



WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Operator's manual

Original operator's manual

Edition	10.2020
Date of print	12.2020
Language	EN
Machine number	VF69156014 –
Model	VF6915
Document number	A159166040

Machine identification

In order for your dealer to assist you as efficiently as possible, you will need to provide some information about your machine. Please enter the details here.

Designation	TE4052T
Working width	5.20 m (17.1 ft)''
Weight	496 kg (1094 lbs)
Machine number	VF6915_ _ _ _
Accessories	
Address of supplier	
Address of manufacturer	Kverneland Group Kerteminde AS Taarupstrandvej 25 DK-5300 Kerteminde Denmark Tel.: +45 65 19 19 00

Table of contents

Preface	4	Cleaning and care	56
Target group for this operator's manual	4	Safety	56
Symbols used	5	General	57
Safety	7	Cleaning	57
For your safety	8	Care	57
Who is allowed to operate the machine?	16	Parking and storage	58
General		Safety	58
safety information	16	General	59
Coupling	19	Uncoupling the machine	60
Hydraulics	20	After the end of the season	60
Road transport	21	Maintenance	61
Operation	22	Safety	61
Uncoupling	23	General	62
Care and maintenance	24	Screwed connections	65
Further regulations	25	Lubrication points for grease lubrication	67
Getting to know the machine	27	Lubrication points for oil lubrication	68
Range of application	27	Filling quantities	69
Features	27	Lubricating the PTO shafts	70
Designation of components	28	Tyres	71
Technical specifications	29	Hydraulics	72
Delivery and assembly	33	Accessories	73
Checking the scope of delivery	33	Accessories	73
Length of PTO shaft	34	Fault elimination	74
Coupling the machine	36	Troubleshooting	74
Safety	36	Circuit diagrams	75
General	36	Hydraulic diagram	75
Coupling the machine	37	Decommissioning	76
Connecting the hydraulics	41	Environment	76
Preparing for use	43	Index	77
Safety	43		
General	44		
Folding the machine into the work position	44		
Road transport	46		
Safety	46		
General	47		
Prior to road transport	47		
Folding the machine into the transport position	48		
48			
Road transport	49		
Preparations on the field	50		
Safety	50		
General	50		
Folding the machine into the work position	51		
Operation	52		
Safety	52		
Crop processing	53		
Use	54		

Target group for this operator's manual



WARNING

Simplified illustrations for better understanding

Illustrations of the machine in the operator's manual are shown without protective equipment – or with the protective equipment open – for better understanding. Be sure to observe the safety information and follow the handling instructions in the operator's manual. Otherwise, serious or fatal injury may be caused as a result.

This operator's manual is aimed at trained agriculturists and persons who are otherwise qualified for agricultural activities and have received instruction in working with this machine.

For your safety

You must familiarise yourself with the contents of this operator's manual before assembly or initial operation of the machine. In this way, you will achieve optimum work results and operational safety. The operator's manual forms an integral part of the machine and must always be kept to hand. This will ensure that you:

- avoid accidents.
- comply with warranty conditions.
- have a fully functional machine in good working order at all times.

Your dealer will provide instruction on operation and care of the machine.

Information for the employer

All personnel are to be regularly, but at least once a year, instructed on the use of the machine, in accordance with the regulations of the national organisation for Health and Safety at Work. Untrained or unauthorised persons are not permitted to use the machine.

You are responsible for ensuring that the machine is operated and maintained safely. Make sure that you and all other persons that operate, maintain or work in close proximity with the machine are familiar with the operating and maintenance regulations, as well as the corresponding safety instructions in this operator's manual.

Training and instruction

Symbols used

In this operator's manual, the following symbols and terms have been used:

- A bullet point accompanies each item in a list.
- ▶ A triangle indicates operating functions which must be performed.

→ An arrow indicates a cross-reference to other sections of this manual.

[+] A plus sign indicates additional equipment which is not included in the standard version.

We have also used pictograms to help you find instructions more quickly:



The "Information" pictogram indicates tips and additional information.



The "Examples" pictogram indicates examples that assist understanding of the instructions.



The spanner indicates tips for assembly or adjustment work.



This arrow in the diagram shows the direction of travel.



The brush indicates the points that must be lubricated using the brush.



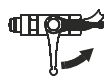
The grease gun indicates the points that must be lubricated using the grease gun.



- ▶ Switch on the tractor engine.



- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.



Open the ball valve.



Close the ball valve.

Preface



California Proposition 65

WARNING

Engine exhaust, some of its constituents, certain machine components and fluids, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this operator's manual and on warning signs on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the operator's manual and safety instructions before you attempt to assemble or use this machine.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



For your safety

Familiarise yourself with your equipment and its limitations. Read the entire manual before attempting to put the machine into operation and to use it.

This chapter contains general safety instructions. Each chapter of the operating manual contains additional specific safety information which is not described here. Observe the safety information:

- in the interest of your own safety.
- in the interest of the safety of others.
- to ensure the safety of the machine.

Numerous risks can result from handling agricultural machinery in the wrong way. Therefore, always work with particular care and never under time pressure.

Information for the employer

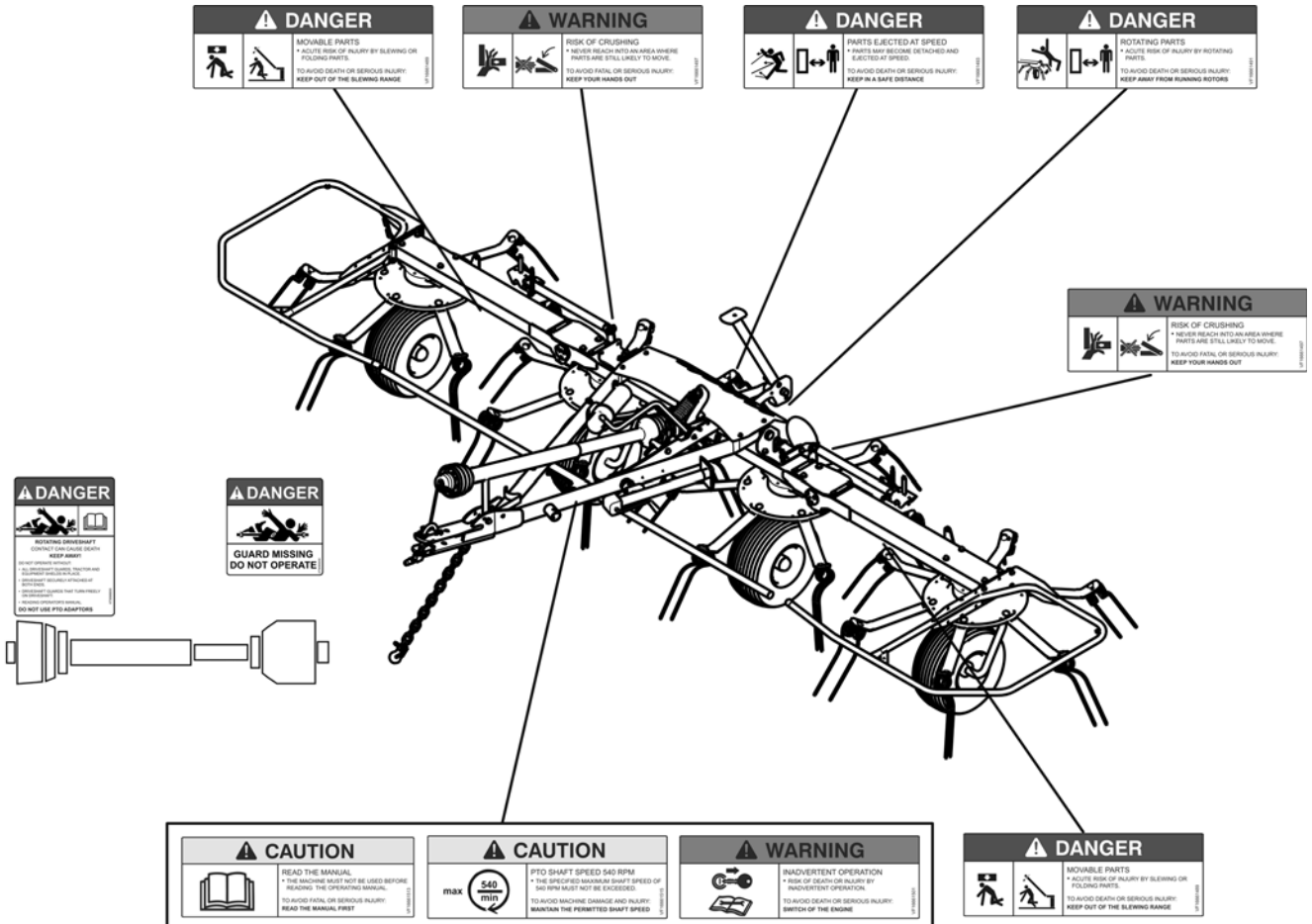
- ▶ Persons who work with the machine must be regularly informed of the safety information in this operator's manual.
- ▶ Untrained or unauthorised persons are not permitted to use, maintain, repair or service the machine.



DANGER, WARNING and CAUTION labels

Safety-related labels attached to the machine indicate potential hazards. The labels must not be removed. Illegible or missing labels should be replaced. You can obtain new labels as replacement parts from your dealer.

DANGER, WARNING and CAUTION labels on the machine





Meaning of warning signs

! DANGER		
		<p>MOVABLE PARTS</p> <ul style="list-style-type: none"> • ACUTE RISK OF INJURY BY SLEWING OR FOLDING PARTS. <p>TO AVOID DEATH OR SERIOUS INJURY: KEEP OUT OF THE SLEWING RANGE</p>
		VF16661489

! DANGER		
		<p>ROTATING PARTS</p> <ul style="list-style-type: none"> • ACUTE RISK OF INJURY BY ROTATING PARTS. <p>TO AVOID DEATH OR SERIOUS INJURY: KEEP AWAY FROM RUNNING ROTORS</p>
		VF16661491

! DANGER		
		<p>PARTS EJECTED AT SPEED</p> <ul style="list-style-type: none"> • PARTS MAY BECOME DETACHED AND EJECTED AT SPEED. <p>TO AVOID DEATH OR SERIOUS INJURY: KEEP IN A SAFE DISTANCE</p>
		VF16661493



 WARNING		
		<p>RISK OF CRUSHING</p> <ul style="list-style-type: none">• NEVER REACH INTO AN AREA WHERE PARTS ARE STILL LIKELY TO MOVE. <p>TO AVOID FATAL OR SERIOUS INJURY: KEEP YOUR HANDS OUT</p>

VF16661497

 WARNING	
 	<p>INADVERTENT OPERATION</p> <ul style="list-style-type: none">• RISK OF DEATH OR INJURY BY INADVERTENT OPERATION. <p>TO AVOID DEATH OR SERIOUS INJURY: SWITCH OFF THE ENGINE</p>

VF16661501



CAUTION	
	<p>READ THE MANUAL</p> <ul style="list-style-type: none"> THE MACHINE MUST NOT BE USED BEFORE READING THE OPERATING MANUAL. <p>TO AVOID FATAL OR SERIOUS INJURY: READ THE MANUAL FIRST</p>
VF16661513	

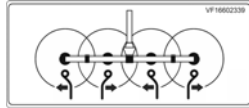
CAUTION	
<p>max</p>	<p>PTO SHAFT SPEED 540 RPM</p> <ul style="list-style-type: none"> THE SPECIFIED MAXIMUM SHAFT SPEED OF 540 RPM MUST NOT BE EXCEEDED. <p>TO AVOID MACHINE DAMAGE AND INJURY: MAINTAIN THE PERMITTED SHAFT SPEED</p>
VF16661515	

DANGER
<p style="text-align: center;">ROTATING DRIVELINE CONTACT CAN CAUSE DEATH KEEP AWAY!</p> <p>DO NOT OPERATE WITHOUT-</p> <ul style="list-style-type: none"> ALL DRIVELINE, TRACTOR AND EQUIPMENT SHIELDS IN PLACE. DRIVELINES SECURELY ATTACHED AT BOTH ENDS. DRIVELINE SHIELDS THAT TURN FREELY ON DRIVELINE.
KT50908000

Outer tube.

DANGER
<p style="text-align: center;">SHIELD MISSING DO NOT OPERATE</p>
KT50908000

Inner tube.



Observe the direction of rotation of the rotors

Observe the direction of rotation of the rotors and the tine position. If the direction of rotation of the rotors is incorrect and/or the tine position is incorrect, the machine does not work correctly.



Check tyre pressures

Check tyre pressures on a regular basis. Incorrect tyre pressures reduce the service life of a tyre and cause unstable driving characteristics. This can result in traffic accidents and accidents causing serious or fatal injuries.



Lubrication points

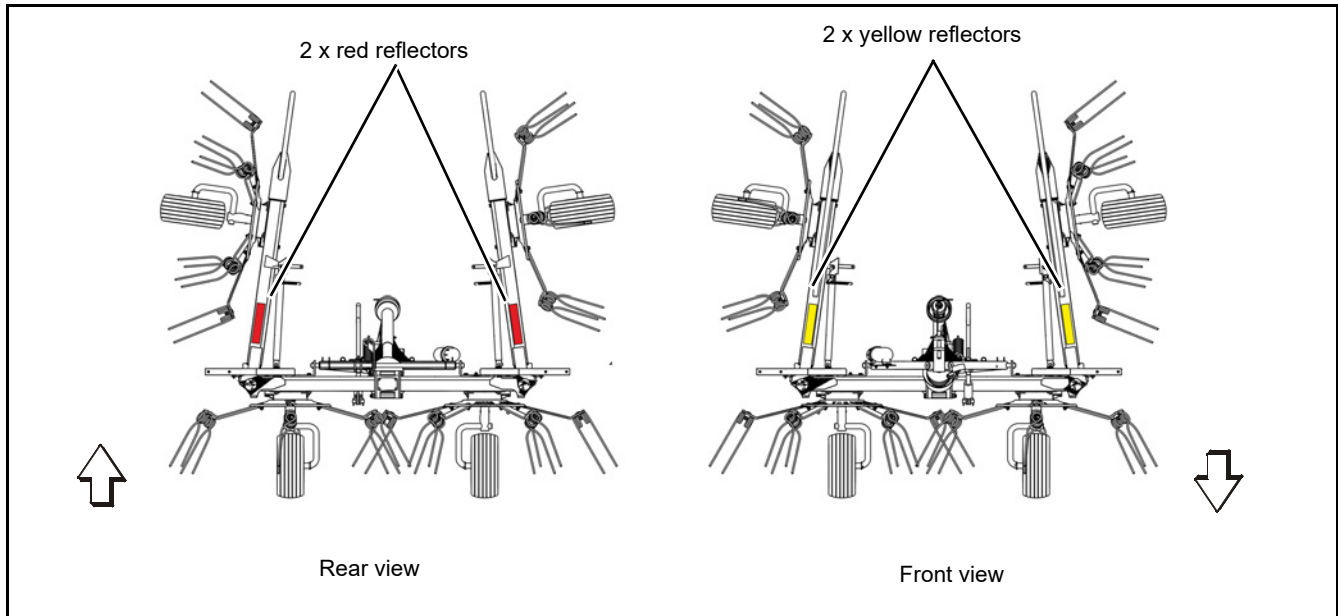
Lubrication points are marked with an information label. Lubricate the machine in accordance with the instructions in the "Maintenance" chapter.



