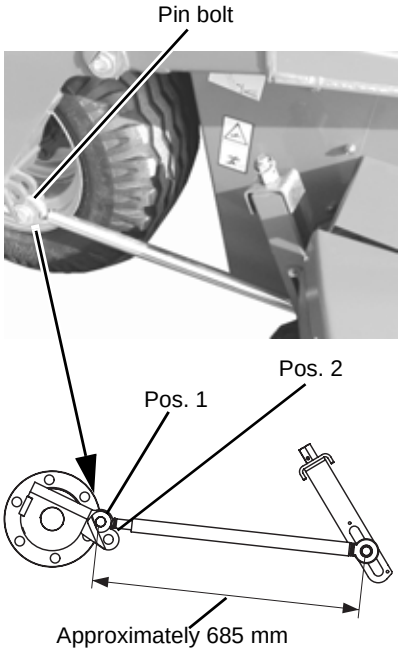
Short stubble height



The following must be done if a short stubble height is required:

> Use a suitable tool to remove the pin from the pin bolt.

> Remove the pin bolt.

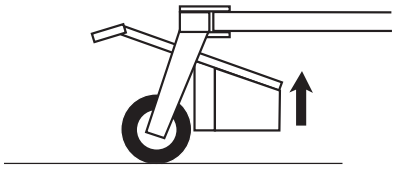


> Move the connecting link to pos. 1.

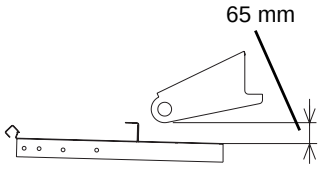
> Fit the pin bolt and pin.

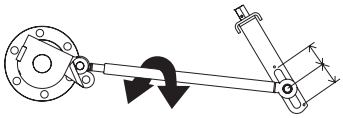
> Check the measurement shown on the connecting link.

NOTE! The measurement shown is only for guidance.



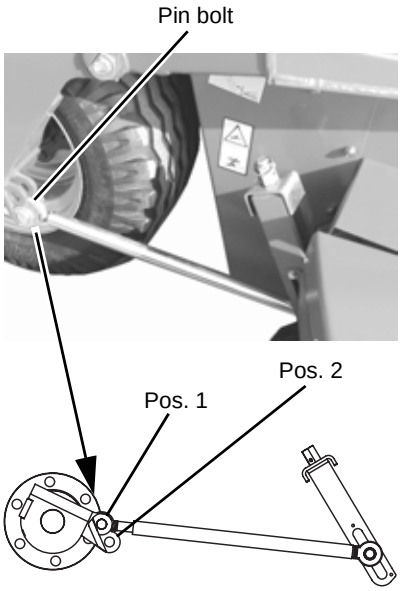
> Activate the tractor hydraulics and raise the machine's cutter bar.





> Check the distance between the upper plate and the spring bracket on both sides of the machine.
> Adjust the connecting links, if necessary, until the distance is as shown.

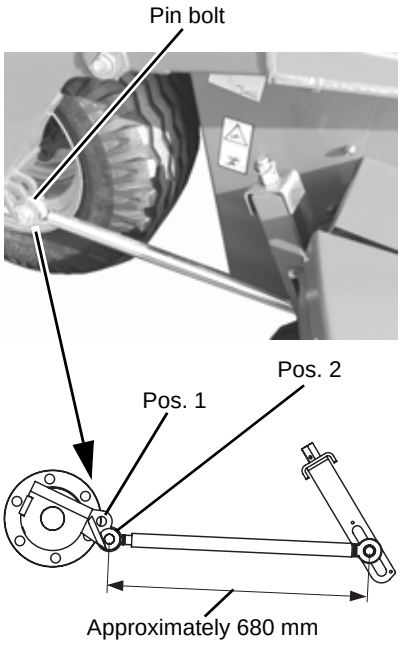
Long stubble height



The following must be done if a long stubble height is required:

> Use a suitable tool to remove the pin from the pin bolt.

> Remove the pin bolt.

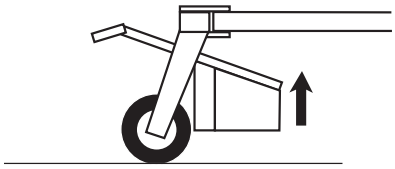


> Move the connecting link to pos. 2.

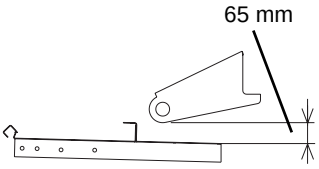
> Fit the pin bolt and pin.

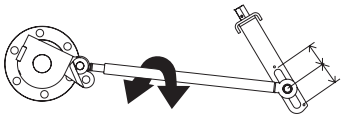
> Check the measurement shown on the connecting link.

NOTE! The measurement shown is only for guidance.



> Activate the tractor hydraulics and raise the machine's cutter bar.

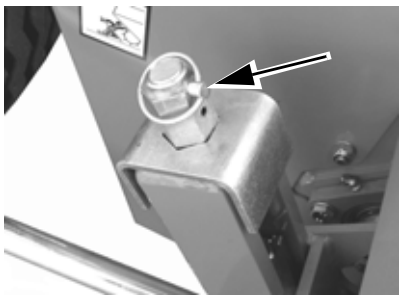




> Check the distance between the upper plate and the spring bracket on both sides of the machine.
> Adjust the connecting links, if necessary, until the distance is as shown.

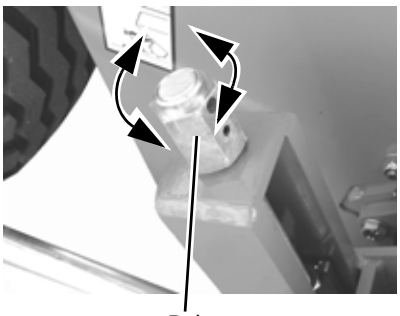
Adjusting the stubble height

The machine has variable settings for stubble height.
Stubble height is adjusted in the following way:



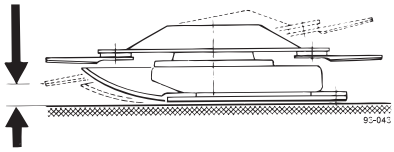
> Remove the linchpin.

> Remove the lock plate.

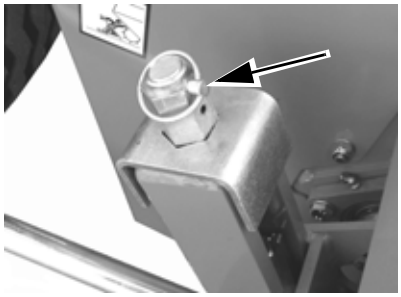


> Use a suitable tool to screw the bolt indicated.

- Turning the bolt clockwise increases the stubble height.
- Turning the bolt anticlockwise reduces the stubble height.



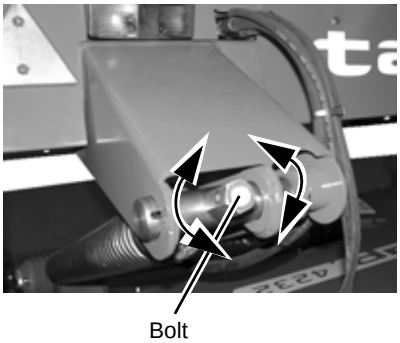
> Fit the lock plate.



> Fit the linchpin.

Suspension

The suspension on the machine's cutting unit should be adjusted so that the downward pressure on the machine's cutting unit is about 40-60 kg.
The cutting unit's suspension can be adjusted as follows:



> Use a suitable tool to screw the bolt indicated.

- When the bolt is screwed clockwise the cutting unit's downward pressure decreases.
- When the bolt is screwed anticlockwise the cutting unit's downward pressure increases.

> Adjust the cutting unit's downward pressure for both springs.

> Check by lifting both sides of the cutting unit by hand.

TIP! The weight on both sides of the cutting unit should be approx. 40-60 kg when lifting by hand.

Working in the field

Check the surrounding area before starting to use the machine
Check the surrounding area before driving and using the machine.
This prevents persons and animals in the vicinity from being harmed.
If the surrounding area is not checked, it may result in serious injuries to persons or animals.

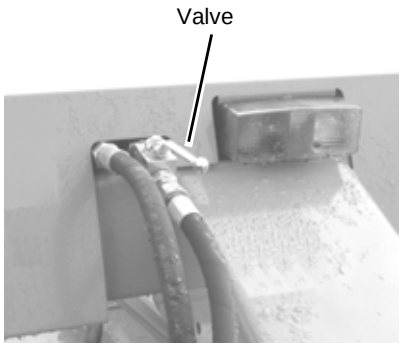
Do not remove the protective guards
Check that all protective guards are in place before use.
This ensures that the machine will offer maximum protection to the operator.
If the safety guards are removed or not used, it may result in serious injuries and accidents.

The side guard for the cutting unit must be correctly positioned before start up
The side guard for the cutting unit must be folded out and correctly positioned before the machine is started.
This ensures that the machine will give maximum protection to the operator.
Moving objects may cause serious injuries and accidents.

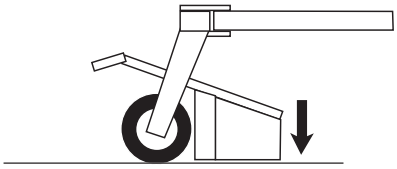
LT Machine

The LT machine is operated in the following way:

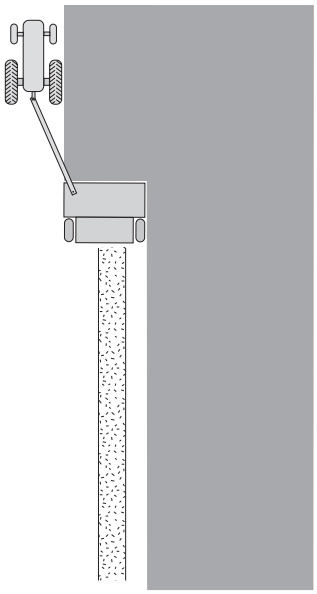
> Check that all guards on the machine are folded out and correctly positioned.



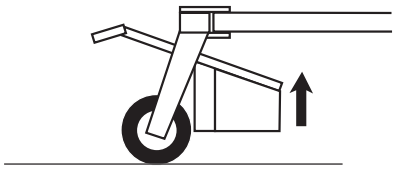
> Check that the hydraulic mechanical safety valve is open.
> Connect the tractor's hydraulic system.
> Connect the tractor's PTO outlet.
> Carefully increase the speed on the PTO shaft to 540/1000 RPM.
→ »Number of revolutions on the PTO« Page 26.
> Activate the tractor hydraulics and turn the machine's drawbar to the right side of the tractor.



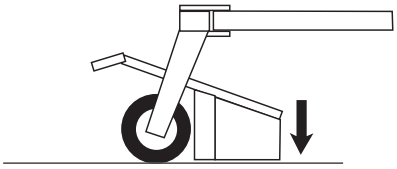
> Activate the tractor hydraulics and lower the cutting unit of the machine to its working position.



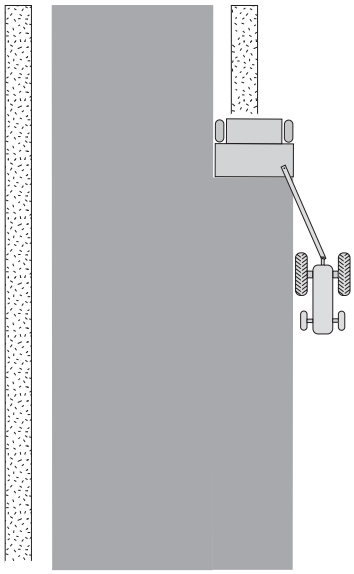
> Find a suitable driving speed for the tractor and cut the 1st swath.



> Activate the tractor hydraulics and raise the cutting unit when turning at the headland.



> Activate the tractor hydraulics and lower the cutting unit of the machine to its working position.

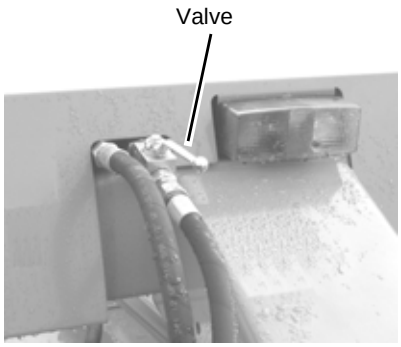


> Find a suitable driving speed for the tractor and cut the 2nd swath.

CT machine

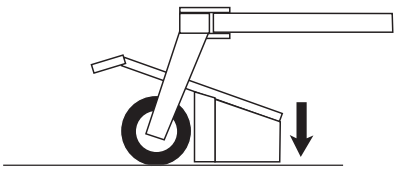
The CT machine is operated in the following way:

> Check that all guards on the machine are folded out and correctly positioned.

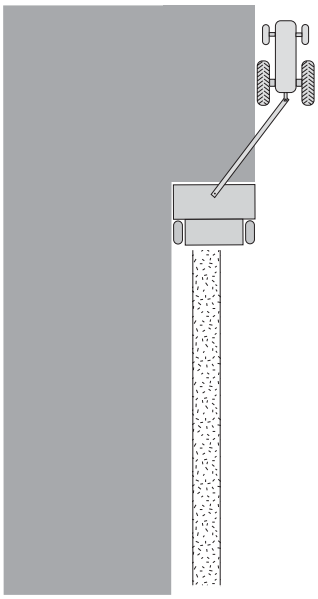


> Check that the mechanical safety valve is open.
> Connect the tractor's hydraulic system.
> Connect the tractor's PTO outlet.
> Carefully increase the speed on the PTO shaft to 540/1000 RPM.

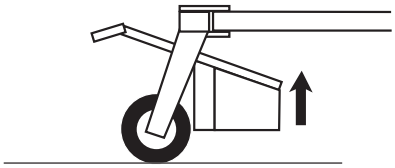
→ »Number of revolutions on the PTO« Page 26.



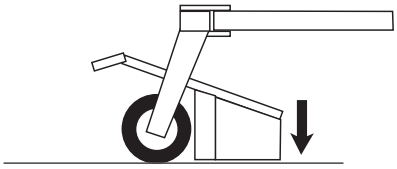
> Activate the tractor hydraulics and turn the machine tension rod out to the left side of the tractor.
> Activate the tractor hydraulics and lower the cutting unit of the machine to its working position.



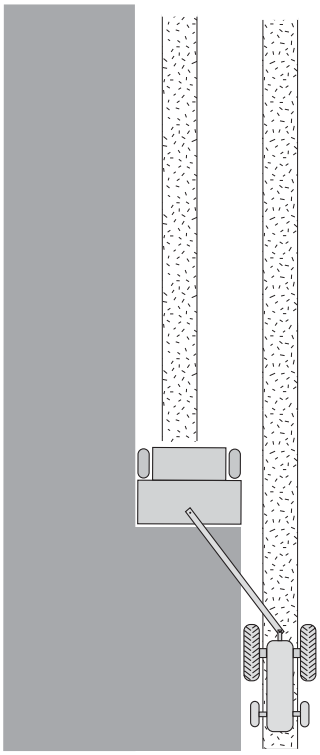
> Find a suitable driving speed for the tractor and cut the 1st swath.



> Activate the tractor hydraulics and raise the cutting unit when turning at the headland.
> Activate the tractor hydraulics and turn the machine's drawbar to the right side of the tractor.



> Activate the tractor hydraulics and lower the cutting unit of the machine to its working position.



> Find a suitable driving speed for the tractor and cut the 2nd swath.

Before cleaning

Higher risk when cleaning the equipment
When cleaning, there is an increased risk of injury.
Paying attention when carrying out cleaning work will ensure your safety and that of others.
Failure to follow the safety instructions may result in serious injuries.

Therefore, do the following before cleaning:

- Check the area around the machine.
- Disconnect the tractor's PTO
- Depressurise the hydraulic system and disconnect it from the tractor.
- Activate the hand brake and stop the tractor.
- Remove the ignition key from the tractor.
- Use the correct climbing units for the machine.

Disconnect the power when cleaning the machine
Always disconnect the power before you start cleaning the machine.
This will prevent short circuits and damage to the electric circuit.
There is a risk of burns and other serious injuries if the electrical systems short circuit.

Protect your body and face when cleaning the machine
Wear the correct protective gear for body and face when cleaning the machine.
This will protect your body and face from dirt and oil splashes.
Severe skin and eye injuries can be caused if body and face are insufficiently protected.

Before starting to clean the machine do the following:

- Open all guards around the cutting unit.
- Remove all loose material from the machine.

Cleaning

Use the correct cleaning agents
Use only PH neutral cleaning agents when cleaning the machine. PH neutral cleaning agents give your machine maximum protection. Cleaning agents with either high or low PH value can be corrode plastic, rubber and painted surfaces.

- High pressure cleaning equipment may be used to clean. However, the area around the bearings should be cleaned using gentle squirts of water.
- Hydraulic components should only be cleaned with gentle squirts of water to protect the gaskets.

After cleaning

- Let the remaining water run off for about 1 hour.
- Remove any water which has collected behind the guards.

Before storage

At the end of the season, the machine should be prepared for storage:

> Check and tighten all bolts.

→ »Torque moment« Page 152.

> Repair any damaged components.

> Replace any defective components.

> Repair any damage to the paintwork.

> Reduce the tyre pressure.

> Lubricate the machine following the program.

→ »Maintenance intervals« Page 74.

Parking/ disconnection of the machine.

Disconnecting the machine from the tractor
There is an increased risk of injury when disconnecting the machine from the tractor.
Paying full attention when disconnecting ensures your safety and that of others.
Failure to follow the safety instructions may result in serious injuries.

Therefore, when disconnecting make sure that:

- The machine is placed upon a horizontal and level surface.
- The tractor cannot roll after being disconnected.
- The tractor is stopped, the handbrake is applied and the ignition key removed.
- Children must never be allowed to play close to the machine.

Hydraulic

Only disconnect hydraulics when system is depressurised
You should only disconnect the hydraulic hoses to the tractor's hydraulics if the hydraulic system on both tractor and machine is depressurised.
There is a risk that the machine will move accidentally.
Unintentional movement of the machine may result in serious injuries.

Avoid physical contact with hydraulic oil
Hydraulic oil contains additives that under certain circumstances can have serious consequences for your health. Therefore, when handling hydraulic oil be aware of the following:

- Avoid direct contact with hydraulic oil. They can damage the skin.
- Protect your skin with barrier cream or protective gloves.
- Never use oil or lubricants to clean your hands.
- Clothes contaminated with oil should be changed immediately.
- Oily cloths should not be kept in your pockets.
- Seek medical help for skin injuries or if you come into contact with hydraulic oil.

Storage

At the end of the season, the machine should be prepared for storage:
Carry out the following:

- Clean the machine thoroughly.

→ »Cleaning« Page 67.

- Change the oil in all the machine's transmissions.

→ »Lubricants« Page 152.

- The hydraulic quick coupling should either be covered with a dust cap or placed in a small plastic bag.
- The PTO shaft should be cleaned, oiled and stored somewhere dry so as to avoid damage or corrosion.
- Always check that the machine's safety equipment is not worn or damaged.
- Bleed as much excess hydraulic pressure from the cylinders and hoses as possible.
- Place the machine in a ventilated machine room.
- Both of the machine's wheel axles should be supported on blocks so that the wheels are lifted off the ground.

Safety

The machine must be secured when parked
The machine must be correctly secured when parked in storage.
Properly secured machines prevent serious accidents.
If the machine is not correctly secured when parked, this may result in serious or fatal injuries.

When parking you must therefore make sure that:

- The machine is parked upon a stable, horizontal surface.
- The machine must be secured to prevent rolling.
- No persons must be allowed near the machine.

For your safety

Comply with the service and maintenance intervals given in the instructions

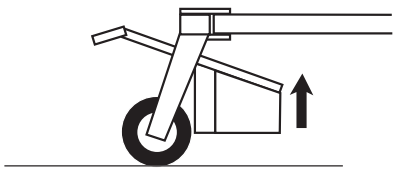
Comply with the intervals for service and maintenance as given in the instructions.

