

# **Translation of original Operating Instructions**

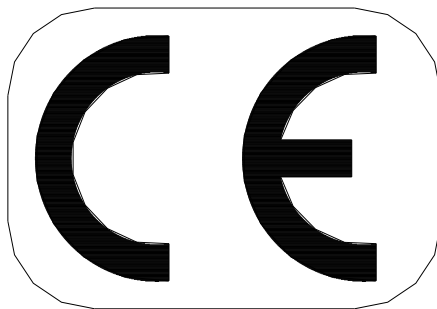
## **Verticutting harrow Terra Rake 350**

# **523.001**

**From equipment I.D. No. :**

**Status :      April 2017**

## **523 99 01**



## EC DECLARATION OF CONFORMITY

We

**Wiedenmann GmbH  
Am Bahnhof  
89192 Rammingen**

declare under our sole responsibility that the product

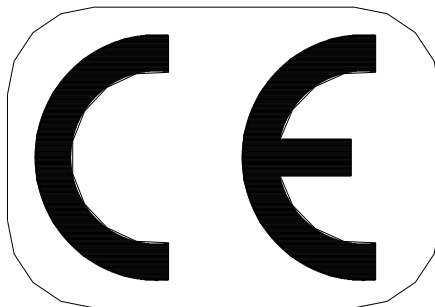
**Verticutting harrow Terra Rake  
Types 350**

to which this declaration refers, corresponds with the relevant basic safety and health requirements of the machinery directive 2006/42/EC.

<b>Rammingen, the 10.03.2015</b>	<b>Horst Wiedenmann</b>
(Place and date of issue)	<b>Managing Partner</b>
	(Name, function and signature of authorised person)

<b>Rammingen, the 10.07.2017</b>	<b>Markus Remmele</b>
(Place and date of issue)	<b>Technical office manager Authorised representative for tech. documentation</b>
	(Name, function and signature of authorised person)

**NOTE: The declaration of conformity is no longer valid if changes are made to the machine that have not been agreed with the manufacturer.**



## Declaration of conformity

We

**Wiedenmann GmbH  
Am Bahnhof  
89192 Rammingen**

hereby declare that the product

**Verticutting harrow Terra Rake  
Types 350**

referred to by this declaration complies with the requirements of  
Machinery Directive 2006/42/EC.

<b>Rammingen, the 10.03.2015</b>	<b>Karl Wiedenmann</b>
(Place and date of issue)	<b>Sales Manager</b>
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# Preface

**READ THESE OPERATING INSTRUCTIONS CAREFULLY** to familiarise yourself with the correct way to operate and service your machine, and to prevent personal injury or damage to the machine. These operating instructions and the adhesive safety signs on your machine can also be obtained in other languages (your dealer can order these for you).

**THESE OPERATING INSTRUCTIONS ARE** a permanent part of your machine and should be handed over to the new owner if the machine is sold.

**MEASUREMENTS** in these operating instructions are given in the metric system. Only use suitable parts and screws. Different wrenches are required for metric and inch screws.

**THE DESIGNATIONS "RIGHT" AND "LEFT"** refer to the forward driving direction of the mounted equipment.

**ENTER THE PRODUCT IDENTIFICATION NUMBERS** in the appropriate "Technical data" or "Product - Identification Number" sections. Please ensure that all figures are accurately entered. These numbers can be of invaluable assistance for tracing the machine should it be stolen. Your dealer also needs these numbers when you order spare parts. We recommend that you additionally file these identification numbers in a secure place away from the machine.

**BEFORE DELIVERY OF THIS MACHINE**, your dealer performed a pre-delivery inspection to ensure optimal performance.

**THE VERTICUT HARROW IS DESIGNED SOLELY** for commercial use and for conventional use on sports fields for the digging and roughing up of the ground surface, as well as for the removal of thatch ("SPECIFIED USE").

Usage for any other purpose beyond this is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from this improper use. These risks are borne solely by the user. Compliance with and strict adherence to the operating, maintenance and repair conditions as specified by the manufacturer also form essential elements of the intended usage.

**FORESEEABLE INCORRECT USE/MISUSE.** The Terra Rake is **NOT** designed for use on artificial turf surfaces. It is not permitted to use the attached device to transport persons or things.

**THIS MACHINE MUST ONLY BE** operated, maintained and repaired by persons familiar with all its particular characteristics and acquainted with the relevant safety regulations. The relevant accident prevention regulations, all other generally recognised safety-related, occupational medicine and road traffic regulations must be adhered to. Any modifications carried out to this machine without the express approval of the manufacturer excludes the manufacturer of all liability for any resulting damage.

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# 1.0. Safety

## Recognize safety information

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



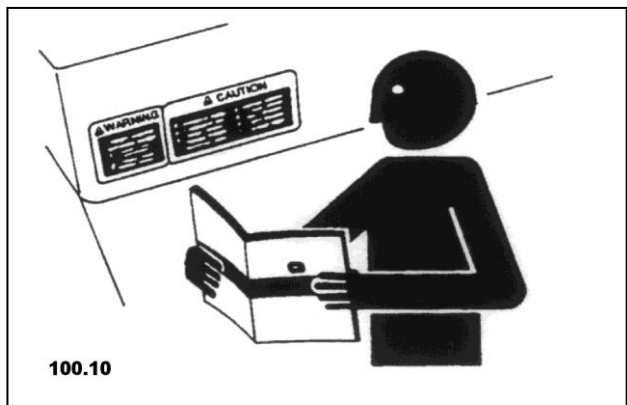
## Follow safety instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your dealer.

Learn how to operate the machine and to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

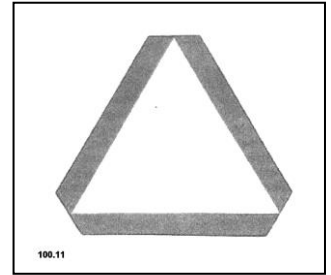
If you do not understand any part of this manual and need assistance, contact your dealer.



## 1.0. Safety

### Observe road traffic regulations

Always observe local road traffic regulations when using public roads.



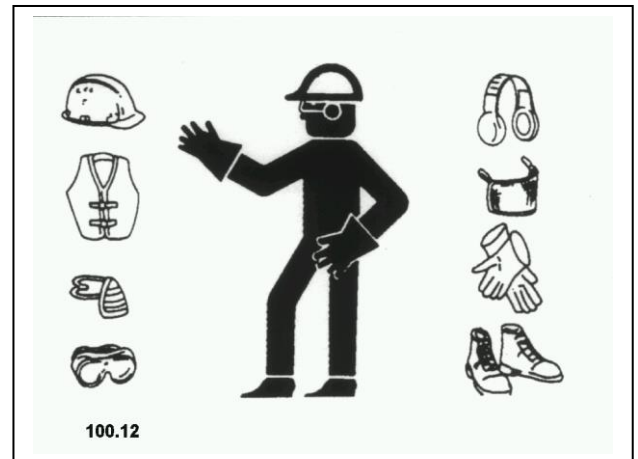
### Wear protective clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



### Stay clear of rotating drivelines

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.



# 1.0. Safety

## Guard and shields

Keep guards and shields in place all the times. Ensure that they are in good condition and installed correctly.

Always disengage the driveline, shut off engine and remove key before removing any guards or shields.

Keep hands, feet and clothing away from moving parts.

## Avoid high - pressure fluids

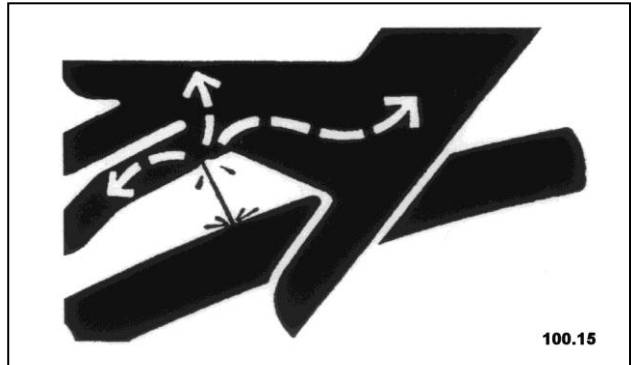
Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.



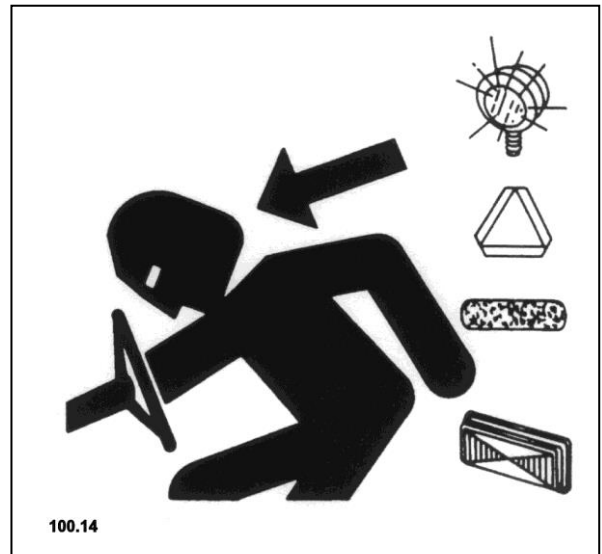


## 1.0. Safety

### Use safety lights and devices

Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use hand signals or turn signal lights.

Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your dealer.



### Avoid heating near pressurized fluid lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.



## 1.0. Safety

### Remove paint before welding or heating

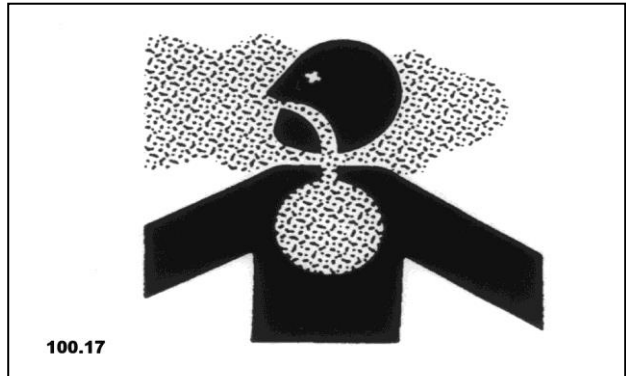
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heatingh:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



## 1.0. Safety

### 1.1. Safety Decals

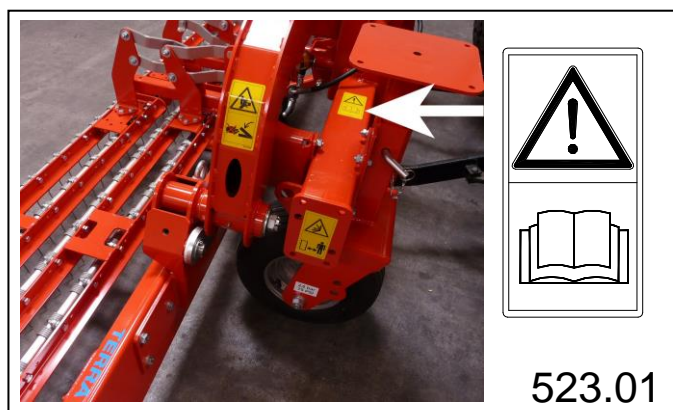
#### Pictorial safety signs

At several important places of this machine safety signs are affixed intended to signify potential danger. The hazard is identified by a pictorial in a warning triangle. An adjacent pictorial provides information how to avoid personal injury. These safety signs, their placement on the machine and a brief explanatory text are shown below.