Signalling equipment

On the machine there are signalling equipment, signs and stickers that serve to ensure safety in road traffic. The signalling equipment must be in good working order at all times. The signs and stickers must not be removed. Illegible or missing labels should be replaced. You can obtain new labels as replacement parts from your dealer.

Signalling equipment





Signs

Additional markings are required for road transport in some U.S. states and some Canadian provinces:



Marking for slow-moving vehicle – SMV

This SMV sign must be used on all slow-moving machines when operated or travelling on public roads.

- Slow-moving machines that are marked with a sign with a maximum permissible speed of up to 40 km/h (25 mph) must use the SMV sign.
- Slow-moving machines that are marked with a sign with a maximum permissible speed of more than 40 km/h (25 mph) but less than 65 km/h (40 mph):
 - must use the SMV sign and
 - must use the sign showing the maximum permissible speed.



Marking for maximum permissible speed (Speed identification symbol – SIS)

- The speed identification symbol (SIS) is required on all implements that exceed a speed of 40 km/h (25 mph). It indicates the maximum speed at which the vehicle may travel on public roads in the USA and Canada.
- The 40 km/h (25 mph) symbol is used next to the Slow-Moving Vehicle (SMV) symbol to indicate the implement's maximum possible speed.



Who is allowed to operate the machine?

Only qualified persons may operate the machine

Only qualified persons who have been informed of the dangers associated with handling the machine are permitted to operate, service or repair the machine. The necessary knowledge can be gained in the course of agricultural vocational training, professional training or intensive instruction.

General safety information

WARNING

The general safety information and warning signs apply to every phase of the life cycle of the machine and to every application.



Switch off the tractor and secure it

Before you dismount:

- ▶ Switch off the PTO shaft drive.
- ▶ Lower all implements.
- ▶ Switch all operating controls to the neutral or park position.
- ▶ Put the tractor's parking brake into the park position.
- ▶ Switch off the tractor.
- ▶ Remove the ignition key.
- ▶ Secure the tractor against rolling away.

An unsecured tractor can run you over or trap you. Otherwise, serious or fatal injury may be caused as a result.

Operate for the first time only after proper training

The machine may only be put into operation if thorough training has been carried out by an authorised dealer or by an employee of the manufacturer. Operation without proper training can lead to damage to the machine due to incorrect operation, or may cause accidents.

Safety is your responsibility

Follow the safety instructions. Ensure that all operators comply with the safety instructions. Prevent serious or fatal accidents by following the safety instructions.

Instructions in the event of malfunctions

In the event of a malfunction

- ▶ shut down,
- ▶ stop and secure the machine immediately.
- ▶ Immediately rectify the faults, if you are qualified to do so,
- ▶ or seek the assistance of an authorized dealer.

Operating a faulty machine can cause accidents or damage.



No persons in the working area

Ensure that no persons – children in particular – are present in the slewing and working area of the machine. Persons could be caught by the machine within this area. Accidents with serious or fatal injuries may be caused as a result.

Safety for children

Never assume that children will remain where you last saw them. Be alert and shut down the machine if children are in the working area of the machine. Prohibit children from playing on or around the machine and from operating the machine.

Perfect working condition

Ensure that the tractor and the machine are always in perfect working condition. Make sure that the tractor brakes work in conjunction with the machine. Also follow the instructions in your tractor's operator's manual.



Switch off the PTO shaft drive when raising the machine

Switch off the tractor's PTO shaft drive if people could enter the working area of the machine when you

- raise the machine,
- raise the rotors to the headland position.

Rotating, unprotected parts can damage the machine and cause life-threatening injuries.



Switch off the tractor PTO shaft drive

Switch off the PTO shaft drive on the tractor when changing from work to transport position (and vice versa). Wait for moving parts to come to a stop. If this requirement is ignored, the consequence may be damage to the machine and even life-threatening injuries.



No reversing while the drive is running

Never drive in reverse with the PTO shaft drive switched on and in the work position if people could enter the working area of the machine. Switch off the PTO shaft drive. Rotating, unprotected parts can damage the machine and cause life-threatening injuries.

Specified workwear

Do not wear baggy, loose-fitting or other unsuitable clothing. Loose fitting items of clothing may become caught in rotating parts. Wear workwear and protective clothing which is suitable for the working environment and the operating conditions. Wear workwear and protective clothing, as specified by the Accident Prevention and Insurance Association. Serious or fatal injury may be caused if these guidelines are not followed.

**No riding on the machine**

Persons or objects must never be transported on the machine. Carrying passengers, especially children, on the machine is life-threatening and prohibited. Serious or fatal injury may be caused if these guidelines are not followed.

Never work on the machine while it is running

No operations may be performed on the machine while it is running. Objects or persons can be caught, drawn in or crushed. Serious or fatal injury may be caused if these guidelines are not followed.

Safe distance from raised and unsecured loads

Never work under suspended loads. Maintain a sufficient distance from raised and unsecured loads. Serious or fatal injury may be caused as a result.

Only use the PTO shaft specified

Use only the PTO shafts specified by the manufacturer and read the attached operator's manual carefully. Adjust the length of the PTO shaft as required. Incorrect PTO shaft lengths can cause damage to the machine and personal injury.

Check and fasten the PTO shaft guard in position

The rotating PTO shaft is protected by the PTO shaft guard. Ensure that the guard is not damaged. Fasten the PTO shaft guard in position by connecting the chains on the implement and the tractor. Unguarded PTO shafts can cause life-threatening injuries.

Make sure the machine is standing level

Before changing from the transport to the work position (and vice versa), make sure the machine is standing level. The machine could tip over, particularly on hillside locations. Damage to the machine and serious or fatal injury may be caused as a result.

Do not make any modifications to the machine

No modifications of any kind may be made to the machine. Unauthorised modifications can adversely affect the correct operation and safety of the machine and shorten its service life. Unauthorised modifications to the machine render the manufacturer's guarantee null and void and free the manufacturer from all liability.



Do not use PTO shafts with disconnect couplings

Only use PTO shafts which have been specified by the manufacturer. PTO shafts with disconnect couplings may allow higher disconnect torques. Higher disconnect torques may cause damage to the machine.

Unrestricted field of vision to the rear

After it has been coupled, ensure that you have an unrestricted view of the machine, in both its work and transport positions. Otherwise, dangerous situations may not be detected on time, resulting in accidents or damage.

Coupling



Increased risk of injury

When the machine is being coupled to the tractor, there is an increased risk of injury. Therefore:

- Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- Never stand between the tractor and machine.
- Lock the PTO shaft securely on the PTO stub shafts of the tractor and the machine.

If this requirement is ignored, the consequence may be damage to the machine and even life-threatening injuries.

Do not connect power supply until equipment is fitted

The electrical supply to the tractor must not be connected when the lighting equipment is being fitted. Otherwise, short circuits may occur and the electronic system may be damaged.

Observe the operator's manual of the PTO shaft manufacturer

Observe the operator's manual of the PTO shaft manufacturer. It will provide you with instructions on how to handle the PTO shaft correctly. If these instructions are ignored, damage may be caused to the PTO shaft and machine.



Hydraulics

Only connect hydraulics at zero pressure

Only connect hydraulic hoses to the tractor hydraulic system if the tractor and machine hydraulic system is at zero pressure. A pressurised hydraulic system can trigger unpredictable movements of the machine and can cause serious machine damage and personal injury. Serious or fatal injury may be caused if these guidelines are not followed.

High pressures in the hydraulic system

The hydraulic system is under high pressure. Regularly check all lines, hoses, and screwed connections for leaks and externally visible damage. Only use suitable tools when looking for leaks. Rectify any damage immediately. Oil escaping under pressure may result in injuries and fires. Seek medical attention immediately if injuries occur.

Uniquely coded hydraulic connections

The hydraulic connections are uniquely coded. Only matching hydraulic couplings between the tractor and machine must be connected. Wrongly connected hydraulic couplings can trigger unpredictable movements of the machine.

Replace hydraulic hoses every six years or sooner

Hydraulic hoses age without showing externally visible signs. Replace hydraulic hoses every six years or sooner. Use hydraulic hoses only with the same technical specifications. The required information is printed on the hydraulic hose. Defective or incorrect hydraulic lines can cause serious or fatal injuries.



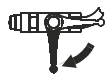
Road transport

Ensuring road safety

The machine must conform to current national traffic regulations if you intend to drive with it on public roads. Ensure the following:

- Lighting, warning and protective equipment must be fitted.
- The permissible transport widths and weights, axle loads, tyre load-bearing capacities, laden weights and national speed restrictions must be complied with.
- The maximum permissible road transport speed must be complied with, but not exceed 40 km/h (25 mph).
- Before driving on public roads, fold in all guard bars and rotors and secure the machine.
- The machine should only be towed by agricultural or forestry tractors.
- The empty weight of the tractor must be greater than the weight of the machine.

The driver and keeper of the vehicle are liable should these conditions not be observed.



Close the ball valve

Close the ball valve before driving on the road. If the ball valve is open and there is an operating error, the machine may drop or swing out unexpectedly. This can result in traffic accidents and accidents causing serious or fatal injuries.

Check the tyre pressures

Check tyre pressures on a regular basis. Incorrect tyre pressures reduce the service life of a tyre and cause unstable driving characteristics. Accidents with serious or fatal injuries may be caused as a result.

Altered driving and braking performance

Driving and braking characteristics are altered when the machine is coupled or hitched to the tractor. When cornering, take the overall width and balancing weight of the machine into consideration. Adjust your driving speed accordingly. A driving style which is not adapted to conditions can cause accidents. Accidents with serious or fatal injuries may be caused as a result.

Speed adjustment

In poor road conditions and at high speeds, significant forces can be generated which subject the tractor and machine material to high or excessive stresses. Adjust your driving speed to the road conditions. A driving style which is not adapted to conditions can cause accidents. Accidents with serious or fatal injuries may be caused as a result.

Check hitch pins

Hitch pins must be in perfect condition. Hitch pins must show no signs of wear and be properly secured. Otherwise, hitched machines may detach themselves of their own accord. Accidents with serious or fatal injuries may be caused as a result.



Operation

Operate for the first time only after proper training

The machine may only be put into operation after proper training has been provided by an employee from a dealership or the manufacturer, or by a factory representative. Operation without training can lead to damage to the machine due to incorrect operation, or cause accidents.

Ensure that the machine is in perfect working condition

Do not operate the machine unless it is in perfect working condition. Check all key components and their correct operation before use. Replace defective components. Defective components can cause material damage and personal injury.

Check the protective equipment

The protective equipment must not be removed or by-passed. Check all protective equipment before using the machine. Unprotected machine parts can cause serious or fatal injury.

Check the immediate vicinity

Check the area immediately surrounding the machine before driving off, and continually during operation. Make sure that you have an adequate view. Only begin work when the immediate vicinity is cleared of any persons or objects. Serious or fatal injury may be caused if these guidelines are not followed.

Retighten all nuts, bolts and screws

Regularly check that nuts and bolts are correctly tightened. Retighten bolts if necessary. Nuts and bolts can work loose when the machine is used. Damage to the machine or accidents may be caused as a result.
→ Observe the correct torque specifications in chapter »Screw and bolt tightening torques« on page 65.

The PTO shaft drive continues turning after it has been switched off

After the PTO shaft drive on the tractor has been switched off, the machine continues to run due to the moment of inertia. Maintain a sufficiently safe distance until all moving parts have come to a complete standstill. Damage to the machine and serious or fatal injury may be caused as a result.

Cornering and turning manoeuvres

Centrifugal forces are in operation during cornering. The machine's centre of gravity at the rear of the tractor is displaced. Be aware of the turning radius and the moment of inertia. A driving style which is not adapted to conditions can cause accidents. Accidents with serious or fatal injuries may be caused as a result.



Uncoupling

Increased risk of injury

There is an increased risk of injury when uncoupling the machine from the tractor. Therefore:



- Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- Never stand between the tractor and machine.
- Set the machine down on firm, secure and level ground.
- Ensure that the parking stand is securely locked.
- Place the PTO shaft in the holder provided.
- Secure the machine against rolling away (use wheel chocks).
- Do not disconnect hydraulic hoses until there is no pressure in the tractor and machine hydraulic system.
- Disconnect all electrical connections.

Failure to observe these instructions can result in serious or fatal injury.



Care and maintenance

Observe the care and maintenance intervals

Observe the periods specified in the operating manual for recurrent checks and inspections. If these periods are not observed, damage to the machine and accidents may be caused as a result.

Use original parts

Many components have special properties that are essential for the stability and correct operation of the machine. Only spare parts and accessories supplied by the manufacturer have been tested and approved. Other products may adversely affect the correct operation of the machine and safety. Using non-OEM replacement parts renders the manufacturer's guarantee null and void and frees the manufacturer from all liability.

When performing care and maintenance work:



- Switch off the PTO shaft drive.
- Depressurise the hydraulic system.
- Whenever possible, uncouple the tractor.
- Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- Ensure the machine is standing on firm, secure and level ground, and provide additional support, if necessary.
- Secure the machine against rolling away.

Only if these regulations are observed can safe working be ensured during care and maintenance work.

Turn off the electrical supply

Disconnect the power supply before working on the electrical system. Systems being supplied with electrical power can cause damage to equipment and injury to persons.

Caution when cleaning with a high-pressure cleaner

Exercise caution when cleaning with a high-pressure cleaner. Bearings, seals and pipe unions are not waterproof. In order to prevent damage to the machine, the bearings, seals and pipe unions must not be exposed to direct contact with the high pressure water jets.

No aggressive washing additives

Do not use any aggressive washing additives for cleaning. Uncoated metal surfaces can be damaged.

Before carrying out welding work

Disconnect all electrical connections from the tractor when carrying out welding on the hitched machine. Damage may otherwise be caused to the electrical system.

Retighten all nuts, bolts and screws

All screwed/bolted connections that are loosened during maintenance and repair operations must be retightened. Serious injury and damage to equipment can be caused by loose pin and screwed connections.
→ Observe the correct torque specifications in chapter »Screw and bolt tightening torques« on page 65.