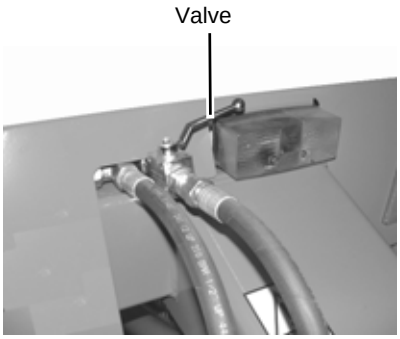
By complying with the maintenance intervals you ensure that the machine will operate without malfunctions and provide maximum protection for the environment.

An incorrectly maintained machine is a danger to the environment.

Specific safety information

- Repair and maintenance work should only be carried out by persons with the necessary professional knowledge and the correct tools.
- The PTO on the tractor should be disconnected, and the motor should be stopped.
- Make sure that the handbrake is activated and the ignition key has been removed from the tractor.
- Make sure the machine is secured with wedges under the wheels before starting work.
- No one should be in between the tractor and the machine if the machine has not been secured.
- Always use original spare parts on the machine.
- Never use a pressurised grease gun spray to lubricate the machine bearings.
- When carrying out any type of service and maintenance work where the machine's cutting unit is raised up, the mechanical safety valve must always be closed.





Lubrication safety and use of oil

Oils and lubricants contain additives that under certain circumstances can have serious consequences for your health. Therefore, when using oil and lubricants be aware of the following:

- Avoid direct contact with these agents. They can damage the skin.
- Protect your skin with barrier cream or protective gloves.
- Never use oil or lubricants to clean your hands.
- Clothes contaminated with oil should be changed immediately.
- Oily cloths should not be kept in your pockets.

NOTE!

- Used oil must be collected and sent to a disposal company, where the oil will be processed in accordance with the regulations in force.
- Seek medical help if skin is injured by oil or lubricants.

General instructions

These instructions concern general maintenance work. Specific maintenance work procedures for each machine will be described later. When performing any maintenance work the machine must be secured in the transport position. If the work position is necessary for performing maintenance work, you will find appropriate instructions to cover this.

TIP Working with the grease gun
One or two pumps of the grease gun is sufficient for lubrication. If you feel resistance after just one pump of the grease gun, do not apply more grease to the bearings. When too much grease is applied, bearings drift apart. This can result in dust and dirt entering the bearings and causing premature wear and tear.

Basic

This table contains explanations of the most important maintenance terms.

Work	Performance
Lubricating with oil can	Add oil with can to moving surfaces or chains
Lubricating with grease gun	1-2 pumps with the grease gun is sufficient unless otherwise stated
Oil change	Use only authorised oil products. Using used oil is dangerous for your health and is strictly prohibited
Replace	Replace the appropriate part following the instructions given in the "Maintenance" chapter
Check	The check is sometimes related to the replacement of the part in question
Complying with the maintenance intervals	All specifications are based on an average usage of the machine. If heavily loaded, e.g. machine pool, maintenance should be carried out on a more regular basis. In work conditions producing high levels of dust, maintenance should also be carried out on a more regular basis

Maintenance intervals

		After the 10 first working hours	Every day	Every 40 hours of use	Every 80 hours of use	Every 200 hours of use	Every season	As required	Oil change	Lubricating with oil can	Lubricating with grease gun	Check	Adjust	Post-tensioning	Replacement	See page
General check and service	Hydraulic hoses every 4 years														•	15
	Cutting disc after 1 hour of use											•		•		103
	Cutting disc		•									•		•		103
								•							•	126
	Cutting disc after 1 hour of use											•		•		100
	Knives		•									•		•		100
								•							•	123
	Friction clutch						•					•				36,117
	Friction disc							•							•	117
	Y - fingers		•									•				114
								•							•	133
	Cones		•									•				105
							•					•				107
Lubrication	Drawbar		•								•					80
	Swivel hitch							•			•					81
			•								•					80
	Cutting unit:															-
	Rotor bearing			•							•					81
	Universal joint			•							•					81
	Hydraulic cylinder - connecting link							•		•	•					81
	PTO shaft		•								•					77

		After the 10 first working hours	Every day	Every 40 hours of use	Every 80 hours of use	Every 200 hours of use	Every season	As required	Oil change	Lubricating with oil can	Lubricating with grease gun	Check	Adjust	Post-tensioning	Replacement	See page
Gear - Transmission	**Gearbox - LT machine:**															-
	Swivel hitch	•							•							97
					•							•				96
							•		•							97
	Main gear	•							•							93
					•							•				91
							•		•							93
	Gearbox - CT machine:															-
	Swivel hitch	•							•							97
					•							•				96
							•		•							97
	Centre gear	•							•							99
					•							•				99
							•		•							99
	Main gear	•							•							93
					•							•				91
							•		•							93
	Cutterbar	•							•							86
			•									•				82
						•			•							86
V-belt	Conditioner			•								•				115
								•							•	134
Other	Wheel bolts	•										•		•		122
							•					•		•		122

Safety in connection with maintenance work on the machine
When working on the machine the tractor must be stopped and secured.
This prevents the PTO shaft from suddenly starting to rotate.
If the tractor and the PTO shaft have not been connected following the instructions serious accidents causing damage to limbs can occur.

When working on the machine:

- The tractor engine must be stopped.
- The ignition key must be removed.
- The tractor's PTO must be disconnected.
- The hand brake must be activated.

Always use original spare parts on the machine
Always use original spare parts.
Original spare parts should be used for safety reasons.
The manufacturer takes on no warranty responsibility in cases where non-original spare parts are used.

Make sure that all protective guards are in place
Check that all protective guards are in place.
This ensures that the machine will offer maximum protection to the operator.
If the safety guards are removed or not used it may result in serious injuries and accidents.

PTO shaft check

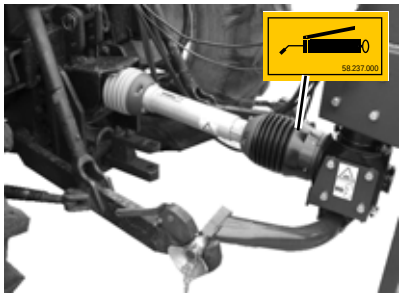
Refer to the manufacturer's maintenance and safety instructions delivered with the PTO shaft.

Lubrication

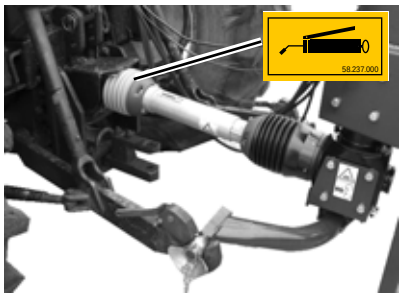
Every day

PTO shaft

CT-LT machine

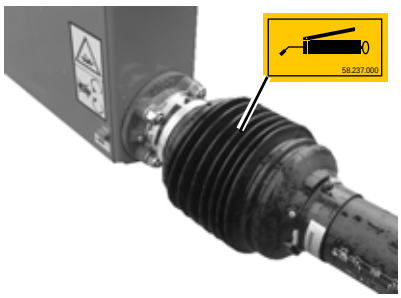


> Loosen the clamping ring and pull the band back.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Fit the band and clamping ring.

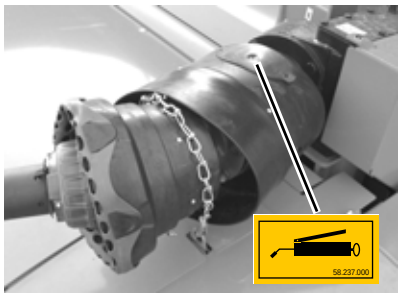


> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

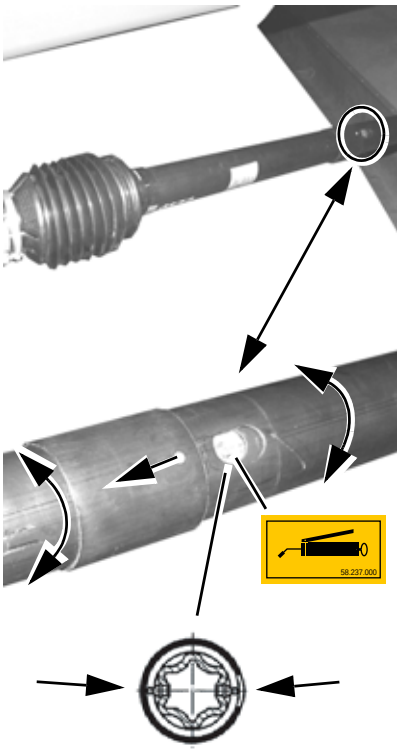
LT Machine



> Loosen the clamping ring and pull the band back.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Fit the band and clamping ring.



> Open the hatch.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Close the hatch.



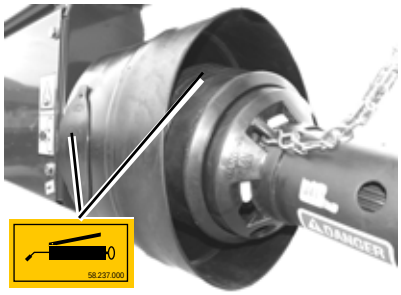
> Push the guard to the side which is lubricated.
> Turn the 2 halves of the protective tube so that the grease nipple is visible.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).

NOTE! The PTO shaft is fitted with two grease nipples that are placed 180^{o} in relation to one another.

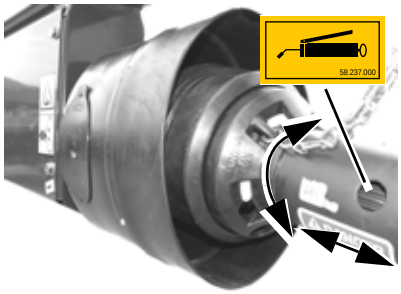
> Turn the protective tube until the other grease nipple is visible.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
> Close the guard over the lubricated area

→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

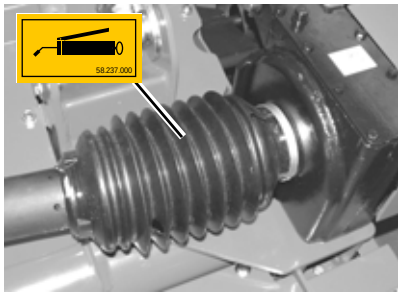
CT machine



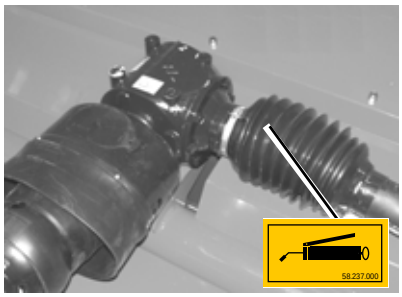
> Open the hatch on the guard.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Close the hatch on the guard.



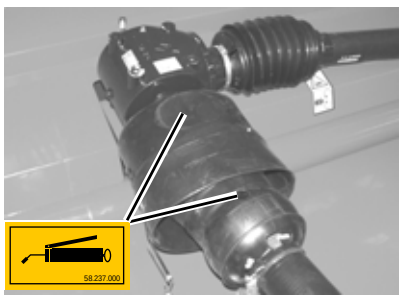
> Position the nozzle on the grease gun in the lubrication hole on the PTO shaft, as close to the shaft as possible.
> Pump the grease gun once or twice (max.).
> Turn the protective tube on the PTO shaft a 1/4 turn and repeat the procedure 3 times.
> Turn the protective tube and apply the grease around the entire circumference of the shaft with a finger.
> Remove the PTO shaft and push the shaft together fully and pull it apart a few times so that the grease is distributed along the length of the shaft.
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.



> Loosen the clamping ring and pull the band back.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Fit the band and clamping ring.

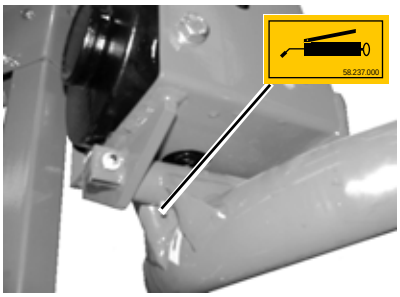


> Loosen the clamping ring and pull the band back.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Fit the band and clamping ring.



> Open the hatch on the guard.
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Close the hatch on the guard.

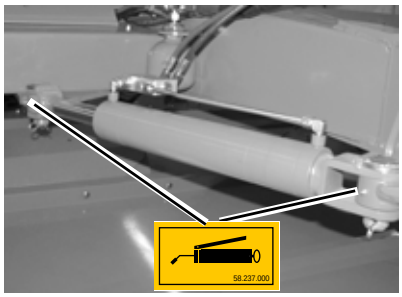
Swivel hitch



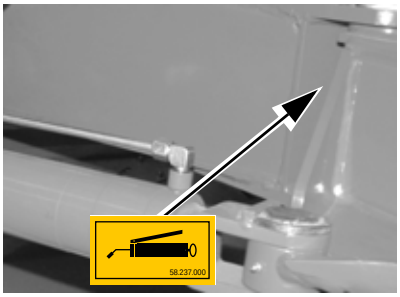
> Press the nozzle of the grease gun over the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

Every 40 hours

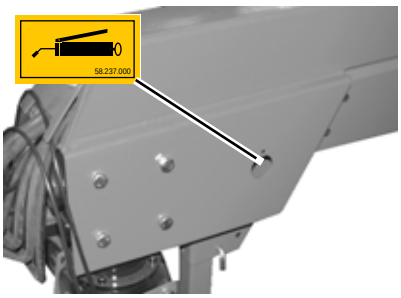
Drawbar



> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

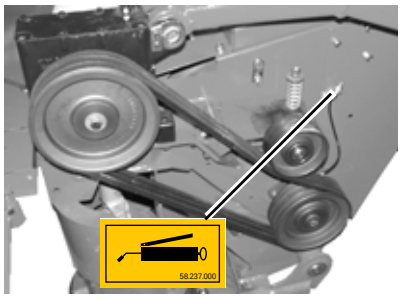


> Press the nozzle of the grease gun over the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

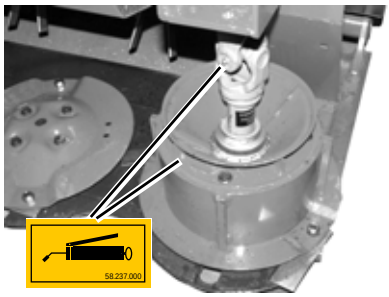


> Open the hatch.
> Press the nozzle of the grease gun over the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.
> Close the hatch.

Cutting unit



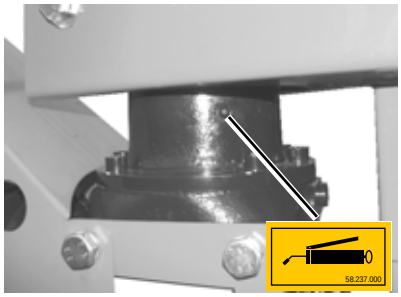
> Locate the grease nipples on both sides of the machine.
> Press the nozzle on the grease gun over the grease nipples.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.



> Turn the cutting disc until both grease nipples are visible
> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

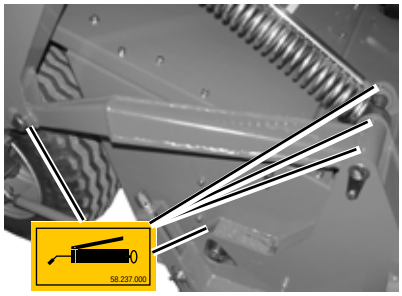
Every season

Swivel hitch



> Press the nozzle of the grease gun over the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

As required



> Press the nozzle of the grease gun onto the grease nipple.
> Pump the grease gun once or twice (max.).
→ »Maintenance intervals« Page 74.
→ »Lubricants« Page 152.

Cutterbar

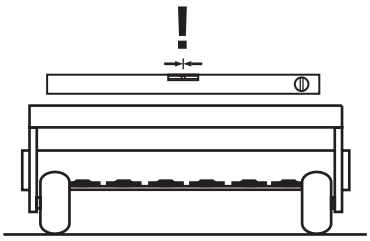
Be careful when using oil
Use barrier cream or protective gloves when handling oil.
It will protect your hands against skin injuries.
Direct contact with the oil could lead to serious skin injuries.

Use the correct oil type
Always use the correct oil type for the transmission.
This will ensure the transmission has a long service life.
Using the incorrect oil type may damage the transmission.

Maintain correct oil level
The max. and min. oil level indicators on the transmission must not be exceeded.
Correct transmission oil level will ensure a long service life.
Incorrect oil levels can cause the transmission to overheat, resulting in serious damage.

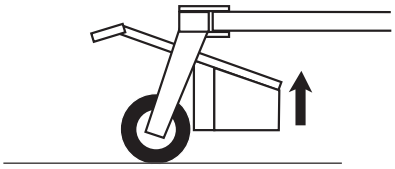
Inspection - oil service

→ »Maintenance intervals« Page 74.

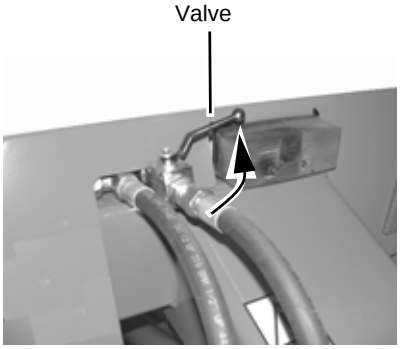


The oil level for the cutterbar is checked as follows:

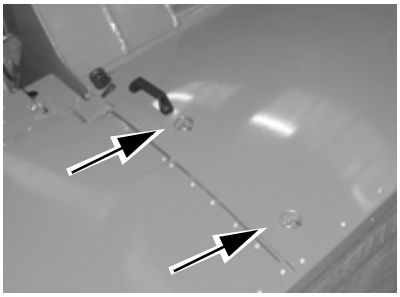
> Place the machine on a level surface.



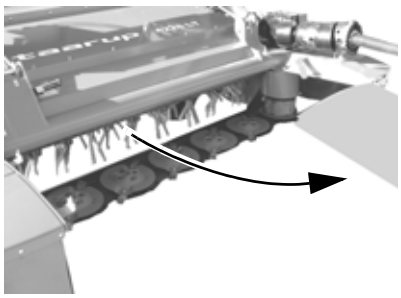
> Activate the tractor hydraulics and raise the machine's cutter bar.



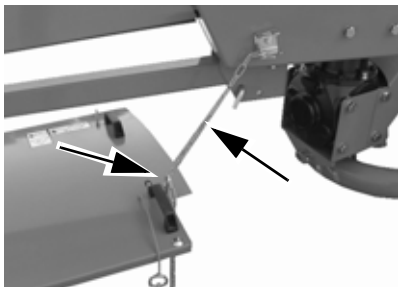
> Close the mechanical safety valve.



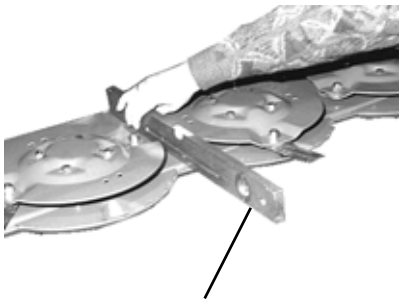
> Remove the linchpins shown here.



> Open the guards around the machine's cutterbar.



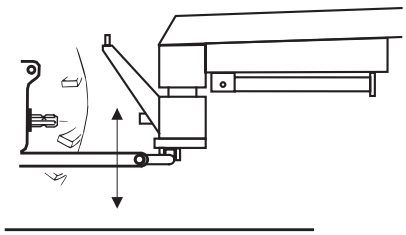
> Suspend the guard in the chain as shown.

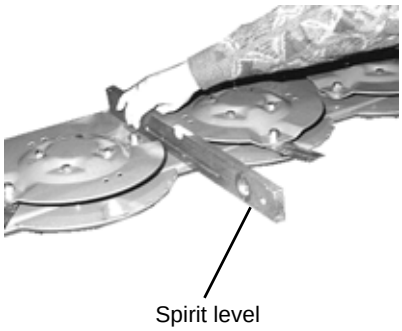


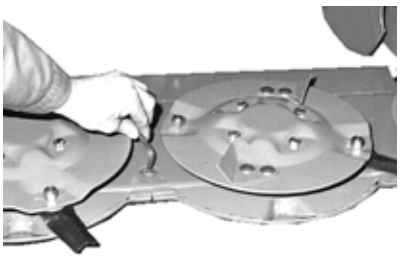
> Check that the cutterbar is horizontal in the direction shown using a spirit level or similar tool.