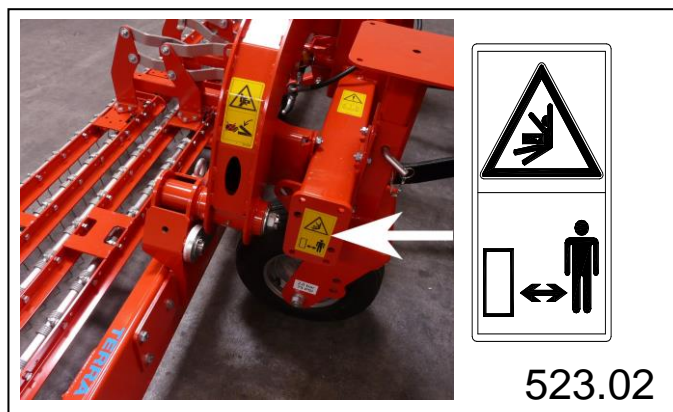
#### Operator's manual

This operator's manual contains all important information necessary for safe machine operation. Carefully observe all safety rules to avoid accidents.



#### Swivelling range

Maintain sufficient distance to the attached equipment when the tractor engine is running.

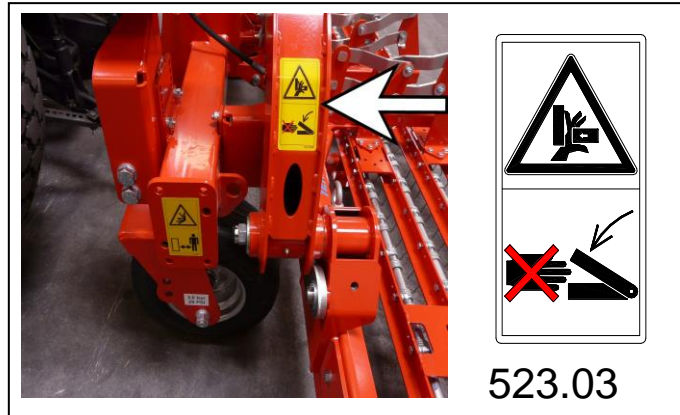


## 1.0. Safety

### 1.1. Safety Decals

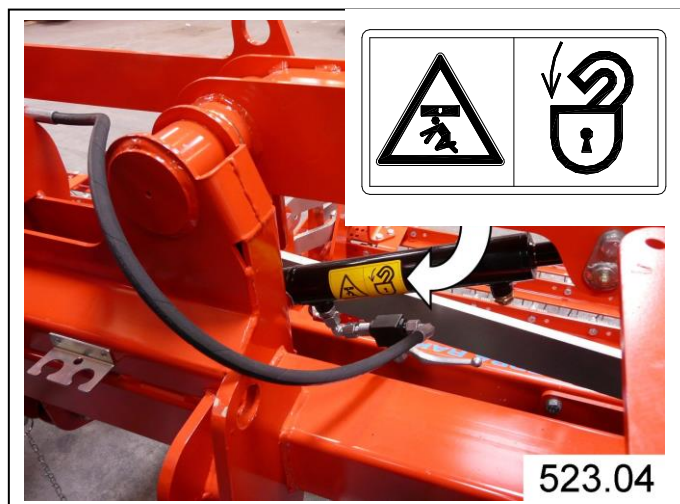
#### Swivelling range

Never reach into areas of crushing hazard as long as any parts may move.



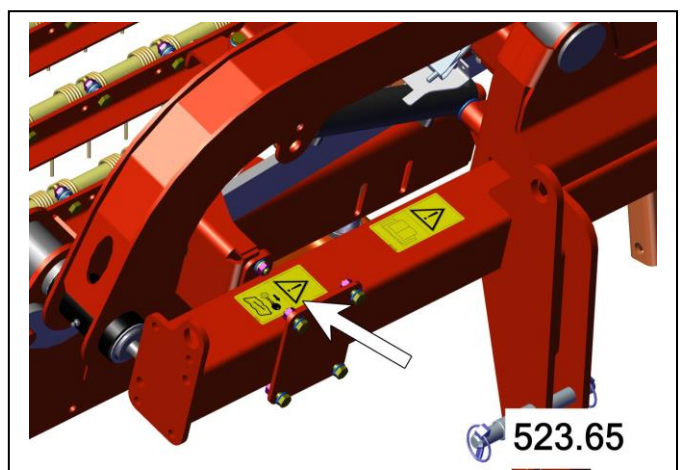
#### Working with the harrow bars raised

Activate the safety locking mechanism before entering the area around the raised harrow bars.



#### Maintenance

Shut off the engine and remove the key before performing maintenance or repair work.



# 1.0. Safety

## 1.2. Safety instructions



Apart from the information in these operating instructions, please also observe generally applicable safety and accident-prevention standards!

During work operation, the user is responsible for the safety of third parties!

During operation on public highways, the relevant traffic regulations must be observed!

Before moving off, ensure that the immediate area of the machine is clear e.g. no children nearby.

Ensure that your visibility is not impaired.

Keep clear of the danger zone of the machine!

Always ensure there is sufficient front-axle load; the steering capability of the vehicle must be maintained.

Observe the max. permissible axle load of the tractor.

The driving and operational characteristics of the tractor may be influenced by the attachment of the Terra Rake. Always adapt your driving style to match the terrain and ground conditions.

Special care should be taken when working and turning on a slope.

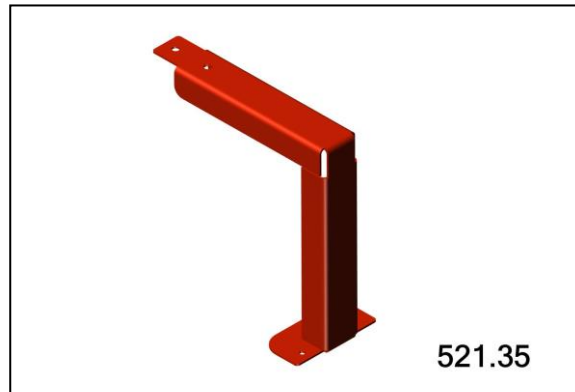
## 2.0. Assembly

### 2.1. General Information

Only attach the machine on firm, even ground.

The Terra Rake is secured to the pallet by two transport feet when delivered. Once removed, the transport feet are no longer required and can be disposed of.

For this work, please use your personal protective equipment (PSA) such as: gloves, goggles, ear protectors.



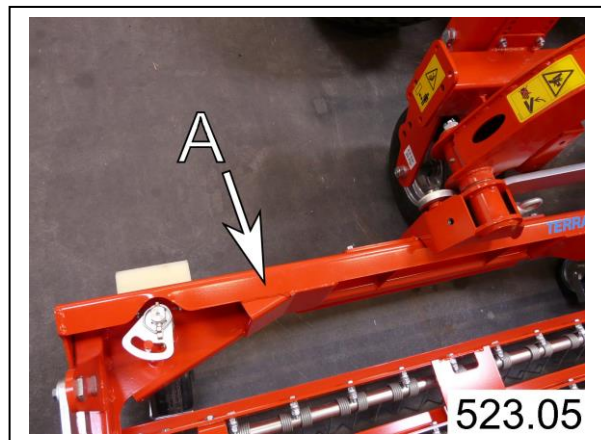
### 2.2. Fitting the Verticut Harrow to the main frame

Attach the main frame to the tractor (see section 4.2.).

Insert the rear parking support in the top position and secure it.

Position the left Verticut Harrow behind the main frame on the left-hand side.

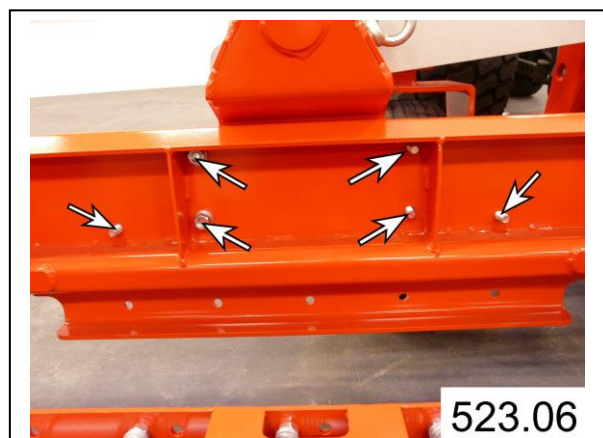
Remove the securing components from the front before fitting the Verticut Harrow to the main frame.



Align the hole pattern for the six bolts with the hole pattern on the main frame.

Only tighten the fixing bolts by hand.

Secure the right-hand Verticut Harrow to the main frame in the same way.





## 2.0. Assembly

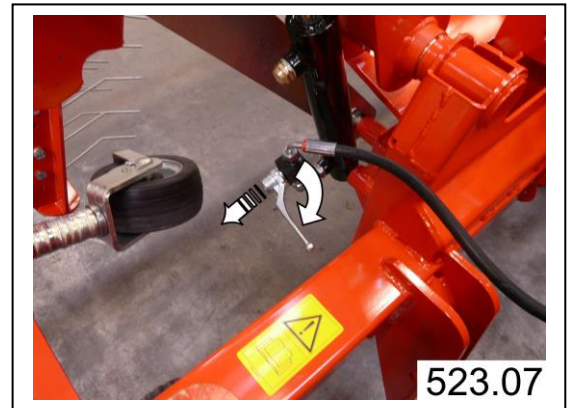
### 2.2. Fitting the Verticut Harrow to the main frame

Connect the hydraulic line to the tractor.

