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INSTRUCTIONS MANUAL

SPARE PARTS CATALOGUE

WARRANTY



ROTARY RAKE
ZK800

CE

Borzytuchom 2026 – Revision 01

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

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CAUTION!

Please read the manual before using the machine and observe the safety instructions contained in it.

The instructions manual is a part of the basic equipment of the machine!

Keep the manual in a safe place, where it is available to the user and service technician through the entire life cycle of the machine.

In the event of its loss or damage, the user must acquire a new copy from the machine dealer or manufacturer.

In the event the machine is sold or made available to another user, the Instructions Manual must be attached with the declaration of conformity for the machine.

The manufacturer reserves all rights to this manual and to any amendments to it.
Copying, processing of the instruction and its parts without permission of the manufacturer is prohibited.

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The manufacturer guarantees efficient operation of the machine, provided it is used in accordance with the technical and operating conditions specified in this INSTRUCTIONS MANUAL.

All faults revealed during the warranty period will be repaired by the Warranty Repairs Service. The deadline for completing the repair is specified in the WARRANTY CARD.

The warranty does not cover parts and components of the machine subjected to wear and tear under normal operating conditions regardless of the warranty period, i.e.: bearings, tyres, rake tines, springs, bumpers, aprons/protective covers, hydraulic hoses, etc.
In-Warranty services are provided only in such cases as mechanical damage not resulting from user's fault, manufacturing defects of parts, etc.
If any damage results from:

- mechanical damage caused by a fault of the user or a traffic accident,
- improper use, adjustment and maintenance, use of the machine for a purpose other than intended,
- operating a damaged machine,
- repairs conducted by unauthorised persons or improper repairs,
- unauthorised changes to the machine structure,

the user may invalidate its rights to the In-Warranty Services.

The user is obliged to immediately report all identified faults and have them repaired, regardless of whether the damage is covered by the warranty or not. Special warranty terms and conditions are laid out in the WARRANTY CARD attached to the newly purchased machine.

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1. Machine identification

All the information required for identification is provided on a nameplate attached to the rake suspension/hitch. It contains information such as: the name and address of the manufacturer, the year of manufacture, the serial number, the weight of the machine.



Figure 1. Nameplate

If in doubt, any information about the machine and explanations of the instructions manual should be provided by the dealer or manufacturer.

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2. Introduction



CAUTION!
This symbol warns of a hazard. The warning symbol indicates an important hazard information provided in the User Manual. Please read the notice, follow the instructions it specifies and take special caution.

2.1. *Read the instructions manual*





CAUTION!

Read the Instructions Manual before use.

The Instructions Manual belongs is a part of the equipment of the machine. Make sure that you have become thoroughly familiar with its content before starting any works with the machine.

This manual provides the user with information regarding operation, use and maintenance of the machine. It contains performance characteristics, requirements for safe and correct operation of the machine, allowing it to be used in the best possible way while retaining the maximum service life and reliability. Careful reading of the instructions manual will help to avoid accidents and enable long and trouble-free operation.

2.2. *Intended use of the machine*

The rotary rake is designed for field works related to preparing feed for animals. It may only be used to rake cut grass, straw or hay and form them into a single swath. The machine should be used on grass or grazing lands, on which stones have been previously removed or where the terrain is without stones.
Using the machine in other circumstances will be construed as inconsistent with the intended use. Strict compliance with the requirements for the use of the machine and operation and maintenance as recommended by the manufacturer is a prerequisite for use as intended.
The machine should be operated, serviced and repaired by people familiar with its specific characteristics and acquainted with the rules of conduct in terms of occupational safety.
Accident prevention regulations and all basic health and safety rules, as well as the highway code must always be observed.
Unauthorised changes in design of the machine without permission of the manufacturer waive manufacturer's liability arising due to any resulting damage or injury.



Any doubts concerning the machine’s intended use should be resolved by contacting its manufacturer. Selecting the right device and knowing its intended use makes its operation safer. Using the machine for any purpose other than the intended use shall be considered an improper use, contrary to the intended use.

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2.3. *Warranty*

The warranty terms are provided in the warranty card. The operator of the machine is obliged to get thoroughly familiar with this instructions manual. Failure to adhere to the correct operation rules leads to decreased efficiency of the rake, its breakdowns and loss of the warranty rights. The warranty rights will become invalid particularly if:

1. Mechanical damage caused by operation not in accordance with the instructions manual is found.
2. Repairs are carried out by workshops other than the seller's service station, the manufacturer's service station or service stations recommended by them.
3. Spare parts other than the genuine spare parts of the manufacturer have been used.
4. Unauthorised modifications of the design of the rake are prohibited.

3. Rules of safe operation

3.1. *User safety*

The rake may only be operated by persons who hold a driving licence, have familiarised themselves with its operation and the contents of this manual, and possess the appropriate qualifications. The rake should be handled with all necessary precautions.

- Apart from this Instructions Manual, observe also general rules of health and safety at work.
- Observe warning symbols placed on the machine.
- The rake may be operated by a person with the proper authorisation to drive the vehicle to which it is attached, in accordance with the manufacturer’s instructions.
- Please note that there are many elements of the machine that may cause an injury (sharp edges, protruding parts, etc.). During any maintenance or servicing work, take extra care when moving around the critical areas listed and always wear personal protective equipment such as: protective clothing, protective gloves, safety footwear and safety goggles.
- Before beginning to work with the rake, you should familiarize yourself with the way it operates, occupational safety rules and recommendations for maintenance and adjustment procedures, by reading this User Manual.
- The rake must be fitted with all the components and barriers (as specified by the manufacturer) designed to restrict access to hazardous areas. These components must be complete and in full working order.
- There is a residual risk of threats; therefore, the application of safe operation instructions and reasonable conduct should be the basic principle of using the machine.
- It is strictly forbidden, to operate the machine by persons under the influence of alcohol or other intoxicants.
- Never allow the tractor towing the rake to be operated by a person other than its operator, and in any case do not allow other people to remain in the vehicle, by the machine or in the working area while in operation.

- It is forbidden to use the machine against its intended purpose. Using the machine for purposes other than those intended by the manufacturer is incompatible with the intended purpose of the machine and may void the warranty. The manufacturer also waives all responsibility for any consequences of improper operation of the machine.
- Should the information contained in the manual be difficult to understand, please contact your dealer or the manufacturer.
- Incorrect or careless use of the machine, and failure to heed the warnings and instructions contained in the manual, may pose a risk to health and life.
- It is recommended that you check the machine's actual technical condition before each use. Pay particular attention to the condition of the hitch, pins, safety devices, running gear, PTO shaft guards, safety barriers and the condition of the rake tines. It is forbidden to use a machine that is not in good working order.
- It is forbidden to carry any items or people on the machine.
- The machine prepared for coupling to a tractor should be placed on a hard, level surface, supported by stands and secured against movement by placing wedges under the road wheels. Furthermore, it is forbidden to stand in the area beneath the rake's arms.
- It is forbidden to start the machine when the rake arms are folded for transport. Failure to comply with the above requirement may cause damage to the power transmission system in the rake and may even result in permanent damage to the tractor's gearbox.
- It is forbidden to stand in the area between the machine being attached and the tractor whilst the tractor is reversing to engage the machine's hitch.
- Take particular care when attaching the machine to the tractor.
- Always check that all pins are secured against movement using the appropriate fasteners (locks). Do not use other securing methods.
- Always use a PTO shaft recommended by the manufacturer and of the correct length to transmit power (for information on determining the correct length, see the instructions supplied with the shaft); in addition, take particular care to ensure correct connection in accordance with the arrows indicating the direction of connection or as specified by the machine manufacturer
- It is forbidden to use a PTO shaft that is damaged. It is recommended that the fault be rectified or that the item be replaced with a new one.
- The safety chain, which prevents the PTO shaft guards from rotating whilst the machine is in operation, must be attached to a fixed structural component of the rake.
- It is prohibited to use safety chains to support the shaft whilst the rake is stationary or being transported.
- After installing the shaft, make sure that it is correctly and safely coupled to the tractor and the rake.
- Before starting the rake, make sure that:

– the direction of rotation of the PTO is correct,

– the raking arms are extended and properly secured,

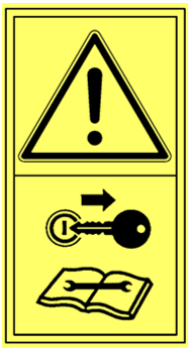
– the safety barriers are in place,

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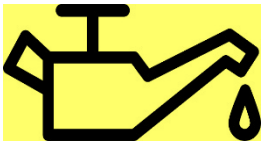
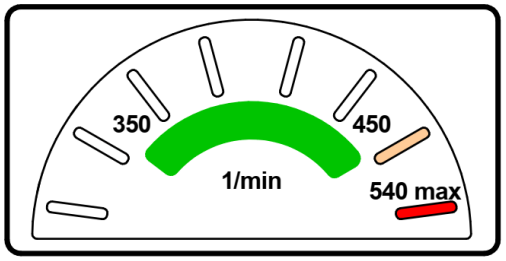
- there are no bystanders (particularly children) or animals in the danger zone. The machine operator must ensure that the machine and the working area are clearly visible.
- The rake must not be used or transported at night or in conditions of restricted visibility due to its protruding parts and the risk of snagging other road users.
- When operating the machine, do not use a PTO speed exceeding 540 rpm.
- It is prohibited to overload the power transmission system by starting the machine abruptly.
- When reversing or turning round, the rake drive must be switched off and the rotors raised using hydraulic cylinders. Failure to follow this recommendation may result in damage to the drive system.
- Whilst the machine is in operation and the drive system to the rake rotors is engaged, it is forbidden to leave the driver's cab.
- Due to the rotating parts, there is a risk of objects or people being caught and drawn in, and of stones or other obstacles within the machine's working area being ejected. It is therefore forbidden to approach a machine that is in operation at a distance of less than 50 m.
- Ensure that the rake arms are correctly adjusted during operation.
- When adjusting, keep your fingers and limbs away from the structural parts of the machine.
- Never approach the rotating PTO shaft or the rotating rotor of the machine.
- Before disconnecting the PTO shaft, switch off the agricultural tractor's engine, remove the key from the ignition and apply the parking brake.
- Carry out any maintenance works in accordance with general principles of occupational safety and hygiene; in the event of an injury, the wound should be washed and disinfected immediately.
- All maintenance and repair work must be carried out only when the tractor's engine is switched off and the ignition key has been removed from the ignition switch.
- When operating the machine, use fit and proper personal protective equipment and suitable tools.
- If any malfunctions or damage are detected, the machine must be taken out of service immediately until the fault has been rectified. Operating a damaged machine is forbidden.
- To ensure safety when using the machine, regularly check its general condition, i.e. inspect the condition of the bolted joints, lubricate the machine in accordance with the instructions, check that all components are present and in working order, check the tyre pressure and, if any faults are found, rectify the fault or replace the faulty part with a new one.
- Where maintenance or repair work requires the machine to be raised off the ground, only certified lifting equipment must be used; in addition, fixed supports must be used (never use brittle materials such as bricks, hollow blocks, etc.) to provide additional protection against the machine falling. It is prohibited to carry out work underneath a machine that has been raised using a hoist only.
- It is forbidden to wear loose clothing such as coats, unbuttoned jackets, scarves, belts, etc., and it is recommended that long hair be tied back in a bun to minimise the risk of it becoming entangled in rotating parts such as a telescopic articulated shaft or the machine's rotor. Of course, it is absolutely essential to remember that you must not approach dangerous areas.

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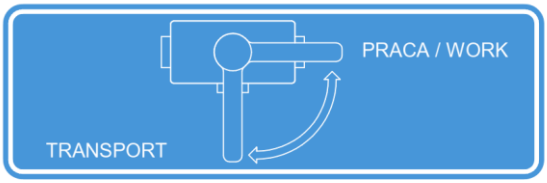
3.2. *Safety signs on the machine*

 Read the Instructions Manual before operating the machine	 Switch off the engine and remove the ignition key before any servicing or maintenance procedures	 Keep a safe distance from the machine. Do not allow unauthorised persons within the range of 50 m from the machine
 Danger relating to the rotating power take-off shaft	 Do not touch the machine components until all its assemblies have come to a complete stop	 Do not stand near tractor tie-rods during control of the lifter
 Danger of seizing by the rotating rotor	 Keep clear of overhead power lines	 Do not enter the area occupied by the folding safety railings

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 Rake handles for use during transport	 Wear a protective suit	 Wear safety goggles
 Use hearing protectors	 Wear protective gloves	 Lubrication point
 Oil change point	 Transport lock – always lock the arms when travelling on the roads	 Warning message about pressure in the hydraulic system.
 Recommended tyre pressure	 Recommended operating speed	

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Position of ball valve during operation and transport



Mark the cable to be connected to the floating section



Do not exceed the maximum speed

3.3. *Hazards associated with the operation of the rake*

No.	Risk	Hazard source (cause)	Risk preventive measures
1	Overloading the locomotor system (physical load)	Working in a standing position, inclined-forced position, walking, moving objects	Read and understand the Instructions Manual; do workplace training in carrying weights standards for the manual handling, correct methods of lifting and carrying loads, getting other persons' help, and the use of handling devices such as jacks and winches.
2	Fall on the same level (tripping, slipping, etc.)	Uneven terrain, messy environment - objects lying and standing around, cables lying on communication roads, slippery surfaces	Suitable footwear, levelled surface, maintaining caution, maintaining order, familiarising with the instructions manual
3	Hitting protruding parts of the machine	The machine and its surroundings	Proper positioning of a machine, safe space to move around, proper organisation of work, paying attention, reading the Instructions Manual
4	Struck by moving objects	Crushed plants, incidental part of the turf, stones thrown out by the machine	Maintaining caution, marking out the danger zone, prohibiting walking around the working machine, prohibiting being at a distance of less than 50m from the working machine, use of personal protective equipment - helmet, safety glasses, reading the Instruction Manual
5	Sharp, dangerous edges	Protruding parts of the machine structure, use of hand tools	Personal protective equipment – safety gloves, buttoned up work clothes, exercising special attention
6	Gear units	Moving gear elements, rotating jointed telescopic shaft, no guards of moving parts	Prohibition of moving, approaching and making adjustments on the running machine, exercising caution, using shields of moving parts, reading the instructions manual
7	Oil-filled mechanical transmissions, hydraulic transmission systems	Fluids, hydraulic and lubricating oils, greases, temperature, leaks, slipping, burns, injections,	Extreme caution, use of personal protective equipment - safety shoes, gloves and goggles, safe positioning of the machine. Familiarisation with the user manual. Familiarisation with the