Further regulations

Observe the regulations

In addition to the safety information listed above, please observe the following:

- Accident prevention regulations in your local area..
- Generally recognised safety regulations and occupational health requirements.
- National road traffic regulations.
- The instructions provided in this operator's manual.
- Standards and instructions relating to operation, maintenance and repair.

Warranty

The warranty and manufacturer's liability will no longer be valid if the instructions provided in the chapter on Safety are not observed, if maintenance is inadequate or faulty, if the machine is used for purposes other than those for which it was intended and if it is overstressed, or if impermissible modifications are made to the machine.



Getting to know the machine

Range of application

The machine is a rotary tedder that is solely to be used for tedding, turning and swathing mown, stalked material such as straw and hay.

Proper use

Any use other than the use described above - such as silo spreading, any type of soil preparation, sweeping, or transmitting power to other machines - is not permitted. The manufacturer and dealers are not liable for damage caused by improper use. The risk is borne solely by the user.

Features

Flexible in operation

This rotary tedder has a working width of 5.20 m and four rotors, and is therefore perfectly suited for flexible operation.

The rotary tedder can be pulled by tractors of 15 kW (20 hp) or more.

Easy-to-maintain gear box

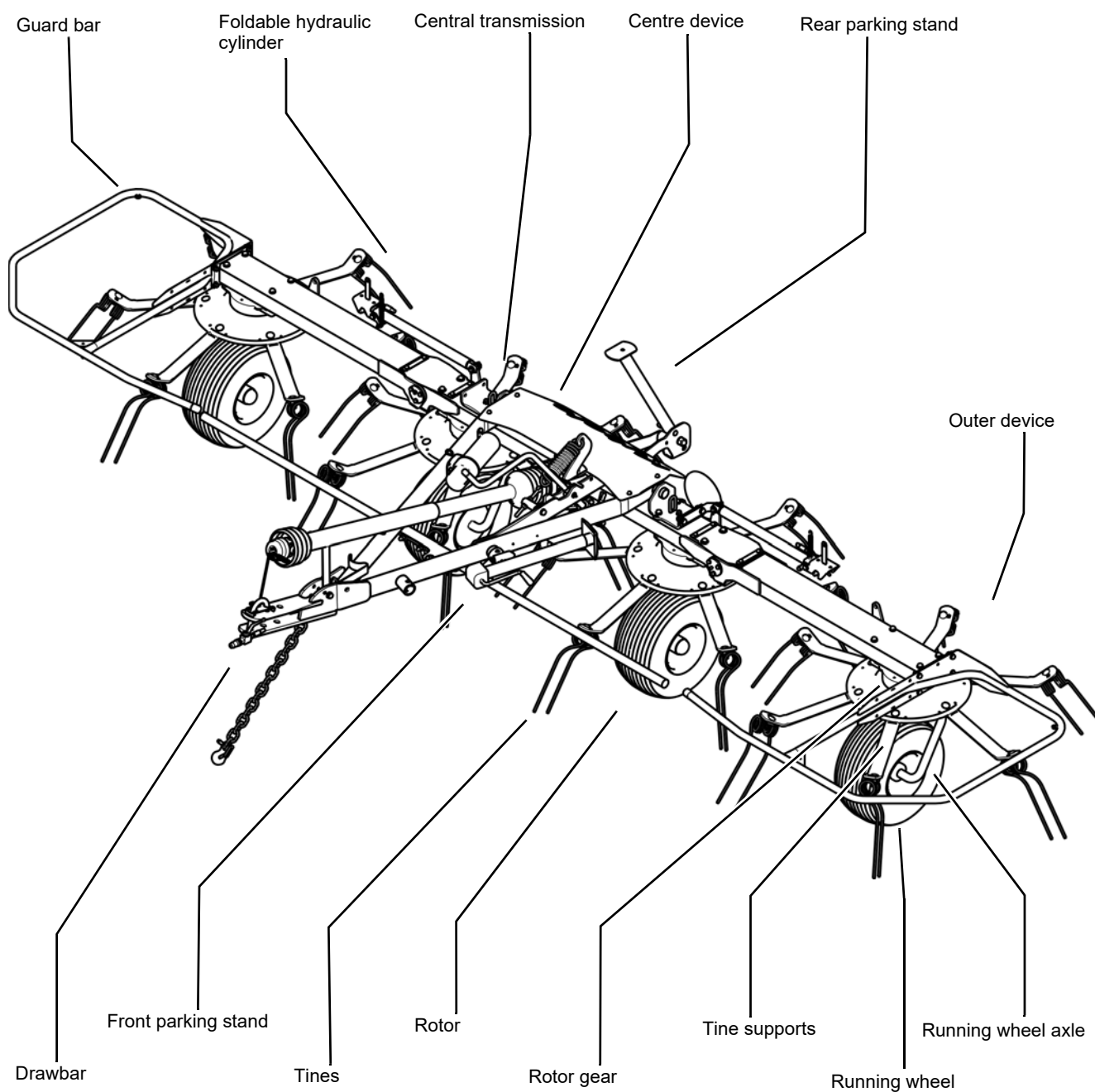
The machine is fitted with maintenance-free gears. The rotor gears are fitted with one lubricating nipple only. The gears are easy to maintain as well as low-wear and sturdy.

Simple transformation from work to transport position

The rotary tedder is easily changed from work to transport position. The hydraulic cylinders swivel the rotary tedder into the transport position. Dismounting from the tractor is not required.

Getting to know the machine

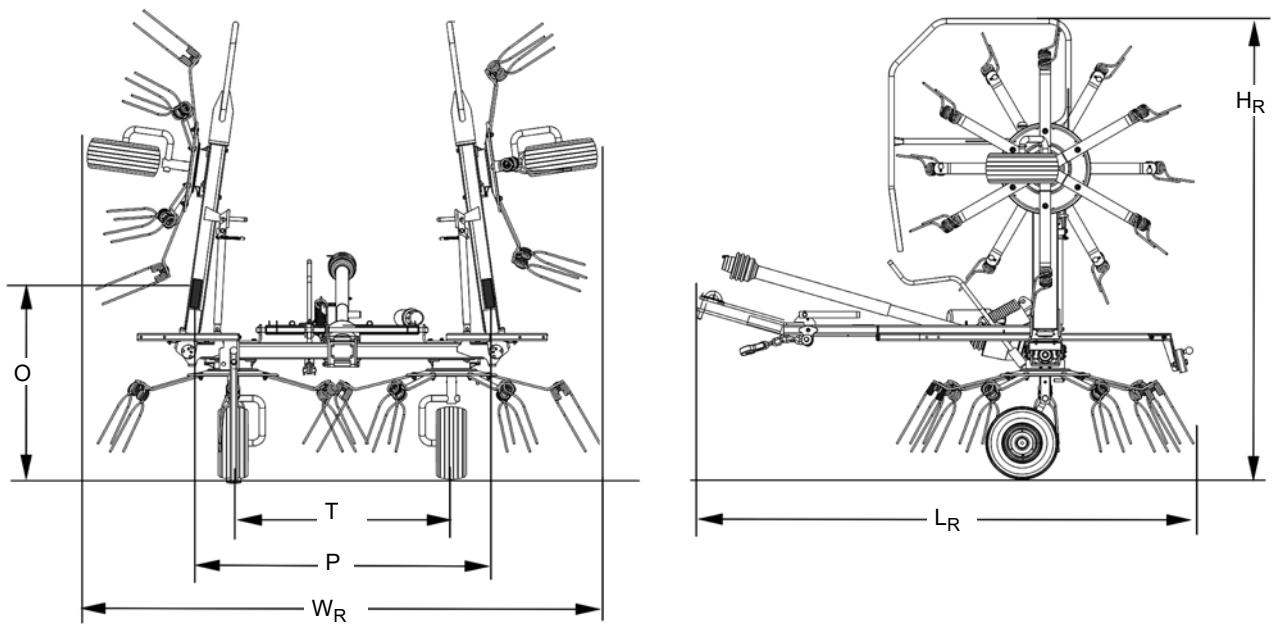
Designation of components



Technical specifications

Dimensions in transport position

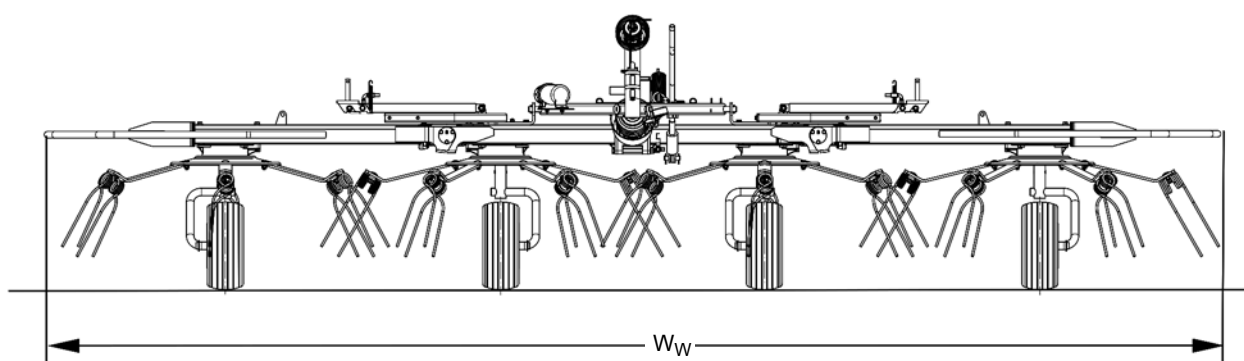
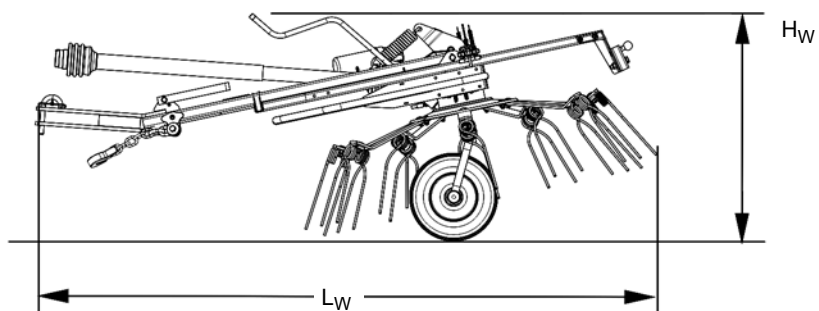
		[m]
L_R	Length in transport position for road transport	2.87 (9.42 ft)
H_R	Height in transport position for road transport	2.56 (8.40 ft)
W_R	Width in transport position for road transport	2.89 (9.50 ft)
T	Track width	1.21 (3.97 ft)
O	Height of top reflectors	0.98 (3.22 ft)
P	Distance between top reflectors	1.77 (5.80 ft)



Getting to know the machine

Dimensions in work position

		[m]
L_W	Length in work position	2.87 (9.32 ft)
H_W	Height in work position	1.27 (4.20 ft)
W_W	Width in work position	5.40 (17.72 ft)



Getting to know the machine

Weights

Total weight	496 kg (1093 lbs)*
Load supported on parking stand	32 kg (73 lbs)*
* Max. weight of the machine with current accessories.	

Tractor equipment required

Output / connections		
	Minimum output of the tractor	15 kW (20 hp)
	Hydraulic connections	1 x single-acting hydraulic control device
	Hydraulic pressure	150 – 210 bar (15,000 – 21,000 kPa, 2175 – 3046 psi)
	Maximum PTO shaft speed	540 rpm
	Pending attachment, cat. 0 and 1	In accordance with ISO 6489-3

Machine equipment

Rotors/tine supports/tines		
	Number of rotors	4
	Number of tine supports per rotor	6
	Tine saver	[+]
Wheels		
	Rotor chassis	18.5 x 8.5 - 8
Safety accessories		
	Safety chain	Standard
	Lighting equipment	–
	Warning signs	–
PTO shaft		
	PTO shaft	Standard
Axles		
	Quantity	4
	Model	Rigid axle

Getting to know the machine

Measurement of airborne sound emissions

The airborne sound emissions from the machine are below the levels stipulated by machinery directive 2006/42/EC.

- A-weighted sound level in the workplace:
< 70 dB(A)
- Currently C-weighted sound level:
< 63 Pa (130 dB based on 20 μ Pa)
- A-weighted sound level on the machine:
< 80 dB(A)

Checking the scope of delivery

Delivery is in the fully assembled state

The machine is delivered fully assembled. Using the check list, check the loose parts on delivery. If any parts of the machine have not been fitted or are missing, please contact your dealer.

WARNING

Do not assemble the machine yourself

Trained personnel are required to assemble the machine. Do not perform assembly work yourself. The following points are required to be met for the machine to be in proper condition:

- Observance of a sequence of work steps.
- Compliance with tolerances and torques.
- Knowledge of work safety during assembly.

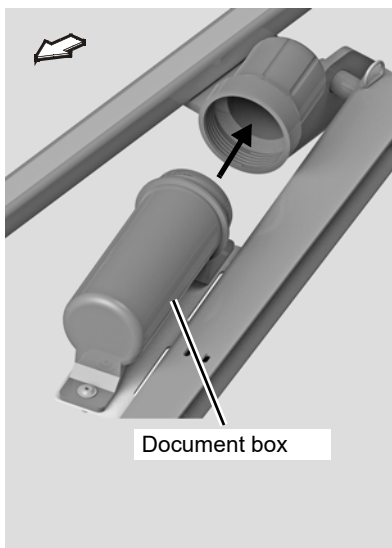
Incorrect assembly can result in damage to the machine or accidents.



If parts are missing or have been damaged during transportation, please inform the dealer, importer or manufacturer immediately.

Checklist for parts which were supplied loose	Quantity
Operator's manual	1
Spare part manual	1
Accessories	See delivery note

Operator's manual



The operator's manual is a safety component. The document belongs with the machine and must always be kept on board. A document box for the operator's manual and spare part manual is mounted on the main frame.

Delivery and assembly

Length of PTO shaft

The length of the PTO shaft was selected at the factory to suit almost all types of tractor. Only in exceptional cases is a correction of the PTO shaft length required on individual tractors. Check the length of the PTO shaft on each tractor prior to first use.

A manufacturer's operator's manual for the PTO shaft is enclosed. This includes detailed information on the relevant version of the PTO shaft and must be observed.

Safety



WARNING

Switch off the tractor and secure it

Before you dismount:

- ▶ Switch off the PTO shaft drive.
- ▶ Lower all implements to the ground.
- ▶ Switch all operating controls to their neutral or park position.
- ▶ Put the tractor's parking brake into the park position.
- ▶ Switch off the tractor.
- ▶ Remove the ignition key.
- ▶ Secure the tractor against rolling away.