Raise the Verticut Harrow from the floor by actuating the hydraulic control block on the tractor.

Activate the safety locking mechanism on the hydraulic cylinder (see section 5.2.).

Fully tighten all of the fixing bolts to create a solid connection with the main frame.



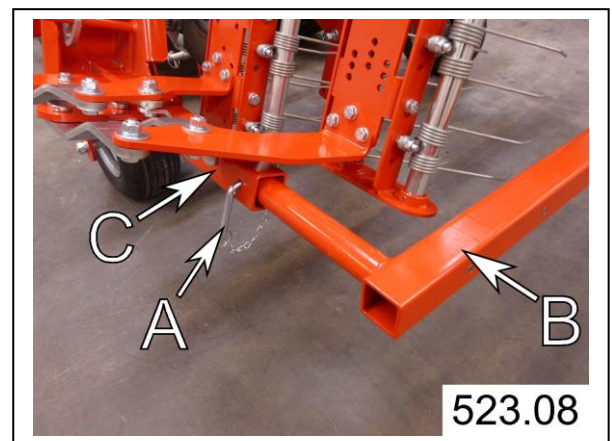
### 2.3. Fitting the transport securing device

The transport securing device was supplied along with the basic unit.

Raise the Verticut Harrow into the transport position.

Remove the connector pin (A) from the transport securing device (B).

Peg the transport securing device (B) to the lower connecting tubes (C).



The lighting system is also screwed onto the transport securing device (B) (see section 2.5.).



## 2.0. Assembly

### 2.4. Mounting the strain relief kit



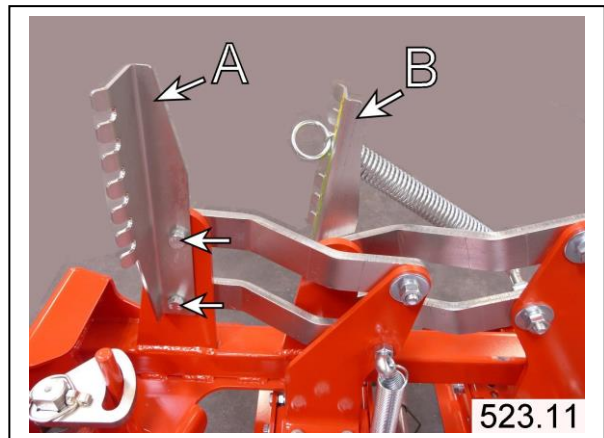
#### ATTENTION DANGER!

The machine shall be set down on an even, secure surface for the mounting of the strain relief kit.

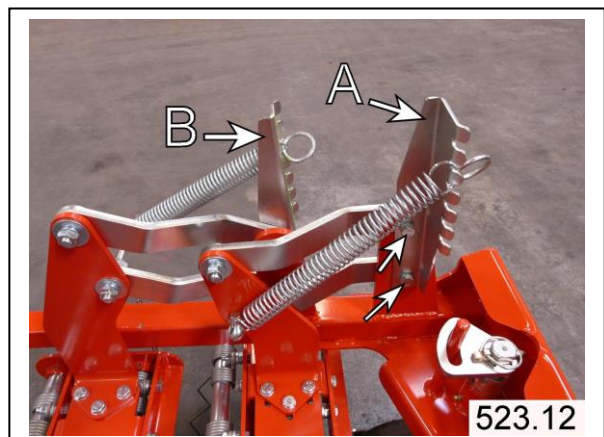
Remove the screw, spring circlip and washer. The removed washer will be replaced.



Secure spring holder I (A) on right with washer, spring circlip and screw as shown in figure 523.11.



Secure spring holder II (B) on right with washer, spring circlip and screw as shown in figure 523.12.





## 2.0. Assembly

### 2.4. Mounting the strain relief kit



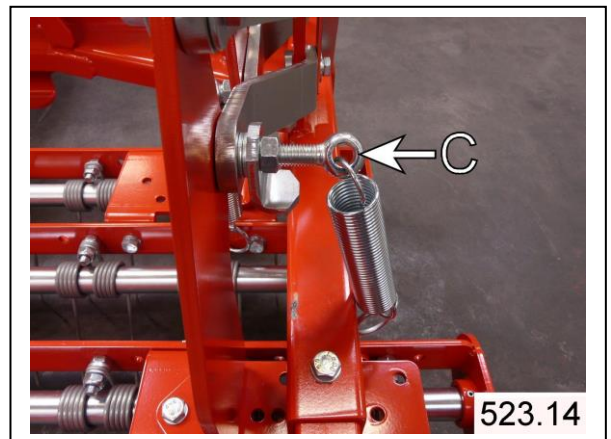
#### ATTENTION DANGER!

The machine shall be set down on an even, secure surface for the mounting of the strain relief kit.

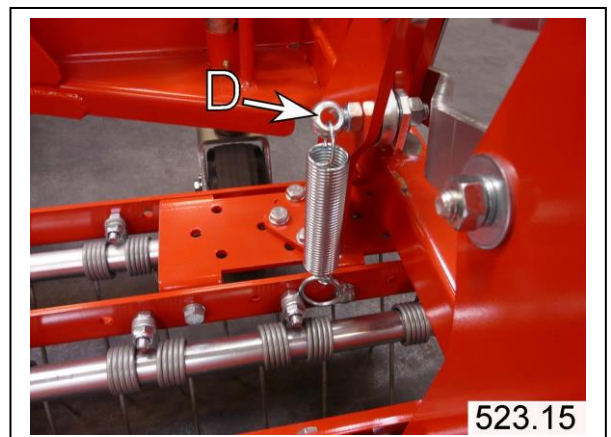
Remove the screw, spring circlip and nut. The removed washer will be replaced.



Secure the tension spring with long eye bolt (C) from the outside, instead of the removed screw on the right, with washer, spring circlip and screw (see figure 523.14).



Secure the tension spring with short eye bolt (D) from the inside, instead of the removed screw on the right, with washer, spring circlip and screw (see figure 523.15).

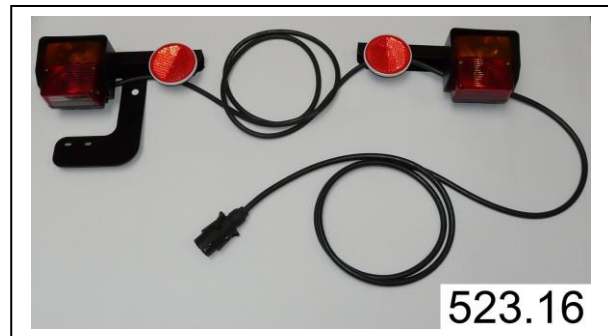


The adjustment process is described in section 6.4.

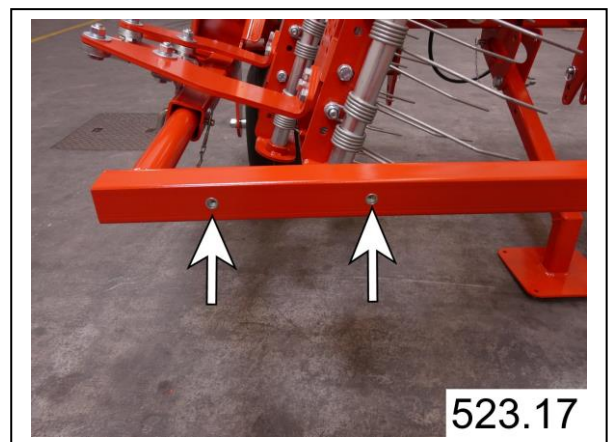
## 2.0. Assembly

### 2.5. Fitting the lighting system

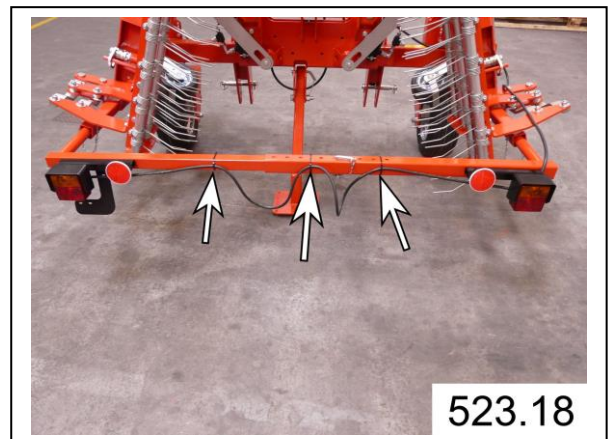
The lighting system is fully assembled and ready to use. It is designed to be attached to the transport securing device (A).



Screw the two light brackets to the transport securing device (A) using the appropriate hole pattern.



Use cable ties to fix the cable between the two light brackets to the transport securing device (A).



## 3.0. Transport

### 3.1. General Information



#### CAUTION DANGER!

The Terra Rake is delivered secured to a transport frame.

ausgeliefert.

Only use a forklift and lifting gear with sufficient load-carrying capacity.



Never stand under lifted loads. There is an imminent danger to life if the load falls.

Improper transport and assembly of the Terra Rake can:

- injury to persons
- damage to property.

Pay special attention to the direction of approach when lifting the machine with the transport frame.

We do not accept any liability for damage resulting from improper handling.



#### CAUTION DANGER!

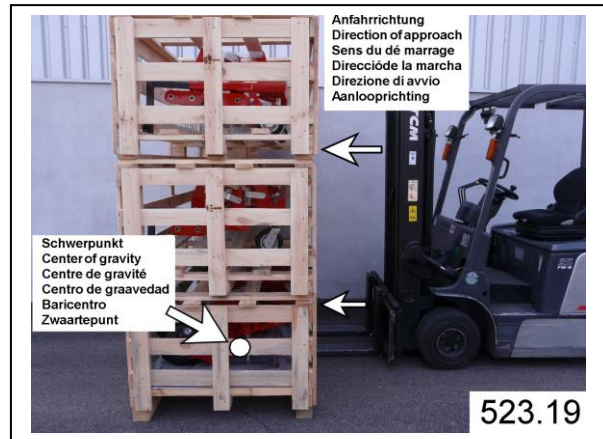
Caution must be exercised when cutting through the securing straps. Risk of injury due to ends "springing open".

## 3.0. Transport

### 3.2. Transportation of the Terra Rake

#### 3.2.1. Transport Using a Forklift

- Insert the forks under the transport frame (pay attention to the direction of approach),
- carefully lift the transport frame,
- unload the TERRA RAKE from the transport device when it is balanced,
- Remove top part and side parts of the transport frame,
- cut through the securing straps,
- attach the TERRA RAKE to the tractor and lift it off the transport frame.