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		sensitisation, poisoning	material safety data sheets for oils and lubricants used in the operation of the machine.
8	Weight of the suspended stationary machine	Improper mounting or coupling, wrong position of the machine, improper operation, leaving the suspended machine on a tractor	Exercising special attention, use of personal protective equipment - safety footwear, safety gloves, secure position of the machine, help of others, use of lifting jacks and hoists, reading the Instructions Manual
9	Micro climate - variable weather conditions	Work carried out in varied weather conditions	Suitable working clothes, beverages, creams with sun screens, proper rest, reading the Instruction Manual
10	Noise	Excessive rotational speed of the machine, damaged, loose, vibrating parts	Operation of the machine in good technical condition, inspections on a regular basis, proper rotational speed, reading the Instruction Manual
11	Thermal hazards	Contact with heat source radiation. Engine cooling systems, engine exhaust system. Temperature of the hydraulic system. Fire caused by sparks ejected upon collision with stones and other items encountered along the machine's path of operation	Use of personal protective equipment, familiarisation with the instructions manual, special care. Temperature control of operating systems of the machine and the vehicle. Use of fire protection measures - essential vehicle/carrier equipment.

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3.4. *Technical specification*

TYPE		ZK800	
Power requirement*		80KM	
3P hitch category		II	
Weight		Basic version	2248 kg
		Version with additional tandems	2300 kg
Working speed		Max 10 km/h	
Transport speed		Max 30 km/h	
Dimension [A]		5890 mm	
Dimension [B]		1710 mm	
Dimension [C]		7290 mm-8390 mm	
Dimension [D]		6800 mm-7800 mm	
Dimension [E]		3000 mm	
Dimension [F]		With barriers folded down	4550 mm
		With the barriers folded up and 3 arms removed from each rotor	3840 mm
Rotor diameter		3200 mm	
Number of rotors		2	
Number of arms per rotor		11	
Number of raking tines per arm		4	
Drive axle tyre type		340/55-16	
Rotor tyre type		16x6,5-8	
Recommended tyre pressure			
Machine noise level	L_{pA}	$70{,}5\,^{+2}_{+0}$ dB	
	L_{Amax}	$85{,}6\,^{+2{,}6}_{+0}$ dB	
	L_{Cpeak}	$101{,}6\,^{+2{,}6}_{+0}$ dB	

L_{pA} – Noise exposure level referenced to 8 hours of operation a day.
L_{Amax} – Maximum sound level measured.
L_{Cmax} – Peak sound level.

*** Minimum power requirement for light operating conditions on level ground**

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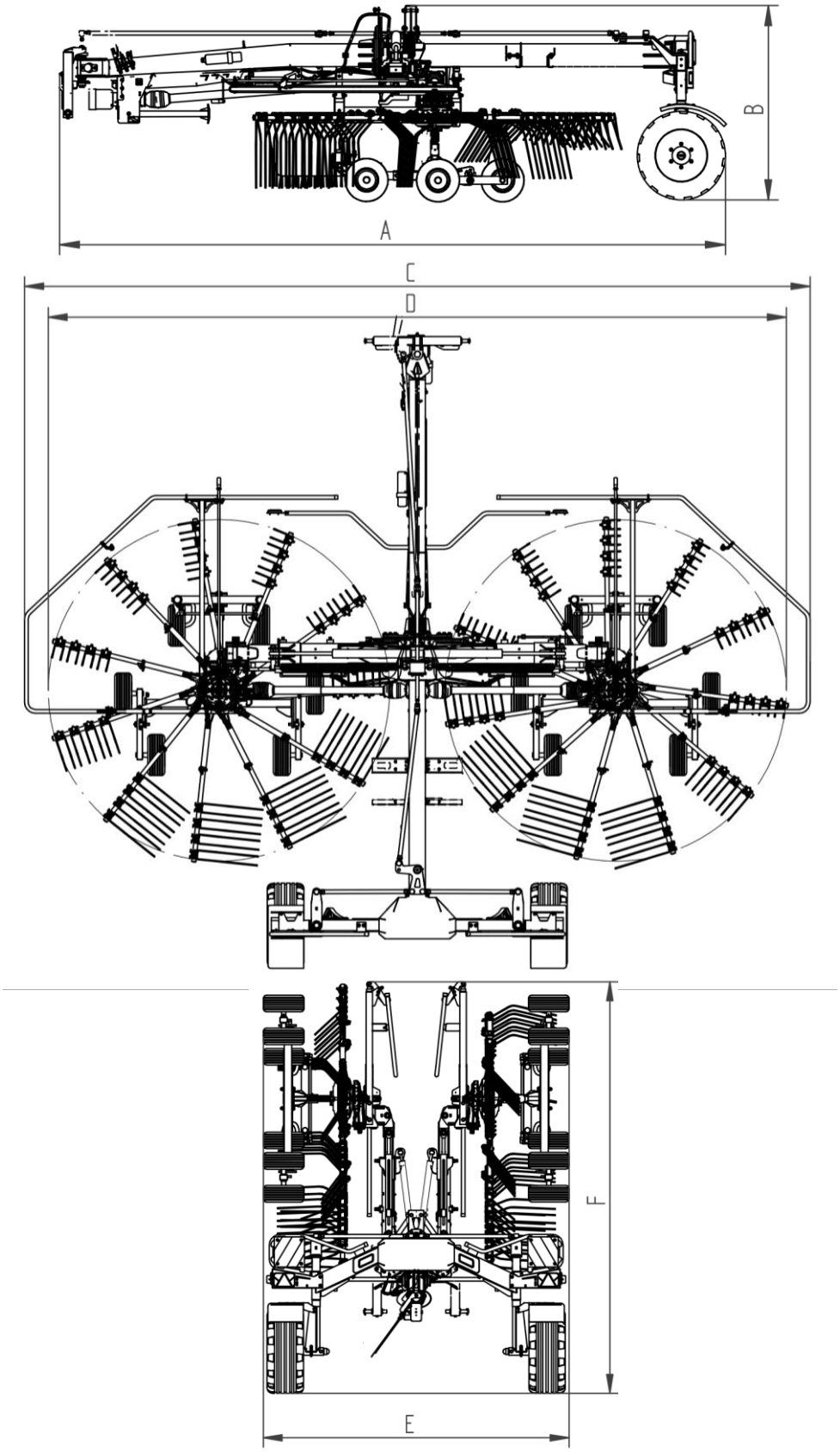
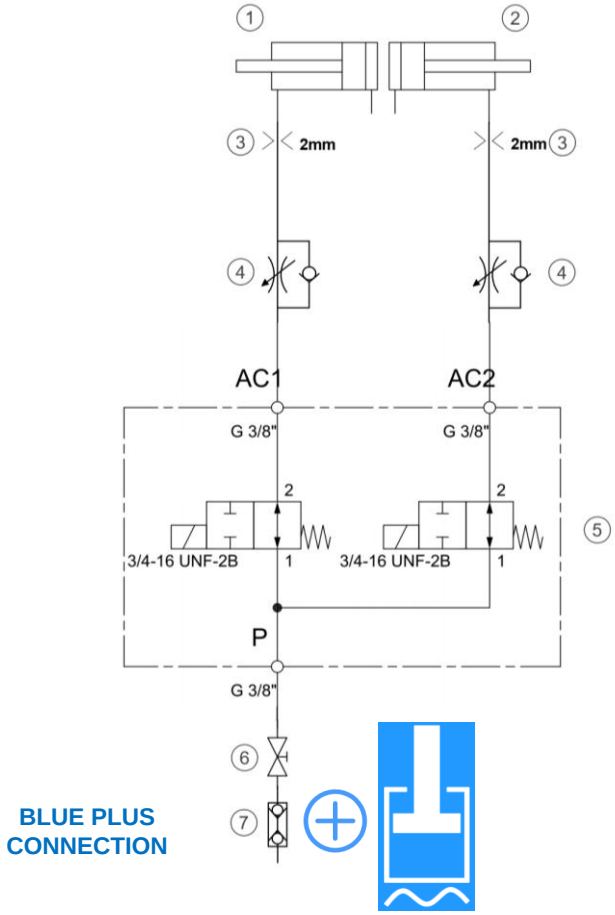


Figure 2. Basic dimensions

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3.5. *Hydraulic diagram for raising the side arms*

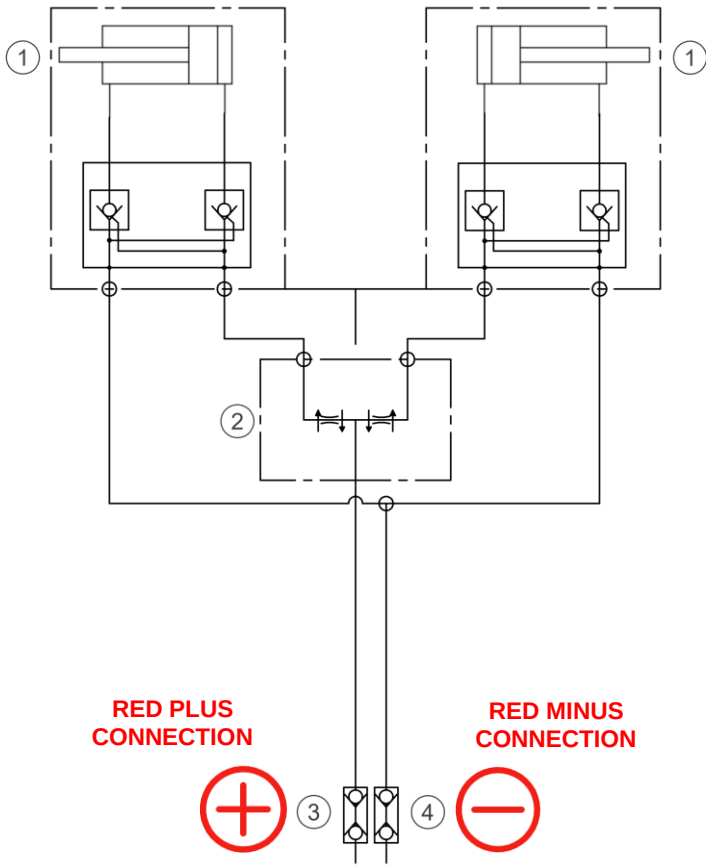


1. RH rotor actuator
2. LH rotor actuator
3. Gland
4. Throttle check valve
5. Control unit
6. Ball valve
7. Hydraulic quick-release coupling

Figure 3. Hydraulic diagram for raising the side arms

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3.6. *Hydraulic diagram for extending the side arms*



1. Actuator
2. Stream divider
3. Hydraulic quick-release coupling for increasing the working width
4. Hydraulic quick-release coupling for decreasing the working width

Figure 4. Hydraulic diagram for extending the side arms

3.7. *General design and principles of operation*

The rake can collect material across a width of between 6.8m and 7.8m. During operation, the shaft is formed by two rotors which rotate in the directions shown in Figure 6. During operation, a swath is formed with a width of between approximately 0.9 m and 1.9 m, depending on the set working width and the type and quantity of material being raked. The machine consists of several main components, as shown in Figure 5.
During operation and transport, the rake moves on the transport axle (1), which is connected to the frame (2) and, via the steering rods, follows the suspension (3) when negotiating bends. The rake has two arms connected to the left and right rotor suspension systems (4, 5). The rotors are mounted on the undercarriage (6), which may be fitted with 4 or 6 wheels on each. Safety barriers (7) ensure safety at work. During operation, the material is ejected onto the windrow curtain (8), which forms a swath. The height of each rotor (9) can be adjusted within a range of approximately 0 to 10 cm relative to the ground. The machine's operation is controlled by the drive(10) and working system, which is connected to the tractor via a wide-angle PTO shaft. With the aid of the hydraulic system (11), both rotors are raised for transport, and whilst the rake is in operation, it is possible to raise each rotor separately and quickly adjust the working width. The machine's visibility is ensured by its lighting and warning devices (12). The machine is also fitted with components such as a document tray, covers, etc. (13)