If the cutterbar is not horizontal, carry out the following:

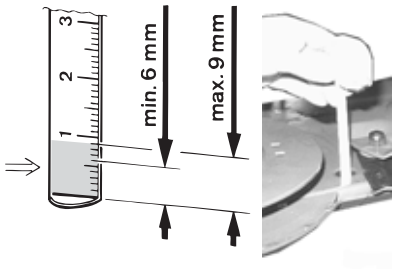
> Raise or lower the tractor's lift arms until the cutterbar is horizontal.



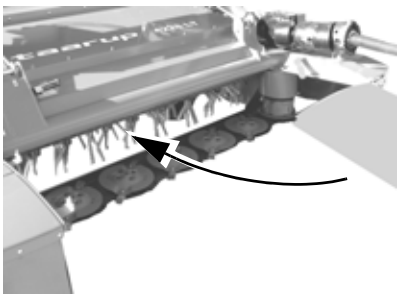




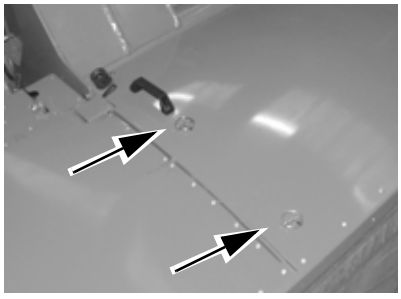
> Locate the oilplug on the left side of the cutterbar and remove it.
- With warm oil: Wait approx. 3 minutes.
- With cold oil: Wait approx. 15 minutes.



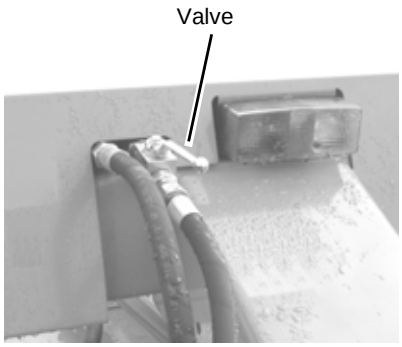
> Check the oil level as shown and refill if necessary.
→ »Lubricants« Page 152.
> Fit the oilplug and tighten it fully.



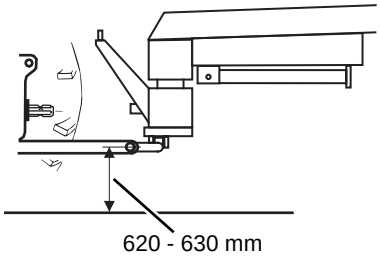
> Close the machine's first guard.



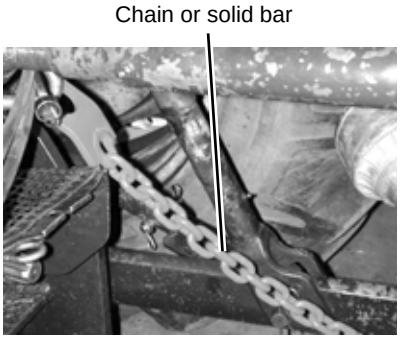
> Fit the linchpin.



> Open the mechanical safety valve.



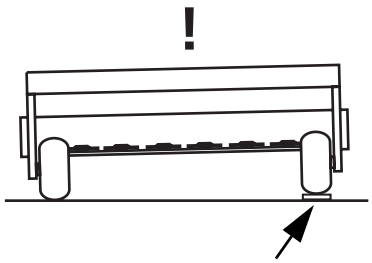
> Adjust the tractor's lift arms to the height shown.



> Lock the lift arms with a chain or solid bar between the lift arm and highest point.

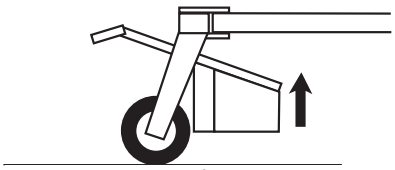
Changing oil

→ »Maintenance intervals« Page 74.

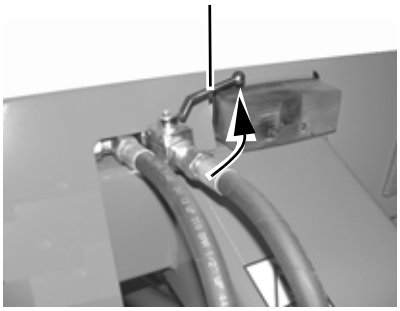


The oil in the cutterbar is changed as follows:

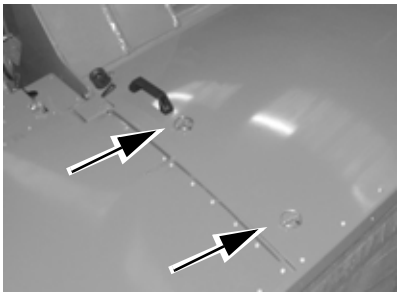
> Place a wooden block or similar under the right-hand wheel of the machine so that the machine slants slightly to the left.



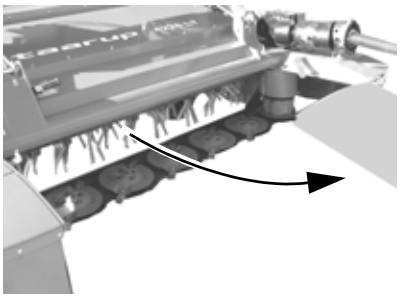
> Activate the tractor hydraulics and raise the machine's cutter bar.



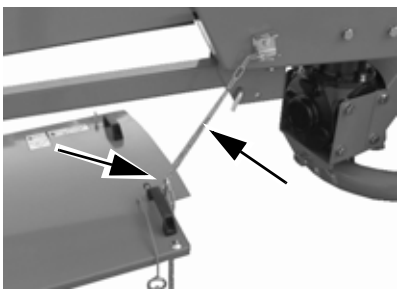
> Close the mechanical safety valve.



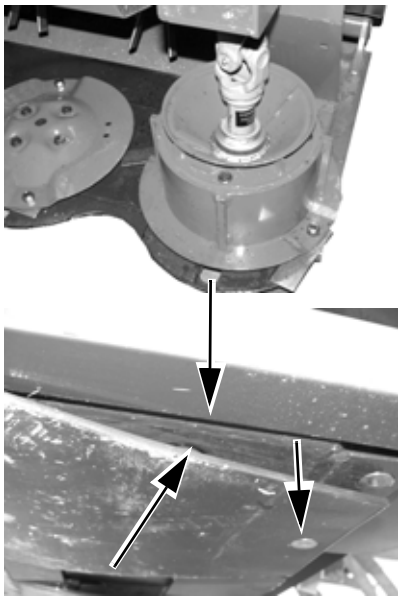
> Remove the linchpins shown here.



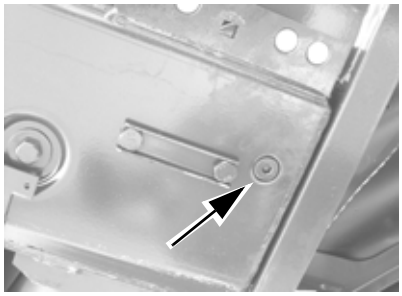
> Open the guards around the machine's cutterbar.



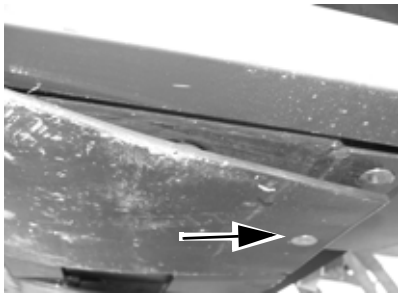
> Suspend the guard in the chain as shown.



> Remove the outermost left-hand stone guard from the machine's cutterbar.

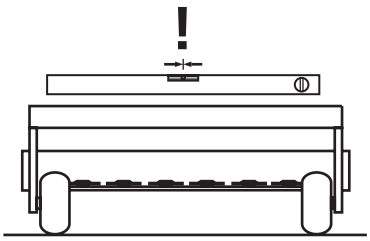


> Locate the drain plug and remove it.
> Let the oil flow into a suitable container.
> Allow the last of the oil to drip out of the cutterbar for approx. 10 - 15 minutes.
> Fit the drain plug into the cutterbar and tighten it fully.

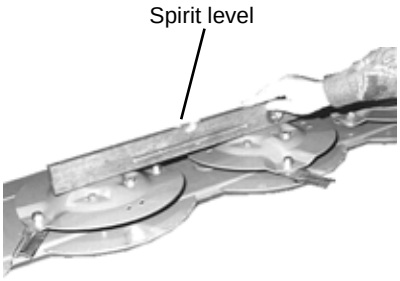


> Fit the outermost left-hand stone guard from the machine's cutterbar.

Filling up with new oil

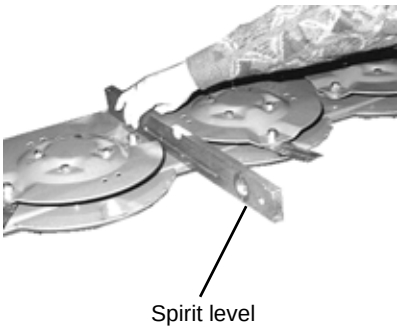


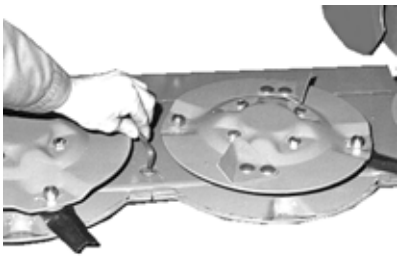
> Place the machine on a level surface.



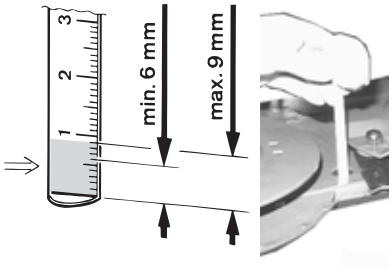
> Check that the cutterbar is horizontal in the direction shown using a spirit level or similar tool.

Position of the cutterbar when filling with oil:
→ Page83





> Remove the oilplug.

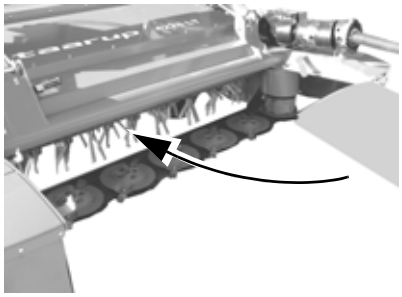


> Fill up with the new oil until the oil level is as shown.

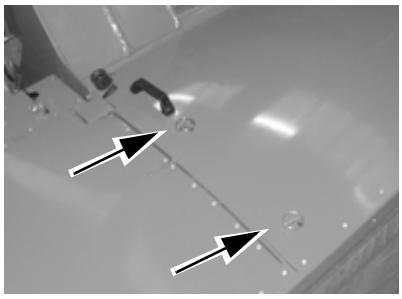
Model	Quantity at oil change litre
4228 LT	Approximately 3.2
4232 LT-CT	Approximately 4.1
4236 LT-CT	Approximately 4.6

→ »Lubricants« Page 152.

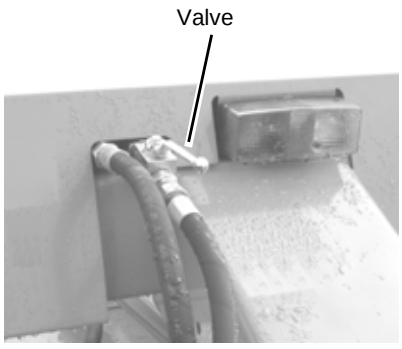
> Fit the oilplug and tighten it fully.



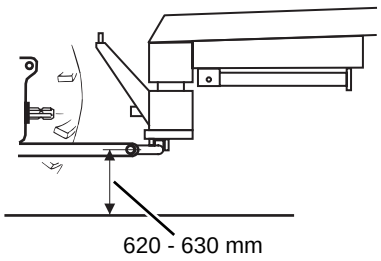
> Close the machine's first guard.



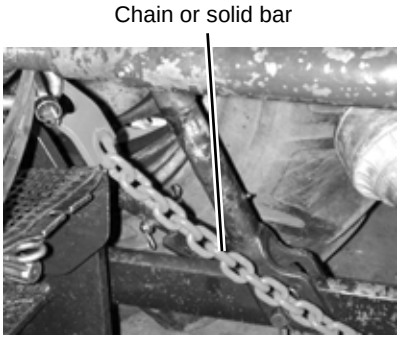
> Fit the linchpin.



> Open the mechanical safety valve.



> Adjust the tractor's lift arms to the height shown.



> Lock the lift arms with a chain or solid bar between the lift arm and highest point.

Gearbox

Pay attention when carrying out oil change
Use barrier cream or protective gloves when changing oil.
It will protect your hands against skin injuries.
Direct contact with the oil could lead to serious skin injuries.

Use the correct oil type
Always use the correct oil type for the transmission.
This will ensure the transmission has a long service life.
Using the incorrect oil type may damage the transmission.

Maintain correct oil level
The max. and min. oil level indicators on the transmission must not be exceeded.
Correct transmission oil level will ensure a long service life.
Incorrect oil levels can cause the transmission to overheat, resulting in serious damage.

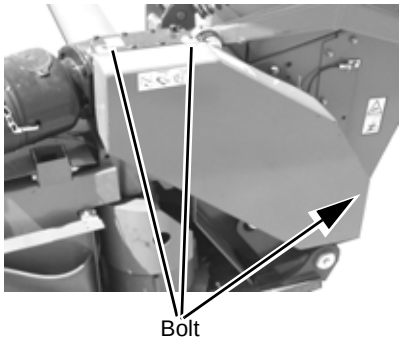
Main gear

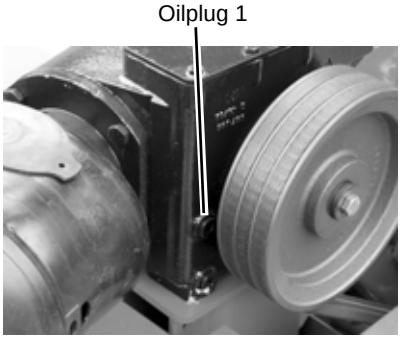
Checking the oil level

→ »Maintenance intervals« Page 74.

LT Machine
The oil level is checked as follows:

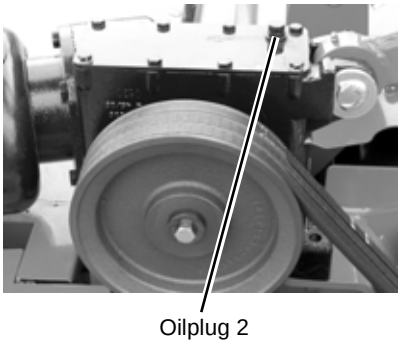
> Remove the guard.

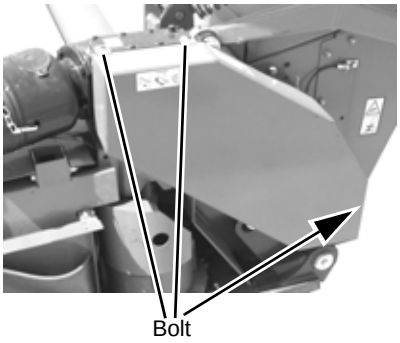




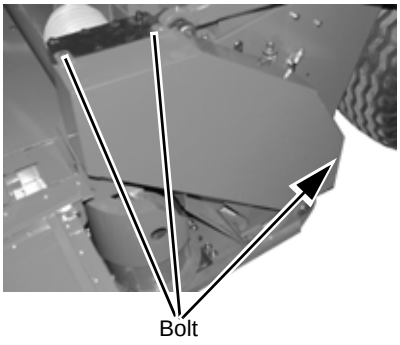
> Remove oilplug 1.
> Check that the oil is filled all the way up to the hole.
> When topping up, remove oilplug 2.
> Fill the oil to the correct level.
> Fit oilplugs 1 and 2 and tighten them.

→ »Lubricants« Page 152.



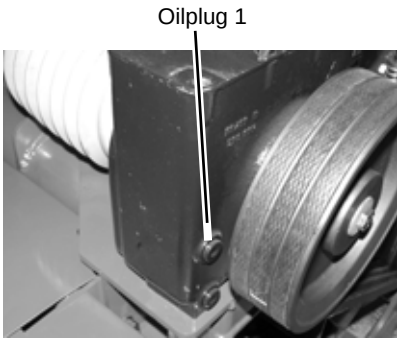


> Fit the guard.



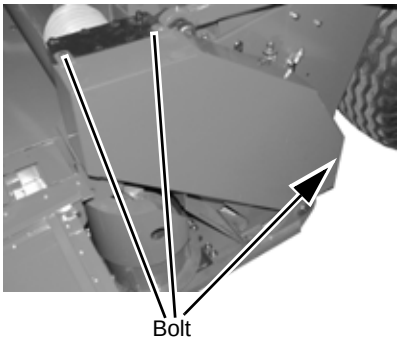
CT machine
The oil level is checked as follows:

> Remove the guard.



> Remove oilplug 1.
> Check that the oil is filled all the way up to the hole.
> When topping up, remove oilplug 2.
> Fill the oil to the correct level.
> Fit oilplugs 1 and 2 and tighten them.

→ »Lubricants« Page 152.



> Fit the guard.

Changing oil

→ »Maintenance intervals« Page 74.

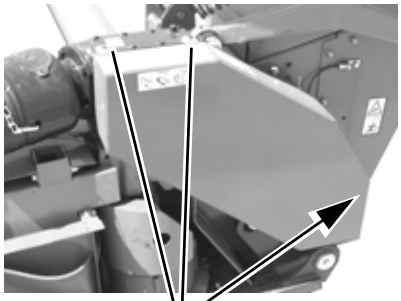
Oil amount when changing oil:

- Approximately 1.5 litres.

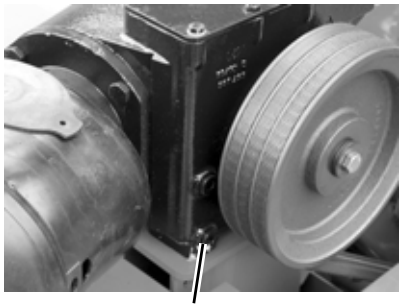
LT Machine

The oil is changed as follows:

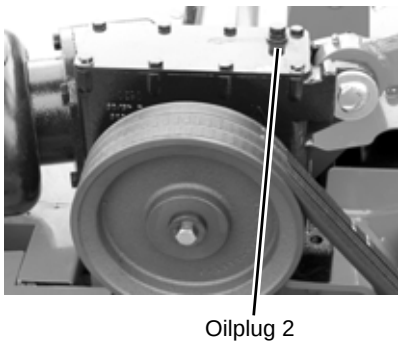
> Remove the guard.

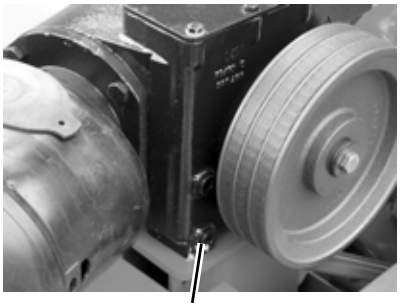


> Use a suitable tool to remove the oilplug 3.
> Let the oil run into a suitable receptacle.
> Allow the oil to drain from the transmission for approx. 10 - 15 minutes.
> Fit oilplug 3 and tighten it.



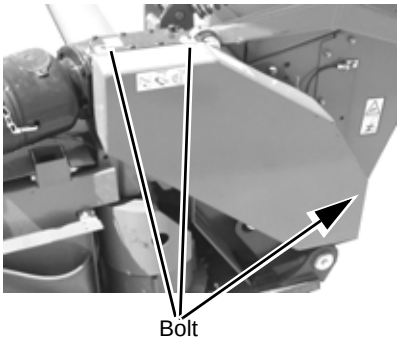
> Remove oilplug 2.