#### NOTE:

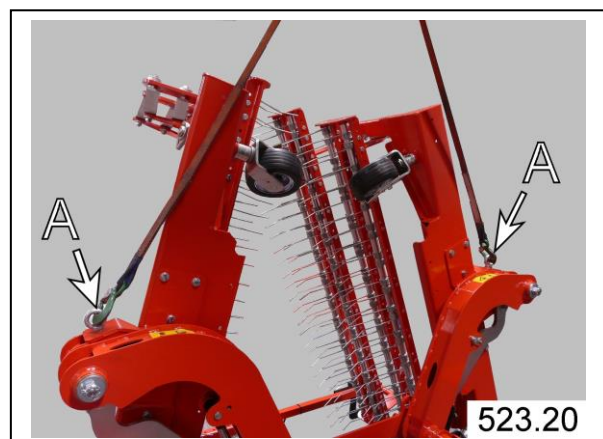
After unpacking, check that all parts for the Terra Rake are present.

The shipping company and Wiedenmann GmbH or the delivery company must be notified immediately in writing of any transportation damage and missing parts.

#### 3.2.2. Hitching points for a crane

The following two points are provided on the Terra Rake for attachment to a crane.

Point A: 2x on the frame





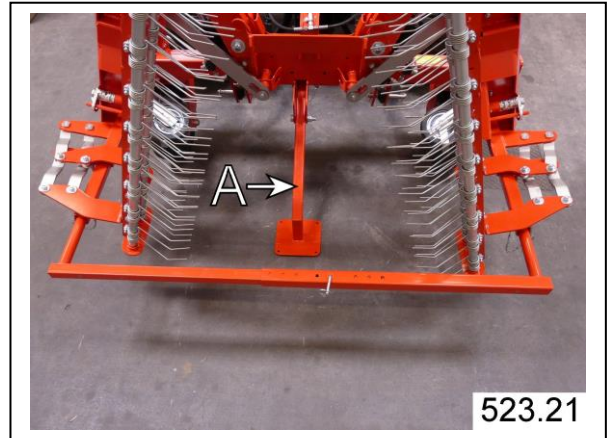
## 3.0. Transport

### 3.2. Transportation of the Terra Rake

#### 3.2.3. Preparation before loading

Raise the Terra Rake slightly using the tractor's rear hydraulic system.

Peg the rear parking support (A) in the lower position and secure it.

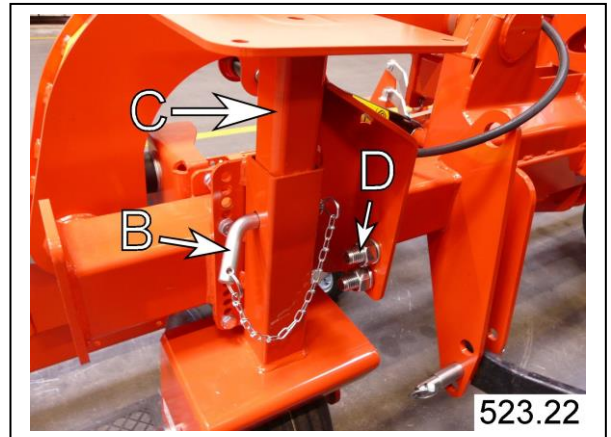


Release the spring clip.

Remove the locking pin (B).

Pull the parking support (C) up to remove it.

Remove the bolts (D) that are screwed into the parking support (C).



Securely screw the parking support (C) to the outside of the wheel yoke using the bolts (D) that have been removed.

Insert the locking pin (B) into the hole from which it was removed and secure it.



## 3.0. Transport

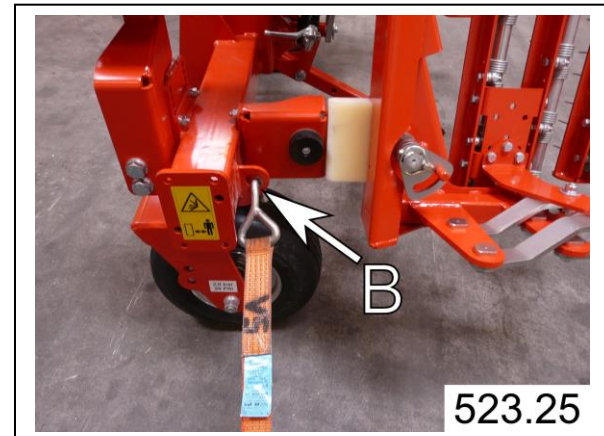
### 3.2. Transportation of the Terra Rake

#### 3.2.4. Mounting point for transport on a trailer

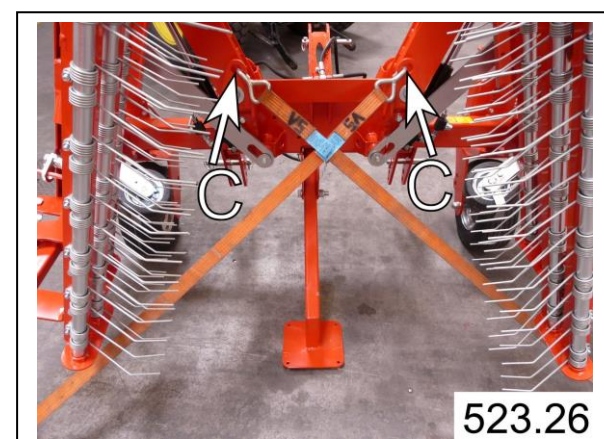
Point A: Two lashing points on the front of the frame



Point B: Two lashing points on the side of the frame



Point C: Two lashing points at the rear on the lateral strut



## 3.0. Transport

### 3.2. Transportation of the Terra Rake

#### 3.2.5. Transportation on the road

The transport securing device must be fitted for transportation on public roads.

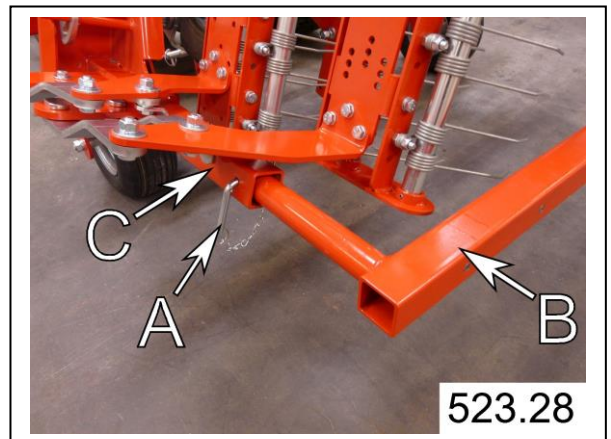
The "lighting system" OPTION is also attached to the transport securing device (B).

Raise the Verticut Harrow into the transport position.



Peg the transport securing device (B) to the lower connecting tubes (C).

The transport securing device (B) is fixed in place using the connector pin (A).



## 4.0. Connecting to the Tractor

### 4.1. General Information



#### CAUTION DANGER!

Apply the parking brakes to ensure the tractor does not roll away.



#### CAUTION !

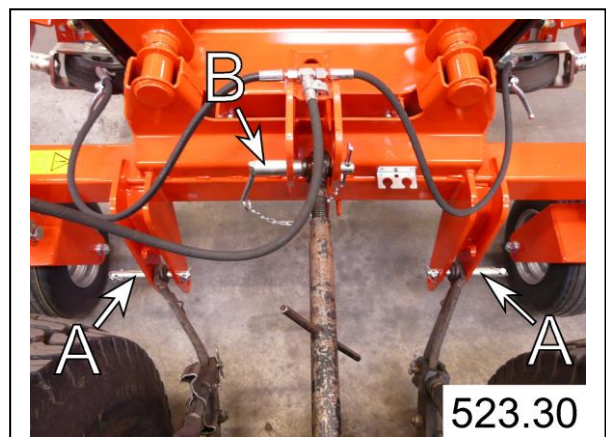
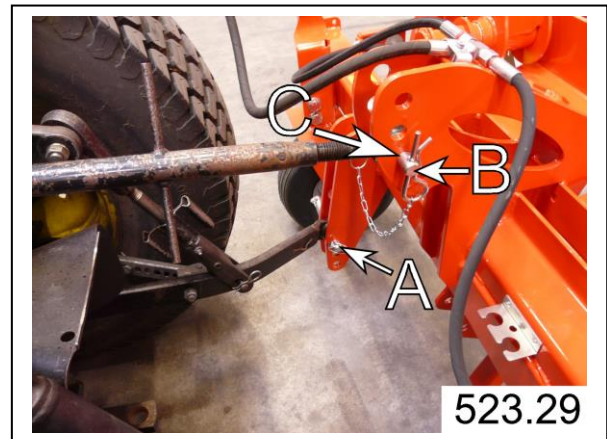
A tractor rear hydraulic system with a floating position is essential for proper use.

Ensure that there is sufficient front axle load to maintain steerability (where required attach ballast weights i.a.w. the tractor's operating instructions).

### 4.2. Mounting with cat.1

**Carefully move the lower links backwards between the mounting brackets.**

1. Peg the lower link using the pin (A) so that the chassis has a ground clearance of approx. 20 cm. Secure the pin (A) with a linchpin.
2. Peg the upper link to the three-point frame by inserting the pin (B) in the relevant hole (C) and secure it with the spring clip.
3. Tighten turnbuckles of the stabilisation chain.