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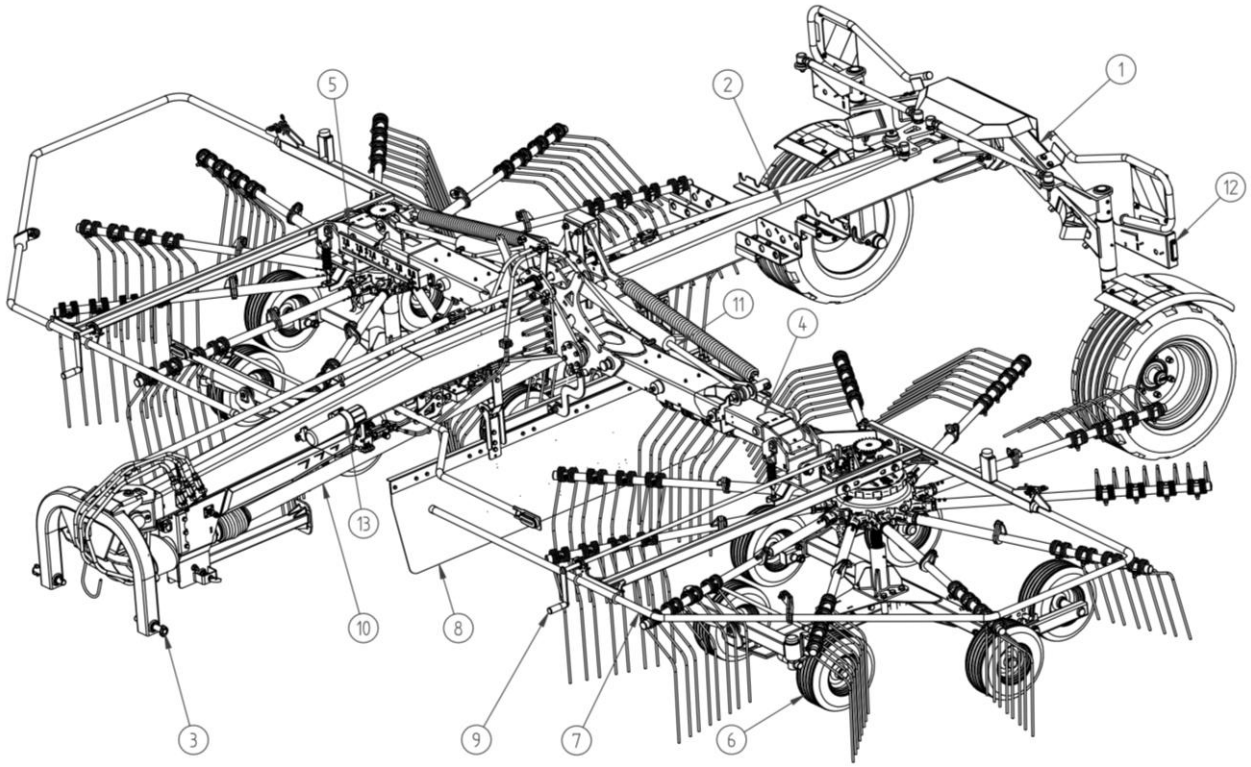


Figure 5. General design

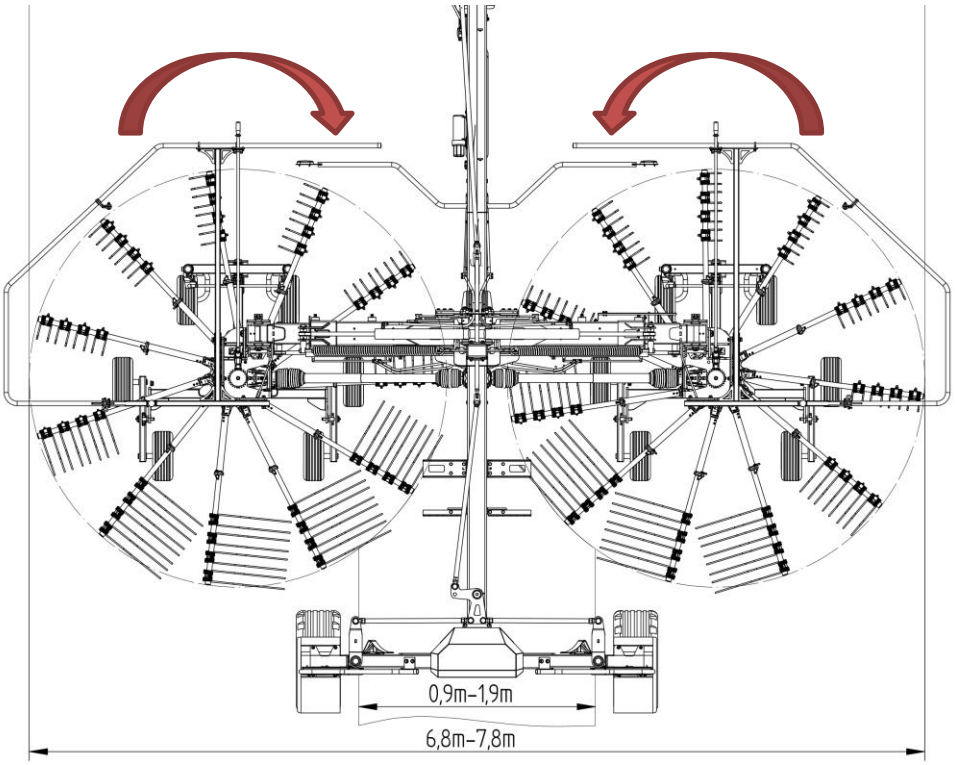


Figure 6. Direction of rotor rotation

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4. Operation

The manufacturer guarantees that the machine was checked and approved for operation in full working order. Nevertheless, the user is obliged to check the machine after delivery and before the first use. Before commencing any works related to coupling the rake with the tractor, the user should check the technical condition of the machine and prepare it for the commissioning. To do so, proceed as follows:

(a) read carefully all the information related to the safety, design, functioning, operation, transport, technical service, etc. included in the manual,

(b) familiarize themselves with the design and principle of operation,

(c) check the completeness of the machine, whether all require protections, screws are in place,

(d) check the condition of screw connections, whether all screws are tightened,

(e) check the condition and pressure of the tyres,

(f) check the appropriateness of wheel mounting,

(g) check the painting coating condition,

(h) check the overall condition of the machine with regard to any damage caused during transport, loading or due to other circumstances (breakage, indentations, cracks, punctures, etc.),

(i) check all lubrication points, whether there are lubrication signs (if needed, lubricate acc. to the guidelines in “Maintenance" section),

(j) check that the transport locking mechanism is working correctly,

(k) check that the rake arms are correctly fastened,

(l) check that the rake tines are correctly fastened,

(m) check that the safety barriers are correctly fastened and functioning properly,

(n) check the condition of hydraulic lines,

(o) check the technical condition of the suspension system to ensure it is complete,

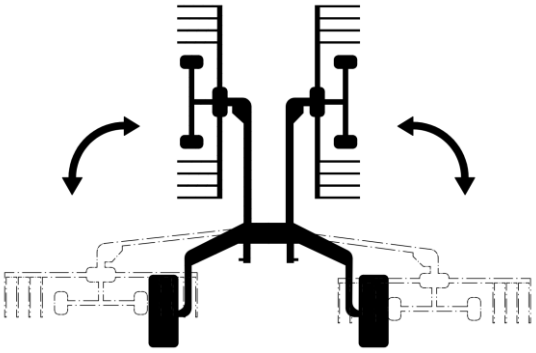
(p) check the mechanical gearboxes for oil leaks and ensure that the oil is in good condition and that the lubrication level is correct.

After performing all activities and stating that the machine condition raises no concerns, the user may set about coupling the rake with the tractor.

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4.1. *Controlling the rake using the hydraulic system*

BLUE PLUS CONNECTION



Switch from the transport position to the working position (see section 4.5):

- Set the ball valve to the working position.
- Pull and hold the transport lock cables.
- Set the coupling to the float position – the machine will move into the working position.

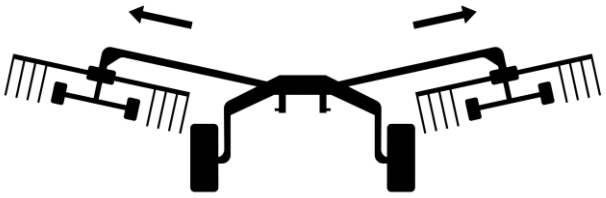
Positioning the machine for headland manoeuvres (see section 4.6):

- Apply pressure to the connection – the machine will move into the headland position.

Switch from the working position to the transport position (see section 4.4):

- Switch off the PTO shaft!
- Pull and hold the transport lock cables.
- Apply pressure to the connection – the machine will move into the transport position.
- Release the transport lock cables and make sure the locks have clicked into place.
- Set the ball valve to the transport position.

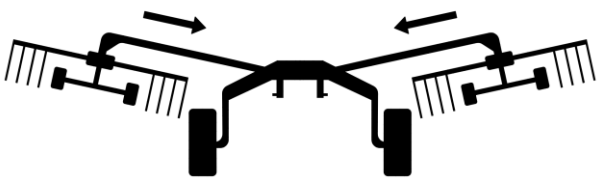
RED PLUS CONNECTION



Increasing the working width (see section 4.6):

- Move the machine to the headland position.
- Apply pressure to the red plus connection.
- Set the machine to the working position.

RED MINUS CONNECTION



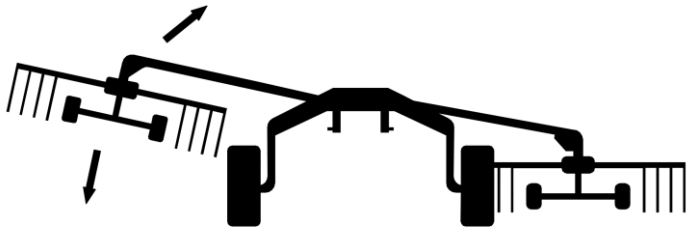
Decreasing the working width (see section 4.6):

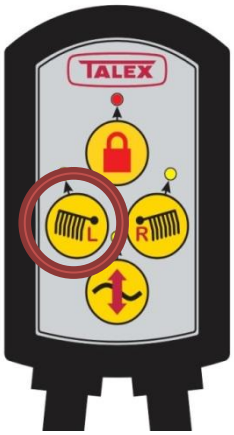
- Move the machine to the headland position.
- Apply pressure to the red minus connection.
- Set the machine to the working position.

Figure 7. Controlling the rake using the hydraulic system.

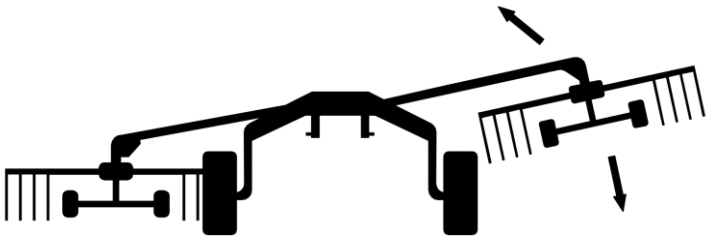
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4.1.1. Remote control functions.



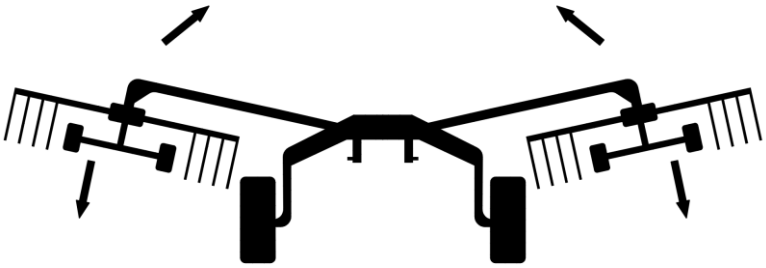


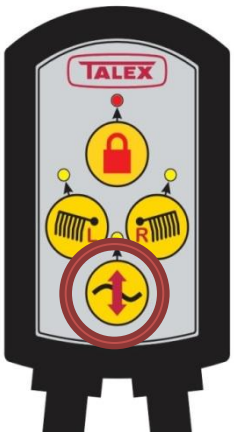
It is possible to raise or lower the left rotor. The right rotor is in the operating position at all times.





It is possible to raise or lower the right rotor. The left rotor is in the operating position at all times.





It is possible to raise or lower both rotors.

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Button lock during operation.



Figure 8. Remote control functions.

4.2. *Coupling the rake*



CAUTION! Take particular care when coupling and uncoupling the rake from the tractor:

- **Take special care that no-one is in the area between the machines when coupling the machine and the tractor.**
- **The machine must be secured using chocks placed under the wheel of the transport axle.**
- **The support foot must be secured with a pin.**
- **The machine must be placed on level ground.**
- **When attaching the rake, the tractor's engine must be switched off, the ignition key removed from the ignition, and the parking brake applied.**



- **Pay particular attention to the correct installation of the PTO shaft and its securing. Follow the instructions supplied with the shaft. Carry out all operations such as correct cutting and lubrication in accordance with the instructions.**
- **Each time before work, pay attention to the condition of the cables and connections. Replace all defective system components with new ones. If leaks occur, the condition of the connections should be checked.**
- **The hydraulic system is pressurised and should therefore be handled with extreme care.**

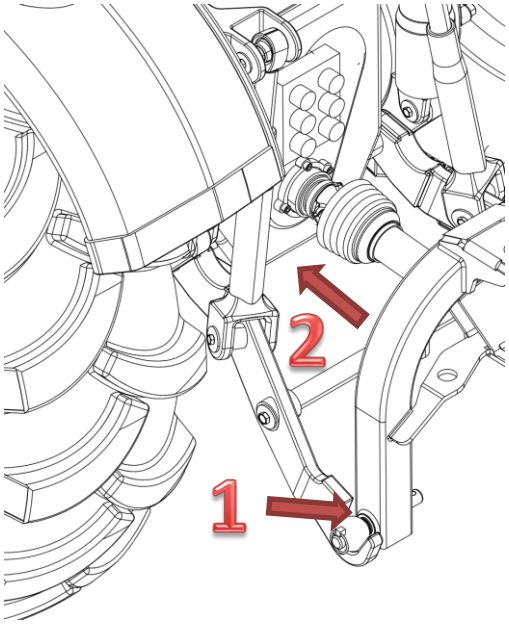


The lower link arms on the tractor must be set at the same height above the ground, and their movement must be restricted by retaining chains or another type of locking mechanism specified by the tractor manufacturer. This is to prevent the rake from swaying whilst in use.