An unsecured tractor can run you over or trap you. Otherwise, serious or fatal injury may be caused as a result.



CAUTION

Check the angle of lock

The PTO shaft has a wide hinge joint giving the tractor a steering angle of up to 80°. Make sure that the PTO shaft is not damaged during tight cornering. This would result in damage to the machine.

Correct length

A PTO shaft that is too long must not be used. Otherwise, damage to the drive bearings on the tractor and machine may be caused as a result.

Checking the length of the PTO shaft

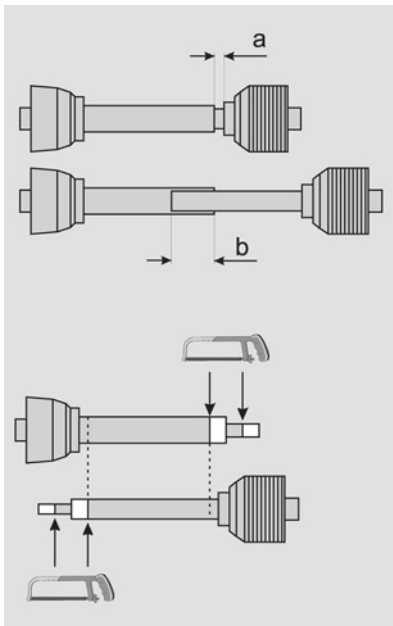


- ▶ Couple the machine to the tractor without the PTO shaft.
- ▶ Lower the tractor's lower link.
- ▶ Set the combination (tractor and machine) to the smallest steering angle.
- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.



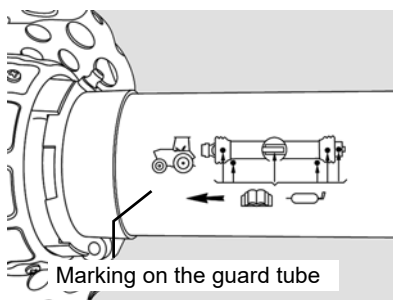
- ▶ If the PTO shaft has been shortened, the minimum overlap and the minimum distance must be checked again when it is operated with another tractor.

Shortening the PTO shaft



- ▶ Pull the PTO shaft apart and connect one half to the tractor PTO shaft drive and one to the machine and secure them.
- ▶ Place the two shaft halves next to each other and:
 - Check for a minimum of 200 mm overlap (b).
 - Check that the PTO shaft is not blocked at one end (minimum distance (a) = 20 mm).
- ▶ Shorten the slide tube and guard tube by the same dimension.
- ▶ Deburr the ends of the tubes.
- ▶ Remove the swarf.
- ▶ Grease the sliding surfaces well.

Fitting the PTO shaft



Make sure that you fit the PTO shaft in the correct installation position. There is a marking on the guard tube of the PTO shaft.

- ▶ Check the length of the PTO shaft and shorten it if necessary.
- ▶ Place the PTO shaft onto the PTO stub shaft of the machine.
- ▶ Secure the PTO shaft with a locking pin.

Coupling the machine

Safety



WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »DANGER, WARNING and CAUTION labels«, page 9.

Increased risk of injury

When the machine is being coupled to the tractor, there is an increased risk of injury. Therefore:

- Never stand between the tractor and machine.
- Secure the tractor against rolling away.
- Actuate the three-point power lift system slowly and carefully.

Failure to observe these instructions can result in serious or fatal injury.

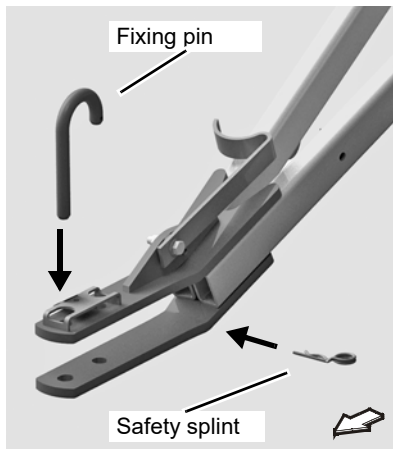
General

The machine is equipped at the factory for coupling to the pending attachment or a lift link drawbar.

The following work steps are described in this section:

- »Coupling the machine«
- »Coupling the PTO shaft«
- »Connecting the hydraulic couplings«

Coupling the machine



! WARNING

Genuine fixing pins from the manufacturer

Use only genuine fixing pins from the manufacturer. These have the required strength. Other pins can break. Damage to the machine or accidents may be caused as a result.

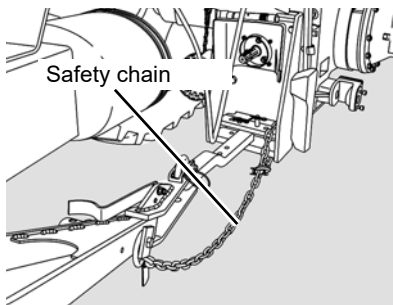
Avoid collisions

The PTO shaft and the drawbar must not collide with the lower link or any other part of the tractor when cornering or turning around. Fasten or remove the lower link and other parts outside of the collision range. Otherwise, damage to the machine or accidents may be caused as a result.

The machine is coupled to the pending attachment or a lift link drawbar with a fixing pin and secured with a safety splint.

→ See »Coupling to the pending attachment«, page 38.

Safety chain for USA and Canada



! WARNING

Safety chain

When travelling on the road, always connect the machine and the tractor using a safety chain. Use a safety chain with a strength that corresponds to at least the total weight of the machine. Otherwise, serious or fatal injuries would be caused as a result.

- ▶ Fasten the supplied safety chain between the tractor and the machine.



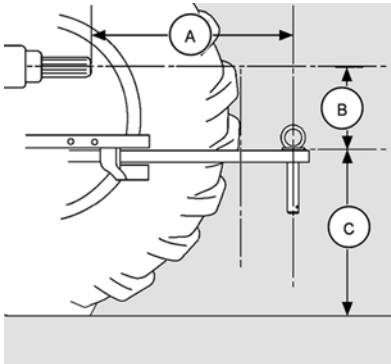
Choose an appropriate length of chain so that the movement of the drawbar is not adversely affected and the chain does not hang down too low.



Also observe the national regulations regarding the length and fitting of safety chains.

Coupling the machine

Coupling to the pending attachment



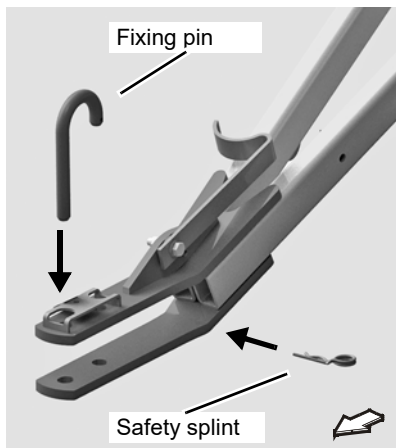
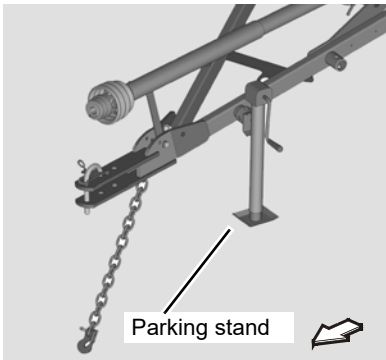
! WARNING

Lock the height adjustment of the lower link

Lock the height adjustment of the lower link. Comply with the tractor operating manual. Unintentionally raising the lower links can irreparably damage the PTO shaft.

Lock the lateral setting of the lower links

Fix the lower links after coupling the implement. Lateral free movement of the lower links causes unstable drive properties during transport journeys and can cause accidents.



For coupling to a pending attachment in accordance with ISO 6489-3, proceed as follows:

- ▶ (A) Distance between the PTO shaft drive and the drawbar hitching point: approximately 356 mm (14 in).
- ▶ (B) Height between the PTO shaft drive and the drawbar hitching point: approximately 203 – 305 mm (8.0 – 12.0 in).
- ▶ (C) Fix the lower link height at a distance of approximately 400 mm (15.75 in) from the ground.

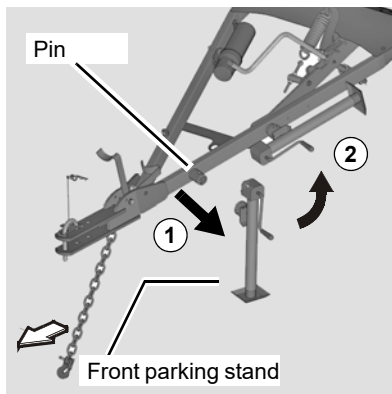
- ▶ Couple the machine to the pending attachment with a fixing pin.
- ▶ Secure the fixing pin with a safety splint.
- ▶ Take the height-adjustable parking stand out of the transport holder bracket and fit it to the drawbar.



The working depth is adjusted via the crank.

→ Chapter »Preparing for use«, section »Adjusting the working depth«, page 45

Folding in front parking stand

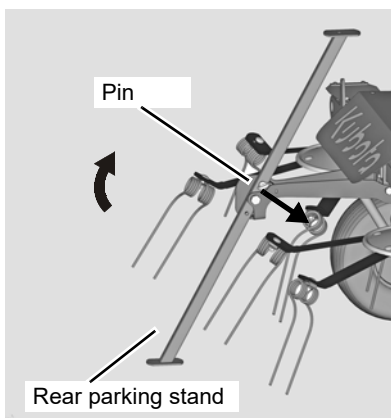


After coupling, fit and secure the front parking stand in the park position.



- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- ▶ Remove the pins from the front bracket and remove the parking stand.
- ▶ Correctly fit the parking stand on the rear bracket and secure with pins.

Folding in the rear parking stand



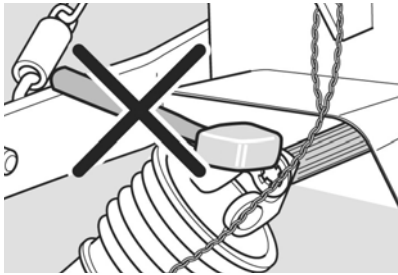
After coupling, fold in and secure the rear parking stand.



- ▶ Switch off the tractor and secure it.
- ▶ Pull the pin to release the rear parking stand.
- ▶ Fold the rear parking stand upwards and secure with pins.

Coupling the machine

Coupling the PTO shaft



Make sure that you fit the PTO shaft in the correct installation position. There is a marking on the guard tube of the PTO shaft.

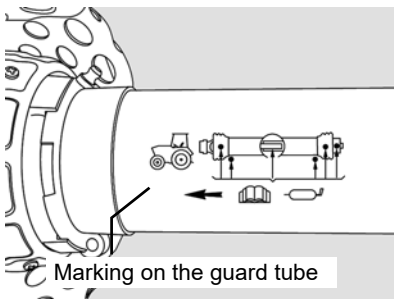
CAUTION

Do not use force

When coupling the PTO shaft, do not use a hammer or any similar tools. Using these types of tool can severely damage the PTO shaft. A damaged PTO shaft can cause damage to the tractor and the machine.

When coupling the PTO shaft, make sure it is in the correct position.

- ▶ Check whether the PTO shaft must be shortened before coupling.
- ▶ Shorten the PTO shaft if necessary.
 - See »Length of PTO shaft«, page 34.



WARNING

Check and fasten the PTO shaft guard in position

The rotating PTO shaft is protected by the PTO shaft guard. Ensure that the guard is not damaged. Unguarded PTO shafts can cause damage to the machine and life-threatening injuries.

- ▶ Check that the tractor's PTO stub shaft is clean and lubricated.
- ▶ Couple the PTO shaft to the tractor and the machine.
 - Observe the fitting instructions embossed on the PTO shaft.
- ▶ Ensure that the PTO shaft is engaged on the shaft ends.
- ▶ Secure the guard cone to the machine frame using a jubilee clip.

Connecting the hydraulics



WARNING

Check hoses and couplings

Check all hydraulic hoses for damage before connecting them. Check all hydraulic couplings for firm seating after connecting them. Defective hydraulic hoses and poorly fitting hydraulic connections can trigger unpredictable movements of the machine, causing severe damage to the machine as well as personal injury. Serious or fatal injury may be caused if these guidelines are not followed.

Secure the tractor's control devices

In the transport position, secure the tractor's control devices against unintended actuation and lock them if possible. Unintentional activation of a control device can trigger unpredictable movements of the machine and cause serious machine damage and personal injury. Serious or fatal injury may be caused if these guidelines are not followed.

Check the routing of the hydraulic hoses

Close or disconnect the quick couplings with great care. Remove any dirt or air which has entered the hydraulic system. The hydraulic system may otherwise be seriously damaged. Material damage or personal injury may be caused as a result.

Avoid mixing oils

If the machine is used on different tractors, an impermissible mixing of oil may occur. Impermissible oil mixtures can irreparably damage tractor components.

Hydraulic connection at zero pressure only

Only connect hydraulic hoses to the tractor hydraulic system if the tractor and machine hydraulic system is at zero pressure. A hydraulic system which is under pressure can trigger unpredictable movements of the machine. Serious or fatal injury may be caused if these guidelines are not followed.

High pressures in the hydraulic system

The hydraulic system is under high pressure. Regularly check all lines, hoses, and screwed connections for leaks and externally visible damage. Never use your hands to search for suspected leaks; only use suitable equipment. Rectify any damage immediately. Fluid escaping under pressure can penetrate skin may result in injuries and fires. Seek medical attention immediately if injuries occur.

Coupling the machine

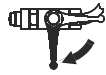
Connecting the hydraulic couplings



WARNING

Make sure the connection is correct

Ensure that the hydraulic system is connected correctly. Otherwise, damage to the machine and personal injury may be caused as a result.



- ▶ Close the ball valve.



- ▶ Set the tractor hydraulics to "free float".

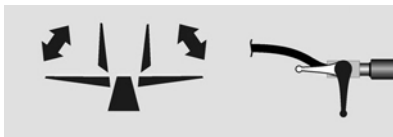
- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.



- ▶ Connect the machine's hydraulic coupling to the single-acting hydraulic control device when it is set to the floating position.

- ▶ Roll up the control ropes and store them in the tractor cab.

- The rotors are raised and lowered via the single-acting hydraulic control device.



Hydraulic line	Marking
Single-acting hydraulic control device	Black (no marking)

Safety



WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 7.

Secure the machine

Secure the machine against accidental starting and rolling away. Use wheel chocks. The machine must stand on a level, firm and secure surface and be supported during the work, if necessary. Unsecured or non-supported machines can cause accidents. Otherwise, serious or fatal injury may be caused as a result.