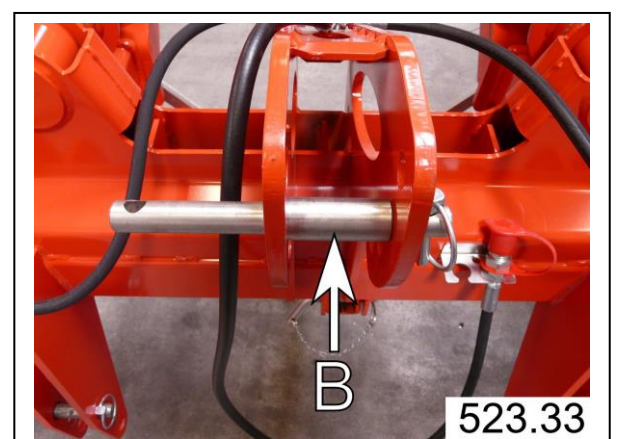
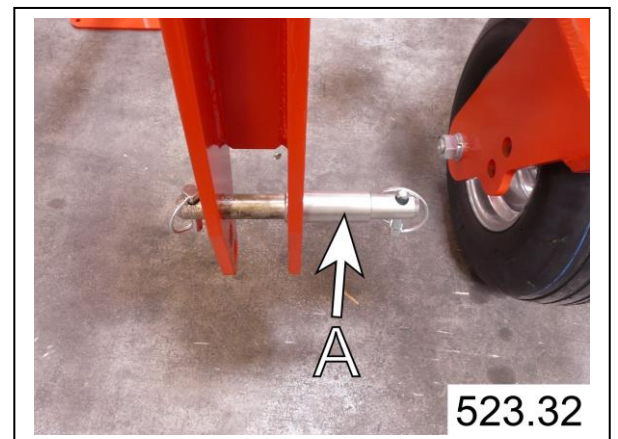
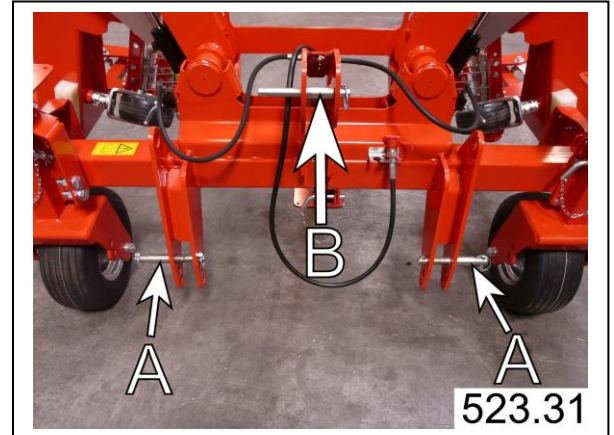


## 4.0. Connecting to the Tractor

### 4.3. Mounting with cat. 2

**Carefully move the lower links backwards from the outside to the mounting brackets.**

1. Peg the lower link using the pin (A) so that the chassis has a ground clearance of approx. 20 cm. Secure the pin (A) with a linchpin.
2. When coupling with catch hooks, the tractor moves the lower links underneath the stationary attached equipment. As a result, the catch hooks are moved directly under the coupling counterparts of the machine to be coupled. The lower links are then raised, whereby the loaded weight of the machine opens (presses down on) the catch hook locking mechanism. In order to do this, suitable catch balls or catch profiles (balls with catch trays) must be fitted to the machine. As soon as the correct position in the catch hooks is reached, the locking mechanism engages automatically and the connection is complete.
3. Peg the upper link to the three-point frame by inserting the pin (B) in the relevant hole (C) and secure with the spring clip.
4. Tighten turnbuckles of the stabilisation chain.



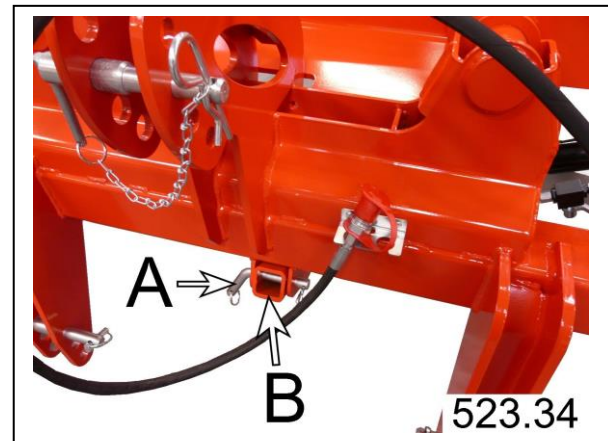
## 4.0. Connecting to the Tractor

### 4.4. Raising the parking support

Raise the attached equipment slightly from the ground.

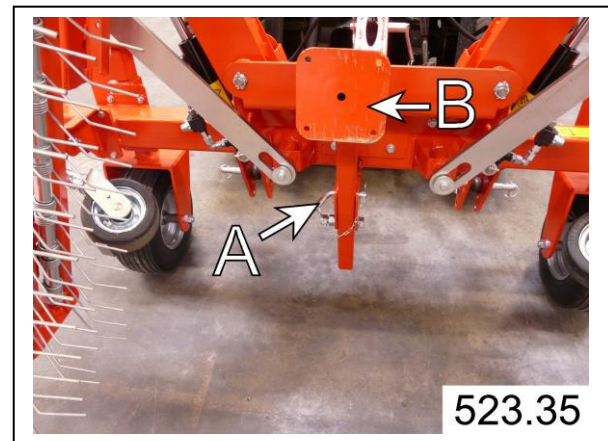
Release the spring clip.

Remove the locking pin (A).



Swivel up the parking support (B) and peg it using the locking pin (A).

To fix the locking pin in place, insert the spring clip.



### 4.5. Connecting hydraulics

The hydraulic system is connected to the hydraulic sockets on the rear of the tractor.

If your tractor is not equipped with such a socket, please contact your dealer.

Avoid tight bends and chafing of the hydraulic lines.

## 5.0. Disconnecting from the Tractor

### 5.1. General Information



#### CAUTION DANGER!

Apply the parking brakes to ensure the tractor does not roll away.

When removing the Terra Rake, always set it down on a firm and even surface.

**- RISK OF TOPPLING**

### 5.2. Safety locking mechanism

Raise both extension arms as high as they will go using the tractor's rear hydraulic system.

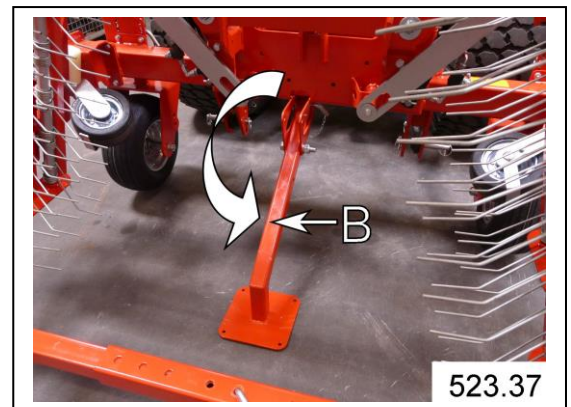
In this position, actuate the safety locking mechanism on both hydraulic cylinders.



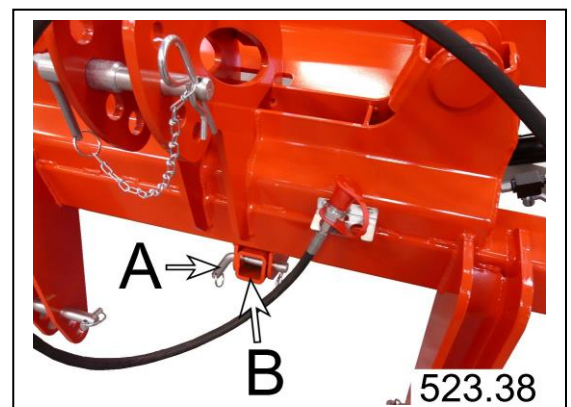
### 5.3. Lowering the rear parking support

Raise the attached equipment slightly using the tractor's rear hydraulic system.

Remove the connector pin (A) and lower the parking support (B) to the rear.



To fix it in place, peg the parking support (B) on the front side using the connector pin (A) and secure it.



## 5.0. Disconnecting from the Tractor

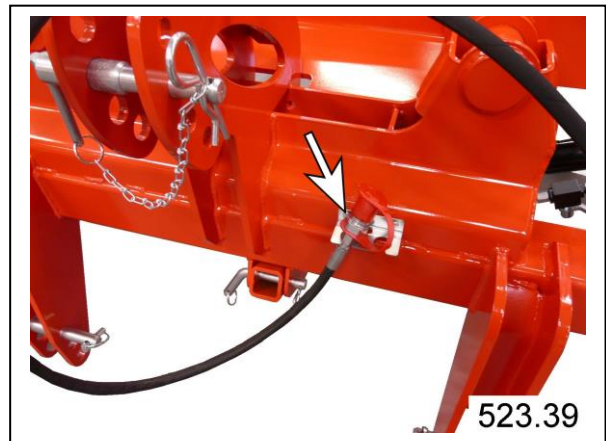
### 5.4. Removing the TERRA RAKE

Check the following before removing:

- That the safety locking mechanism on the hydraulic cylinders is activated.
- That the rear parking support is pegged in the lower position and secured.

Only now can you start to remove the Terra Rake.

- Lower the attached equipment onto the ground.
- Uncouple the hydraulic line from the tractor.
- Hydraulic line → attach to the fitted retainer.
- De-tension the upper link and detach it from the three-point frame.
- Pull out the lower link pins.
- Peg all the pins to the three-point frame and secure them with linchpins.





## 6.0. Before Initial Operation

### 6.1. General Information



#### CAUTION DANGER!

During work operation, the verticut harrow user is responsible for the safety of third parties.

Always check the immediate surroundings when starting to drive (Caution - CHILDREN!).

Take particular care when working on a slope

- **DANGER OF TILTING !**

The warning and information signs attached to the machine contain important information to ensure safe operation. Observe these instructions for your own safety!

Beware of foreign bodies when working.

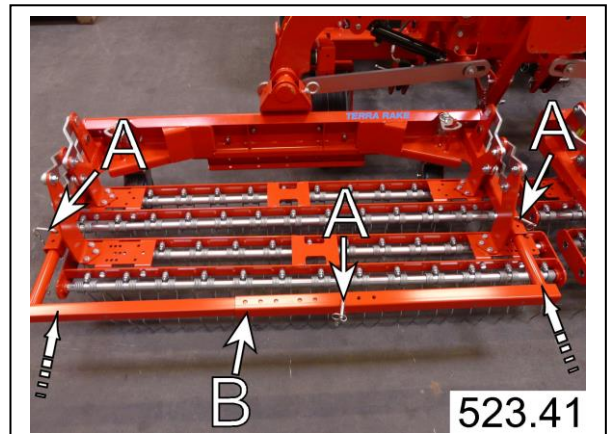
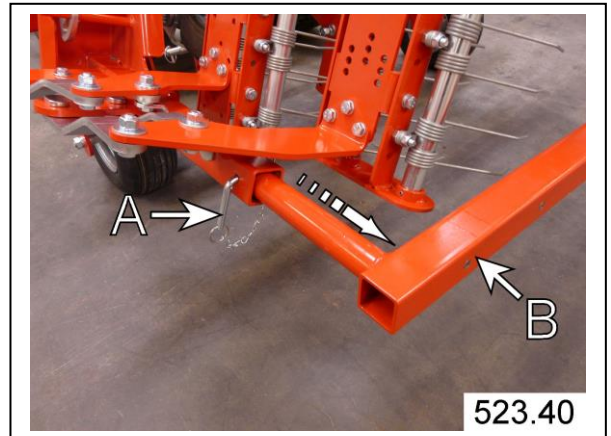
Never reverse the verticut harrow while in the working position.