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The steps for coupling the rake are described in the following sections:

1. **Coupling the lower links and the PTO shaft.**

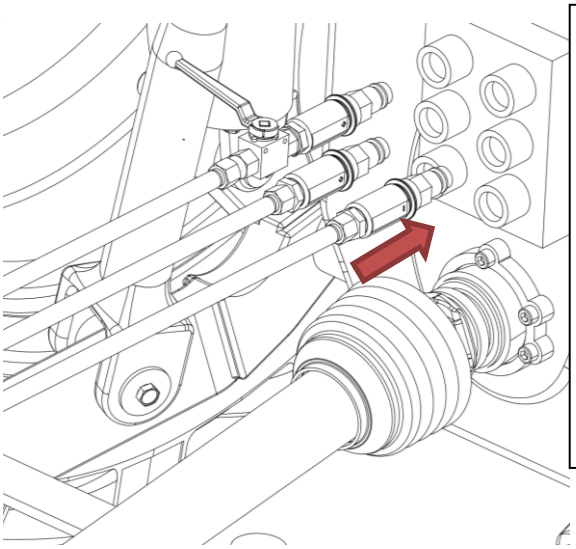


1. Once you have driven up to the rake and attached it to the lower links, you must secure them.

2. Once you have ensured that the machine has been correctly hitched, switched off the engine, removed the key from the ignition and applied the parking brake, couple the PTO shaft. It is essential to secure it with a chain by attaching it to the tractor.

CAUTION! The wide-angle joint on the shaft must be on the machine side.
CAUTION! Once the shaft has been coupled, tilt its handle upwards.

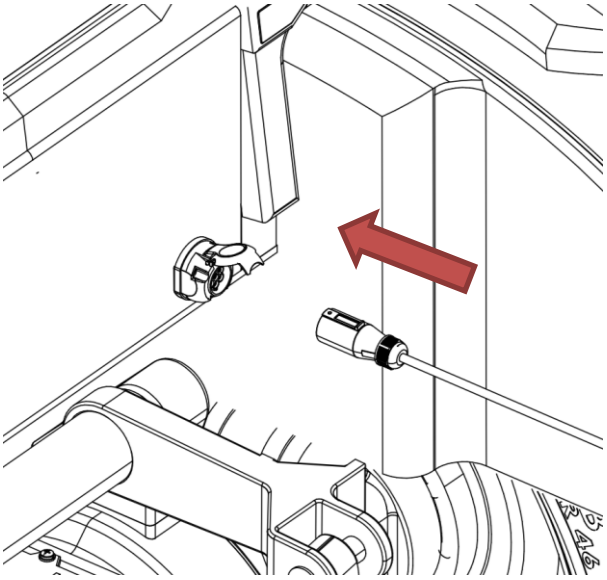
2. **Connecting the hydraulic hoses.**



- Before connecting the hydraulic hoses, the pressure in the tractor's system must be relieved.
- Connect the hydraulic hose marked with a blue plus sign to the floating section.
- The wire marked with a red plus sign is responsible for increasing the working width.
- The wire marked with a red minus sign is responsible for reducing the working width.

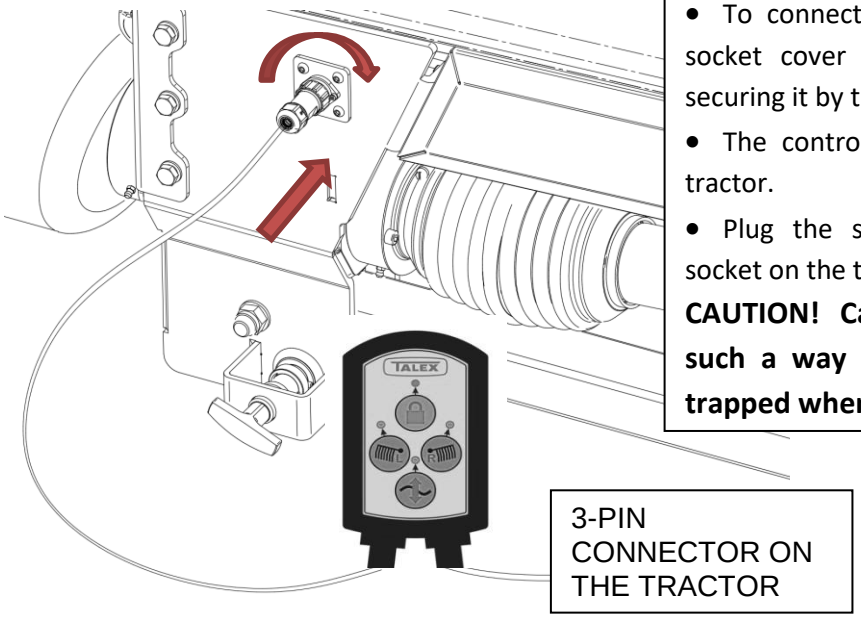
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3. Connecting the lighting plug.



- Before connecting the plug into the socket, check that the socket is not dirty.
- Once connected, check that all the lighting functions are working properly.

4. Connecting the controller.



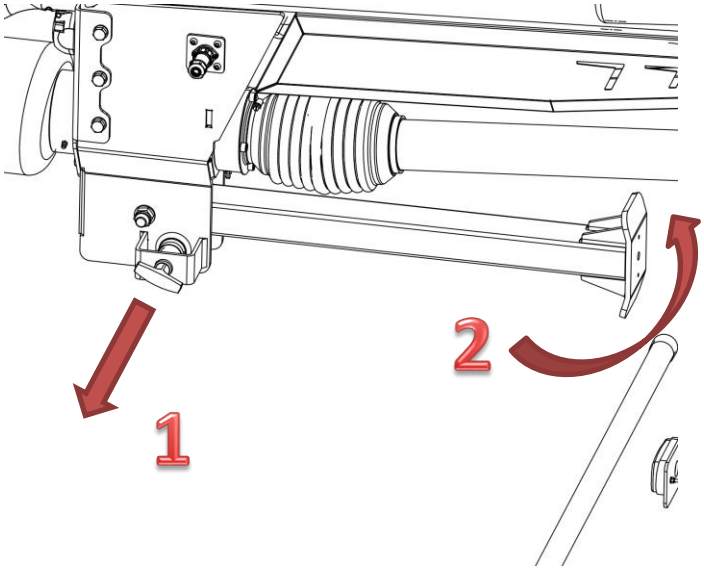
- To connect the controller, unscrew the socket cover and plug in the connector, securing it by turning the nut on it.
- The control unit must be fitted to the tractor.
- Plug the second cable into the 3-pin socket on the tractor.

CAUTION! Cables must be routed in such a way that they do not become trapped when the machine is in motion.

3-PIN CONNECTOR ON THE TRACTOR

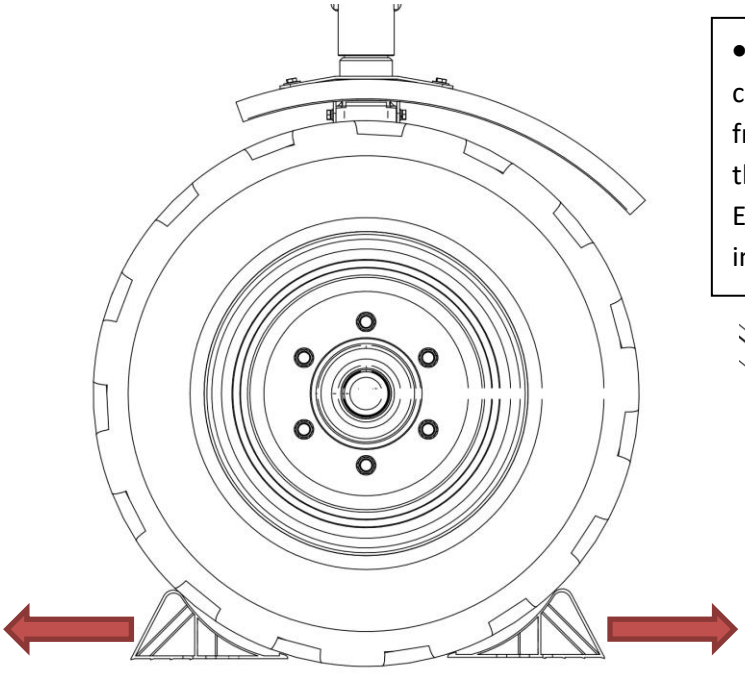
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5. Positioning the supporting foot.

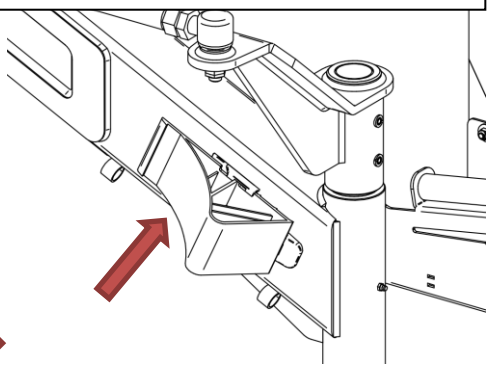


1. To fold up the support foot, pull its locking mechanism towards you.
2. After pulling the lock, lift the support foot towards the frame and release the lock. Make sure the support foot is properly secured.

6. Removing safety wedges.



- Once the machine has been coupled, remove the wheel chocks from under the wheel and place it in the holders on the transport axle. Ensure that they are correctly fitted into their sockets.

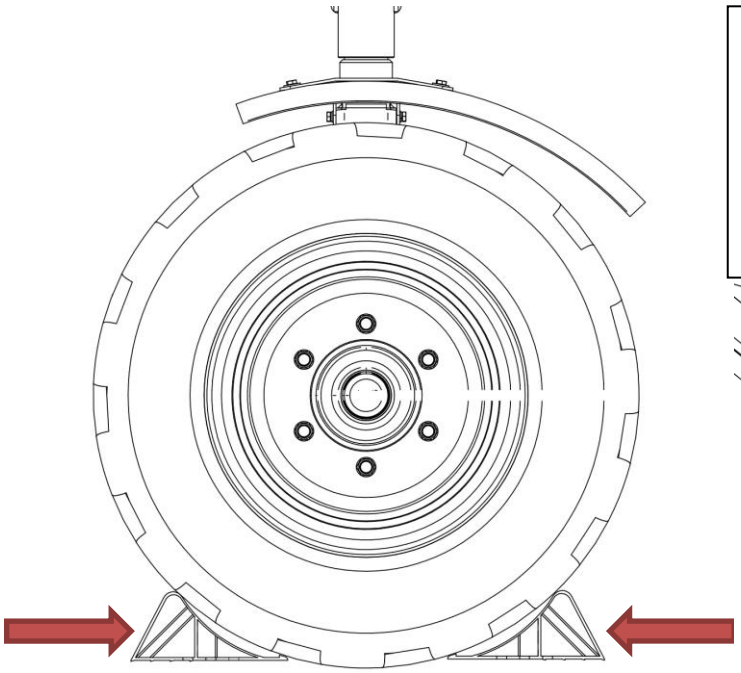


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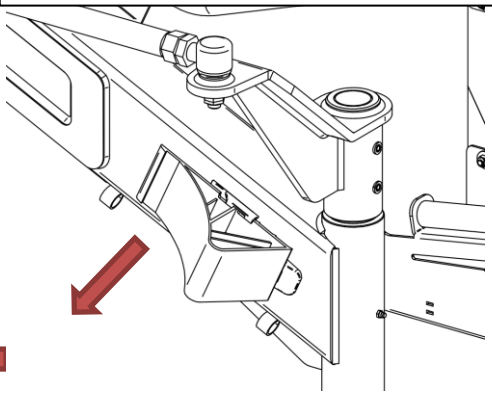
4.3. *Uncoupling the rake*

The steps for uncoupling the rake are described in the following sections:

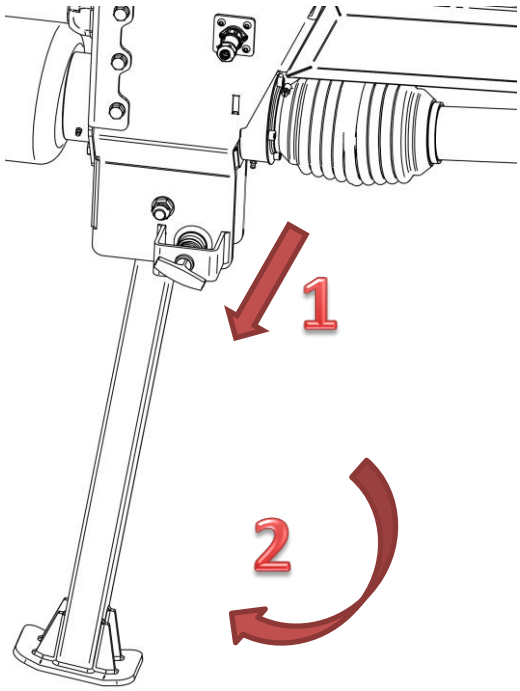
1. **Securing the machine with wedges.**



- Once the vehicle is positioned on level ground, the ignition has been switched off, the key has been removed from the ignition and the handbrake has been applied, place wheel chocks under the wheel on the



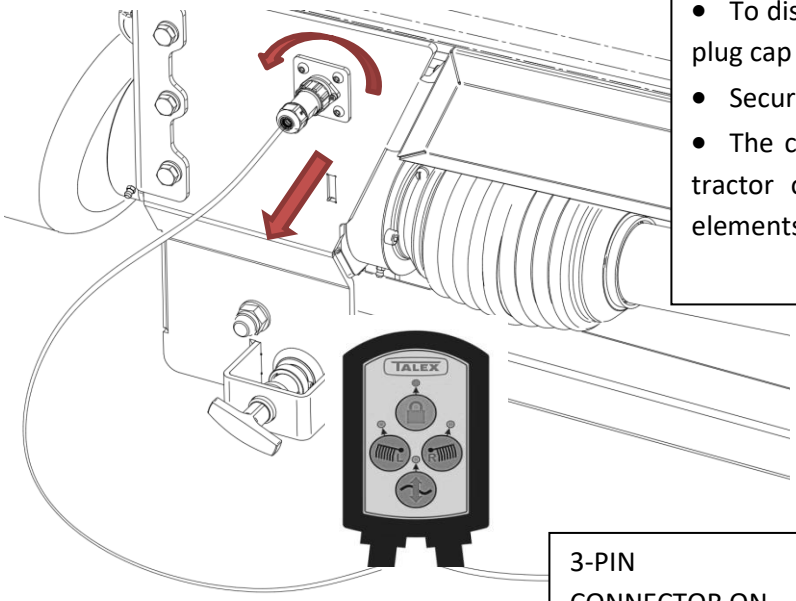
2. **Extending the support foot.**



1. To fold down the support foot, pull its locking mechanism towards you.
2. After pulling the lock, lower the support foot towards the ground and release the lock. Make sure the support foot is properly secured.