No persons in the working area

Ensure that no persons – children in particular – are present in the slewing and working area of the machine. Persons could be caught by the machine within this area. This may result in serious injury or even death.

Avoid the hazard area

The rotors are considered a hazard area. Do not stand in the hazard area. The rotors may lower or turn. This may result in serious injury or even death.

Remove tine supports

When carrying out adjustment work on the machine, tine supports which hinder work on the machine must be removed. Tine supports that are not removed can cause serious injuries.

Unfold fully and evenly

Ensure that the side devices are evenly unfolded. If there is a malfunction, fold the side devices back in and repeat the process at a higher engine speed. The hydraulic cylinders must be completely extended in the work position. Otherwise, the machine may be damaged.

Preparing for use

General

The following applies when performing all adjustment work:

- ▶ Check the tyre pressures.
- ▶ Secure the machine.
- ▶ Lower the machine to the work position.
- ▶ Undo appropriate bolts and/or screws.
- ▶ Make the required adjustment.
- ▶ Retighten the bolts.

The following work steps are described in this section:

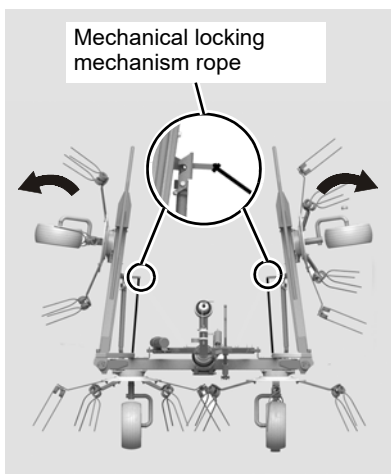
- »Folding the machine into the work position«
- »Adjusting the working depth«

Folding the machine into the work position

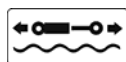
WARNING

Observe the contour of the terrain

Move the machine onto a flat surface or uphill before changing from the transport to the work position. Avoid inclines on which the combination (tractor and machine) could slip or overturn. The side device can swivel out uncontrollably. Damage to the machine may be caused as a result. There is an increased risk of tipping and injury in a position at right angles to the direction of the slope.

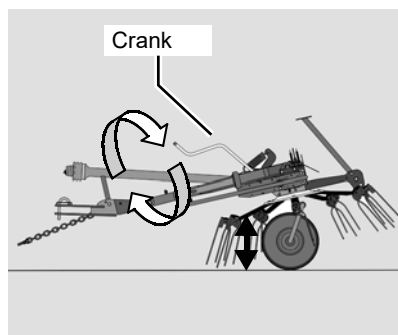


- ▶ Pull the mechanical locking mechanism rope for the lift arms and keep the rope tensioned.
- ▶ Using the hydraulic control device, fold the machine into its work position.



- ▶ Activate the floating position of the tractor's hydraulic control device.

Adjusting the working depth



The clearance of the tines from the ground is adjusted in the work position via the crank.

- ▶ The PTO shaft drive is off.
- ▶ Using the hydraulic control device, fold the machine into its work position.
- ▶ Switch off the tractor and secure it.
- ▶ Using the crank, adjust the drawbar so the distance between the tines and the ground can be adapted.



The tines should lightly touch the ground.

Safety

Before transporting the machine on public roads, please read the following safety information. Compliance is mandatory and will help you to avoid accidents.



WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 9.

Ensuring road safety

The machine must conform to current national traffic regulations if you intend to drive with it on public roads. Ensure the following:

- Lighting, warning and protective equipment must be fitted.
- The permissible transport widths and weights, axle loads, tyre load-bearing capacities, laden weights and national speed restrictions must be complied with.
- The maximum permissible road transport speed must be complied with, but not exceed 40 km/h (25 mph).
- The machine should only be towed by agricultural or forestry tractors.
- The empty weight of the tractor must be greater than the weight of the machine.

The driver and keeper of the vehicle are liable should these conditions not be observed.

Observe transport width

Observe the permissible transport widths. Fold the machine into its transport position. The driver and keeper of the vehicle are liable for any non-compliance with national traffic regulations.



Close the ball valve

Close the ball valve before driving on the road. If the ball valve is open and there is an operating error, the machine may drop or swing out unexpectedly. Otherwise, traffic accidents and accidents with fatal injuries may be caused as a result.

Check the lighting equipment

Prior to road transport in the transport position, check that the machine does not obscure the tractor's rear lights and reflectors. Attach lighting equipment and protective device, if necessary. The driver and keeper of the vehicle are liable for any non-compliance with national traffic regulations.

General

The following work steps are described in this section:

- »Prior to road transport«
- »Folding the machine into the transport position«
- »Checking the machine«
- »Preparations on the field«

Prior to road transport

When driving on public roads, the machine must be in the transport position.



WARNING

Pay attention to the height, width and length

When driving under bridges, power lines, and restricted heights from the ground, always take the actual height, width and length of the machine and any attached implements into account. Otherwise, damage to the machine, traffic accidents and accidents with fatal injuries may be caused as a result.

Fold up the machine completely

Ensure that the machine is always completely folded up. Never drive with a partially folded side device. There is otherwise the risk of traffic accidents and accidents with fatal consequences.



Close the ball valve

Close the ball valve before driving on the road. If the ball valve is open and there is an operating error, the machine may drop or swing out unexpectedly. Otherwise, traffic accidents and accidents with fatal injuries may be caused as a result.

To prepare the machine for road transport, carry out the following steps:

- ▶ Remove any crop residues and coarse dirt.
- ▶ Fold up the machine completely.
- ▶ Lock the contact roller [+] transport locking device.
- ▶ Attach the lighting equipment/warning signs.
- ▶ Raise the machine to transport height.

Road transport

Folding the machine into the transport position

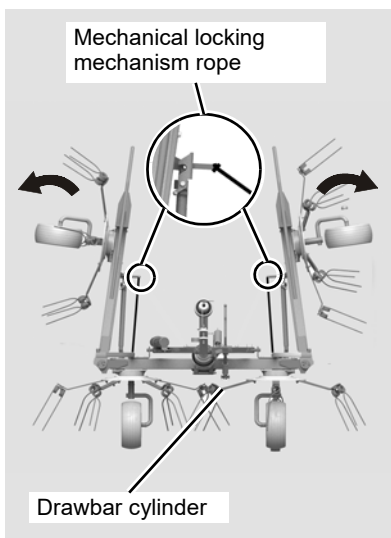
WARNING

Make sure the machine is standing level

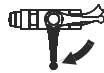
Before changing from the transport to the work position (and vice versa), make sure the machine is standing level. The machine could tip over, particularly on hillside locations. Damage to the machine and serious or fatal injury may be caused as a result.

No persons within the slewing range

No persons, especially children, may be present within the slewing range and working area. Persons can be trapped by the machine. Serious or fatal injury may be caused if these guidelines are not followed.



- ▶ Switch off the tractor PTO shaft drive.
- ▶ Use the single-acting hydraulic control device to fold the machine into the transport position until the mechanical locking mechanism for the outer device engages.
- ▶ Actuate the single-acting hydraulic control device until the drawbar cylinder has completely aligned the machine.
- ▶ Close the ball valve.



Road transport



WARNING

Follow the instructions below for road transport. Otherwise, traffic accidents and accidents with fatal injuries may be caused as a result.

- ▶ Before pulling away, check the immediate vicinity. Always make sure that you have a clear field of vision and, in particular, look out for children within the operating area of the machine.
- ▶ When driving, lock the hydraulic control devices on the tractor.
- ▶ Close the ball valve.
- ▶ Do not transport people or objects on the machine.
- ▶ Adjust your speed to road conditions.
- ▶ Do not exceed a maximum speed of 40 km/h (25 mph). Comply with the national speed limits.
- ▶ Ensure sufficient steering and braking capability. Driving characteristics, steering, and braking capability are all influenced if the machine is coupled (increased braking distance as a result of greater inertia).
- ▶ There is a danger of tipping on slopes and if corners are taken too fast. Ensure that you drive in a careful manner that is adapted to the road conditions.

Checking the machine



Prior to driving on the road, check the machine against the check list:

- PTO shaft drive off?
- Tyre pressures correct?
- Crop residues and dirt removed?
- Machine in transport position?
- Transport locking device locked?
- Tractor lighting equipment not obscured?

Preparations on the field

Safety

The following applies for all preparations on the field:

WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 9.



Switch off the tractor and secure it

Before you dismount:

- ▶ Switch off the PTO shaft drive.
- ▶ Lower all implements to the ground.
- ▶ Switch all operating controls to their neutral or park position.
- ▶ Put the tractor's parking brake into the park position.
- ▶ Switch off the tractor.
- ▶ Remove the ignition key.
- ▶ Secure the tractor against rolling away.

An unsecured tractor can run you over or trap you. Otherwise, serious or fatal injury may be caused as a result.

Avoid the hazard area

The rotors are considered a hazard area. Do not stand in the hazard area. The rotors may lower or turn. Serious or fatal injury may be caused if these guidelines are not followed.



Close the ball valve

Close the ball valve before adjusting. If the ball valve is open and there is an operating error, the machine may drop or swing out unexpectedly. Damage to the machine or accidents with serious or fatal injuries may be caused as a result.

General

The following work steps are described in this section:

- »Folding the machine into the work position«

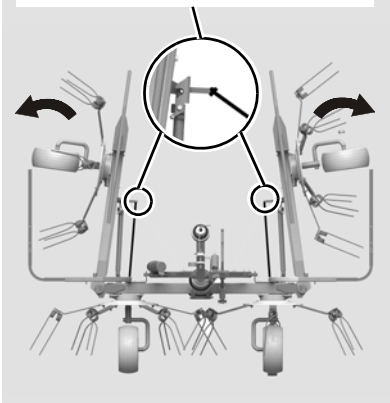
Folding the machine into the work position

WARNING

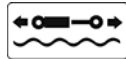
Observe the contour of the terrain

Move the machine onto a flat surface or uphill before changing from the transport to the work position. Avoid inclines on which the combination (tractor and machine) could slip or overturn. The side device can swivel out uncontrollably. Damage to the machine may be caused as a result. There is an increased risk of tipping and injury in a position at right angles to the direction of the slope.

Mechanical locking mechanism rope for the outer device



- ▶ Switch on the tractor.
- ▶ Release the locking mechanism for the outer device using the single-acting hydraulic control device.
- ▶ Pull the rope on the mechanical lock and keep it tensioned.
- ▶ Lower the machine to the work position using the single-acting hydraulic control device.
- ▶ Release the mechanical locking mechanism rope.
- ▶ Actuate the single-acting hydraulic control device until the drawbar cylinder has aligned the machine in the work position.
- ▶ Activate the floating position of the tractor's hydraulic control device.



Safety



WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 7.

No riding on the machine

Persons or objects must never be transported on the machine. Carrying passengers on the machine is life-threatening and prohibited. Serious or fatal injury may be caused if these guidelines are not followed.

No persons in the working area

Ensure that no persons are present in the slewing and working area of the machine. Persons could be caught by the machine within this area. This could result in fatal injury.

Maximum PTO stub shaft speed 540 rpm

The PTO stub shaft speed must not exceed 540 rpm and must be adapted to the condition of the crop. Higher revolution rates can cause damage to the machine.

Only allow the PTO shaft clutch to respond for a short time

Do not allow the slip clutch to respond for longer than 3 seconds. If the clutch responds for a longer period of time, it will become worn and the disconnect torque will drop.

Do not compress the PTO shaft

The PTO shaft between the tractor and machine must not be compressed when in the work position or transport position. If compressed, PTO shafts can cause damage to the machine and tractor.

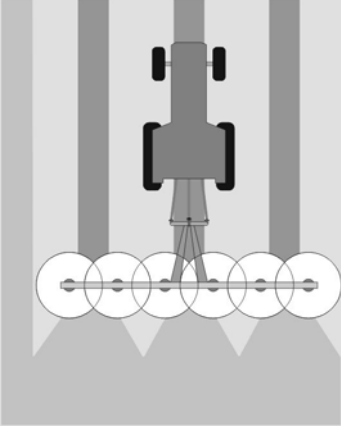
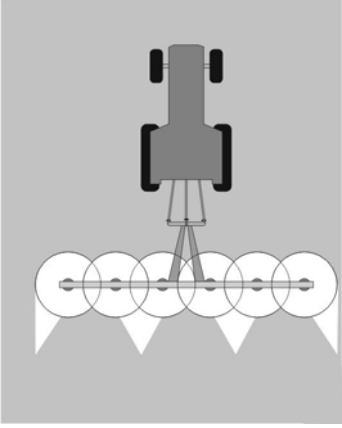
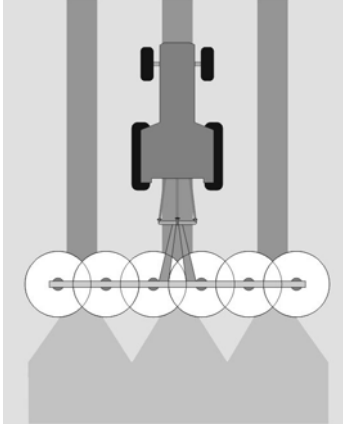
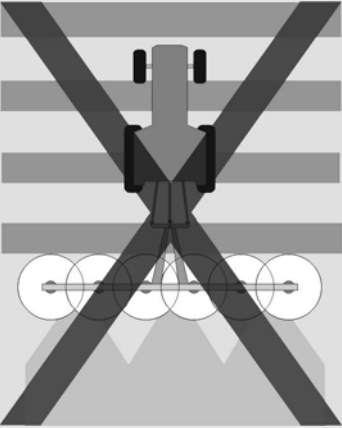
Observe the contour of the terrain

Pay even more attention when driving on an incline. Avoid inclines on which the combination (tractor and machine) could slip or overturn. There is an increased risk of tipping and injury in a position at right angles to the direction of the slope.

Crop processing

The following methods of crop processing are possible with the rotary tedder:

- Tedding.
- Turning.
- Swath laying

Tedding	Turning	Swath laying
		
<p>When tedding, the freshly cut crop is distributed over the sward.</p> <p>▶ Run the PTO stub shaft at roughly 500 rpm.</p>	<p>Turning ensures uniform drying of the crop after cutting.</p> <p>▶ Run the PTO stub shaft at roughly 400 rpm.</p>	<p>Swath laying disperses the available swath to allow it to dry better.</p>
<p>Prevent crossing swathes</p>		
		
<p>Swaths should not be crossed. This puts uneven loads on the machine.</p>		

Operation

Use

WARNING

No persons in the working area

Ensure that no persons – children in particular – are present in the slewing and working area of the machine. Persons could be caught by the machine within this area. Serious or fatal injury may be caused as a result.