Oilplug 3

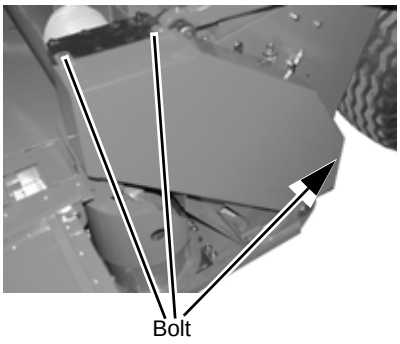
> Remove oilplug 1.
> Fill up the new oil until the oil level reaches the hole.
→ »Lubricants« Page 152.
> Fit oilplugs 1 and 2 and tighten them.



Bolt

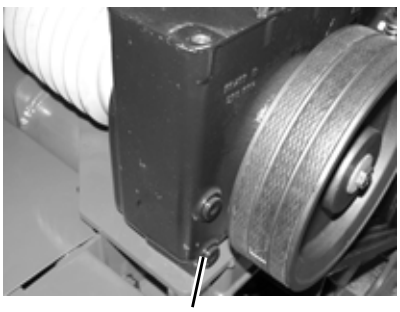
> Fit the guard.

CT machine
The oil is changed as follows:



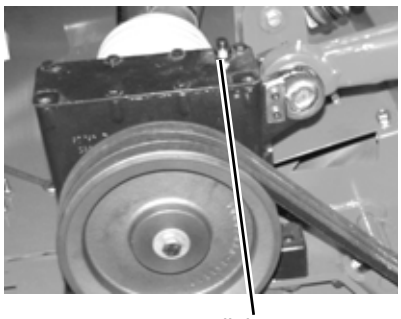
Bolt

> Remove the guard.



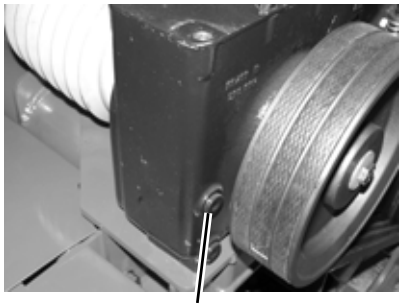
Oilplug 3

> Use a suitable tool to remove the oilplug 3.
> Let the oil run into a suitable receptacle.
> Allow the oil to drain from the transmission for approx. 10 - 15 minutes.
> Fit oilplug 3 and tighten it.



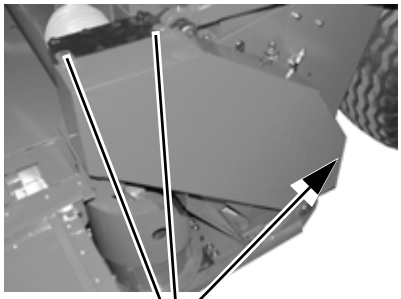
Oilplug 2

> Remove oilplug 2.



Oilplug 1

> Remove oilplug 1.
> Fill up the new oil until the oil level reaches the hole.
→ »Lubricants« Page 152.
> Fit oilplugs 1 and 2 and tighten them.



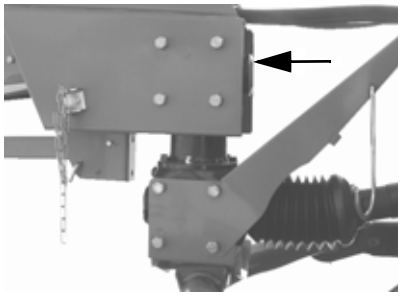
Bolt

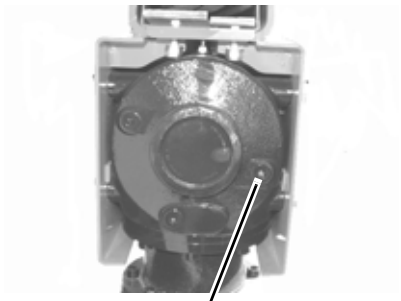
> Fit the guard.

Swivel hitch

Checking the oil level

→ »Maintenance intervals« Page 74.
The oil level is checked as follows:





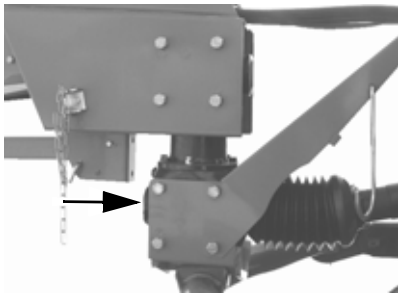
Oilplug

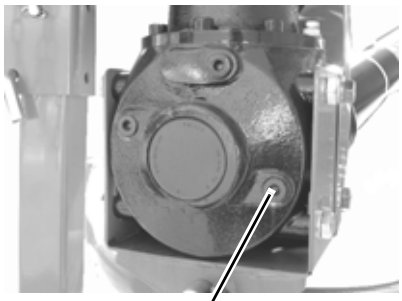
The upper part of the swivel hitch

> Remove the oilplug.
> Check that the oil is filled all the way up to the hole.
- When topping up, fill oil in the same place.

> Fill the oil to the correct level.
> Fit the oilplug and tighten it.

→ »Lubricants« Page 152.





Oilplug

The lower part of the swivel hitch

> Remove the oilplug.
> Check that the oil is filled all the way up to the hole.
- When topping up, fill oil in the same place.

> Fill the oil to the correct level.
> Fit the oilplug and tighten it.

→ »Lubricants« Page 152.

Changing oil

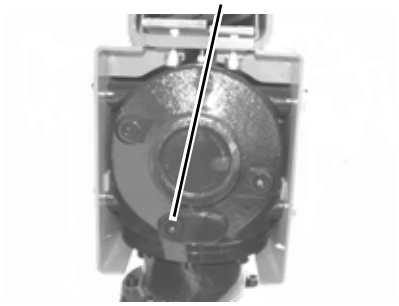
The upper part of the swivel hitch
Oil amount when changing oil:

- Approximately 1.1 litres.

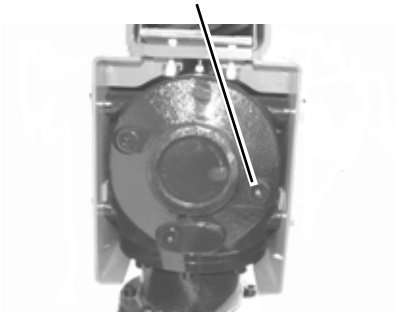
The oil is changed as follows:

> Use a suitable tool to remove the oilplug 1.
> Let the oil run into a suitable receptacle.
> Allow the oil to drain from the transmission for approx. 10 - 15 minutes.
> Fit oilplug 1 and tighten it.

Oilplug 1



Oilplug 2



> Remove oilplug 2.
> Fill up with new oil until it the oil level reaches the hole [2].
> Fit oilplug 2 and tighten it.

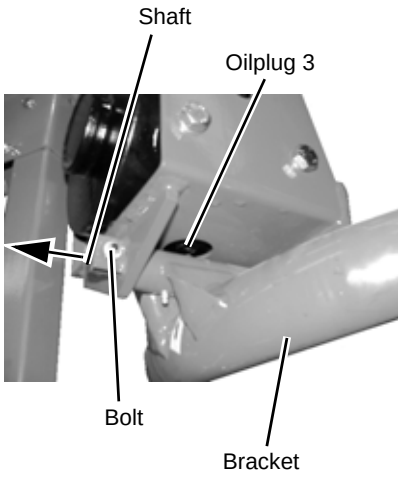
→ »Lubricants« Page 152.

The lower part of the swivel hitch

→ »Maintenance intervals« Page 74.

Oil amount when changing oil:

- Approximately 1.1 litres.



The oil is changed as follows:

> Use a suitable tool to remove the bolt.

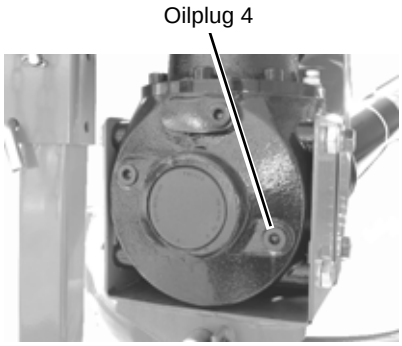
> Remove the shaft for the bracket and remove the bracket.

> Use a suitable tool to remove the oilplug 3.

> Let the oil run into a suitable receptacle.

> Allow the oil to drain from the transmission for approx. 10 - 15 minutes.

> Fit oilplug 3 and tighten it.

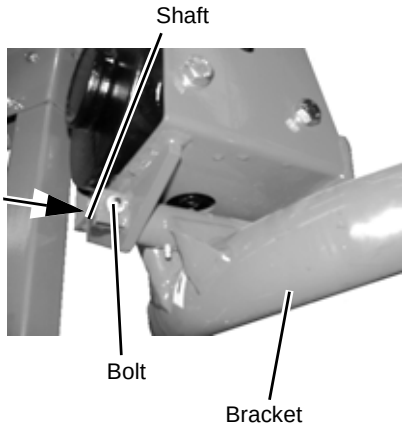


> Remove oilplug 4.

> Fill up with new oil until it the oil level reaches the hole [4].

> Fit oilplug 4 and tighten it.

→ »Lubricants« Page 152.



> Fit the bracket and the shaft.

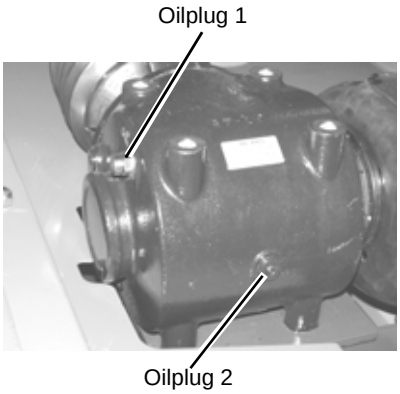
> Fit the bolt and tighten it up.

Centre gear

Checking the oil level

CT machine only

→ »Maintenance intervals« Page 74.



The oil level is checked as follows:

> Remove oilplug 2.
> Check that the oil is filled all the way up to the hole [2].
> When topping up, remove oilplug 1.
> Fill the oil to the correct level.
> Fit oilplug 2 and tighten oilplug 1.

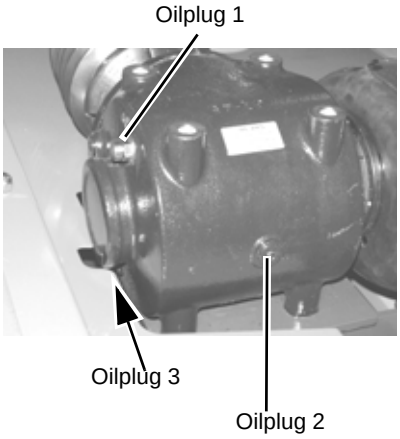
→ »Lubricants« Page 152.

Changing oil

→ »Maintenance intervals« Page 74.

Oil amount when changing oil:

- Approximately 1.5 litres.



The oil is changed as follows:

> Use a suitable tool to remove the oilplug 3.
> Let the oil run into a suitable receptacle.
> Allow the oil to drain from the transmission for approx. 10 - 15 minutes.
> Fit oilplug 3 and tighten it.
> Remove oilplug 1.
> Remove oilplug 2.
> Fill up with new oil until it the oil level reaches the hole [2].
> Fit oilplug 2 and tighten oilplug 1.

→ »Lubricants« Page 152.

Service - check

Knives

Safety concerning maintenance work on the transmission
When working on the transmission the tractor must be stopped and secured.
This prevents the machine from suddenly starting to rotate.
If the tractor and the PTO shaft have not been connected following the instructions serious accidents causing damage to limbs can occur.

When working on the transmission:

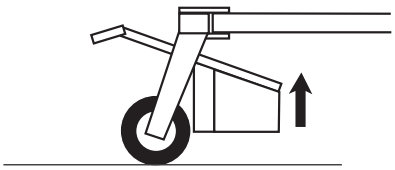
- The tractor engine must be stopped.
- The ignition key must be removed.
- The tractor's PTO must be disconnected.

Check the machine knives on a regular basis
The machine's knives must be regularly inspected.
Worn or damaged knives can unbalance the rotating parts.
Vibrations can cause damage to the machine.

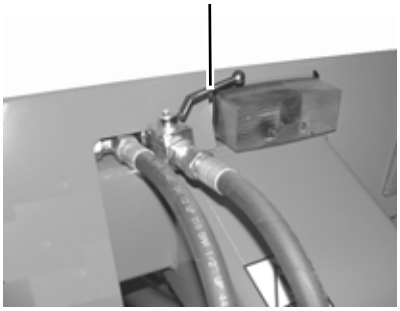
→ »Maintenance intervals« Page 74.

The knives are checked in the following way:

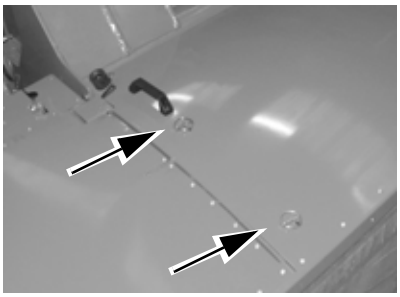
> Activate the tractor hydraulics and raise the machine's cutter bar.



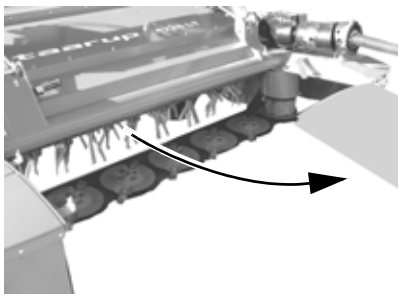
Valve



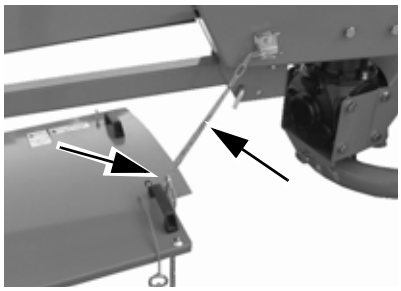
> Close the mechanical safety valve.



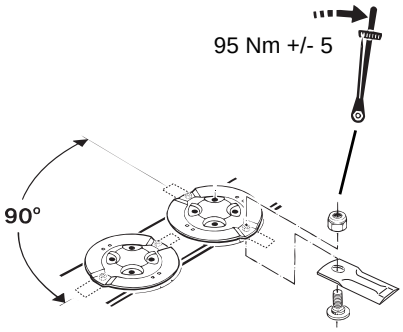
> Remove the linchpins shown here.



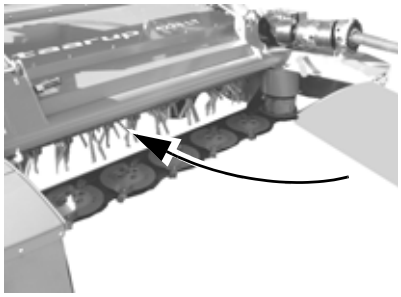
> Open the guards around the machine's cutterbar.



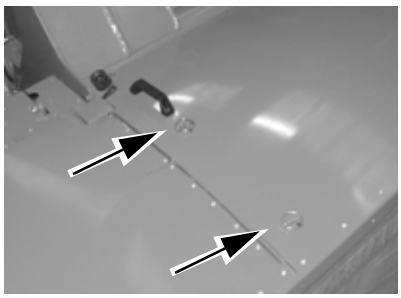
> Suspend the guard in the chain as shown.



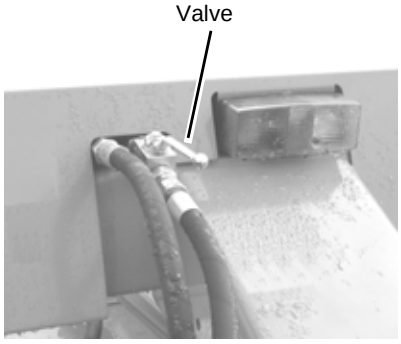
> Turn the cutting discs by hand until the damaged knife is in the position shown.
> Inspect the bolts and knives for wear.
> Use a suitable tool and tighten the bolt to a torque of 95 Nm.



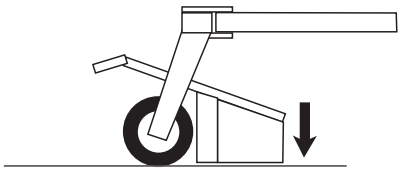
> Close the guards around the machine's cutterbar.



> Fit the linchpin.



> Open the mechanical safety valve.

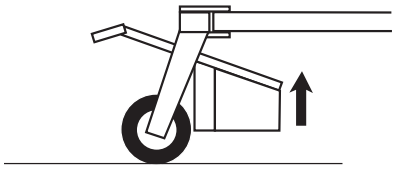


> Activate the tractor hydraulics and lower the cutting unit of the machine.

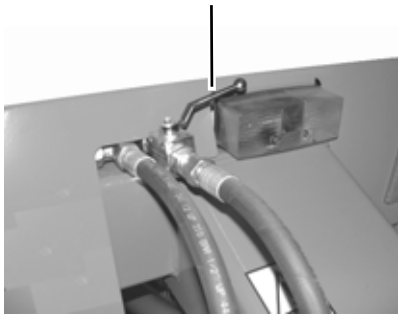
Cutting disc

→ »Maintenance intervals« Page 74.

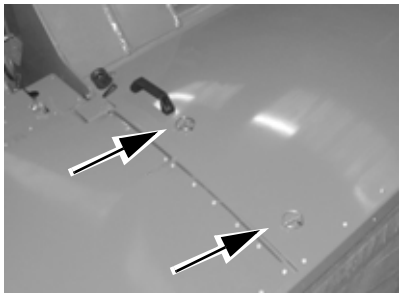
The cutting discs are checked as follows:



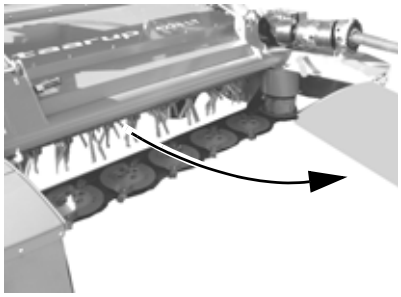
> Activate the tractor hydraulics and raise the machine's cutter bar.



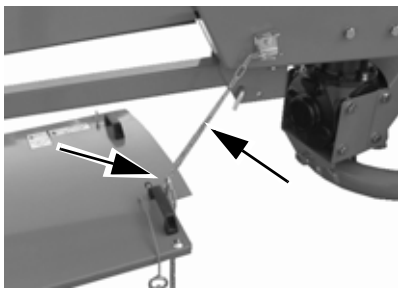
> Close the mechanical safety valve.



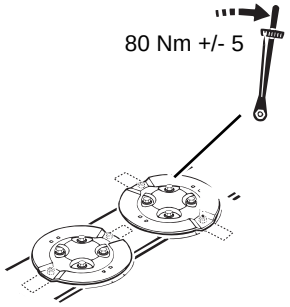
> Remove the linchpins shown here.



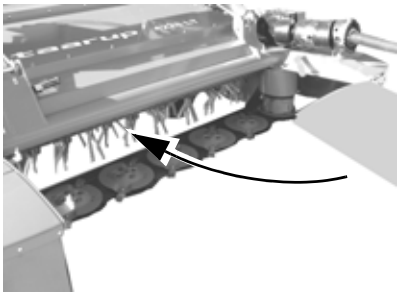
> Open the guards around the machine's cutterbar.



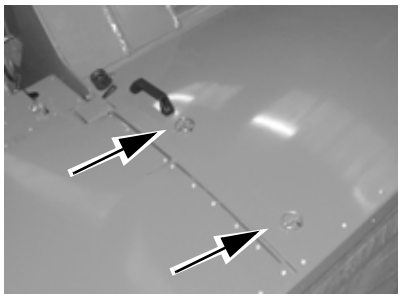
> Suspend the guard in the chain as shown.