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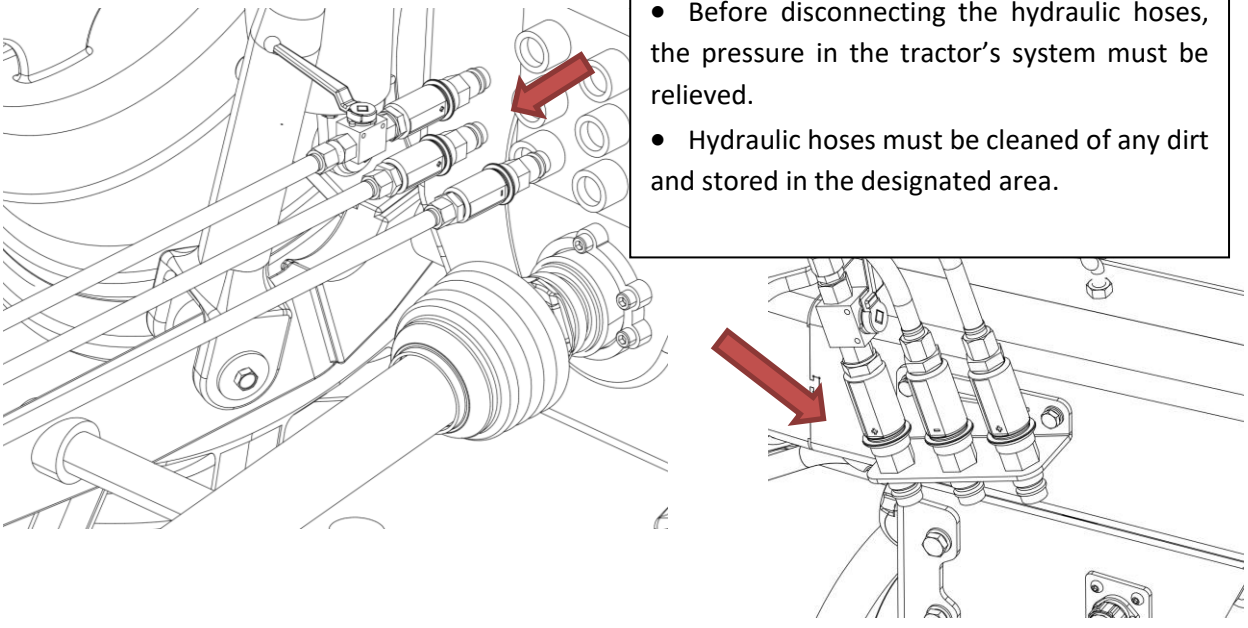
3. Disconnecting the controller.



- To disconnect the controller, unscrew the plug cap and then unplug it.
- Secure the plug socket with a cover.
- The control unit should be stored in the tractor or in a place sheltered from the elements.

3-PIN CONNECTOR ON THE TRACTOR

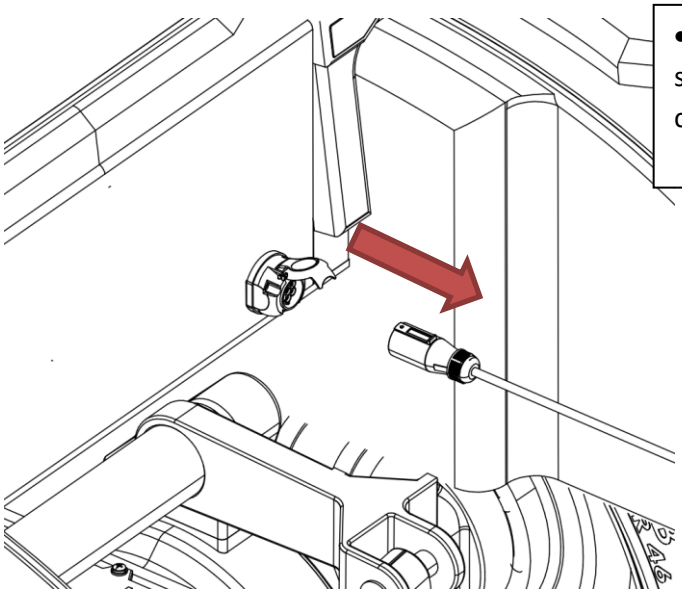
4. Disconnecting the hydraulic hoses.



- Before disconnecting the hydraulic hoses, the pressure in the tractor's system must be relieved.
- Hydraulic hoses must be cleaned of any dirt and stored in the designated area.

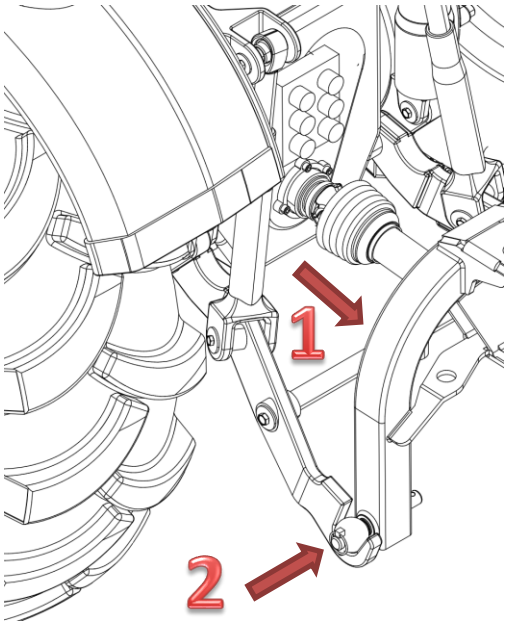
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5. Disconnecting the lighting plug.



- Before disconnecting the plug from the socket, remove any dirt, then unplug it and close the socket cover.

6. Uncoupling the lower links and the PTO shaft.



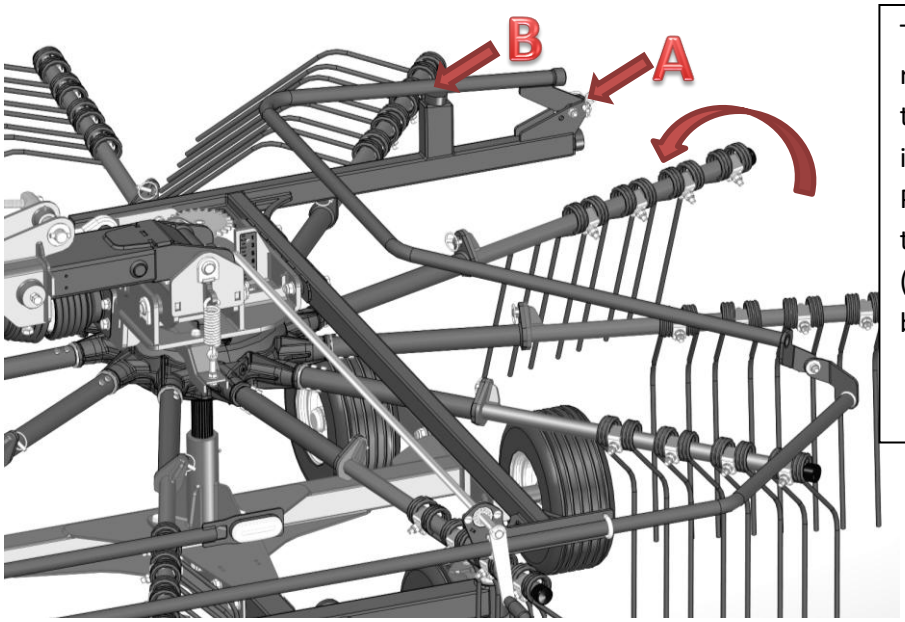
1. First, remove the safety chain, then detach the shaft and hang it on the designated hook.
2. Release the lower links and detach the rake from them.

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4.4. *Transport position.*

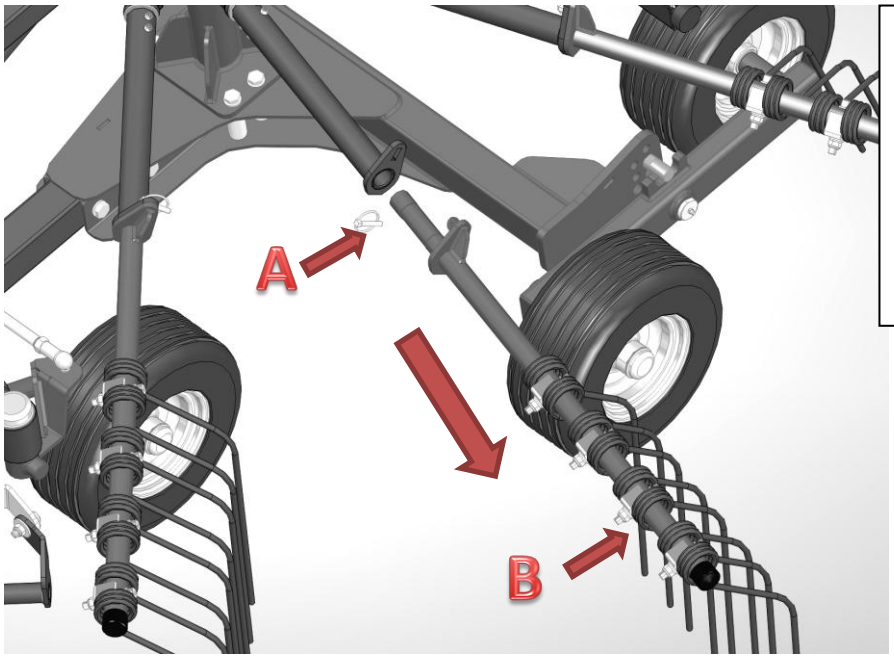
The description below sets out the sequence for folding the machine into its transport position. This should be done with the PTO shaft switched off and the arms set to the minimum working width, i.e. 6.8 m on the width scale.

1. Folding up the safety barriers



To fold up the side barrier, remove the safety pin (A), then lift the barrier and rest it against the stop (B). Please remember to secure the barrier with a split-pin (A). Carry out these steps on both sides of the machine.

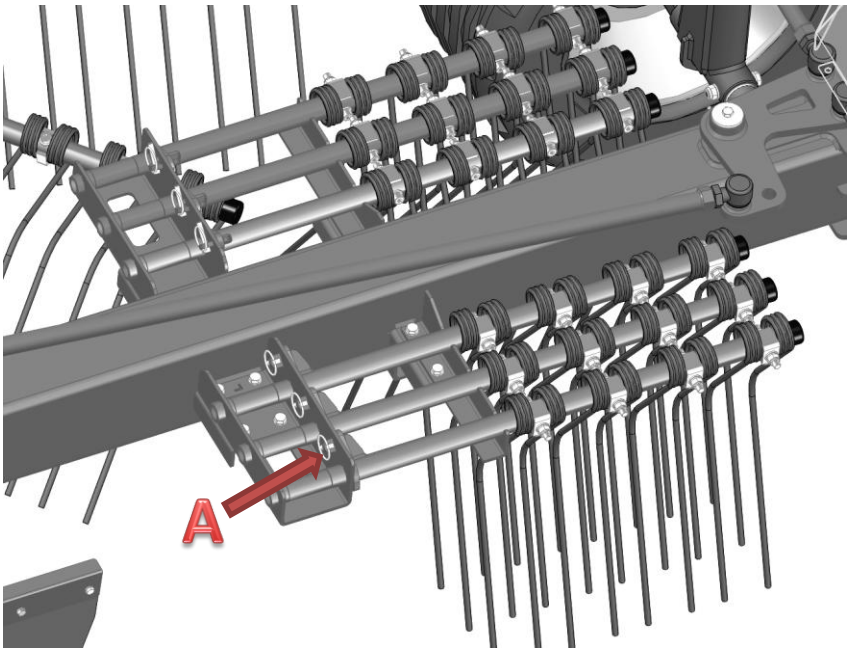
2. Removing the rake arms



For transport, the 3 outermost rake tines must be removed from each rotor. To do this, remove the cotter pin (A) and then pull out the entire arm (B).