### 6.2. Removing the transport securing device

Undo the securing pin (A) on both sides.

Remove the transport securing device (B) out of the support by pulling it to the rear.

In order to work with the machine, peg the transport securing device (B) to one of the two Verticut Harrows and secure it.

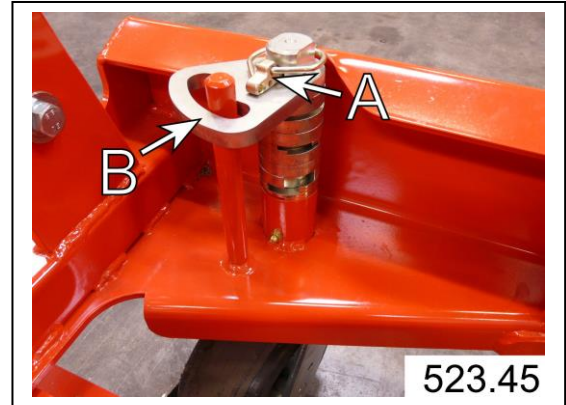


## 6.0. Before Initial Operation

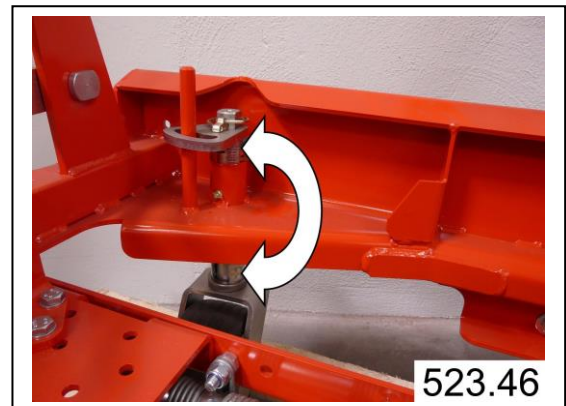
### 6.3. Depth adjustment

The harrows are adjusted by moving the spacer rings on the four support wheels by exactly the same amount.

- Raise the Verticut Harrow using the tractor's rear hydraulic system.
- Remove the linchpin (A).
- Remove the pivot bracket (B) and peg in the linchpin (A).



- Moving the spacer rings from the bottom to the top increases harrow aggressiveness.
- Moving the spacer rings from the top to the bottom reduces harrow aggressiveness.
- The **OPTION** spring relief kit helps to reduce aggressiveness (see section 6.4.).
- If all of the supporting wheels are in the same position, the pivot brackets (B) must be refitted.



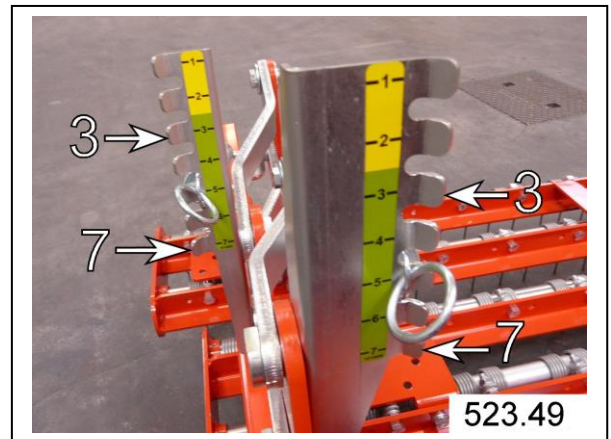
## 6.0. Before Initial Operation

### 6.4. Setting the strain relief kit

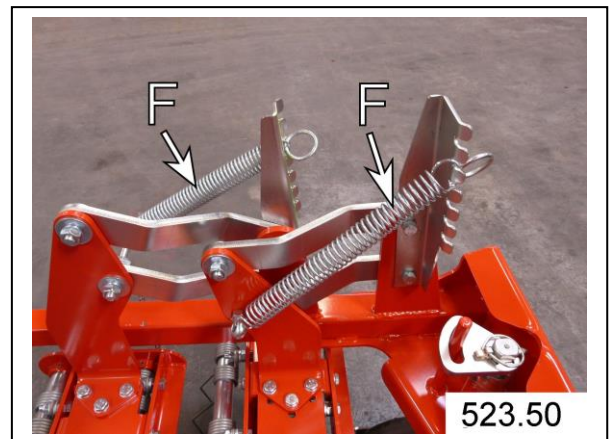
The spring relief kit reduces the tine penetration depth.

#### Setting for lawns

All tension springs are fitted at positions 3 to 7 in the case of mounted strain relief kit.



Fit tension springs (F) at the desired position on the spring holders.



## 7.0. Operation

### 7.1. General Information



#### CAUTION DANGER!

During work operation, the verticut harrow user is responsible for the safety of third parties.

When moving off, ensure that the immediate area of the machine is clear e.g. no children nearby!

Take particular care when working on a slope  
- **DANGER OF TILTING !**

Direct everyone out of the danger zone before starting.

The warning and information signs attached to the machine contain important information to ensure safe operation. Observe these instructions for your own safety!

Beware of foreign bodies when working.

Never reverse the verticut harrow while in the working position.

### 7.2. Driving characteristics



#### CAUTION !

Attaching the Terra Rake may influence the driving and operational characteristics of the tractor.

- Always adapt your driving style to match the terrain and ground conditions.
- Special care should be taken when working and turning on a slope.  
- **DANGER OF TOPPLING !**

#### Starting operation

Drive the tractor onto the surface to be worked on

Lower the machine

Start driving operation

Operating speed

10 bis 15 km/h

[6.2 - 9.3 mile/hour]

#### Ending operation

Stop driving

Lift out machine

Switch off the tractor engine

Clean the verticutting harrow



## 7.0. Operation

### 7.3. Danger Zone



#### CAUTION !

Direct everyone out of the danger zone before starting.

Do not allow the Verticut Harrow to make any swivelling movements if there are people in the machine's danger zone.

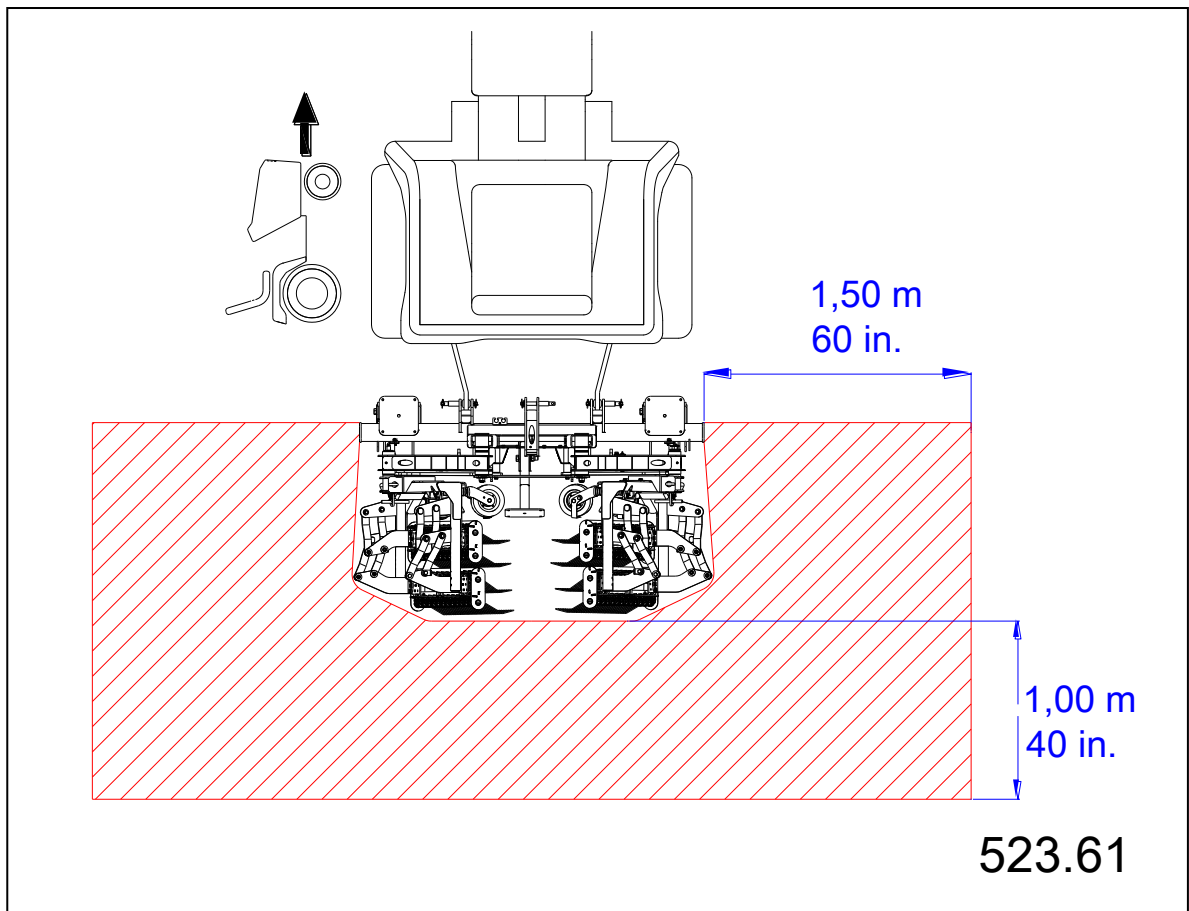
During operation, you must ensure that there is sufficient clearance for the Verticut Harrow to swivel out:

#### Clearances

to the side **approx. 1,50 m**

to the rear **approx. 1,00 m**

in order to avoid injury to persons or damage to equipment.



## 8.0. Maintenance

### 8.1. General Information



#### CAUTION DANGER:

Perform maintenance tasks only with the machine installed. Shut down the tractor and secure it against accidental starting.

When working on the tools, safety precautions should be taken to prevent injury (e.g. gloves).

Switch off the tractor engine before performing any maintenance work.

When performing maintenance and repair work, the installed machine must always be lowered to the ground.