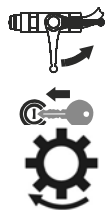
Requirements

The machine is set as follows:

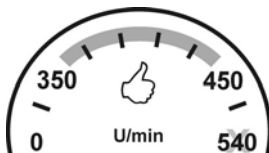
- Working depth correctly adjusted.
→ »Adjusting the working depth«, page 45.
- The machine is in the work position
→ »Folding the machine into the work position«, page 51.
- Set the single-acting hydraulic control device to the floating position.



Starting work



- ▶ Check that there is nobody in the working area of the machine.
- ▶ Open the ball valve.
- ▶ Switch on the tractor.
- ▶ Switch on the PTO shaft drive at a low engine speed.
- ▶ Slowly increase the speed. Do not exceed the maximum speed of 540 rpm.
- ▶ Select a driving speed at which the crop is picked up cleanly and distributed evenly.



Select a PTO stub shaft speed depending on crop processing requirements.

Working speed



CAUTION

Avoid crossing over swathes

As a general rule, avoid crossing over swathes. The crop is distributed unevenly and the machine is subjected to abrupt stresses. Damage to the machine may be caused as a result.

Allow ample space when driving around obstacles

Obstacles must be circumnavigated in good time and at a distance. Due to the large width and length of the machine, it reacts slowly and tends to overrun. Damage to the machine may be caused as a result.

A constant working speed is essential for uniform crop processing. The working speed should be set between 4 and 8 km/h. The working speed depends on ground and crop conditions.

- ▶ Select a working speed at which the crop is picked up cleanly and completely.

Spreading pattern

Depending on the crop, the spreading pattern is changed via the following settings:

- the PTO stub shaft speed
- the working speed

PTO stub shaft speed

- Too high a PTO stub shaft speed results in crumbling losses and swath formation if the crop is dry.
- Too low a speed produces swath formation.

Working speed

- Too high a working speed produces uneven distribution and heap formation.

Safety



WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 7.

Secure the machine

- Switch off the PTO shaft drive.
- Depressurise the hydraulic system.
- Switch all operating controls to their neutral or park position.
- Put the tractor's parking brake into the park position.
- Switch off the tractor and remove the ignition key.
- Ensure the machine is standing on firm, secure and level ground, and provide additional support, if necessary.
- Secure the machine against rolling away.

Only if these regulations are observed can safe working be ensured during care and maintenance work. Unsecured or non-supported machines can cause accidents. Serious or fatal injury may be caused as a result.

No persons in the working area

Ensure that no persons – children in particular – are present in the slewing and working area of the machine. Persons could be caught by the machine within this area. Serious or fatal injury may be caused as a result.

CAUTION

Clean the bearings and hydraulic parts with care

Exercise caution when cleaning with a high-pressure cleaner. Bearings, seals and pipe unions are not waterproof. The bearings, seals and pipe unions must not come into direct contact with a high-pressure water jet. Metal surfaces can corrode. After each cleaning procedure, lubricate the bearing points and grease bare metal parts. Otherwise, the machine may be damaged.

Preserving bare metal parts

The high-pressure cleaner removes the protective grease film from bare metal surfaces. Unprotected metal surfaces can corrode. After each cleaning procedure, lubricate the bearing points and grease bare parts.

Fire hazard

Remove the collection of fodder from the machine, such as from the tine arm and the slip clutch. Dry crop may ignite. Otherwise, damage may be caused to the environment and the machine.

General

The following work steps are described in this section:

- »Cleaning«
- »Care«

Cleaning



- ▶ Switch off the tractor PTO shaft drive.
- ▶ Using the hydraulic control device, lower the machine into the work position.
- ▶ Keep the machine coupled.
- ▶ Lock the hydraulic control device.



- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- ▶ Do not clean the bearings and piston rods of hydraulic cylinders using a high-pressure cleaner.
- ▶ After each use, clean the machine of any coarse dirt and crop residue.

After cleaning

- ▶ Lubricate all bearings after cleaning.
→ Observe the chapter »Maintenance« and the following pages.
- ▶ Replace missing warning signs and stickers.

Care

For a long service life, we recommend the following:

- ▶ Apply a protective layer of oil to all uncoated work tools. Only use approved, biodegradable oil, e.g. rapeseed oil.
- ▶ Repair any paint damage.

Parking and storage

Safety

When setting down and parking the machine, special safety precautions have to be observed:



WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 7.

Keep children away from the machine

Forbid children from playing on or around the machine. Select a parking area to which no unauthorised persons have direct access. Metal edges and machine work tools can cause serious injury.

Make sure the machine is standing level

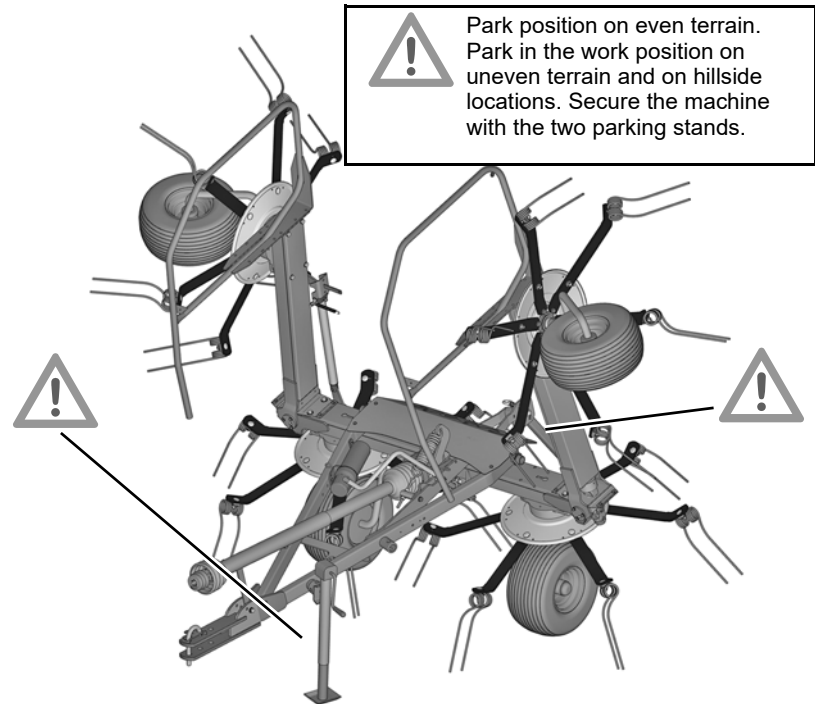
Before changing from the transport to the work position (and vice versa), make sure the machine is standing level. The machine could tip over, particularly on hillside locations. Damage to the machine and serious or fatal injury may be caused as a result.

General

WARNING

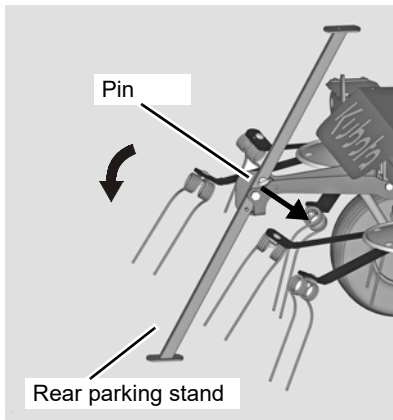
Park the machine in the work position on uneven terrain

Park the machine in the work position on uneven terrain and secure the machine against rolling away. Machines that are parked in the transport position on uneven terrain could tip over. Damage to the machine and serious or fatal injury may be caused as a result.



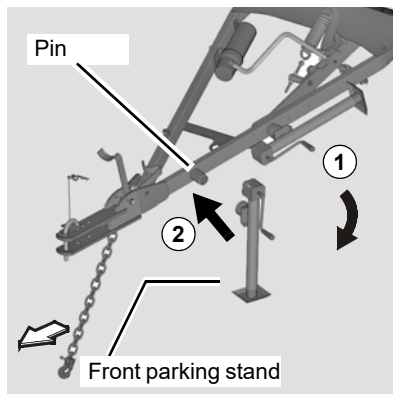
Parking and storage

Uncoupling the machine



To uncouple the machine from the tractor, proceed as follows:

- ▶ Set the machine down on a firm, level surface and fold it into the transport position.
- ▶ Secure the tractor against rolling away, turn off the engine and remove the ignition key.
- ▶ Pull the pin to release the rear parking stand.
- ▶ Fold the rear parking stand downwards and secure with pins.



- ▶ Pull off the PTO shaft and place it on the holder provided.
- ▶ Close the ball valve and release the hydraulic couplings.
- ▶ Place hydraulic couplings in storage pockets.
- ▶ Remove the pins from the rear bracket and remove the parking stand.
- ▶ Correctly fit the parking stand on the front bracket and secure with pins.
- ▶ Use the front parking stand to relieve the load on the drawbar.
- ▶ Release the fixing pins from the hitch.
- ▶ Unhitch the machine.

After the end of the season

After the end of the season and if the machine is to be stored for a long period of time, perform the following work:

- ▶ Clean the machine thoroughly.
- ▶ Check all the screw joints and tighten the screws.
- ▶ Repair or replace any damaged components.
- ▶ Repair any paint damage.
- ▶ Lubricate the machine in accordance with the lubrication schedule.
- ▶ Check the tyre pressures.
- ▶ Replace missing warning signs and stickers.

Safety

The following applies to all servicing work:

WARNING

Observe the safety information

Disregard for safety information can lead to serious or fatal injury. See chapter »Safety«, page 7.

Requirements for maintenance work

Only perform the maintenance operations if you have the required expert knowledge and suitable tools. The absence of technical knowledge or suitable tools can cause accidents and injuries.

Protect the machine against unintended starting

The following conditions must be observed for carrying out repairs and maintenance work and rectifying malfunctions on the machine when it is coupled:

- Switch off the PTO shaft drive.
- Switch all operating controls to the neutral or park position.
- Put the tractor's parking brake into the park position.
- Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- Ensure the machine is standing on firm, secure and level ground, and provide additional support, if necessary.
- Secure the machine against rolling away.

Serious accidents may be caused if the machine starts accidentally.

Use OEM replacement parts

Many components have special properties that are essential for the stability and correct operation of the machine. Only spare parts and accessories supplied by the manufacturer have been tested and approved. Other products may adversely affect the correct operation of the machine and safety. The use of non-OEM replacement parts renders the manufacturer's guarantee null and void and frees the manufacturer from all liability.

Secure moving parts

Moving parts must be secured with lifting gear against sliding, folding or swivelling. Otherwise, serious injury to persons or damage to the machine may be caused as a result.

Disconnect electrical connections before performing welding work

Disconnect all electrical connections from the tractor when carrying out welding on the hitched machine. Otherwise, electrical and hydraulic systems may be damaged as a result.



Maintenance

Protective measures when handling oils or lubricants

Additives in oils and lubricants may have adverse effects on health. As marking in accordance with the hazardous goods regulation is not necessary, please always ensure the following:

WARNING

Avoid skin contact

Avoid skin contact with these materials. Protect your skin by means of protective skin cream or oil-resistant gloves. Contact can result in skin damage.

Do not use oils for cleaning

Do not use oils or lubricants to clean your hands. Swarf and abraded material in these materials can also result in injuries.

Change out of soiled clothing

Change out of clothing that is heavily soiled with oil as soon as possible. Oils can be hazardous to your health.



- Used oil must be collected and disposed of.
- If the skin is damaged by oil or lubricant, seek medical advice immediately.

General

This information relates to general servicing work. For all servicing work, the machine must be locked in the work position. If transport position is required for maintenance work, you will find appropriate information for the maintenance work.

- ▶ Lower the machine to the work position.
- ▶ Secure the machine against rolling away by using chocks.

Direction and rotary direction

Direction information (right, left, front, rear) is given in relation to the direction of travel.

Rotary direction is defined as follows:

- Rotary direction right = clockwise.
- Rotary direction left = counterclockwise.
- Rotation about a vertical axis, viewed from top to bottom.
- Rotation about a horizontal axis, viewed at right angles to the direction of travel, from left to right.
- The rotation of screws and nuts, etc. is always viewed from the operating side.

Maintenance terms

Listed in this table are short explanations of the most important maintenance terms.

Task	Explanation
Greasing	Apply grease to the slide surfaces using a brush.
Lubrication	One or two presses of the grease gun, unless specified otherwise.
Oiling	Unless specified otherwise, use only plant-based oils, such as rapeseed oils. The use of used oil will endanger your health and is also strictly prohibited.
Replacement	Replace the appropriate part in accordance with the instruction in the Maintenance chapter.
Inspection	Check the tyre pressures, adjustment dimensions and seal tightness as required, and replace any worn parts or seals.
Observe the maintenance intervals	The specifications relate to an average usage of the machine. If subjected to heavier duty (e.g. by contracting companies), select the maintenance intervals to be shorter. Also, for extreme working conditions (for example heavy dust creation), shorter maintenance intervals are possible.

Lubricant

Lubricant used on this machine must meet the following requirements:

Lubricant	Specifications
Gear oil	SAE 90 API-GL-4 or 5
e.g.: KUBOTA HEAVY DUTY 80W-90 GEAR OIL	
Grease	NLGI GC/LB
e.g.: KUBOTA Polyurea Grease	

Maintenance

Maintenance intervals

	After 5 hours of operation	Daily	After 20 hours of operation	After 50 hours of operation	After 250 hours of operation	Once per season	After heavy use	As required	In case of wear	Lubrication	Greasing	Inspection	Replacement	Cleaning	Page
General															
All screws	•					•		•							65
Visual inspection		•					•					•			
Bearing						•						•			67
Hose connections						•						•			
Air pressure		•				•		•				•			71
Lighting equipment [+]								•				•		•	
Hydraulics															
Hydraulic hoses every 6 years													•		72
Hydraulic cylinders						•						•			
Hydraulic couplings						•						•			
PTO shafts															
Single joints				•		•				•					67
PTO shaft guard						•				•		•			70
Profile section tube						•					•				70
Gearbox															
Main gear box						•		•				•			69
Rotor gear				•		•				•		•			69

Screwed connections

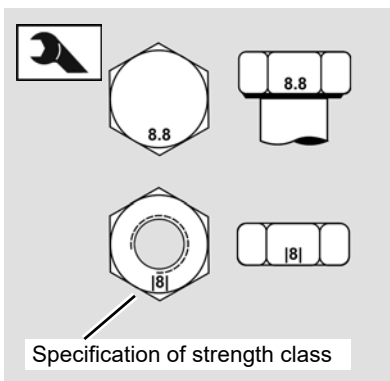
On this machine, bolts with a minimum quality of "8.8" (can be seen on the bolt head) are used.