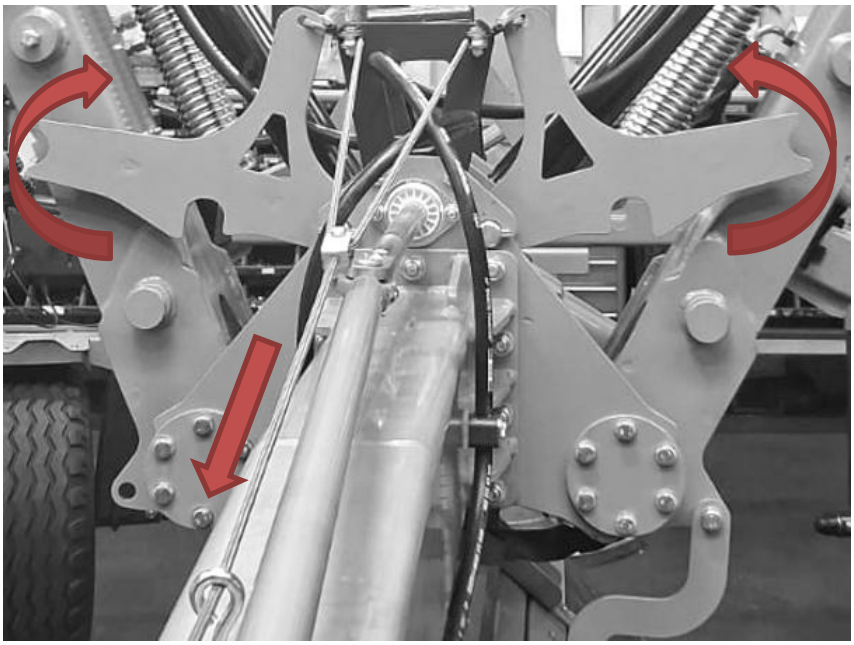
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3. Storing the rake arms in their storage areas



Place the arms, which have been removed for transport, in the designated storage area. There are right and left arms. Please bear this in mind when fitting and removing them. Each arm should be secured with a cotter pin (A).

4. Removing the transport locks and raising the rotors.

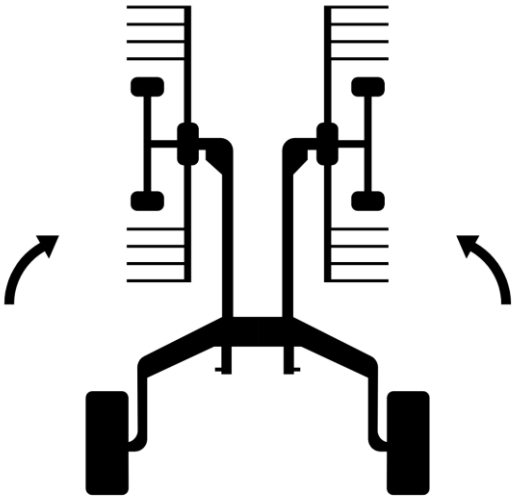


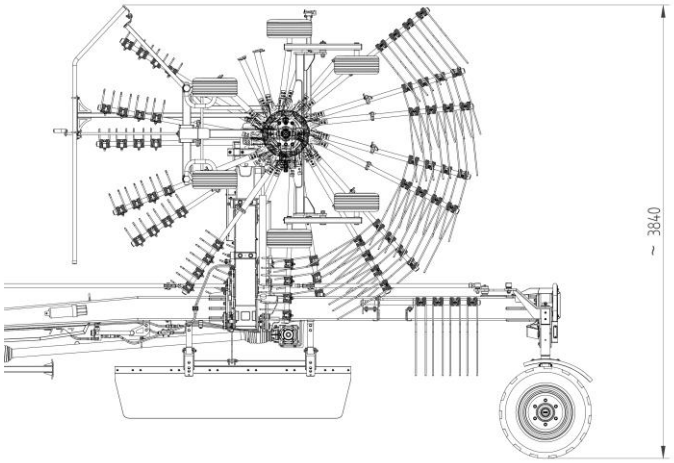
To raise the rotors to the transport position, pull and hold the transport lock cable. Next, apply pressure to the connection used to raise the rotors. It is marked in blue and with a plus sign.

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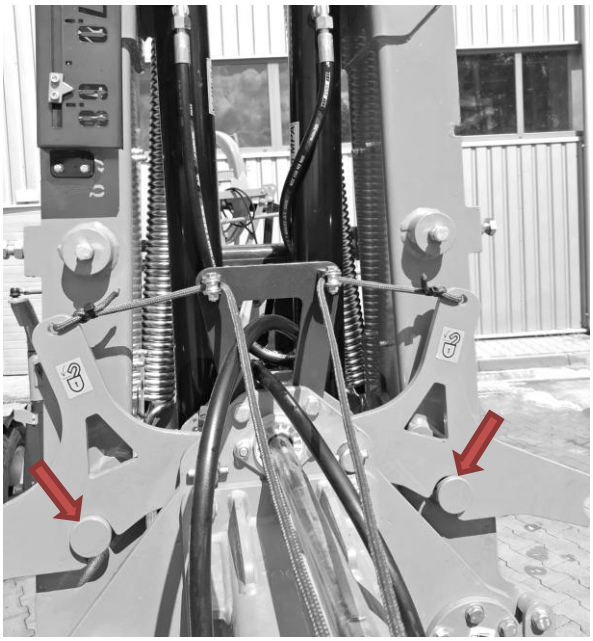
5. Folding the rake into the transport position

A general view of the rake in its transport position is shown below. It is important that the side barriers are folded up and the outer rake arms are removed. This is due to the maximum permissible transport height.





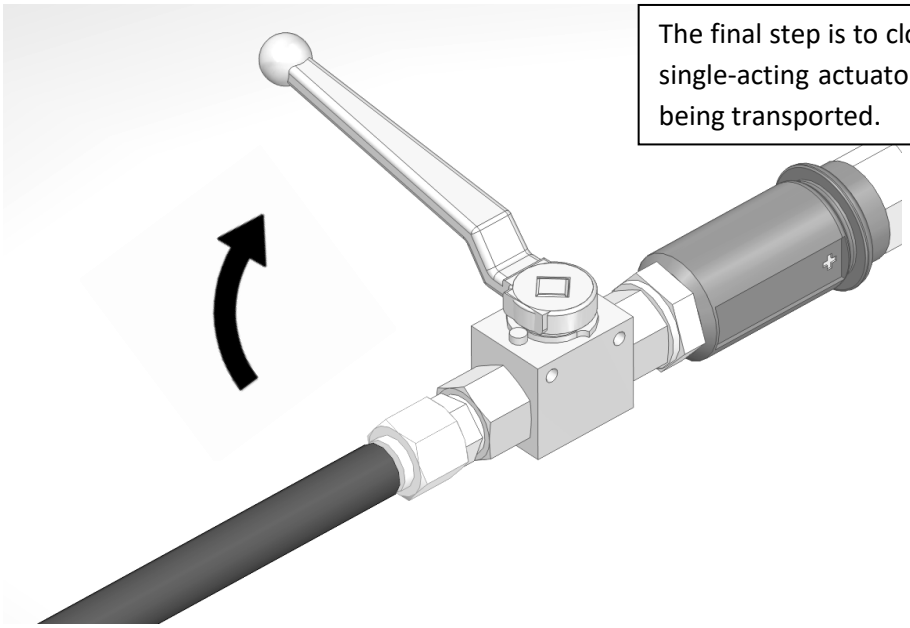
6. Correct positioning of transport locks



Once the rotors have been folded into the transport position, release the locking cable. They should jump into the spaces marked with arrows. It is essential to ensure that the locks have engaged in their designated positions.

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7. Closing the ball valve for transport

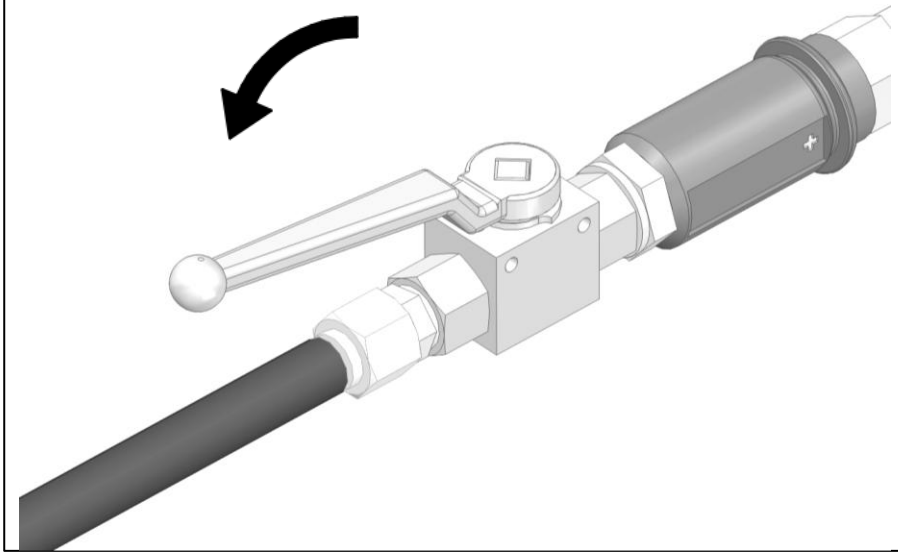


The final step is to close the ball valve on the single-acting actuators whilst the machine is being transported.

4.5. *Working position*

The following description sets out the sequence for setting up the machine in its working position:

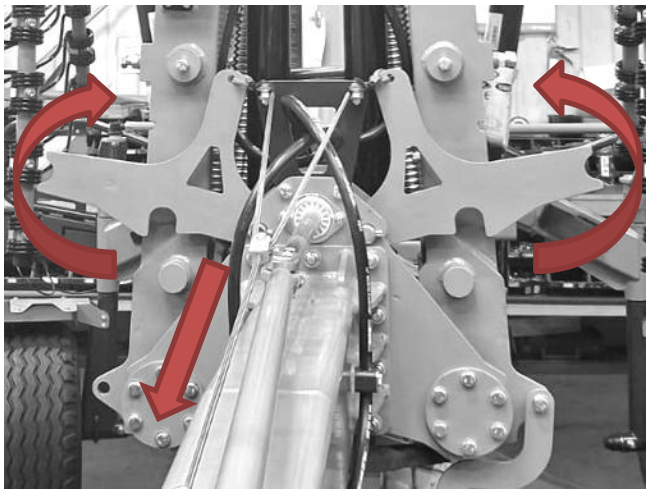
1. Opening the ball valve on single-acting actuators.



The first thing to do before starting to unfold the rake is to ensure that this can be done safely for the operator and bystanders. Only then can the valve on the single-acting actuators be opened.

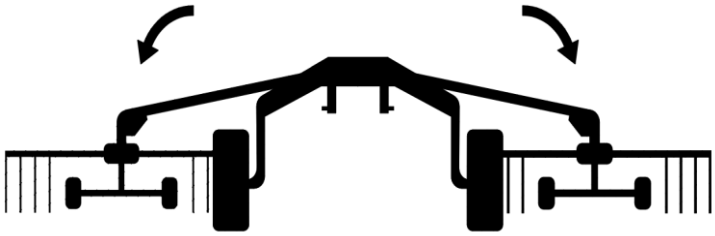
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2. Unlocking the arms

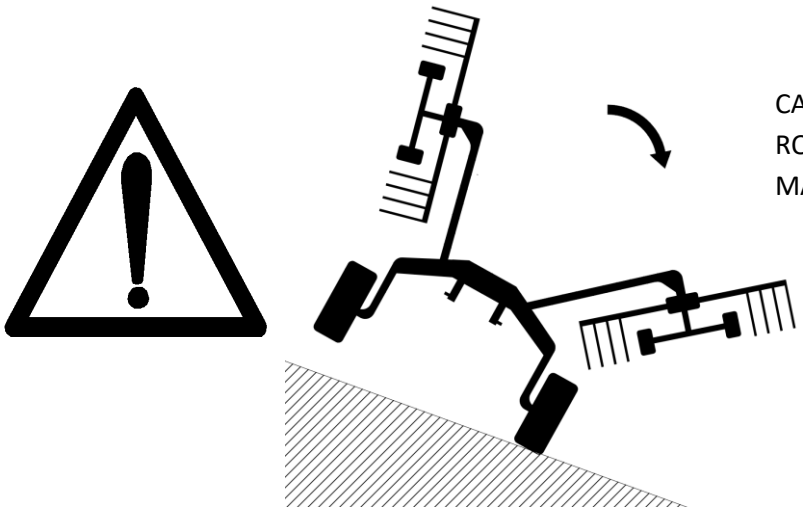


To lower the rotors to the working position, pull and hold the transport lock cable. Next, set the connection marked in blue and with a plus sign to float mode. The rake arms should start to drop.

3. Lowering the rotors to the ground



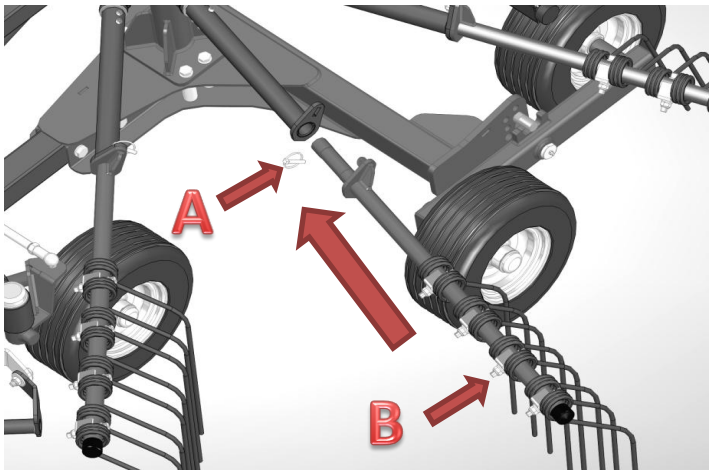
Once the rotors have been lowered to the ground, the transport locking cable can be released.



CAUTION! AVOID LOWERING THE ROTORS ON SLOPES. THE MACHINE MAY TIP OVER.