The maintenance of the tools includes a lubrication as well as a cleaning process. After finishing the mowing operation the machine should be washed out and checked thoroughly.

Use only original parts. Third-party parts often do not match the required quality and thus endanger your safety. Moreover, the sustained warranty and recognition of justified warranty claims can only be guaranteed, if you exclusively use **original parts from Wiedenmann**.

We expressly point out to you that non-original parts that have not been delivered by Wiedenmann also have not been approved and released by

Wiedenmann.

The installation and/or use of such products may actually have a negative impact on the constructional properties of your vehicle and thus may affect the active and/or passive safety. Damages arising from the use of non-original parts are excluded from the scope of the manufacturer's liability.

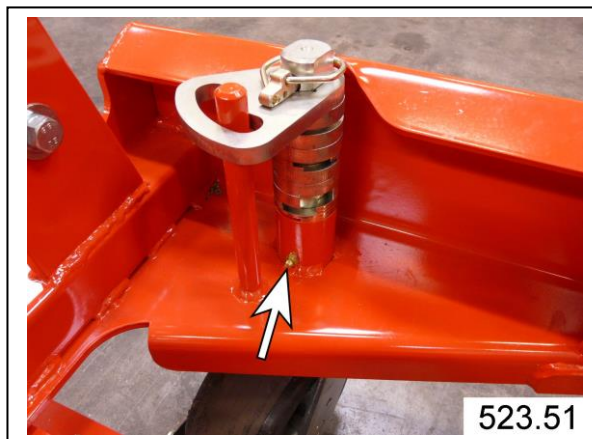
Refit all of the components.

After performing maintenance work, remove all parts that do not belong to the Verticut Harrow.

## 8.0. Maintenance

### 8.2. Lubrication points

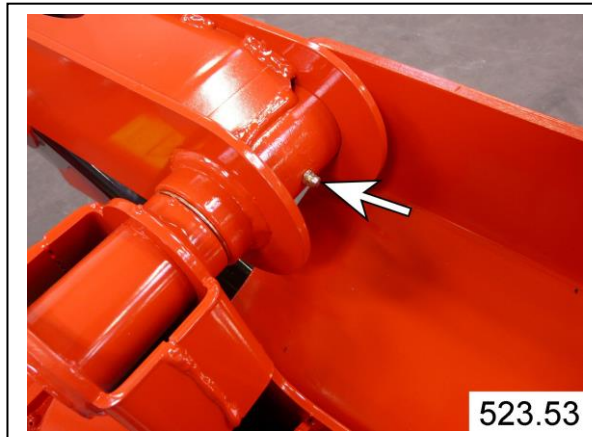
Support wheel bearing



Pendulum bearing



Swivelling arm bearing



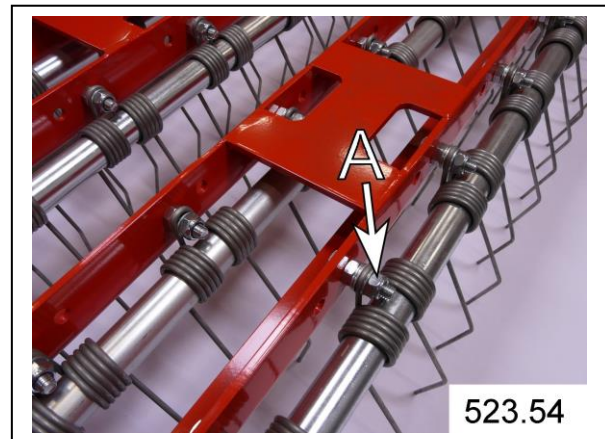
Bearing pin for the hydraulic cylinder on the swivelling arm



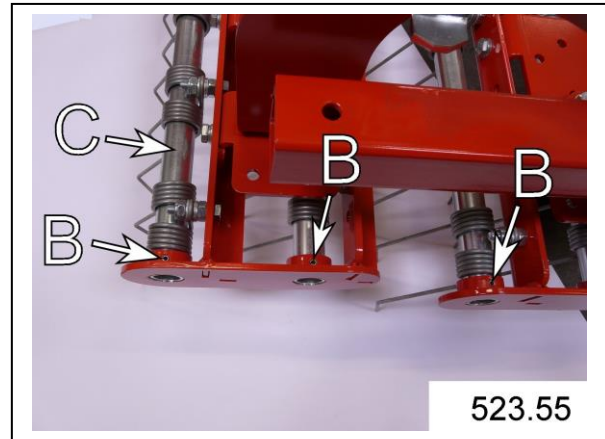
## 8.0. Maintenance

### 8.3. Replacing the spring tines

Loosen all hexagon nuts (A) of the faulty spring elements



Remove the clamping sleeves (B) on the left and right of the axle.



Pull the axle (C) outwards.

Replace spring elements

Insert axle (C)

Tap the clamping sleeves (B) on the left and right into place.

Tighten all hexagon nuts (A) of the replaced spring elements.

## 8.0. Maintenance

### 8.4. Cleaning

Clean the verticutting tines on a regular basis. This lengthens the service life of the components and, in the process, you discover loose components, wear and areas of unwanted corrosion.

**NOTE:**

**Do not bring plastic and sealing elements in contact with aggressive fluids (e.g. carbon tetrachloride, tri, benzene, caustic solutions, acids etc.).**

**Bind drops of oil with a binding agent and dispose of it according to the regulations. Eliminate the cause. Only use wire brush and caustic solutions in case of emergency.**

#### Auxiliaries and application

When performing cleaning work, the installed machine must always be lowered to the ground.

#### Cleaning with water

All dirty parts, but use caution:

⇒ water causes rust.

#### Cleaning with dry cloth

All inspection glasses, signs and labels

#### Cleaning with compressed air

**Exercise caution when using compressed air. Put on safety glasses! Without safety glasses you risk eye injuries! Furthermore you blow dirt into the guides and bearings. For this reason, avoid this cleaning method.**



## 8.0 Maintenance

### 8.5. Care and maintenance of the hydraulic system

Suitable for hydraulic fluids based on mineral, glycol and synthetic oils.

Examine hydraulic hose lines regularly for damage and ageing and replace if necessary

According to the manufacturer's specifications, the replacement period for hydraulic lines is 6 years.



#### CAUTION !

The hydraulic system is not approved for the use of BIO oils !



#### CAUTION !

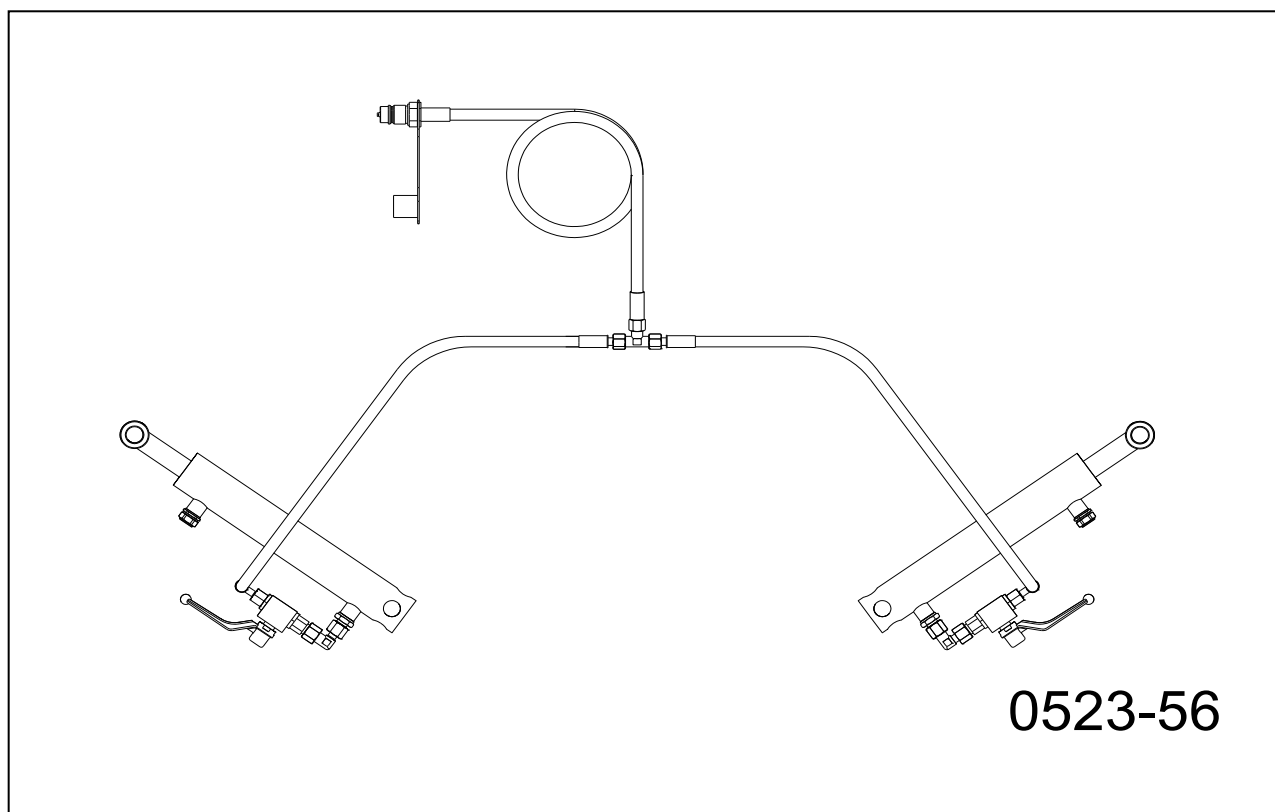
High-pressure fluids leaking under high pressure can penetrate the skin, causing serious injury. For this reason, depressurise the system before disconnecting lines. Before building up pressure in the system again, ensure that all line connections are leak-tight. It is difficult to see hydraulic oil leaking from a small opening. For this reason, use a piece of cardboard when searching for leaks.

Protect the hands and body from high-pressure fluids.

If a fluid has penetrated the skin, this must be removed immediately by a doctor familiar with this type of injury; otherwise serious infections are possible. Doctors who are unfamiliar with this type of injury should obtain the relevant information from a competent medical source.

## 8.0 Maintenance

### 8.6. Hydraulic connection diagram



### 8.7. Wheels and Tyres



#### CAUTION:

Serious or fatal injuries can be caused by the explosion-type bursting of the tyres and by the rim parts.