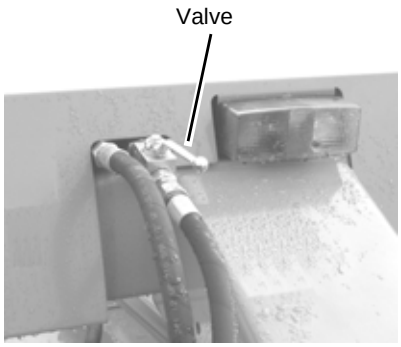
> Inspect the condition of the cutting discs for deformities and cracks.
> Use a suitable tool and tighten the cutting disc to a torque of 80 Nm.



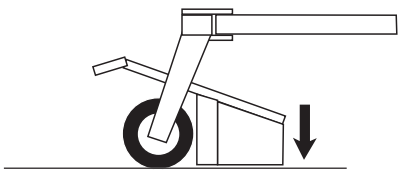
> Close the guards around the machine's cutterbar.



> Fit the linchpin.



> Open the mechanical safety valve.



> Activate the tractor hydraulics and lower the cutting unit of the machine.

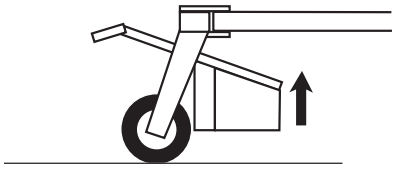
Cone

External inspection

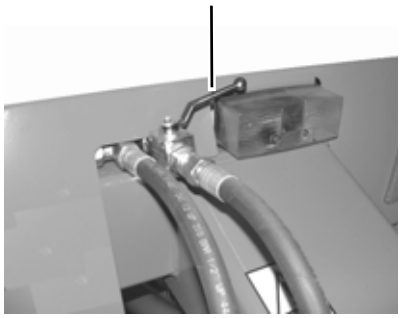
→ »Maintenance intervals« Page 74.

An external check of the cones is carried out in the following way:

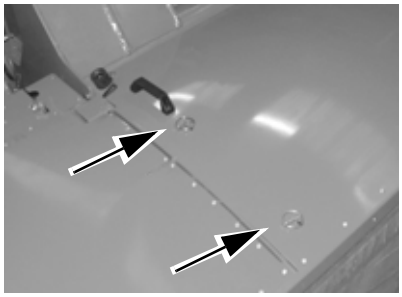
> Activate the tractor hydraulics and raise the machine's cutter bar.



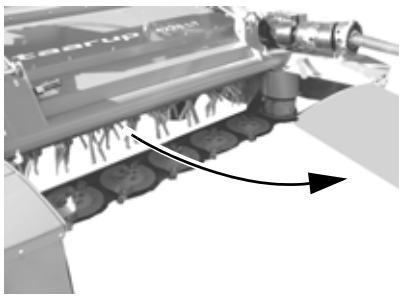
Valve



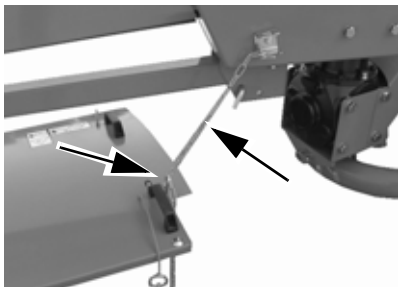
> Close the mechanical safety valve.



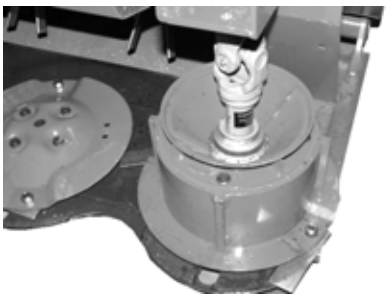
> Remove the linchpins shown here.



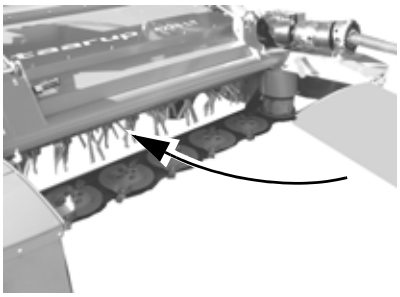
> Open the guards around the machine's cutterbar.



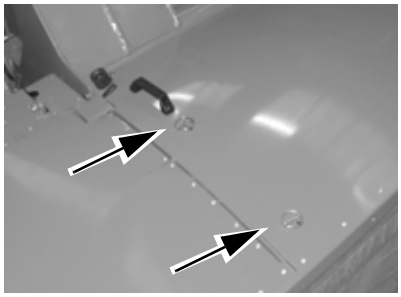
> Suspend the guard in the chain as shown.



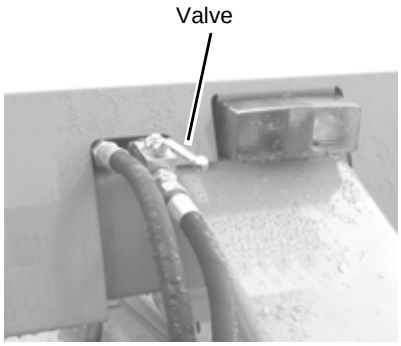
> Remove dirt from the cones on both sides of the machine.



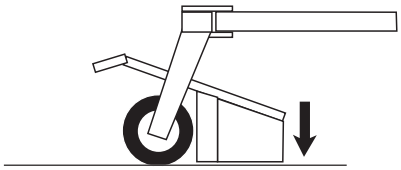
> Close the machine's guard.



> Fit the linchpin.



> Open the mechanical safety valve.

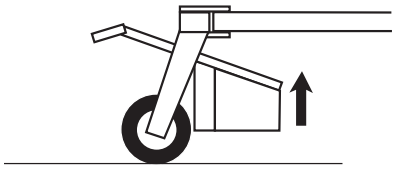


> Activate the tractor hydraulics and lower the cutting unit of the machine.

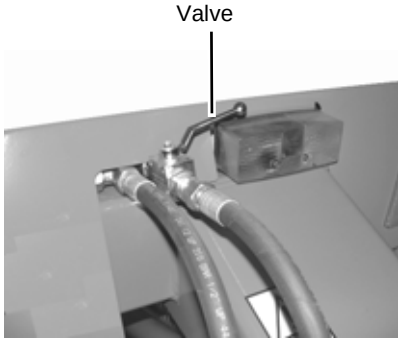
Internal inspection

→ »Maintenance intervals« Page 74.

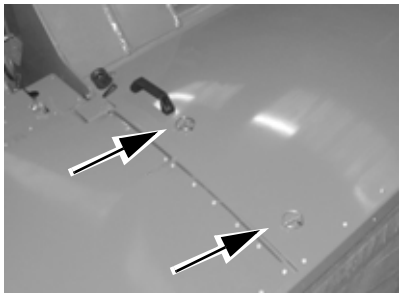
The insides of the machine's cones are checked in the following way:



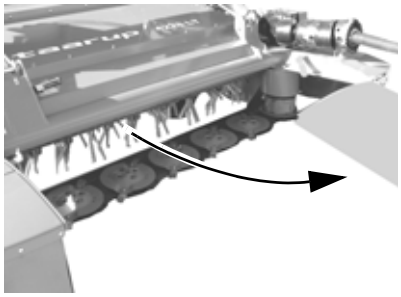
> Activate the tractor hydraulics and raise the machine's cutter bar.



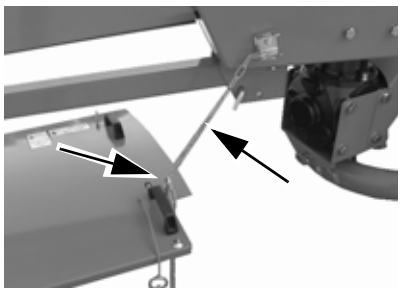
> Close the mechanical safety valve.



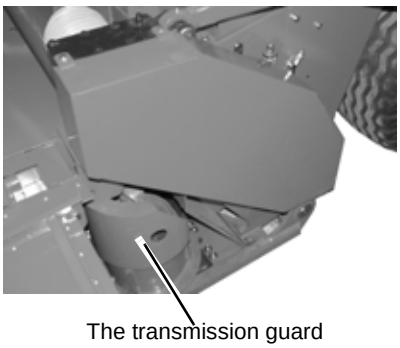
> Remove the linchpins shown here.



> Open the guards around the machine's cutterbar.

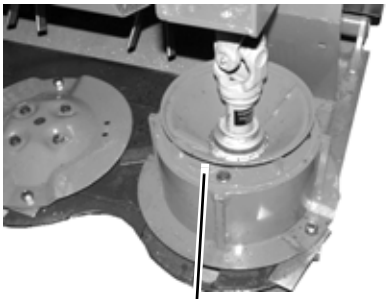


> Suspend the guard in the chain as shown.



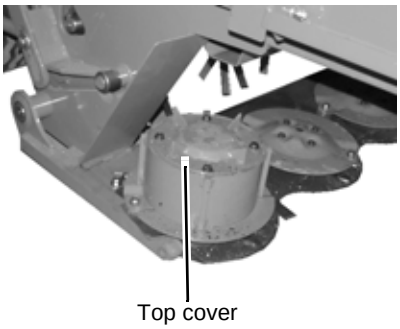
The transmission guard

> Use a suitable tool and remove the guard around the cutterbar's transmission.



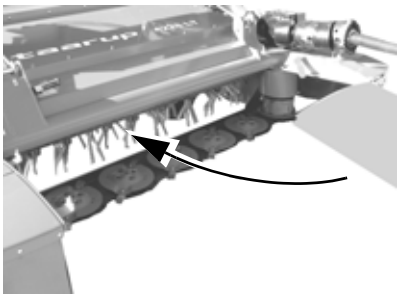
Top cover

> Remove the cone's top cover.
> Clean the inside of the cone.
> Fit the cone's top cover.
> Fit the guard around the cutterbar's transmission.

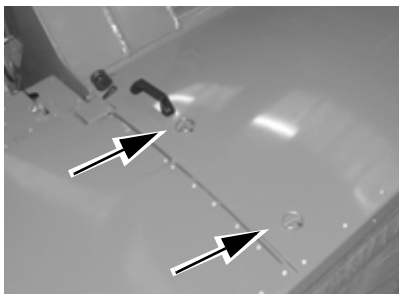


Top cover

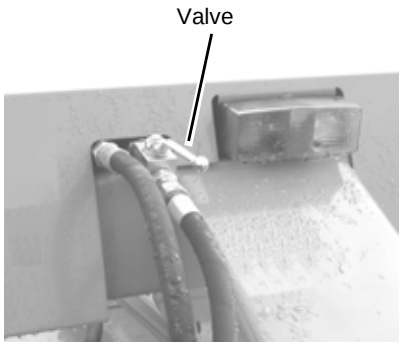
> Remove the top cover on the cones that are found on the opposite side of the transmission.
> Clean the inside of the cone.
> Fit the cone's top cover.



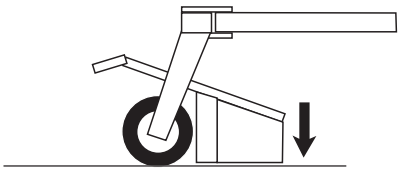
> Close the machine's guard.



> Fit the linchpin.



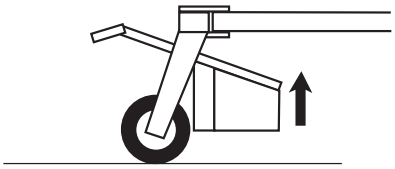
> Open the mechanical safety valve.



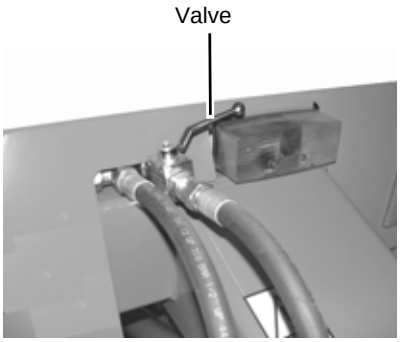
> Activate the tractor hydraulics and lower the cutting unit of the machine.

Universal joint

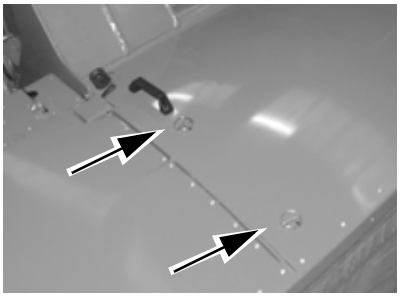
→ »Maintenance intervals« Page 74.
The universal joint between the transmission and the cutterbar is checked in the following way:



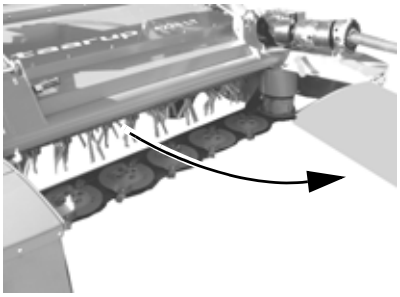
> Activate the tractor hydraulics and raise the machine's cutter bar.



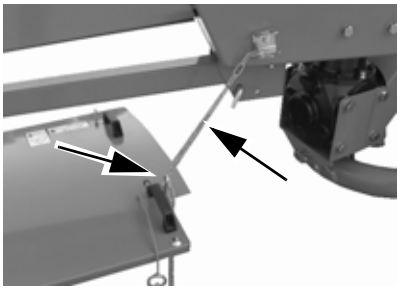
> Close the mechanical safety valve.



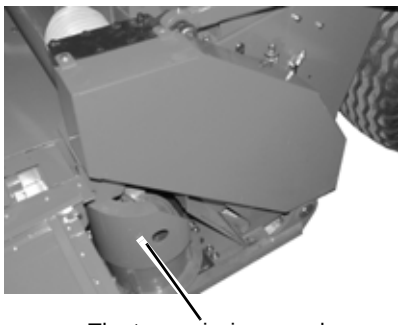
> Remove the linchpins shown here.



> Open the guards around the machine's cutterbar.

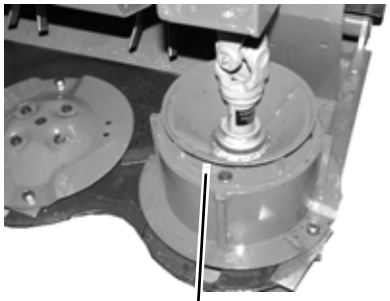


> Suspend the guard in the chain as shown.



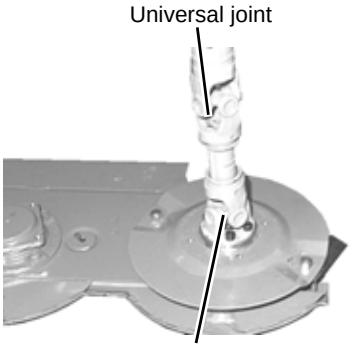
The transmission guard

> Use a suitable tool and remove the protection around the PTO shaft between the transmission and the cutterbar.

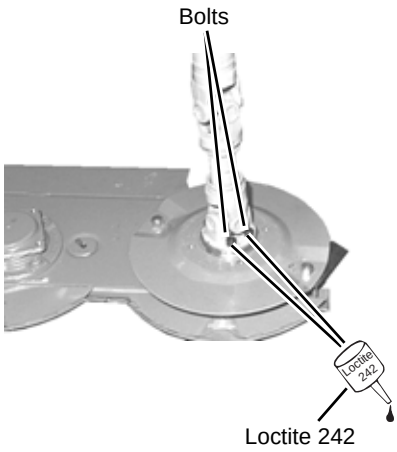


Top cover

> Remove the cone's top cover.

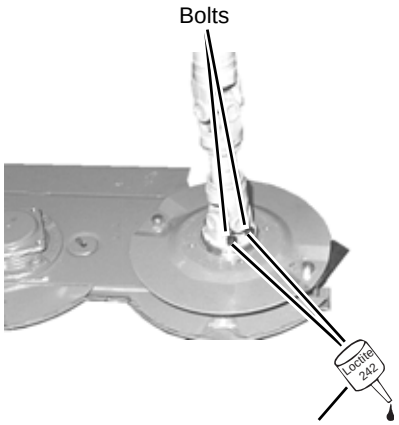


> Inspect both universal joints for wear.



> Check for broken or loose bolts.
> Replace the broken bolts.
> Apply Loctite 242 or a similar product to all bolts.
> Fit and tighten the bolts.

→ »Torque moment« Page 152.



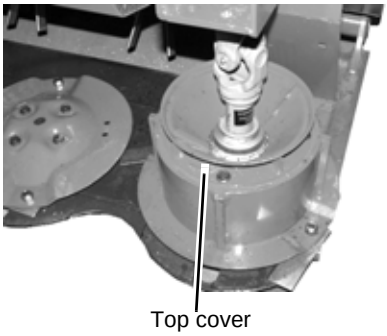
If there are loose bolts the following procedure should be followed:

> Remove and clean the bolts.

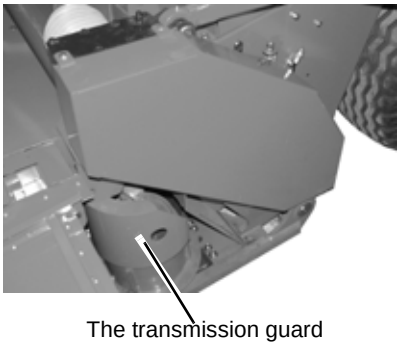
> Apply Loctite 242 or a similar product to all bolts.

> Fit and tighten the bolts.

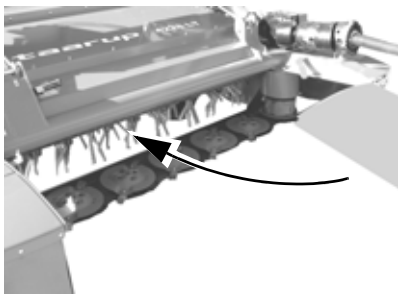
→ »Torque moment« Page 152.



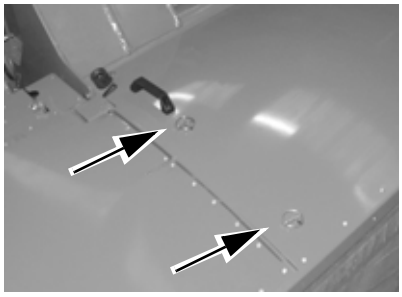
> Fit the cone's top cover.



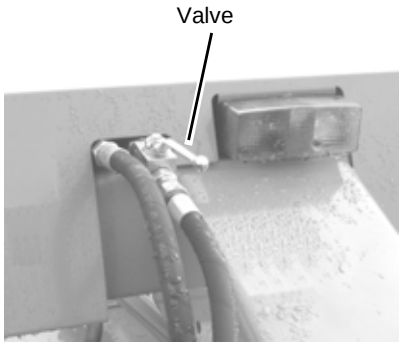
> Fit the guard around the cutterbar's transmission.



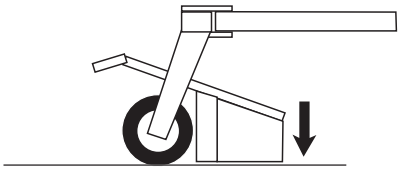
> Close the machine's guard.



> Fit the linchpin.



> Open the mechanical safety valve.



> Activate the tractor hydraulics and lower the cutting unit of the machine.

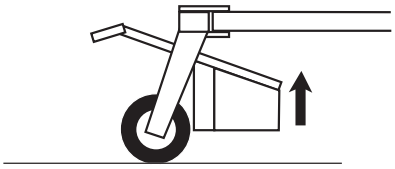
Rotor

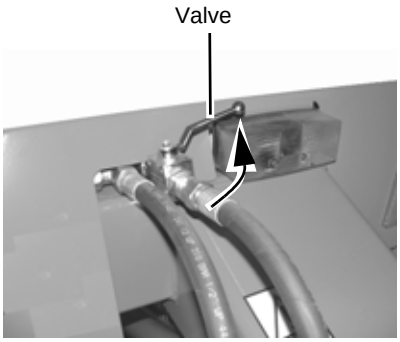
Y - fingers

→ »Maintenance intervals« Page 74.