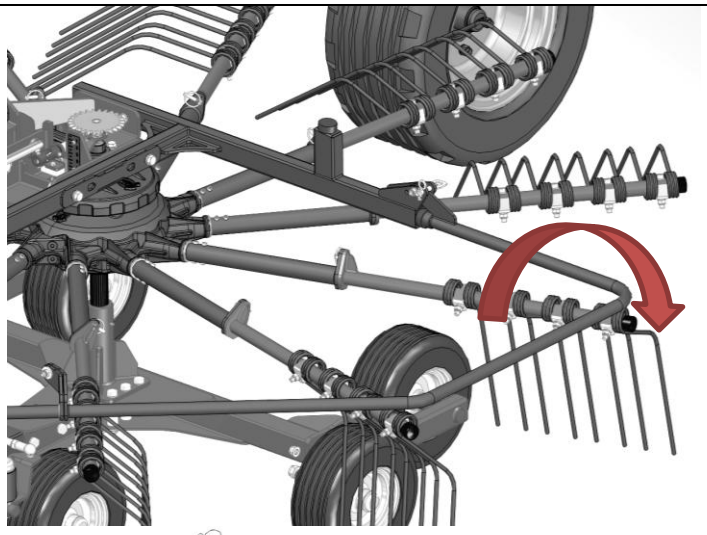
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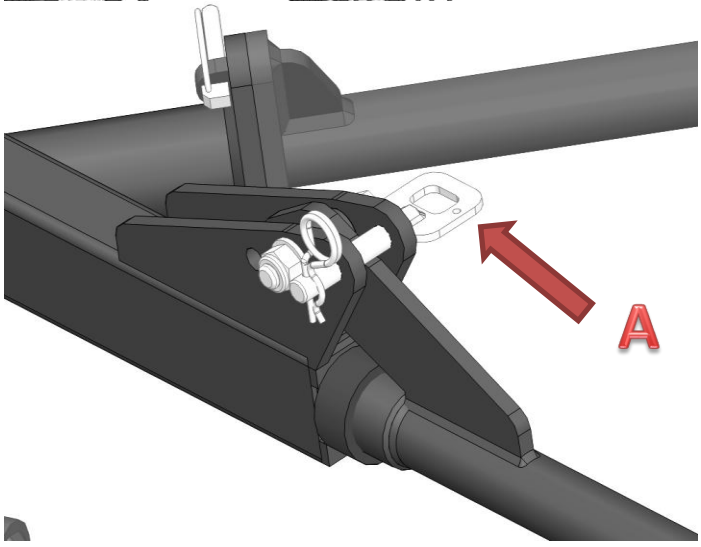
4. Folding up the rake arms



The arms (B), which are stored in the storage areas during transport, must be inserted into the sockets on the gearboxes and secured with cotter pins (A).

5. Folding down the safety barriers

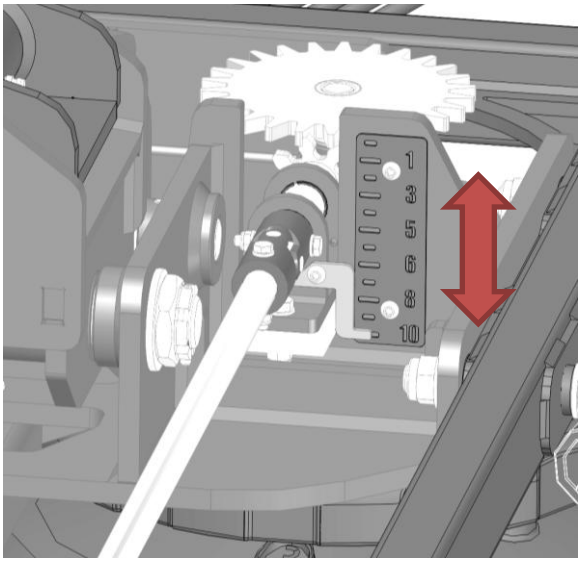




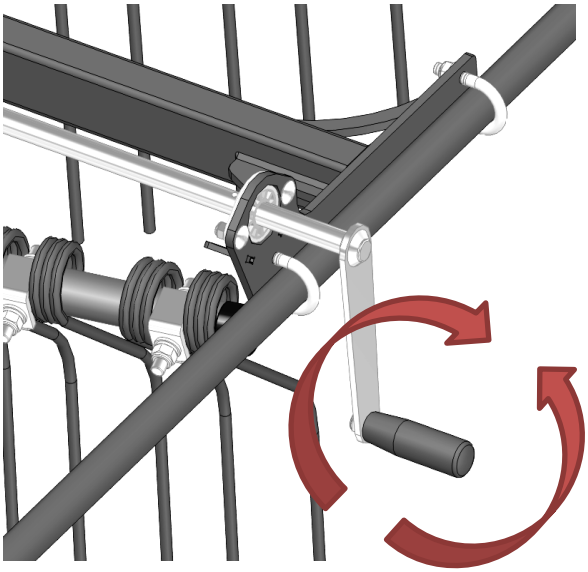
To lower the side barrier, remove the safety pin (A) and then lower the barrier. The barrier must be fitted tightly; therefore, it should be pressed downwards and only then secured with a pin and split pin. Carry out these steps on both sides of the machine.

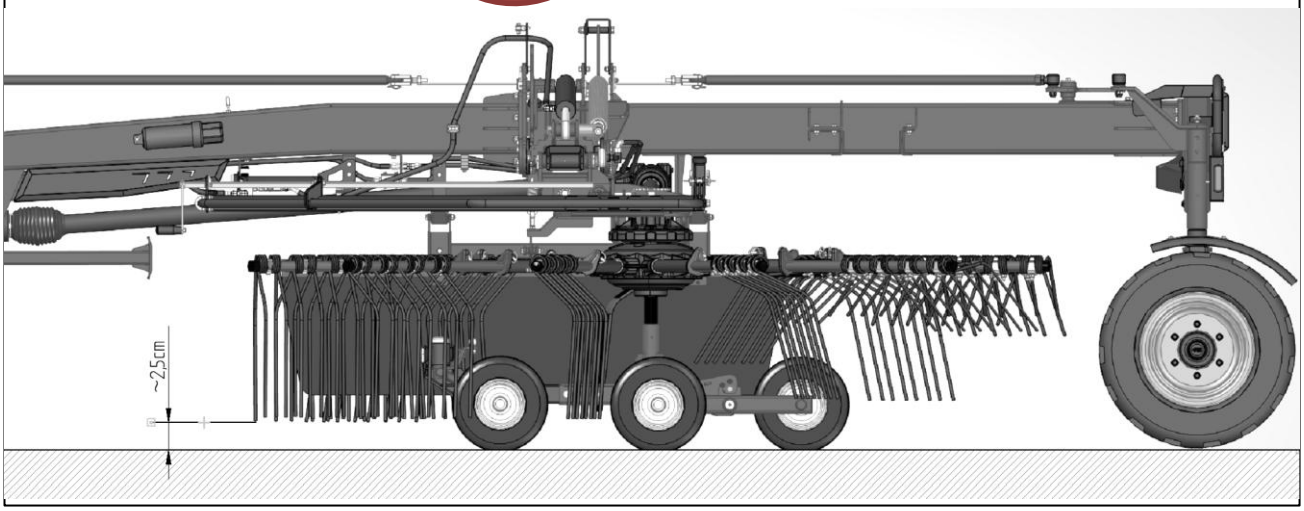
6. Adjusting the raking height

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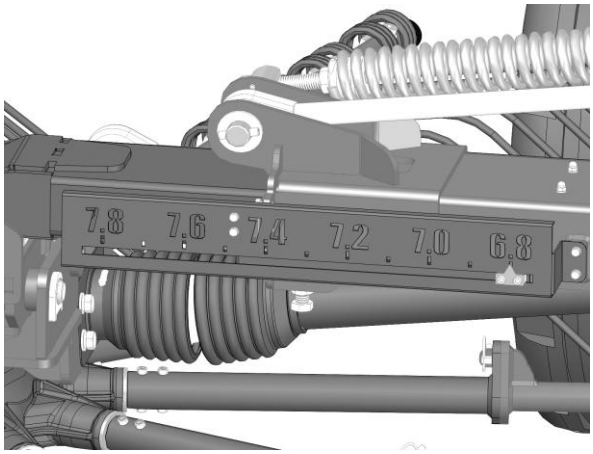
Before starting work, adjust the height of the rake tines from the ground; this is usually around 2.5 cm. The scale on the rotors indicates a similar distance from the ground. Never place the scale less than 1 cm above the ground. This may cause damage to the machine. Both rotors should be positioned identically. The height is adjusted by turning the crank on each of the rotors.





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7. Adjusting the working width

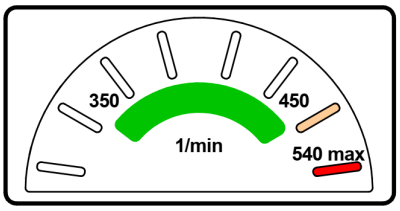


The working width can be set within a range of 6.8m to 7.8m. This is done using the red connectors. A plus sign for increasing the width, and a minus sign for decreasing it. The scale is visible on one of the arms.

8. Points to note whilst working



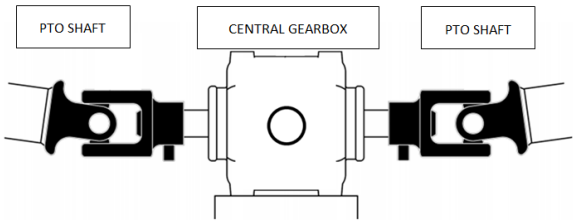
- When operating the rake, keep the speed within the recommended range of 350 to 450 rpm.



- Before folding up the machine from its working position into its transport position, switch off the PTO shaft and wait until the rotors have come to a complete stop. Failure to comply with this may result in damage to the rake.
- Single-acting actuators (blue plus connection) must be set to the float position during operation. Failure to comply with this may result in damage to the rake.

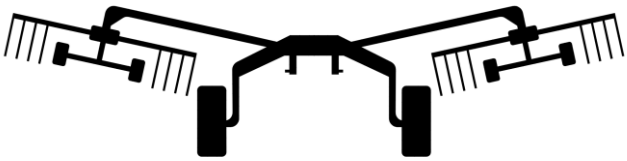


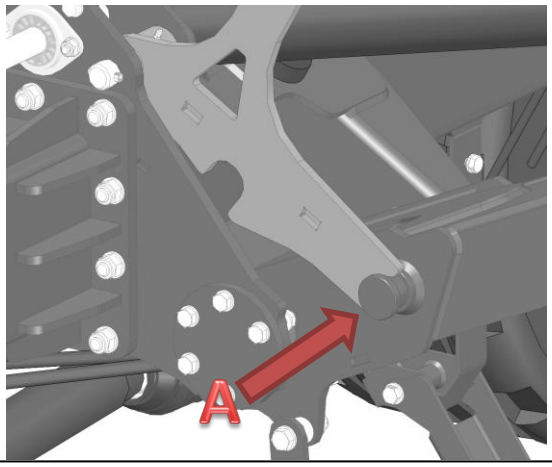
- Always fit the shafts on the gearbox so that the joints' axes are parallel. Failure to comply with this may result in damage to the rake.



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4.6. *Position on the headlands*





The position shown in the diagram is used for manoeuvring through tight headlands.

To set the valve to this position, apply pressure to the connection marked with blue. The arms should automatically rest against the stops on the transport locks (A).

To return to operating mode, set the function on the manifold to ‘float’.

5. Maintenance

5.1. *Oil change and lubrication points for the central gearbox and side gearboxes*

Observe lubrication and oil change intervals recommended by the manufacturer. In the case of oil, choose the value given in the box, whichever comes first. Failure to follow the guidelines shown in the diagram may result in a reduction in the service life of the gearbox:

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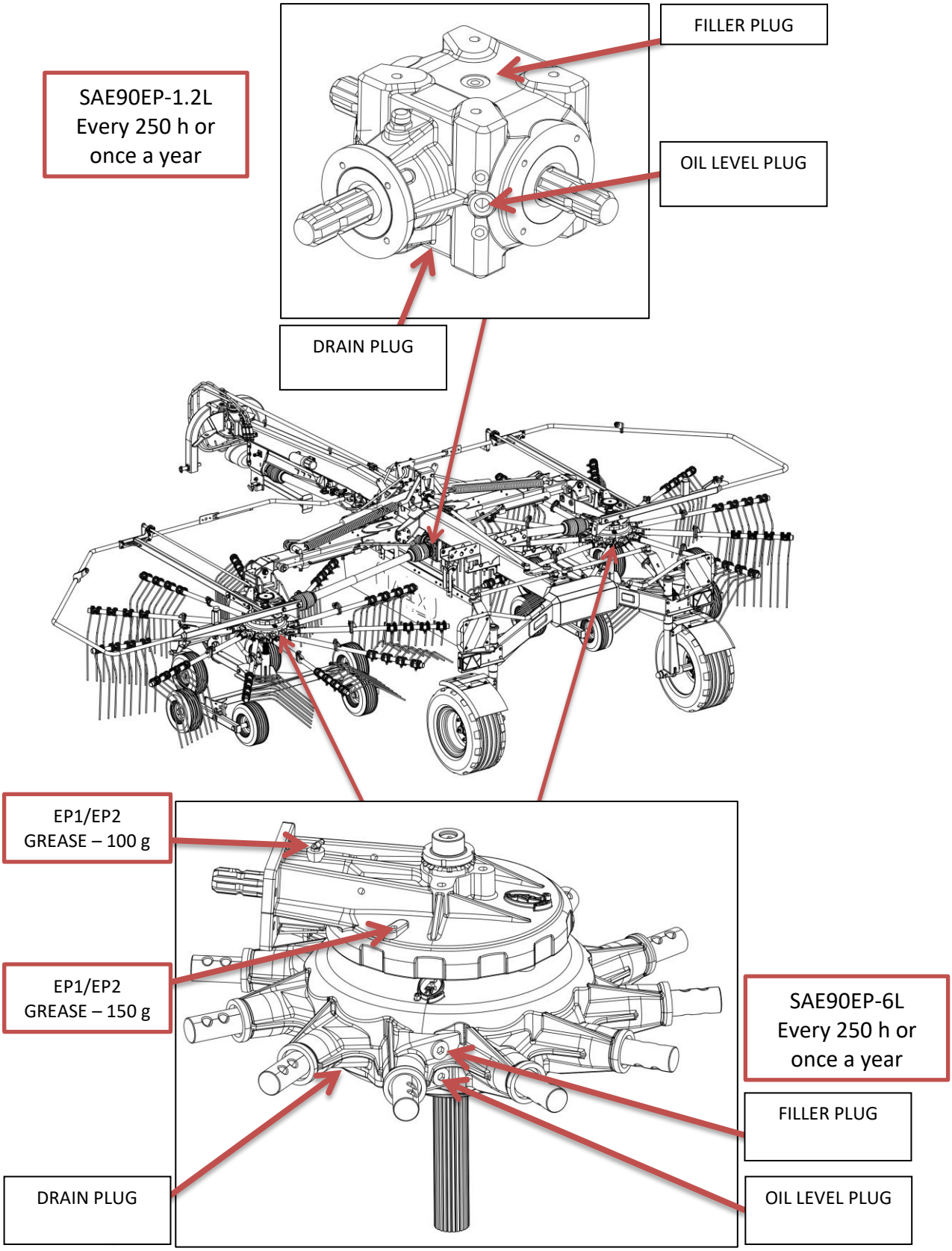