Regularly check the tyre pressure: **200 kPa**

Always adhere to the recommended tyre pressure. Never inflate the tyres over the recommended pressure. Do not heat the wheels or tyres or carry out welding on them. Heating the tyres can lead to explosion-type tyre bursts as

the pressure in the tyre thereby becomes very high. Welding can lead to deformations or damage of the wheel.

Check wheels and tyres daily for low pressure, slits, bulges, damaged rims, missing wheel bolts or -nuts.

Ensure correct tyre pressure of the vehicle tyres is correct.

## 8.0. Maintenance

### 8.8. Disassembly / disposal



#### **ATTENTION DANGER !**

**Exercise care when disassembling.**

**Please refer to the chapter "Safety measures" and local safety regulations.**

**The dangers are as follows:**

- **heavy parts might fall down after being disconnected**
- **sharp edges,**
- **The machine might tilt and crush someone.**

#### **Disassembly for disposal :**

Set the TERRA RAKE down on stable ground.

Drain the hydraulic oil and collect it in a suitable vessel.

Disassemble TERRA RAKE from the top downwards.

#### **IMPORTANT :**

**Specifications and laws concerning the disposal of hazardous substances and pollutants must be observed in all cases. Familiarize yourself completely with the procedure for disposal.**

### 8.9. Unauthorized conversion and spare part manufacture

Conversion and modifications to the Terra Rake are permitted only after prior consultation with the manufacturer.

Original parts and accessories authorised by the manufacturer are designed to ensure your safety. The use of other parts may change the properties of the Terra Rake. We accept no liability for the consequences that arise from this.



## 9.0. Equipment

### 9.1. Scope of Delivery

Basis unit

with

Verticut Harrow, left

Verticut Harrow, right

Transport securing device for road travel

Operating instructions,  
transfer declaration with  
guarantee card.

### 9.2. Special equipment

Lighting system



Strain relief kit



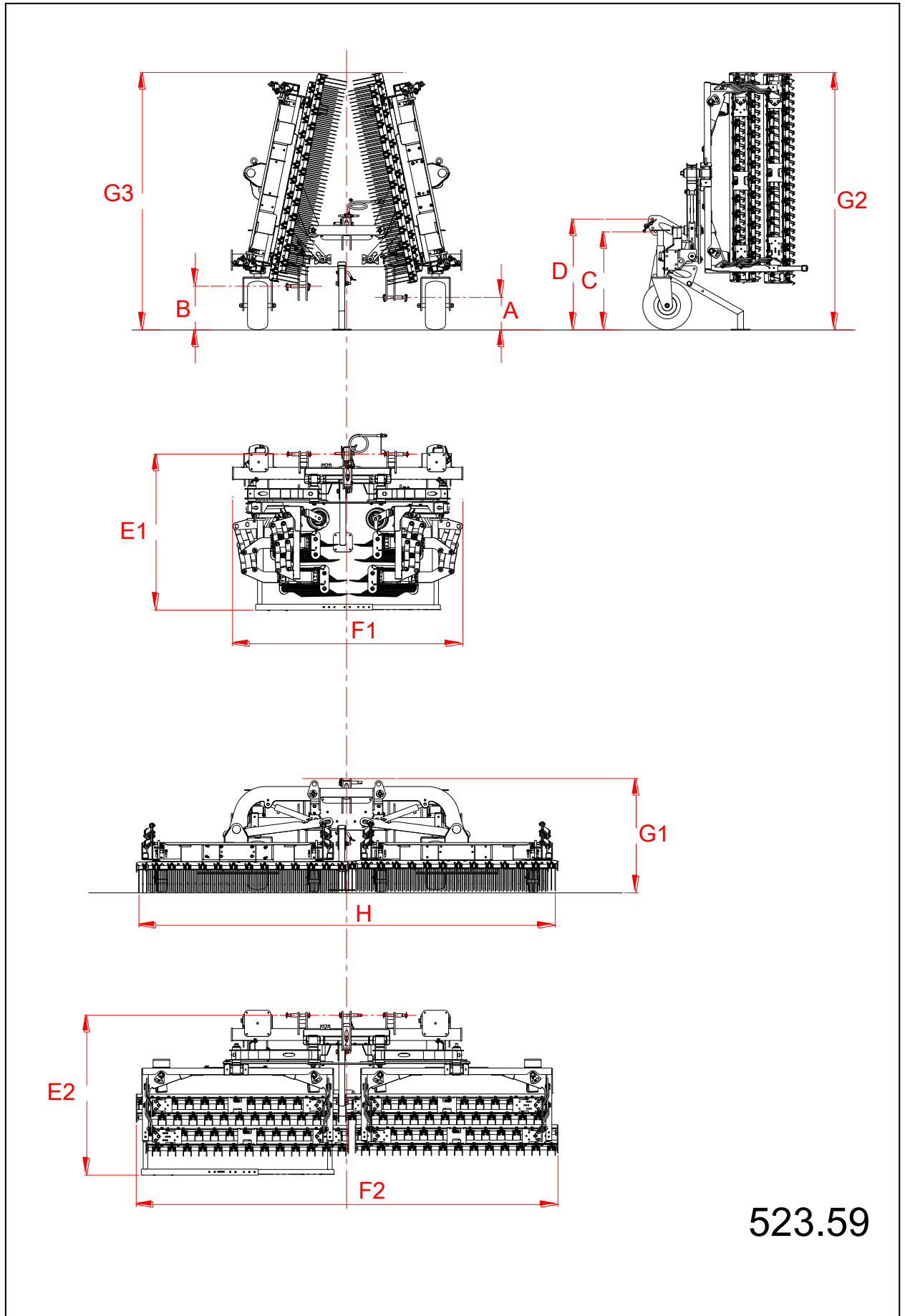
## 10.0. Technical Specifications

### 10.1. Technical Data

<b>A</b>	Height up to lower pull rod connection (down)	mm	235
<b>B</b>	Height up to lower pull rod connection (up)	mm	330
<b>C</b>	Height up to middle of upper guide bar connection (down)	mm	795
<b>D</b>	Height up to middle of upper guide bar connection (up)	mm	895
<b>E1</b>	Machine length from middle of lower link connection in the parking position	mm	1200
<b>E2</b>	Machine length from middle of the lower link connection	mm	1300
<b>F1</b>	Machine width in the parking position	mm	2120
<b>F2</b>	Machine width in the working position	mm	3580
<b>G1</b>	Machine height in the working position	mm	930
<b>G2</b>	Machine height in parking position	mm	2050
<b>G3</b>	Machine height in the transport position (when raised by 20 cm)	mm	2250
<b>H</b>	Working width	mm	3530
	Diameter of the running wheels	mm	400
	Tyres		16x6,50-8
	Number of wheels	Quantity	2
	Tyre pressure	bar (PSI)	2 (29)
	Track width	mm	1495
	Min. power required for tractor	KW (PS)	30 (40)
	Min. hydraulic operating pressure	bar	140
Weights:			
	Main frame	kg	270
	Verticut Harrow, left	kg	140
	Verticut Harrow, right	Kg	140
	Transport securing device	kg	10
	OPTION: Spring relief kit	kg	6
	OPTION: Lighting system	kg	3
	Max. total weight	kg	569

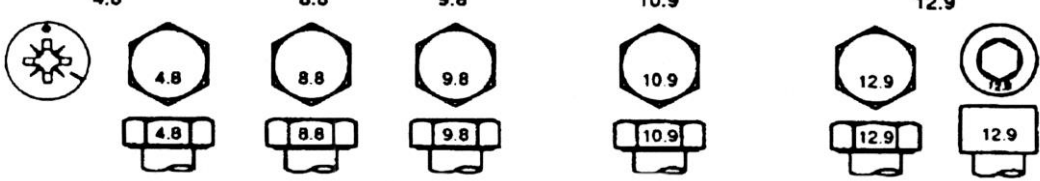
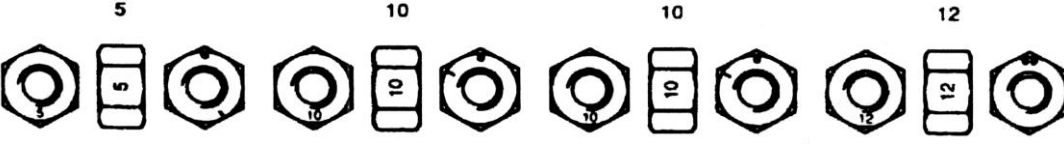
## 10.0. Technical Specifications

### 10.1. Technical Data



## 10.0. Technical Specifications

### 10.2. Metric bolt and cap screw torque values

Property Class and Head Markings																
																
Size	class 4.8				class 8.8 or 9.8				class 10.9				class 12.9			
	Lubricated *		Dry **		Lubricated *		Dry **		Lubricated *		Dry **		Lubricated *		Dry **	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
M6	4,8	3,5	6	4,5	9	6,5	11	8,5	13	9,5	17	12	15	11,5	19	14,5
M8	12	8,5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designet to fail under predetermined loads. Always replace shear bolt with identical property class

Fasteners should be replaced with the same or higher property class. If higher property class fasteners used, these should only be tightened to the strength of the original.

\*\* "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phossphate and oil coatings.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent therm from failing when tightening.

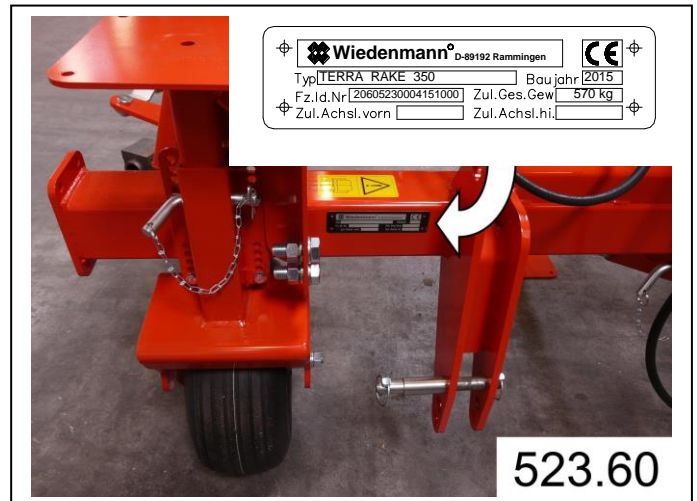
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

\*\* "Dry" means plain or zinc platend without any lubrication.

## 10.0. Technical Specifications

### 10.3. Chassis Number

Enter the respective product identification no. in the space provided below. Always quote this number when ordering spare parts or in case of warranty claims.



Fz. Id. Nr. \_\_\_\_\_