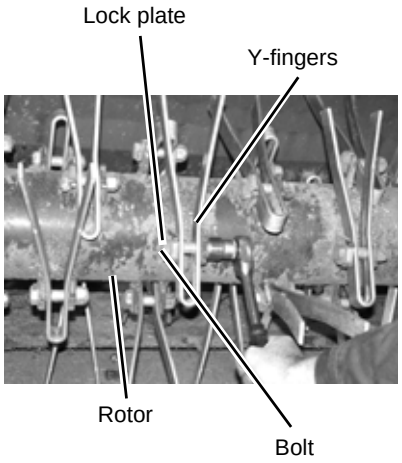
The Y-fingers are checked in the following way:

> Activate the tractor hydraulics and raise the machine's cutter bar.



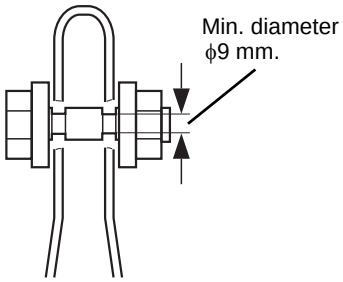


> Close the mechanical safety valve.



> Check the conditioner for loose fingers.
> Check the lock plate by the bolt.
- If the lock plate is damaged or cracked, it must be changed.

→ »Y - fingers« Page 133.



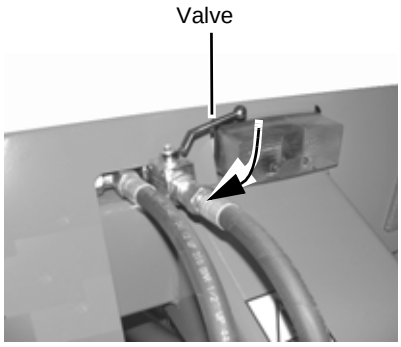
> Inspect the bolt for damage or wear.
- If the bolt is damaged or worn, it must be changed.

NOTE! The minimum diameter of the bolt must not be less than ϕ9 mm.

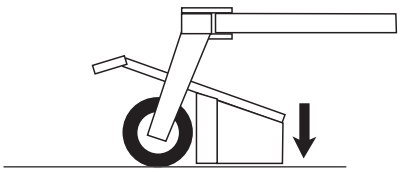
→ »Y - fingers« Page 133.

> Check that the bolt is fully tightened.
> If not, use a suitable tool to tighten the bolt fully.

NOTE! The Y-fingers should be able to move freely.



> Open the mechanical safety valve.

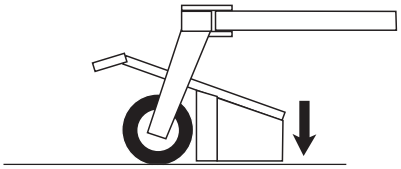


> Activate the tractor hydraulics and lower the cutting unit of the machine.

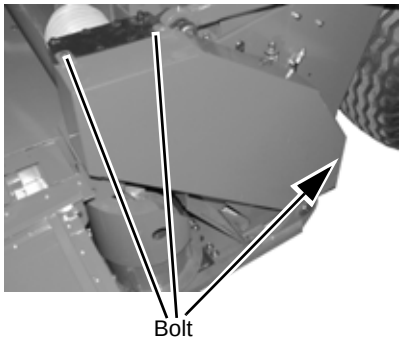
Transmission

→ »Maintenance intervals« Page 74.

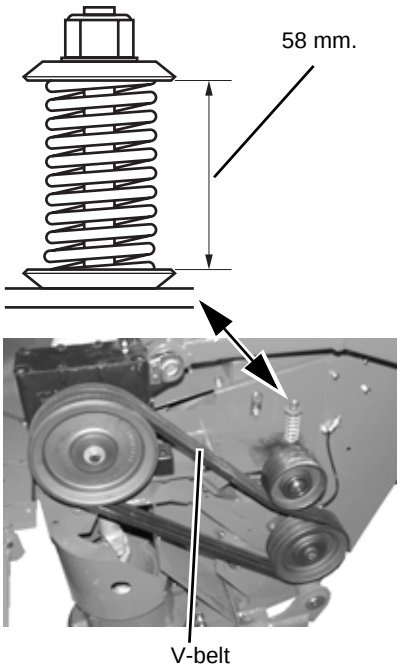
The V-belts on the conditioner must be regularly checked.
The V-belt for the conditioner transmission is checked in the following way:



> Activate the tractor hydraulics and lower the cutting unit of the machine.



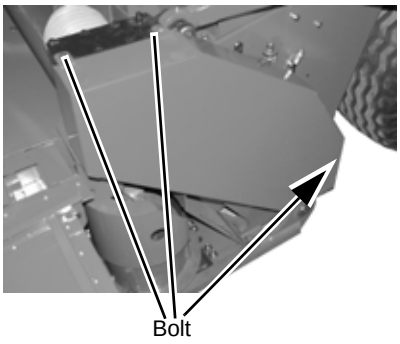
> Remove the guard.



> Use a tape measure or similar to measure the springs as shown.

> The springs are tightened with a bolt to the measurement shown.

NOTE! A new machine or a newly fitted V-belt should be checked after a few hours use.

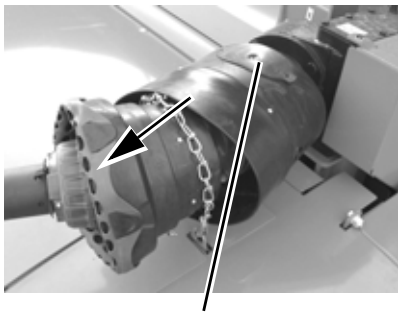


> Fit the guard.

Friction clutch

Only to be carried out after a prolonged period without use

LT Machine



Open the hatch

→ »Maintenance intervals« Page 74.

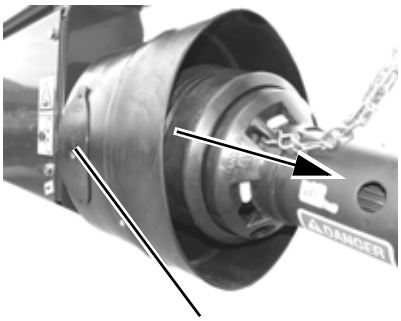
The friction clutch is bled in the following way:

> Open the hatch shown and use a suitable tool to remove the lock on the PTO shaft.
> Pull the friction clutch back so it is free of the main gear.

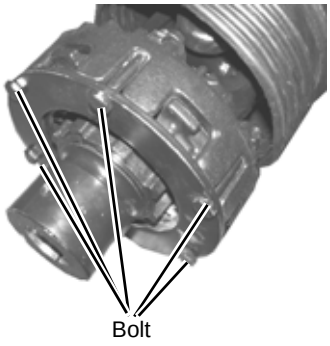
Bolt

> Tighten all bolts on the friction clutch.
> Fit and tighten the PTO shaft fully on the main gear.

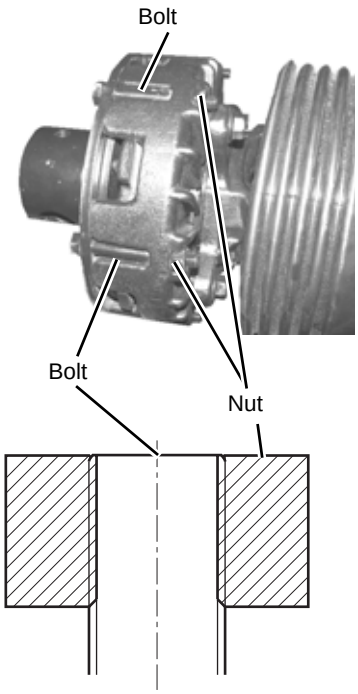
CT machine



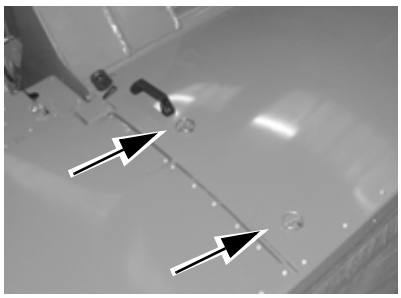
> Open the hatch shown and use a suitable tool to remove the lock on the PTO shaft.
> Pull the PTO shaft back, free of the drawbar.



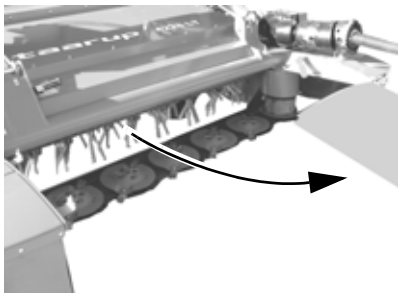
> Loosen the bolts shown.



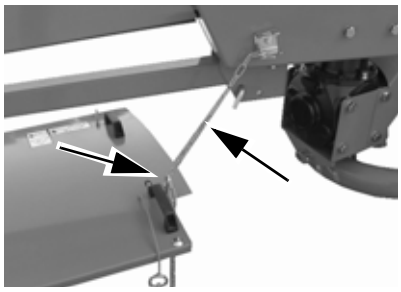
> Loosen the bolts until the end of the bolt is flush with the side of the nut as shown.
> Fit and tighten the PTO shaft fully on the drawbar.



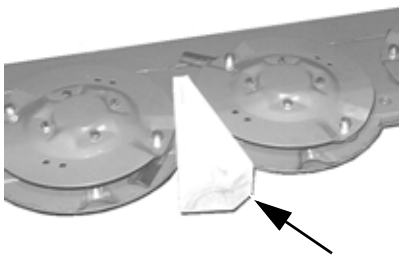
> Remove the linchpins shown here.



> Open the first guard.

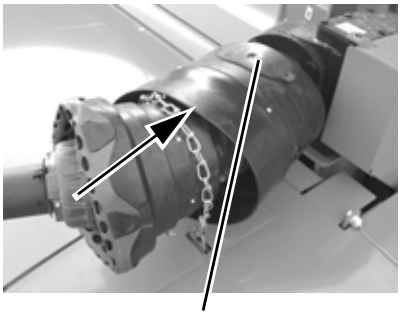


> Suspend the guard in the chain as shown.



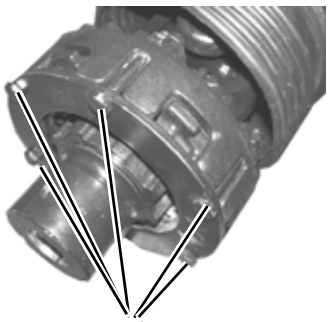
> Block the cutterbar by placing a wooden block between the two cutting discs.
> Start the tractor and connect the tractor's PTO outlet
> Allow the coupling to freely rotate until it is warm.
> Disconnect the PTO outlet and stop the tractor.
> Remove the friction clutch from the shaft.

> Loosen all the bolts on the clutch.

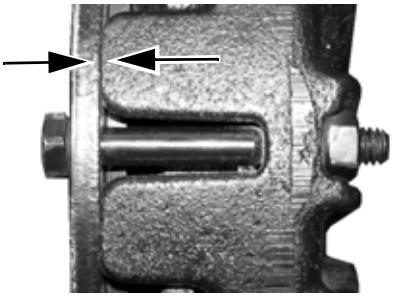


> Fit and tighten the PTO shaft fully on the main gear.
> Close the hatch on the guard.

CT machine



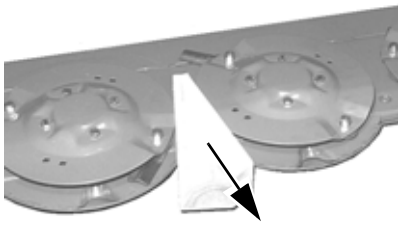
> Tighten the bolts shown on the friction clutch.



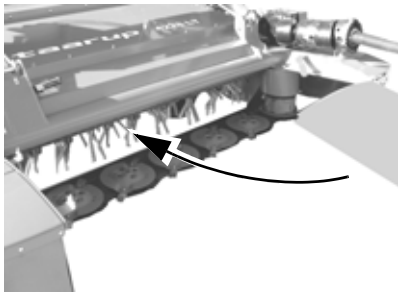
> Tighten the bolts until the friction clutch is fully tightened to contact.

NOTE! The setting for the clutch cannot be adjusted.

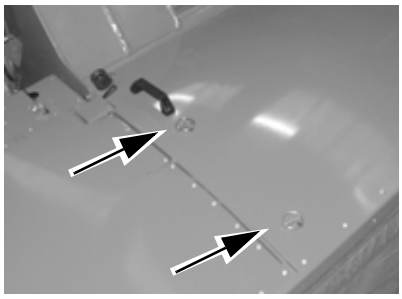
> Fit and tighten the PTO shaft fully on the drawbar.
> Close the hatch on the guard.



> Remove the wooden block from the cutter bar.

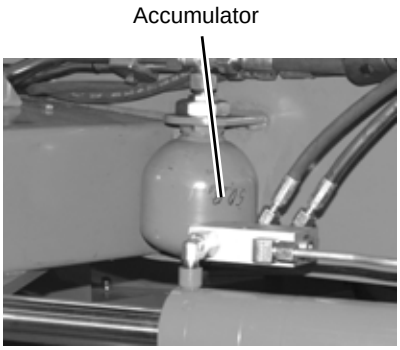


> Close the machine's guard.



> Fit the linchpin.

Accumulator



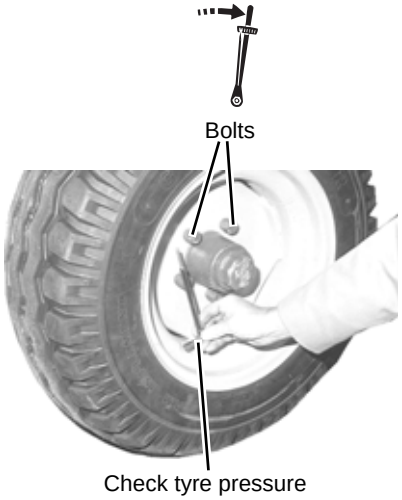
Very high amount of accumulated pressure in the accumulator
Do not attempt to take the accumulator apart.
The accumulator contains very high accumulated pressure and may only be taken apart by authorised persons.
Attempting to take the accumulator apart can lead to serious or fatal injury.

The machine is fitted with an accumulator that can absorb excess shock from the cutting unit when the machine is in its transport position.

NOTE! Pressure in the accumulator: 40 bar

NOTE! The check may only be undertaken be authorised persons.

Wheel



→ »Maintenance intervals« Page 74.

> Use a suitable torque wrench adjusted to the torque shown in the table below.
> Place the wrench on the wheel bolts.
> Check all the bolts on the wheels and tighten them to the torque shown.
> Check the tyre pressure and, if necessary, top up the tyre to the pressure shown in the table below.

Model	Tyre Dimension	Tyre pressure bar	Bolt torque Nm
4228 LT	380/55 -17	3.5	300
4232 LT-CT	380/55 -17	3.5	300
4236 LT-CT	380/55 -17	3.5	300

Replacement

Safety concerning maintenance work on the transmission
When working on the transmission the tractor must be stopped and secured.
This prevents the machine from suddenly starting to rotate.
If the tractor and the PTO shaft have not been connected following the instructions serious accidents causing damage to limbs can occur.

When working on the transmission:

- The tractor engine must be stopped.
- The ignition key must be removed.
- The tractor's PTO must be disconnected.

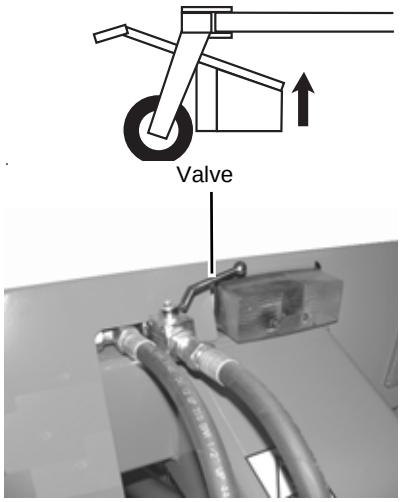
Knives

Check the machine knives on a regular basis
The machine's knives must be regularly inspected.
Worn or damaged knives can unbalance the rotating parts.
Vibrations can cause damage to the machine.

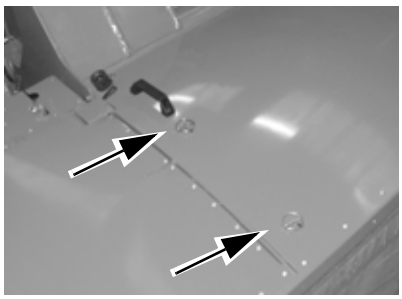
→ »Maintenance intervals« Page 74.

Replace the knives as follows:

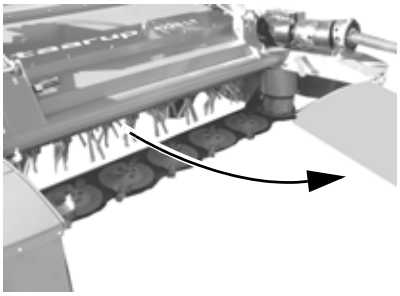
> Activate the tractor hydraulics and raise the machine's cutter bar.



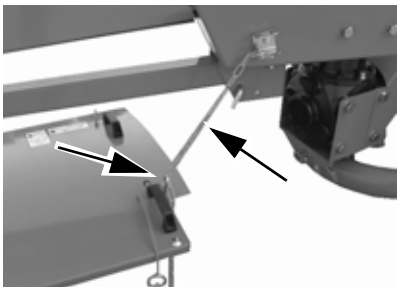
> Close the mechanical safety valve.



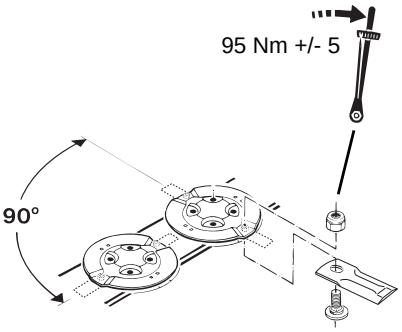
> Remove the linchpins shown here.



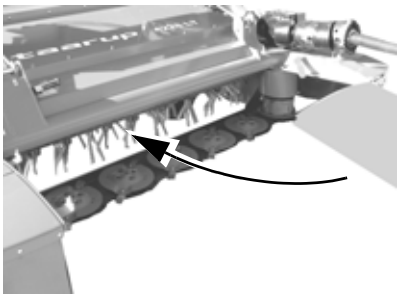
> Open the guard around the machine's cutterbar.



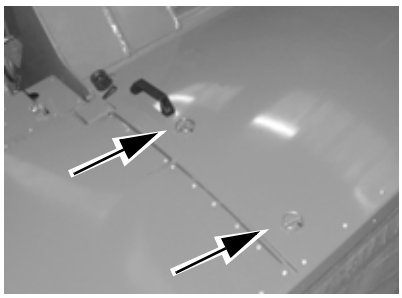
> Suspend the guard in the chain as shown.



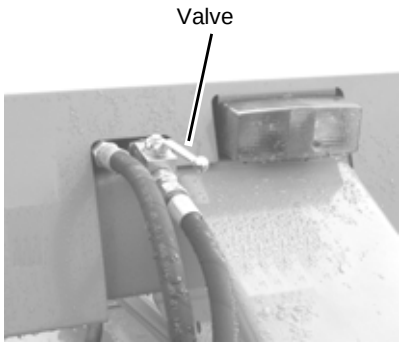
> Turn the cutting discs by hand until the damaged knife is in the position shown.
> Use a suitable tool to remove the bolt.
> Replace the knife and fit the bolt.
> Use a torque wrench to tighten the bolt to the torque shown.



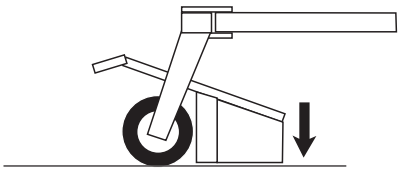
> Close the machine's guard.



> Fit the linchpin.



> Open the mechanical safety valve.



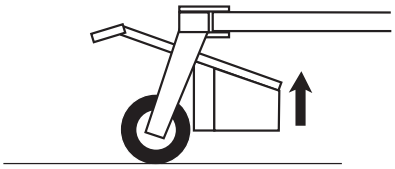
> Activate the tractor hydraulics and lower the cutting unit of the machine.