Tightening screws

All bolts must be retightened:

- After the first 5 hours of operation.
- According to the frequency of use.
- At least once a season.

Screw and bolt tightening torques



WARNING

Use the correct screw and bolt tightening torques

Tighten the bolts and nuts to the specified tightening torques. Damage to the machine and serious or fatal injury may be caused as a result.

Never oil or grease bolts before use

Never treat bolts and nuts with grease or oil before using them. This changes the coefficient of friction and the bolts may break off. Damage to the machine and serious or fatal injury may be caused as a result.

Note the strength class specification for screws, nuts and bolts. Refer to the table for the corresponding tightening torque. Securely tighten screws, nuts and bolts to the specified values, provided that no other value is specified. The torque specifications refer to a dry coefficient of friction (0.12).

	8.8	10.9	12.9
M 6	9.9 Nm (7.3 ft.lbs)	14 Nm (10.3 ft.lbs)	17 Nm (12.5 ft.lbs)
M 8	24 Nm (17.7 ft.lbs)	34 Nm (25 ft.lbs)	41 Nm (30.3 ft.lbs)
M 10	48 Nm (35.4 ft.lbs)	68 Nm (50.2 ft.lbs)	81 Nm (59.8 ft.lbs)
M 12	85 Nm (62.7 ft.lbs)	120 Nm (88.6 ft.lbs)	145 Nm (104 ft.lbs)
M 14	135 Nm (99.6 ft.lbs)	190 Nm (140 ft.lbs)	230 Nm (166 ft.lbs)
M 16	210 Nm (155 ft.lbs)	290 Nm (214 ft.lbs)	350 Nm (258 ft.lbs)
M 20	410 Nm (302 ft.lbs)	580 Nm (428 ft.lbs)	690 Nm (509 ft.lbs)

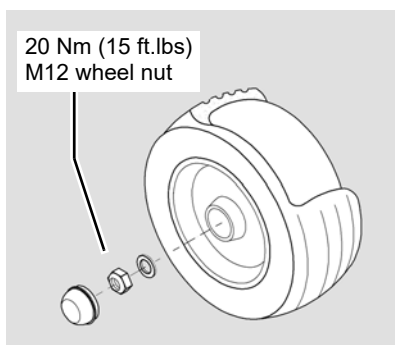
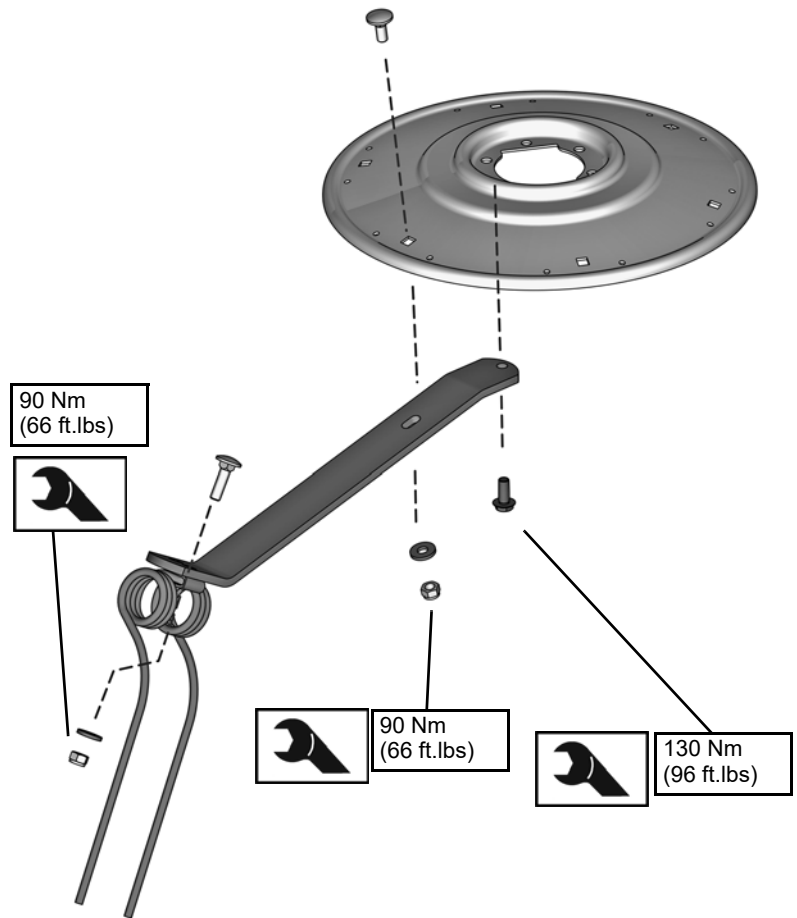


Tighten safety bolts and lock nuts to a 10 % higher value.

Maintenance

Special tightening torques

Note the special tightening torques for the following screwed connections:



- Running wheel nuts: 20 Nm (15 ft.lbs).

Lubrication points for grease lubrication

Working with a grease gun



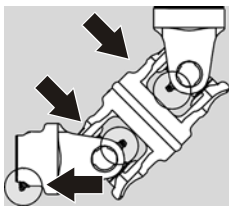
Lubricate the places listed in the illustration as follows:

- After 30 hours of operation.
- Before and after the season.
- Each time after cleaning with a high-pressure cleaner.

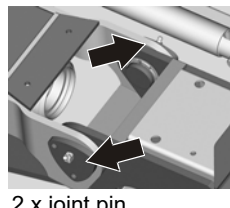
Before applying the grease gun

- ▶ Clean the lubricating nipple and
- ▶ Clean the grease gun attachment fitting.

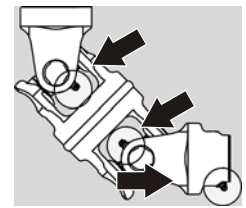
Lubricate the bearings with one or two presses of the grease gun. If you feel resistance at the second press, do not press a second time. Too much grease will force the bearings apart. Dust and dirt can penetrate into the bearings. This leads to premature wear.



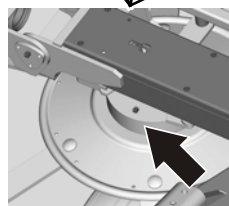
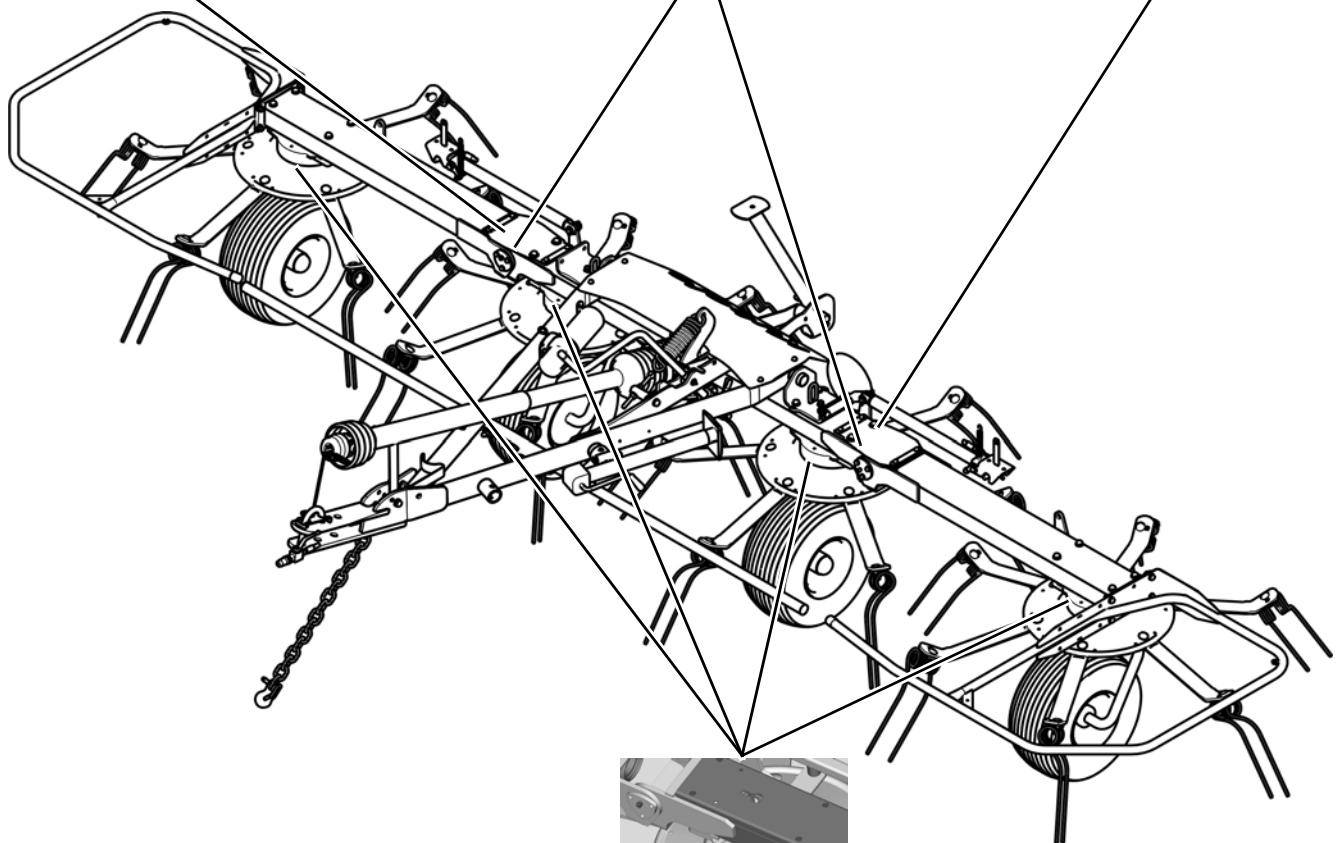
3 x universal joint



2 x joint pin



3 x universal joint



Rotor gear

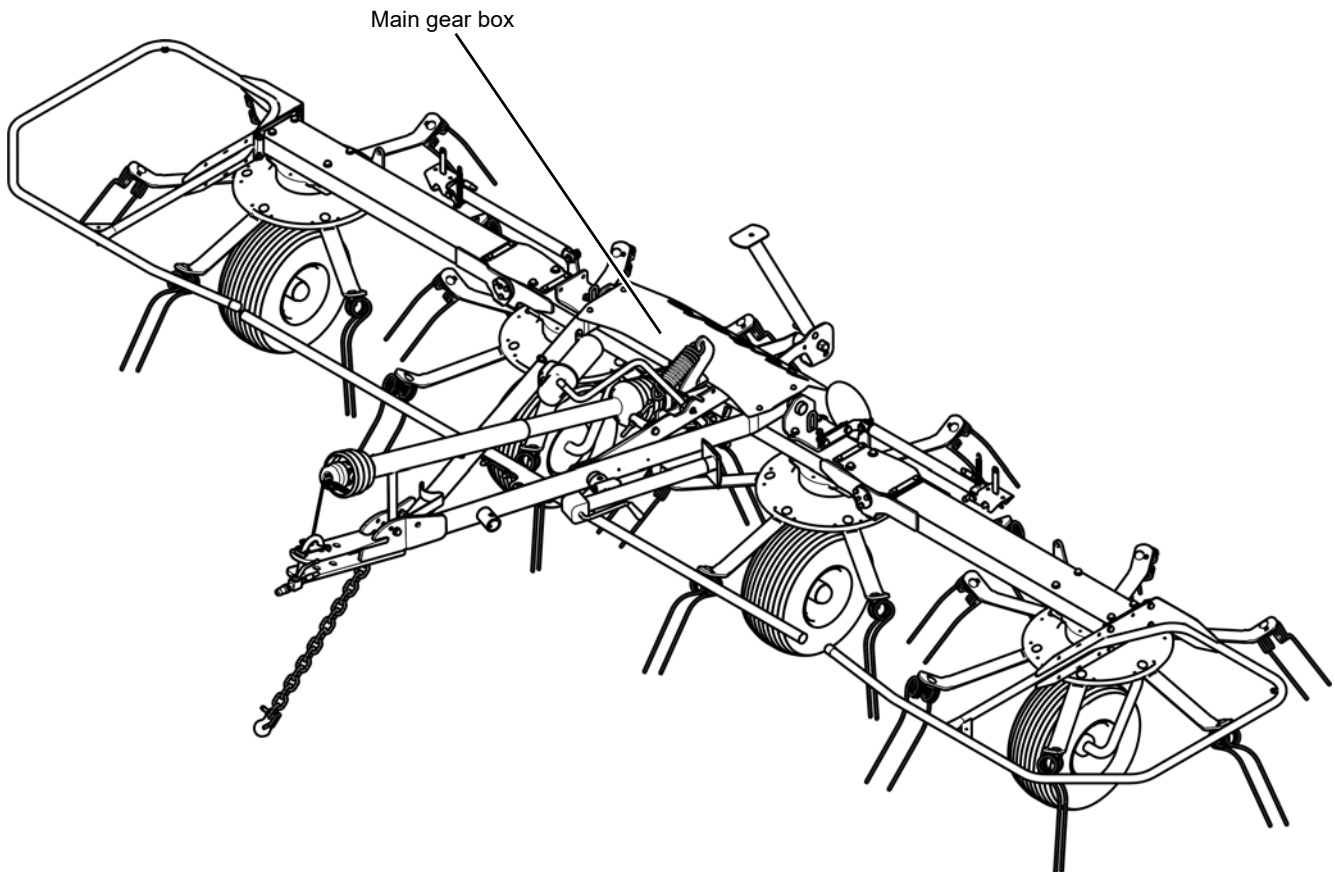
Maintenance

Lubrication points for oil lubrication

The machine has one main gear box and four rotor gears.

The main gear box is lubricated with oil and requires almost no maintenance. However, the oil level must be checked if there is a visible loss of oil.

→ »Main gear box«, page 69



Filling quantities

WARNING

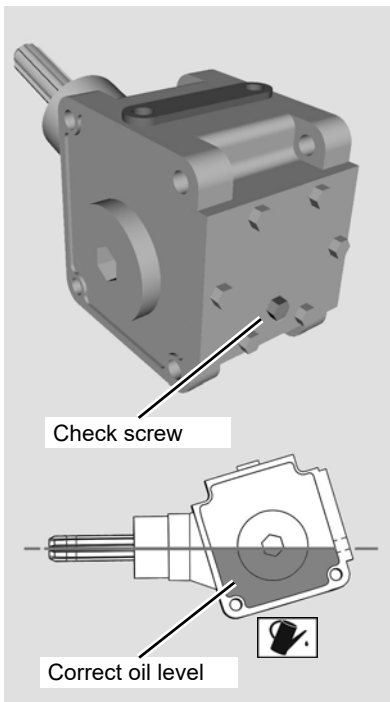
Observe the correct fill quantities

Observe the correct lubricant fill quantities. Check them regularly. A lubricant level which is too low or too high may result in damage to the machine.