Cutting disc

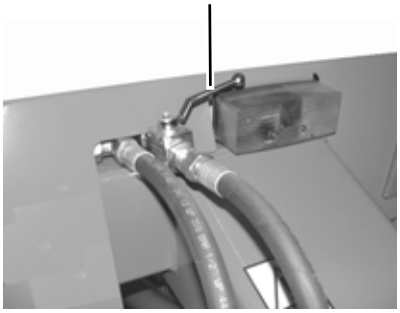
→ »Maintenance intervals« Page 74.

The cutting discs are replaced in the following way:

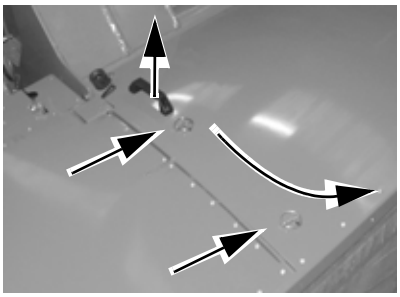
> Activate the tractor hydraulics and raise the machine's cutter bar.



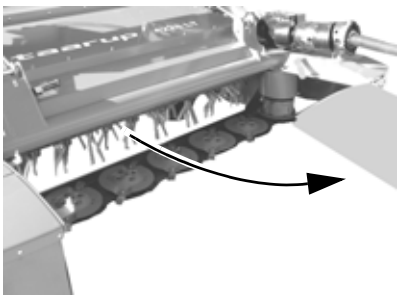
Valve



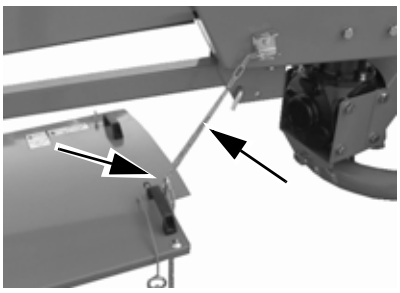
> Close the mechanical safety valve.



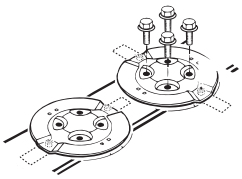
> Remove the linchpins shown here.



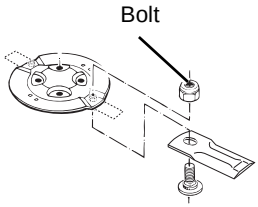
> Open the guards around the machine's cutterbar.



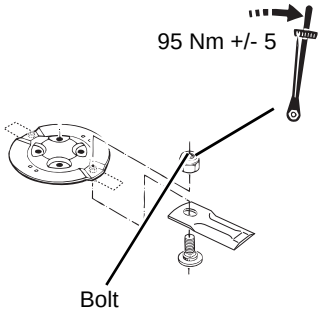
> Suspend the guard in the chain as shown.



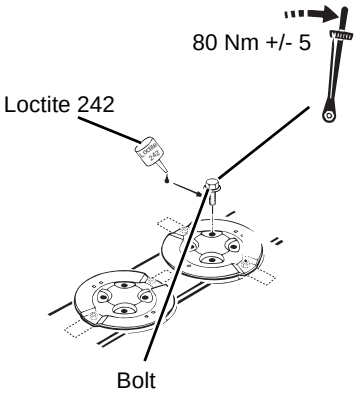
> Use a suitable tool to remove the cutting disc.



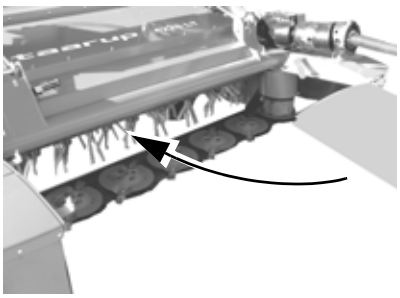
> Remove the bolt and knife from the cutting disc.



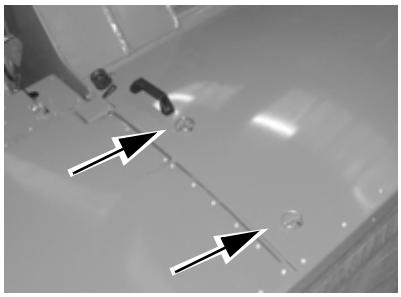
> Fit the knife and bolt on the new cutting disc.
> Use a torque wrench to tighten the bolt to the torque shown.



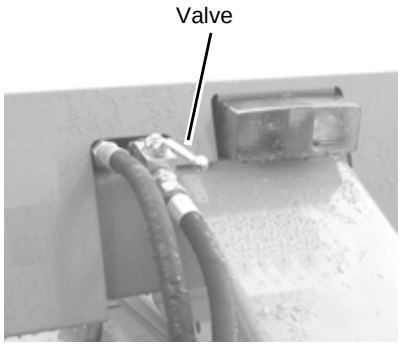
> Apply Loctite 242 or a similar product to all bolts.
> Fit the cutting disc on the cutterbar.
> Use a torque wrench to tighten the bolt to the torque shown.



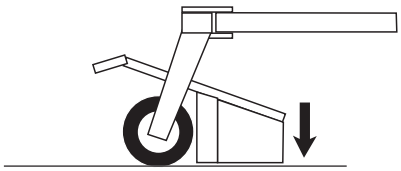
> Close the machine's guard.



> Fit the linchpin.



> Open the mechanical safety valve.



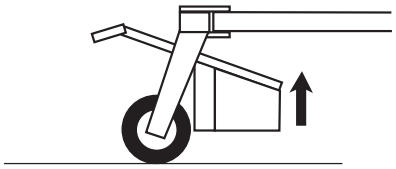
> Activate the tractor hydraulics and lower the cutting unit of the machine.

Universal joint

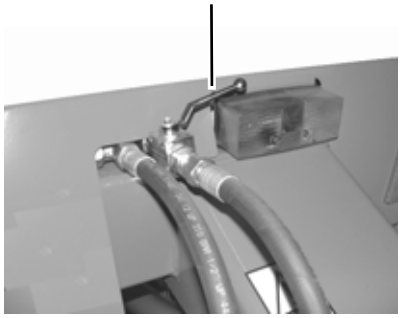
→ »Maintenance intervals« Page 74.

The PTO shaft is changed as follows:

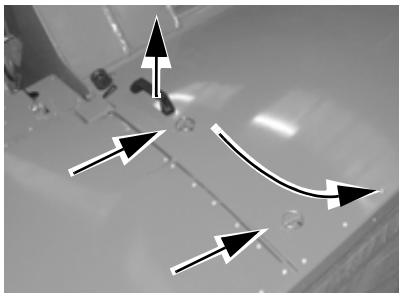
> Activate the tractor hydraulics and raise the machine's cutter bar.



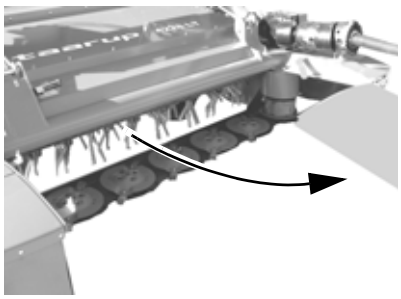
Valve



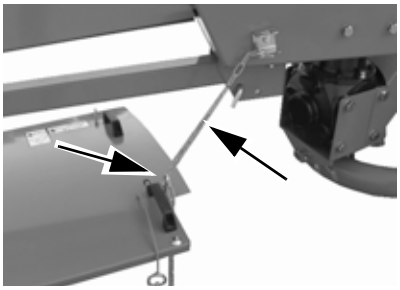
> Close the mechanical safety valve.



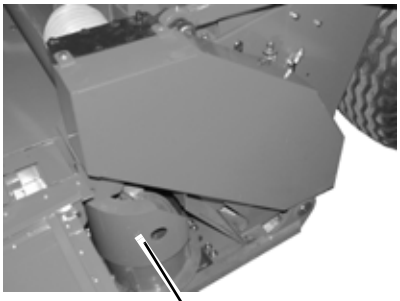
> Remove the linchpins shown here.



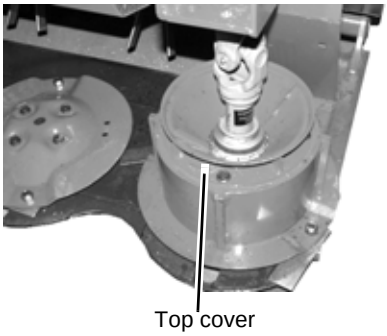
> Open the guards around the machine's cutterbar.



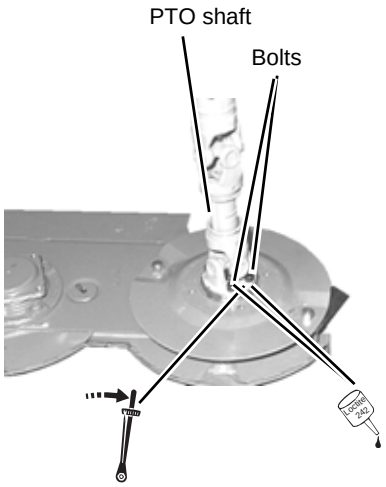
> Suspend the guard in the chain as shown.



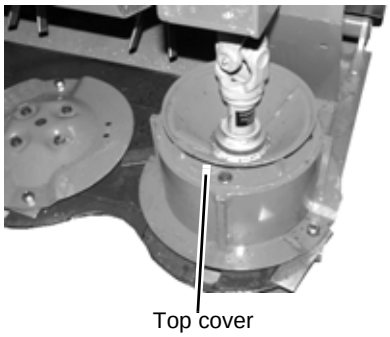
> Use a suitable tool and remove the protection around the PTO shaft between the transmission and the cutterbar.



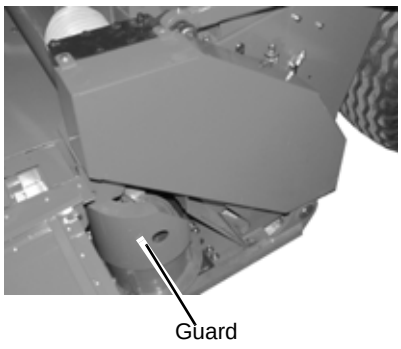
> Remove the cone's top cover.



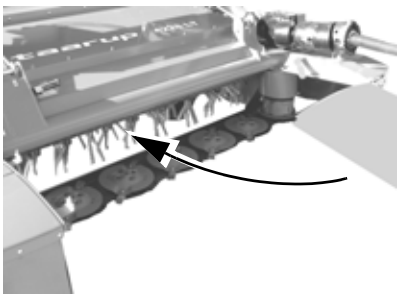
> Remove the bolts and replace the PTO shaft.
> Clean the bolts.
> Apply Loctite 242 or a similar product to all bolts.
> Fit and tighten up the bolts with a torque wrench.
→ »Torque moment« Page 152.



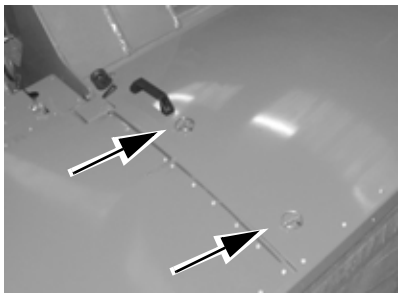
> Fit the cone's top cover.



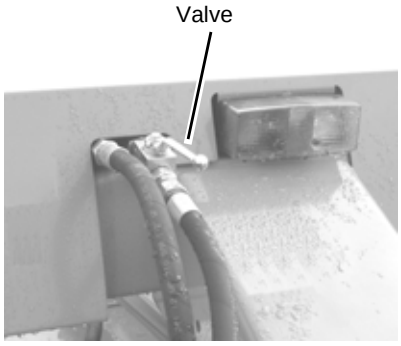
> Fit the guard around the cutterbar's transmission.



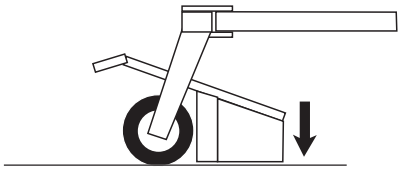
> Close the machine's guard.



> Fit the linchpin.



> Open the mechanical safety valve.



> Activate the tractor hydraulics and lower the cutting unit of the machine.

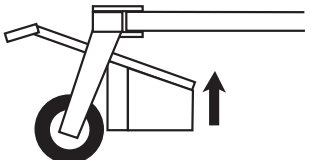
Rotor

Y - fingers

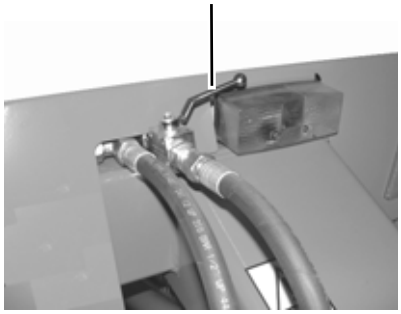
→ »Maintenance intervals« Page 74.

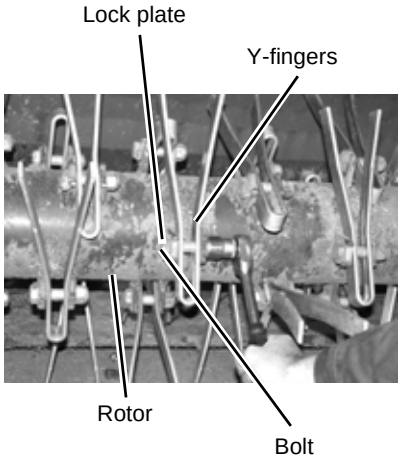
The Y-fingers are replaced in the following way:

> Activate the tractor hydraulics and raise the machine's cutter bar.

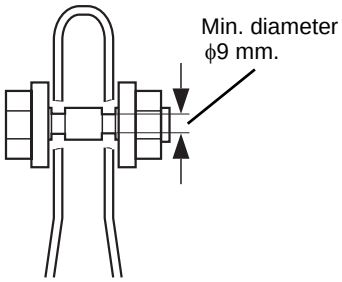


> Close the mechanical safety valve.





> Use a suitable tool and remove the bolt nut.
> Remove the bolt and the lock plate and replace the damaged Y-finger.



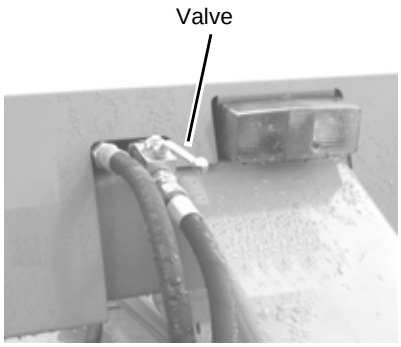
> Inspect the bolt for wear.

NOTE! The minimum diameter of the bolt must not be less than ϕ9 mm.

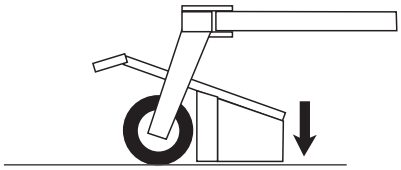
- If the diameter of the bolt is less than ϕ9 mm in the worn areas, it must be replaced.

> Fit the bolt with the lock plate and Y-fingers.
> Tighten the bolt.

NOTE! The Y-fingers should be able to move freely.



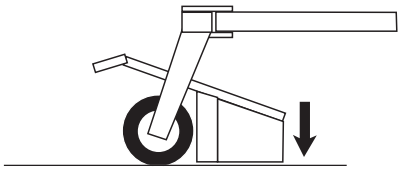
> Open the mechanical safety valve.



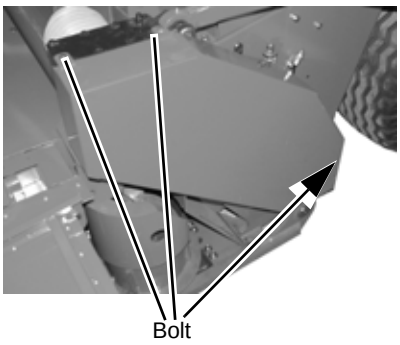
> Activate the tractor hydraulics and lower the cutting unit of the machine.

Transmission

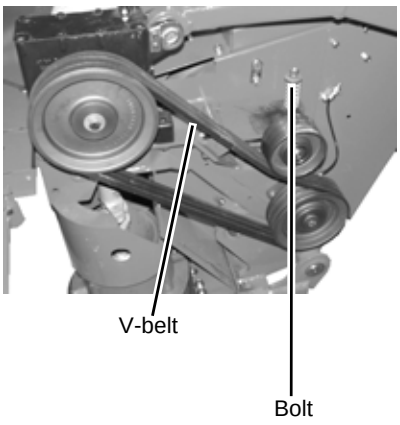
→ »Maintenance intervals« Page 74.
The V-belts are replaced in the following way:



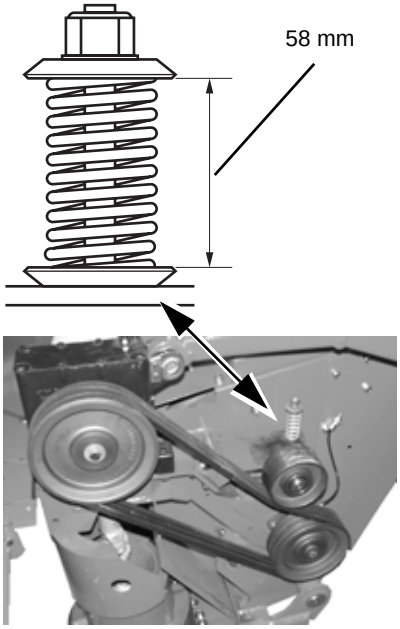
> Activate the tractor hydraulics and lower the cutting unit of the machine.



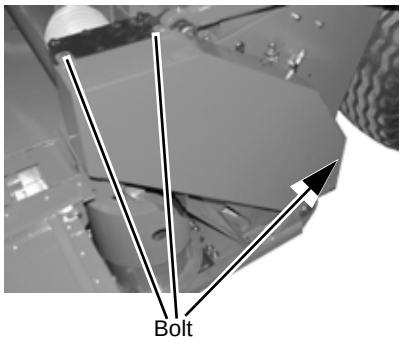
> Remove the guard around the transmission.



> Completely loosen the bolt on the spring.
> Remove the V-belts.
> Fit the new V-belts.



> Tighten the springs until the target shown.

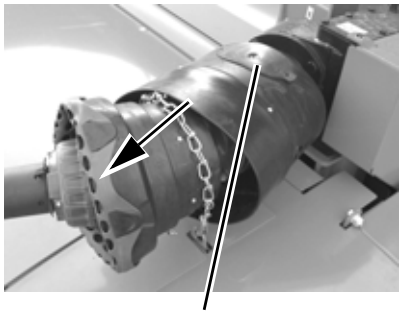


> Fit the guard.

Friction clutch

→ »Maintenance intervals« Page 74.

LT Machine

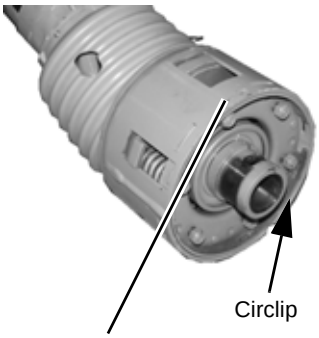


Open the hatch

> Open the hatch shown and use a suitable tool to remove the lock on the PTO shaft.
> Pull the PTO shaft back, free of the main gear.

Bolt

> Tighten all bolts on the friction clutch.

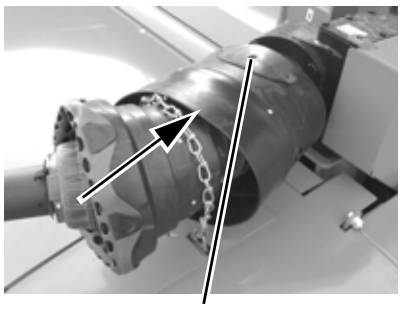


Circlip

Use pointed tool

> Use a screwdriver or similar pointed tool to force the circlip out of the friction clutch.
> Remove the friction clutch and replace the friction discs.
> Assemble and fit the friction clutch.
> Fit the circlip.
> Loosen all the bolts on the friction clutch.

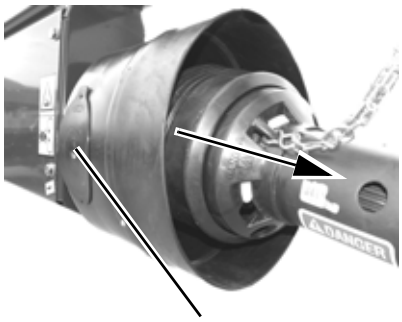
NOTE! The setting for the clutch cannot be adjusted.



Close the hatch

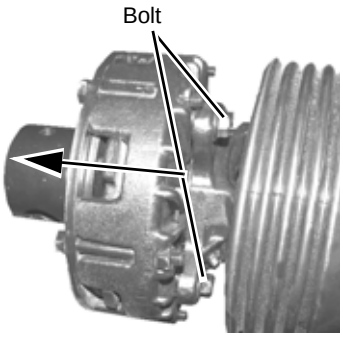
> Push the PTO shaft in over the shaft on the main gear.
> Fit the lock on the friction clutch.
> Close the hatch on the guard.

CT machine

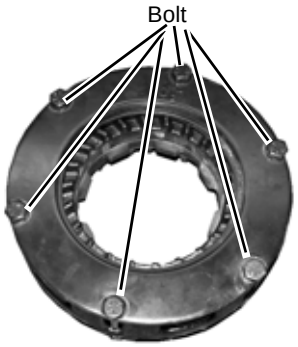


Open the hatch

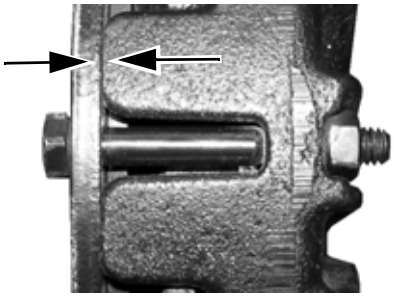
> Open the hatch shown and use a suitable tool to remove the lock on the PTO shaft.
> Pull the PTO shaft back, free of the drawbar.



> Remove the bolts shown and remove the friction clutch from the PTO shaft.

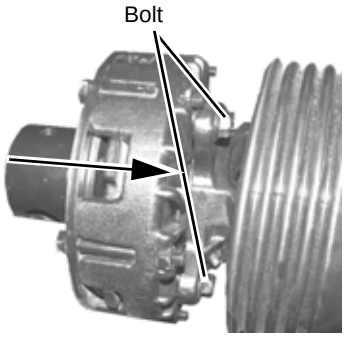


> Remove the bolts shown and separate the friction clutch.
> Change the friction discs and assemble the friction clutch.

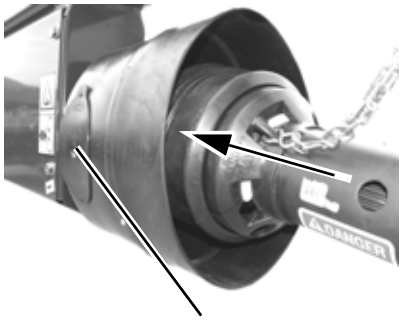


> Fit and tighten the bolts until the friction clutch is fully tightened to contact.

NOTE! The setting for the clutch cannot be adjusted.

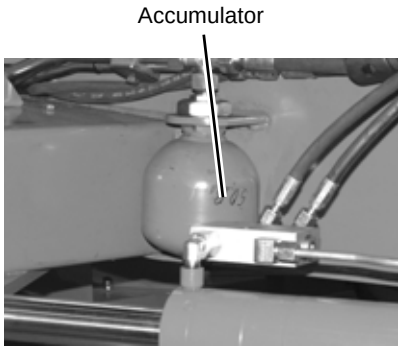


> Fit the friction clutch on the PTO shaft.



> Fit the PTO shaft on the drawbar.
> Fit the lock on the PTO shaft.
> Close the hatch on the guard.

Accumulator



Very high amount of accumulated pressure in the accumulator
Do not attempt to replace the accumulator.
The accumulator contains very high accumulated pressure and may only be taken apart by authorised persons.
Attempting to replace the accumulator can lead to serious or fatal injury.

The machine is fitted with an accumulator that can absorb excess shock from the cutting unit when the machine is in its transport position.

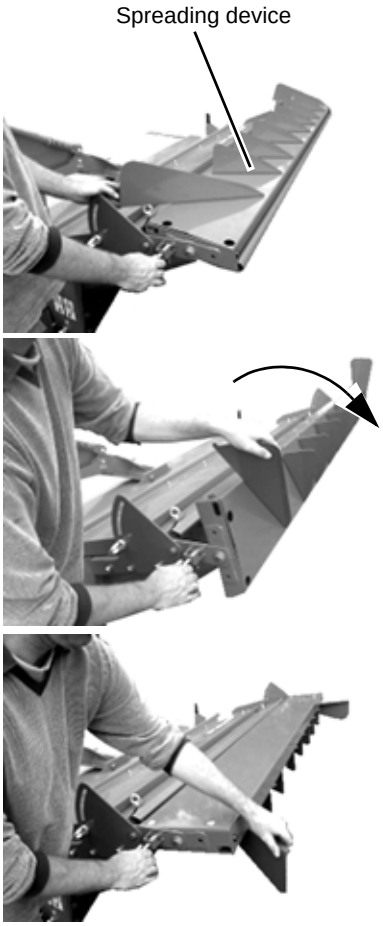
NOTE! Pressure in the accumulator: 40 bar

NOTE! The accumulator may only be replaced by authorised service personal.

Bx equipment

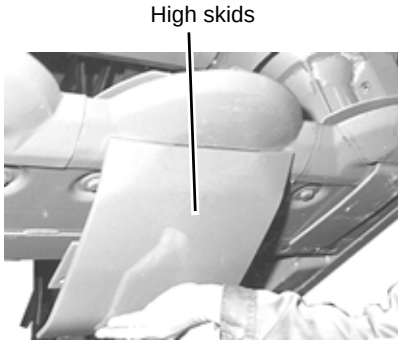
With this equipment, two swaths can be joined into one swath. This saves time and increases the capacity for the subsequent processing of the crop. The flexibility of this equipment also provides the possibility for use switching between mowing with or without gathering the swath, without the changeover time.

Spreading device



The machine can be fitted with a flip-over spreading device that ensures a perfect spreading of the crop.
The spreading device is simple to use and can be swung round when in use.

High skids

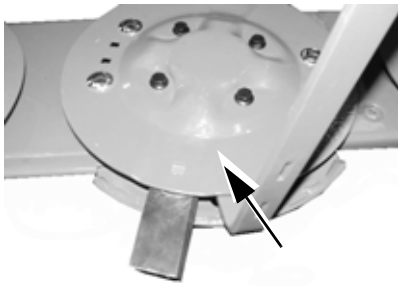


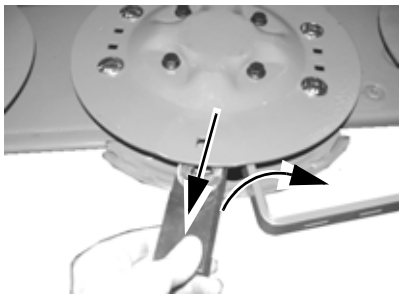
The machine can be fitted with high skids if a higher stubble height is required.
The skids are available in the following heights:

- 40 mm.
- 80 mm.

High skids are recommended for uneven fields with lots of stones or molehills.

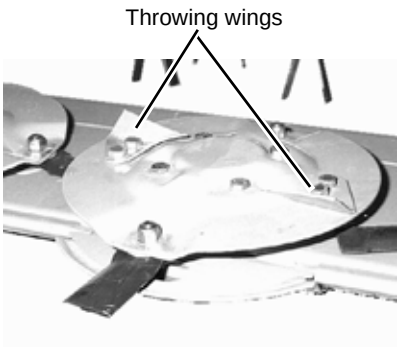
Quick release of knives





The machine can be fitted with knife quick release, so the knives can easily be changed or turned in just a few seconds with the help of a simple tool.

Throwing wings



Fitting throwing wings is recommended to rectify any stripe problems with spring crops, caused by grass blocking the cutting discs.

NOTE! The throwing wings are specifically made for right and left turning cutting discs.

Rotor rpm

450 RPM.

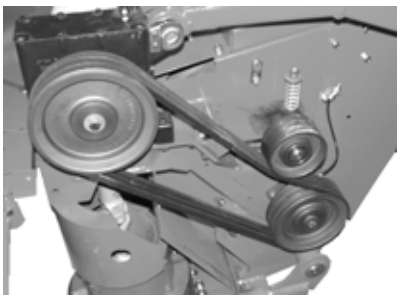
For mowing whole crop

The machine can be fitted with a set consisting of a V-belt pulley and 3 V-belt parts, which reduces the speed of the machine's rotor to 450 rpm. It is recommended that this extra equipment is used for cutting whole crops.

→ »Rotor« Page 53.

1015 RPM.

When cutting difficult crops and/or Bx equipment fitted



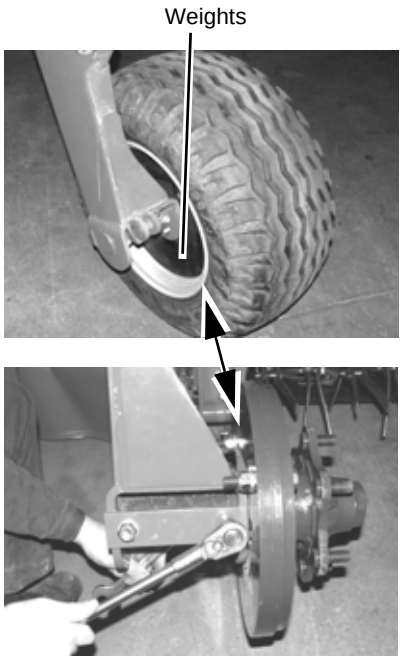
The machine can be fitted with a set consisting of a V-belt pulley and 3 V-belt parts, which change the speed of the machine's rotor to 1015 rpm. It is recommended that this extra equipment is used for cutting difficult crops and/or when Bx equipment is fitted to the machine.

→ »Rotor« Page 53.

Nylon Y-fingers on the rotor

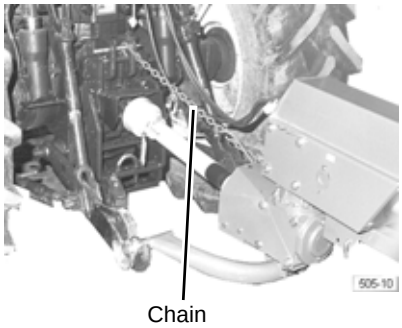
The machine's rotor can be fitted, if required, with Y-fingers made from nylon.

Weights



The machine can be fitted with weights that are mounted on the machine's wheels.
Weights are used on hilly land to stabilise the machine.

Chain for locking the lift arms



A chain is available as extra equipment to prevent the tractor's lift arms from lowering. The chain is fitted between the highest point on the tractor and one of the lift arms.

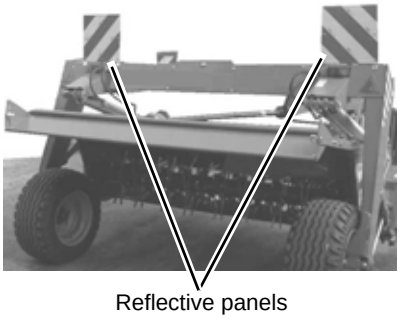
→ »Attachment of the tractor« Page 30.

PTO shaft

8 or 21 splines

The machine can be fitted with PTO shafts with either 8 or 21 splines.

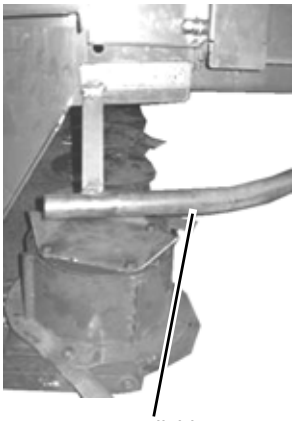
Warning sign



Reflective panels

The machine can be fitted with a reflective warning sign which ensures that the machine is correctly marked for transport on public roads.

Straw divider



Straw divider

The machine can be fitted with a straw divider on the right-hand side of the cutterbar. The straw divider is to be used for mowing long, matted types of grass.

Electric and hydraulic system

Fault	Possible cause	Remedy	Page
Hydraulic system	The machine's hydraulic functions do not work	Check that the hydraulic hoses are correctly connected to the tractor's hydraulic outlet	34
		Make sure that the tractor hydraulics are engaged.	34
	The machine's hydraulic functions seem sluggish	Insufficient amount of oil from the tractor.	

Cutterbar

Fault	Possible cause	Remedy	Page
The machine is sloping to the rear during mowing	There is too much downward pressure on the cutterbar	Adjust the springs	60
Uneven stubble	Driving too slowly	Increase speed	24
	The tractor RPM on the PTO is too low	Check RPM	24
	The knives are blunt or individual knives are missing	Turn or replace the knives	123
	The machine is not correctly balanced	Adjust the springs	60
Stripes in the stubble[1]	The cutterbar does not have the correct angle for the crop in question	Adjust the angle of the cutterbar	55
	The cutterbar is fitted with high skids[3]	Remove the high skids[3]	141
		Note! The field must be free of stones	
	Build up of crop on the cutting discs	Increase speed	
		Mount throwing wings[3] on the cutting discs	142
		Set the rotor to 900 rpm	53
Uneven swathes	The rotor's RPM is too low	Set the rotor to 900 rpm	53
	Incorrect setting of the deflector plate	Adjust the deflector plates	55
The cutting unit receives violent shocks during road transport	The machine's accumulator has too little pressure or is defective	Check or replace the accumulator[2]	122 139
	The safety valve is closed	The safety valve must be open	41

Fault	Possible cause	Remedy	Page
Conditioning too weak	Too much distance between the conditioner plate and the rotor	Adjust the conditioner plate	52
	The rotor's RPM is too low	Set the rotor to 900 rpm	53
	The rotor V-belts are not tightened sufficiently	Check the V-belts	115
	The rotor V-belts are worn	Replace the V-belts	134
Blockage of the flow of crop through the machine	The rotor V-belts are not tightened sufficiently	Check the V-belts	115
	The rotor V-belts are worn	Replace the V-belts	134
	The conditioner plate is too close to the rotor	Change the setting of the conditioner plate	49
The crop spills out between the machine and the Bx equipment[3]	The rotor's RPM is too low	Set the rotor to 900 rpm	53
		Set the rotor to 1015 rpm[3]	53,142
The cutterbar gets abnormally warm	Too much oil in the cutterbar	Inspect the oil level in the cutterbar	82
	Wrong oil type	Change to the correct oil type	152
The crop glides underneath the rotor	The throwing wings[3] are not mounted on the cutting discs	Fit the throwing wings[3]	142
	The throwing wings[3] are worn	Replace the throwing wings[3]	142
An uneven border is left between mown and unmown crops, especially with long strawed crops.	The crop is very matted	Fit straw divider[3]	144

PTO shaft

Fault	Possible cause	Remedy	Page
The friction clutch on the PTO shaft becomes abnormally warm	The RPM on the PTO shaft is too low	Check RPM	24
	The friction discs in the coupling are worn	Check the friction discs in the coupling	117
		Replace the friction discs in the coupling	136
Insufficient transferral of power/torque to the machine	The friction discs in the coupling are worn	Check the friction discs in the coupling	117
		Replace the friction discs in the coupling	136

- [1] Problems with stripes are more likely to occur when mowing short, strong, spring crops in less than ideal weather conditions. Always begin by checking that the knives on the cutting discs are sharp.
- [2] May only be carried out by authorised service personnel.
- [3] Extra equipment - Page 140.

Guidelines for warranty

The warranty period for our product is 12 months from the date of purchase. The warranty does not include the parts subject to wear.

Warranty claims can be made with Kverneland warranty application which must be filled out by your local Kverneland dealer where your machine/equipment was purchased.

No liability is accepted for any damage arising

We are not liable for compensation for any damage not arising from the actual machine/equipment. This also includes damage arising from incorrect usage of the machine/equipment.

Therefore, read this instruction manual before starting to use the machine/equipment into use. Furthermore, always check that the machine/equipment works correctly before and during use.

When the machine is reached the end of its service life, it must be disposed of in the correct way. Observe the following:

Metal parts

Send usable parts to an authorised recycling station. Larger scrap parts must be taken to an authorised breaker's yard where they can be processed in accordance with current regulations.

Rubber parts

Send the usable parts to an authorised recycling plant where they can be processed in accordance with current regulations.

Plastic

Send the usable parts to an authorised recycling plant where they can be processed in accordance with current regulations.

Hydraulic oil

All oil must be drained from the machine
The oil that has been drained from the machine must be sent to a breaker's yard where it can be processed in accordance with current regulations.

Electronic parts

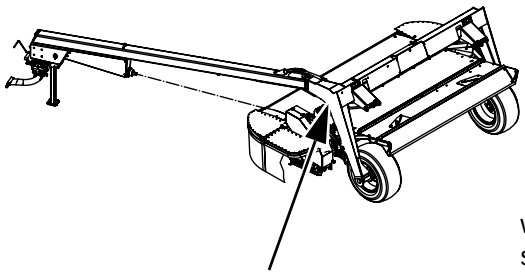
Send the usable parts to an authorised recycling plant where they can be processed in accordance with current regulations.

EU Directive 98/37/EG

We:

Kverneland Group Kerteminde AS
Taarupstrandvej 25
DK-5300 Kerteminde - Denmark

hereby declare under our sole responsibility that the following product:



CE plate and type plate

4228 LT - 4232 LT - 4232 CT - 4236 LT- 4236 CT and ancillary equipment

which is the subject of this declaration, complies with the essential safety requirements of EU Directive 98/37/EEC.

To fulfil the appropriate safety requirements under the terms of the EU Directive, the following standards have been applied:

- EN 292-1;2 (11/1991);
- EN 294 (06/1992)

Kverneland Group Kerteminde AS
Kerteminde - Denmark 01.02.2008

Claus Udengaard Thomsen
Managing director

Conversion table

Basic unit:	SI - unit	Conversion figures:
Length	1 m	39.4 in = 3.3 ft = 1.1 yrd = 0.00062 miles (US)
Area	1 m^2	1.2 yd^2 = 10.8 ft^2 = 0.00025 acre = 0.0001 ha
Volume	1 dm^3 (1 l)	61 in^3 = 0.035 ft^3 = 0.22 gallons (Imp) = 0.26 gallons (US)
Speed	1 m/sec	3.6 km/h = 2.24 mph = 3.28 ft/sec
Power	1 N	0.10 kp = 0.22 lbf
Effect	1 kW	1.36 hp = 102 kpm/sec
Mass	1 kg	2.2 lb = 0.0197 cwt = 35 oz
Torque moment	1 Nm	0.102 kpm = 8.8 lb-in = 0.74 ft. lbs.
Pressure	1 bar	0.01 atm. (kp/cm^2) = 0.14 psi
R.P.M.	min^{-1} = revolutions / min = rpm	

Lubricants

Supplier	Transmission oil for cutterbar/ transmission 3000 revolutions per minute.	Transmission oil for bevel gear etc. (540 - 1000 rpm)	Grease nipples
BP	Energear SHX-M 75W-90	Energear Hypo 80W-90	Energrease L 21 M
CASTROL	EP 80W	EPX 80W/90	Castrol Molymax
STATOIL	Gearway G4 80W-90	Gearway G4 80W-90	CreaseWay CaH 81
Q8	T35 80W	T 55 80 W/90	Rembrandt Moly S 2
MOBIL OIL	Mobilube HD GX-A 80W W	Mobilube 80W-90	Mobilgrease EAL 1
SHELL	Spirax GX 80 W	Spirax MB 90	Retinax HD 2 Retinax HD X2
TEXACO	Geartex EP-A 80W	Geartex EP-A 80W-90	Multifak t EP 2 Molytex EP 2
OK	Gearoil GL 5 80 W	OK Gearoil GL 5 80 W-90	Compound 2

Torque moment

Torque moment for bolts of quality 8.8 black and/or galvanized and ungreased when tightened on a smooth surface or a plain washer.									
Thread dia. mm	5	6	8	10	12	14	16	20	22
Nm	5	10	26	52	90	144	225	436	594

The above tables are valid unless otherwise indicated in the instruction manual for this machine.

W