The main gear box and rotor gear require no maintenance.

Gearbox	Fill quantity
Main gear box	0.75 l (0.8 US qt) SAE 90 API-GL-4 or 5

Main gear box



- No oil change is required.
- The maintenance-free main gear box is filled ex works with sufficient oil.
- Only check the oil level in the work position (machine positioned horizontally), if there is visible oil loss.

Checking the oil level:

- ▶ Fold the machine into its work position.
- ▶ Undo the check screw completely.
- ▶ Check the oil level.
 - Correct oil level: bottom edge of check screw hole.



Check the main gear box at least once per season. If there is a visible loss of lubricant, consult your dealer. Damage to the machine may be caused as a result.

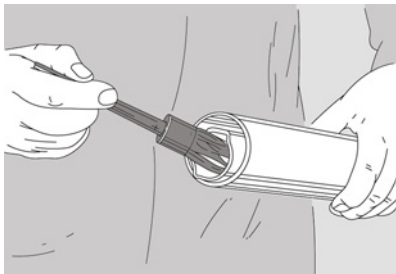
Lubricating the PTO shafts

The PTO shaft manufacturer's own operating manual is included with each PTO shaft. This includes detailed information on the relevant version of the PTO shaft.

WARNING

Check the guard components

Check all guard components of the PTO shafts for wear or damage (visual inspection). Replace any defective guard components. An unguarded PTO shaft or damaged guard components can cause very serious injuries during operation.



Lubricate the single joints as follows:

- Basic joint (E): After 250 hours of operation.
- Before and after the season.
- Each time after cleaning with a high-pressure cleaner.

Grease the profile section tubes (P):

- After 100 hours of operation.
- Before and after the season.
- Each time after cleaning with a high-pressure cleaner.

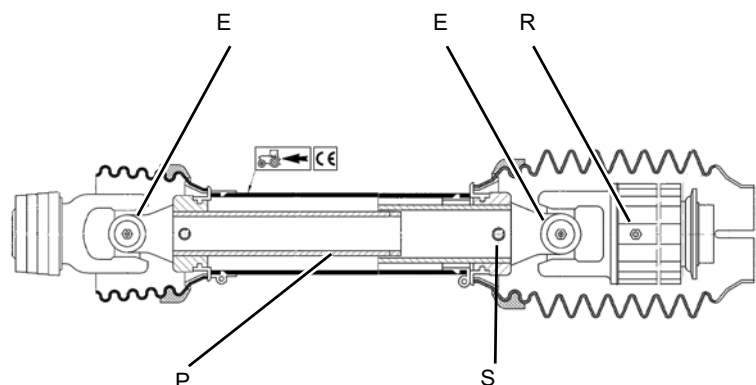
Lubricate the guard bearings (S) as follows:

- After 100 hours of operation.
- Before and after the season.
- Each time after cleaning with a high-pressure cleaner.

Lubricate the slip clutch (R) as follows:

- Before and after the season.
- Each time after cleaning with a high-pressure cleaner.

PTO shaft for main drive



Tyres



WARNING

Do not drive with worn or damaged tyres

Replace worn or damaged tyres immediately. There is a high risk of accident when driving on the road with such tyres.

Tyre pressure

Check the tyre pressures on a regular basis:

- daily.
- Before any road transport.
- As required (for example before setting the tine height).
- Before and after the season.

Tyre size	Tyre pressure [bar]
18.5 x 8.5 - 8	at least 1.5 (152 kPa, 22 psi)

Hydraulics



WARNING

Hydraulic system at zero pressure

Work must only be performed on the hydraulic system if the tractor and machine hydraulic system is at zero pressure. A pressurised hydraulic system can trigger unpredictable movements of the machine and can cause serious machine damage and personal injury. Serious or fatal injury may be caused if these guidelines are not followed.

Exercise caution when welding

Do not perform any welding work in the vicinity of the hydraulic hoses. Hydraulic oil can catch fire very easily.

Clean hydraulic system

Close or disconnect the quick couplings with great care. Remove any dirt or air which has entered the hydraulic system. The hydraulic system may otherwise be seriously damaged. Material damage or personal injury may be caused as a result.

Collect escaping oil

Escaping oil must be collected and disposed of in accordance with national regulations. Otherwise, damage may be caused to the environment.

Hydraulic hoses



WARNING

Replace hydraulic hoses every six years or sooner

Hydraulic hoses age without showing externally visible signs. Replace hydraulic hoses every six years or sooner. Use hydraulic hoses only with the same technical specifications. The required information is printed on the hydraulic hose. Defective or incorrect hydraulic lines can cause serious or fatal injuries.

To replace the hydraulic hoses:

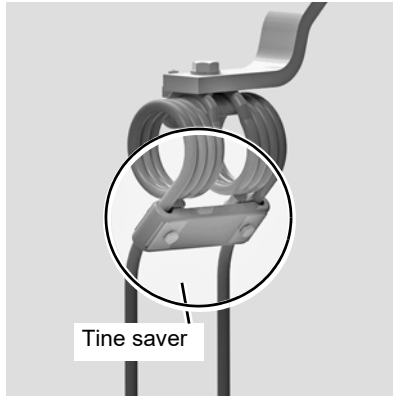


- ▶ Lower the rotors into the work position.
- ▶ Depressurise the system.
- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- ▶ Disconnect the hydraulic hoses.
- ▶ Replace hydraulic hoses.

Accessories

Optional additional equipment does not form part of the standard scope of delivery, and, in this manual, is indicated by a plus symbol [+]. Additional equipment is available to order from your dealer.

Tine saver [+]



If tines are broken, the tine savers can prevent the broken-off part from being lost. Broken-off tine parts in the crop may damage machines that are following behind.

- The flexible plastic holders can be easily attached and released again.
- One tine saver is required for each tine.

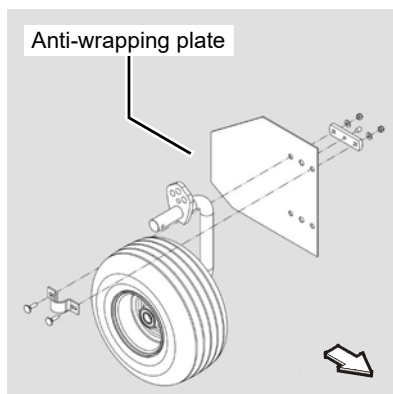


For a good crop pickup, both tine legs must be parallel after fitting the tine saver.



If the tine saver is overtightened, the tine legs become splayed.

Anti-wrapping plate [+]



The anti-wrapping plate ensures a perfect, uniform fodder flow. It stops the feed getting wrapped around the running wheel axles.

- ▶ The anti-wrapping plates are fitted to the running wheel axles in the work position, as shown.



Take note of the arrangement of the axles when fitting the anti-wrapping plates.

Spare wheel [+]



The spare wheel [+] is fitted on the outer device.

Fault elimination

Troubleshooting

Faults can often be eliminated quickly and easily. Before contacting Customer Service, refer to the table to check whether you can remedy the fault yourself.



WARNING

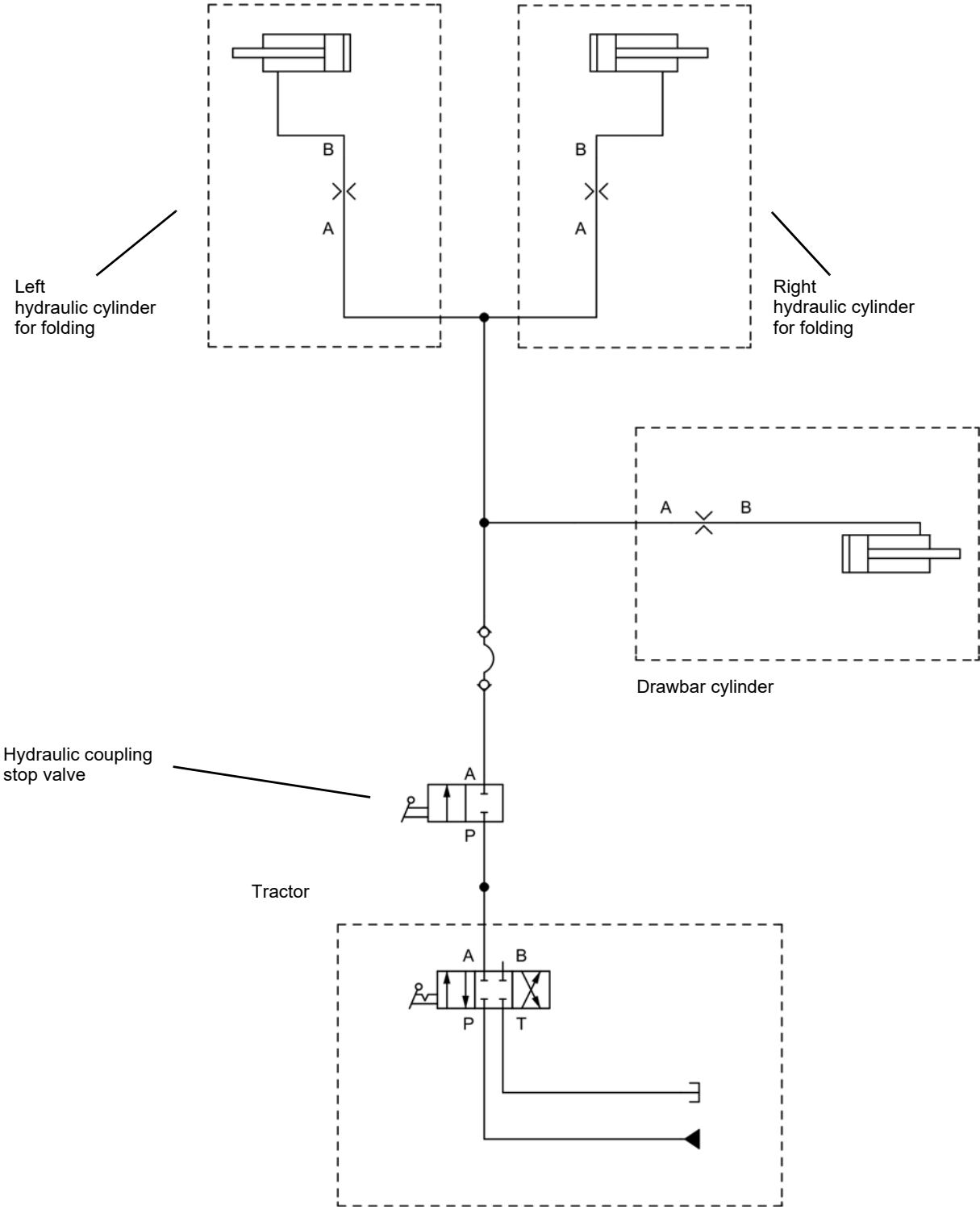
In case of a fault, proceed as follows:

- ▶ Immediately stop operation.
- ▶ Switch off the PTO shaft drive.
- ▶ Switch all operating controls to the neutral or park position.
- ▶ Put the tractor's parking brake into the park position
- ▶ Switch off the tractor engine, put the parking brake in the park position, remove the ignition key and secure the tractor against rolling away.
- ▶ Ensure the machine is standing on firm, secure and level ground, and provide additional support, if necessary.
- ▶ Secure the machine against rolling away (use wheel chocks).

The fault must be repaired before work can be resumed. Damage to the machine and serious or fatal injury may be caused as a result.

Fault	Causes	Remedy
Rotor is leaving crop behind across the entire width.	Working depth set too high.	→ »Adjusting the working depth«, page 45
Fodder is heavily contaminated.	Working depth set too low.	
Machine not operating cleanly at high speed.	Rotor tines set too high.	Reduce speed.
	Speed too fast to process the amount of fodder.	
Slip clutch responding frequently.	Fodder mass too great or irregular.	Reduce speed. Reduce PTO stub shaft speed.
	Working depth set too low.	→ »Adjusting the working depth«, page 45
Noise production during work.	Loose screwed connections or worn-out tine supports.	Check tine supports and screwed connections on tines.
	Broken tines on the tine saver.	Replace the tines.
Fodder is not picked up.	Tines do not touch the ground in the work position.	→ »Adjusting the working depth«, page 45 → Activate the floating position
Tines graze the ground during transportation	Drawbar cylinder lowers if the hydraulic control device is not sealed off	→ Fully raise the machine and close the ball valve.

Hydraulic diagram



Decommissioning

Environment

During decommissioning, the individual parts must be disposed of properly and in an environmentally friendly manner. Please observe the waste disposal guidelines that are currently in force.

Plastic parts

Plastic parts can be disposed of in normal household waste (residual waste), depending on the laws specific to your country.

Metal parts

All metal parts can be sent for recycling.

Oil

In terms of waste legislation, environmentally-compatible hydraulic oils must be stored, collected and disposed of separately in accordance with regulations.

Rubber

Rubber parts, such as hoses or tyres, must be brought to a rubber recycling centre.

A			
After the end of the season	60		
C			
Care	57		
Checking the scope of delivery	33		
Circuit diagram			
Hydraulics	75		
Cleaning	57		
Connecting the hydraulic couplings	42		
Coupling to the pending attachment	38		
D			
Designation of components	28		
Direction information	62		
Disposal			
Metal parts	76		
Plastic parts	76		
F			
Field edge clearing	56		
Filling quantities	69		
L			
Lubrication points	67		
Grease lubrication	67		
Machine	67		
Oil lubrication	68		
PTO shaft	70		
M			
Maintenance	61		
Lubrication points	67		
Maintenance intervals	64		
Maintenance terms	63		
Screwed connections	65		
O			
Operation	52		
Operator's manual	33		
P			
Preparation for road transport	47		
Preparations on the field	50		
Proper use	27		
Protective measures when handling oils or lubricants	62		
		PTO shaft	
		Attaching	40
		Coupling	40
		Fitting	35
		Shortening	35
R			
		Range of application	27
		Road transport	46
S			
		Safety	8
		Care and maintenance	24
		Pictorial symbols	10
		Road transport	21
		Uncoupling	23
		Safety chain for USA, Canada	37
		Signalling equipment	14
		Special tightening torques	66
		Speed	49
T			
		Target group	4
		Technical specifications	
		Dimensions in transport position	29
		Dimensions in work position	30
		Machine equipment	31
		Measurement of airborne sound emissions	32
		Tractor equipment	31
		Weights	31
		Tyre pressure	71
		Tyres	71
U			
		Uncoupling the machine	60