Figure 9. Diagram showing the oil change procedure for gearboxes

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5.2. *Lubrication points for moving parts*

- To ensure the correct performance of the machine, it must be thoroughly and properly lubricated according to the lubrication diagram.
- All the points shown, which are fitted with ball grease nipples, must be filled with EP1/EP2 solid grease using a grease gun.
- Lubricate the corresponding points on the other side of the machine as well, not just those shown in the lubrication diagram – they are mirror images on the other rotor.
- Lubricate the articulated telescopic shaft in accordance with the diagram below. Details of PTO shaft operation are contained in a separate manual supplied with it.

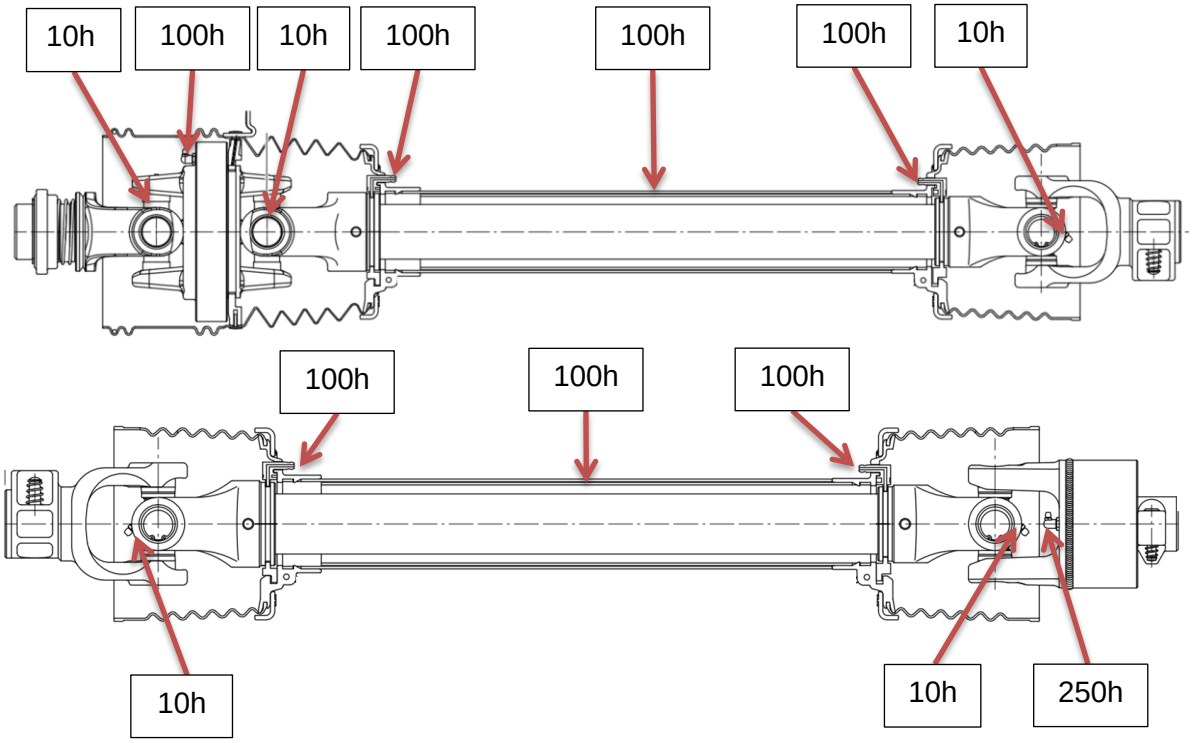


Figure 10. Lubrication diagram for universal PTO shafts

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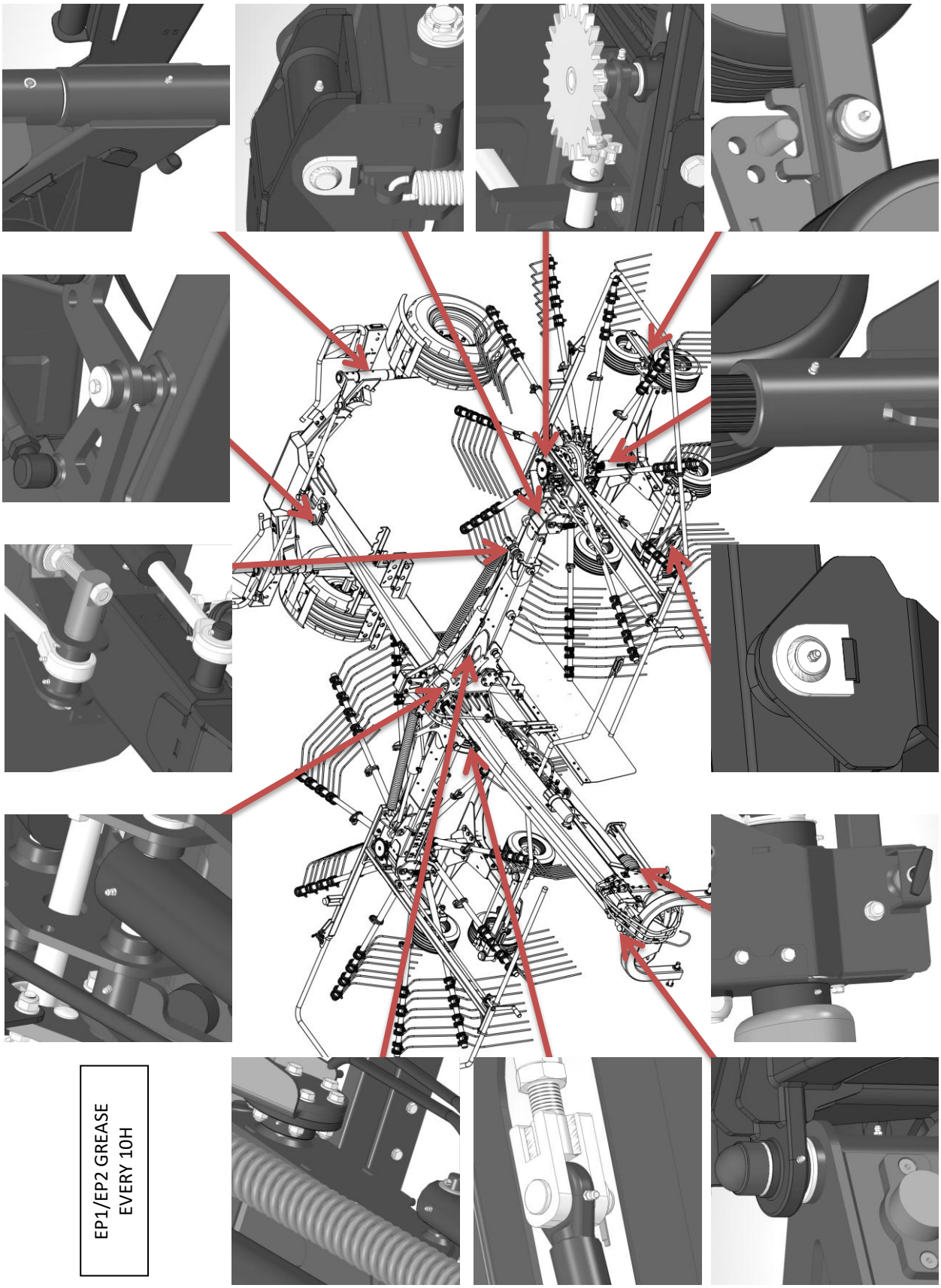


Figure 11. Lubrication diagram

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5.3. *Mounting and dismantling wheel, checking nuts for tightness*

Dismantling the wheel:

- Put chocks under the wheel that will not be dismantled.
- Make sure that the rake is properly secured and will not roll when the wheel is dismantled.
- Loosen the wheel nuts.
- Place the jack under the indicated point on the wheel to be removed (Figure 12) and lift the machine.
- Remove the wheel.

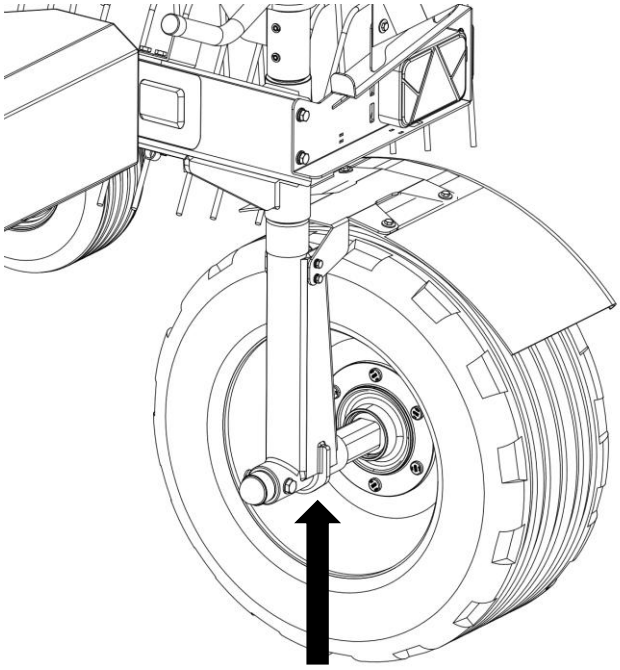


Figure 12. Wheel change support point

Mounting the wheel

- Clean the studs of the transport axle and the nuts from dirt.
  - Do not lubricate the nut and stud threads.
- Inspect the technical condition of the studs and nuts and replace if necessary.
- Put the wheel on the hub, tighten the nuts so that the rim fits tightly against the hub.
- Lower the rake and tighten the nuts to the recommended torque and in the order shown in Figure 13.

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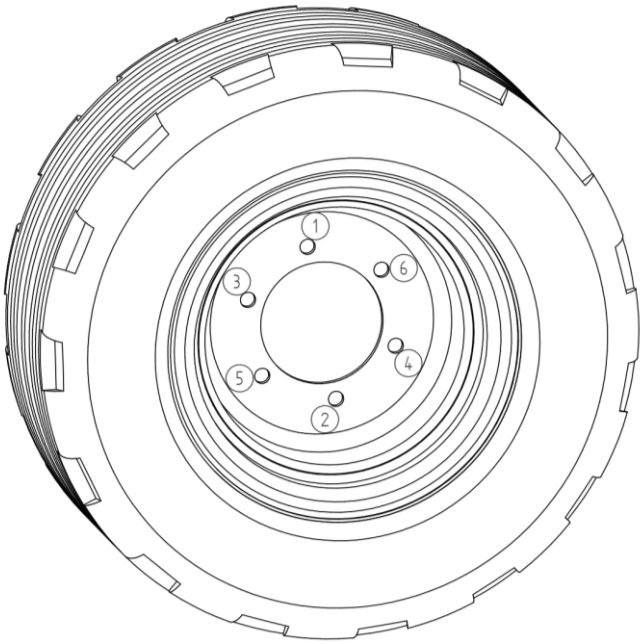


Figure 13. Wheel tightening sequence

The M18x1.5 wheel nuts should be tightened with a torque of 280 Nm.

Use a torque wrench to gradually tighten the nuts, alternating them diagonally in several steps, until the required torque is reached.

Checking the wheel tightness on the axle:

- after using the rake for the first time,
- In the case of intensive use, the check should be carried out at least every 100 km.

Repeat the whole procedure if the wheel was disassembled.

The nuts of the running wheels must not be tightened with impact wrenches, as there is a danger that the permissible tightening torque may be exceeded, resulting in the break of fastener's thread or the hub stud. The highest tightening accuracy is achieved with a torque wrench. Before you start tightening, make sure that the correct tightening torque is set.

5.4. *Adjustment of the rotor descent speed*

If there is a significant difference in the descent speed of the rotors as they move into their working position, it is possible to adjust them. Each rotor is controlled by a separate valve, which can be adjusted. To delay the descent of the faster side, turn the valve knob clockwise. Figure 14 shows the valves and their adjustment mechanisms.

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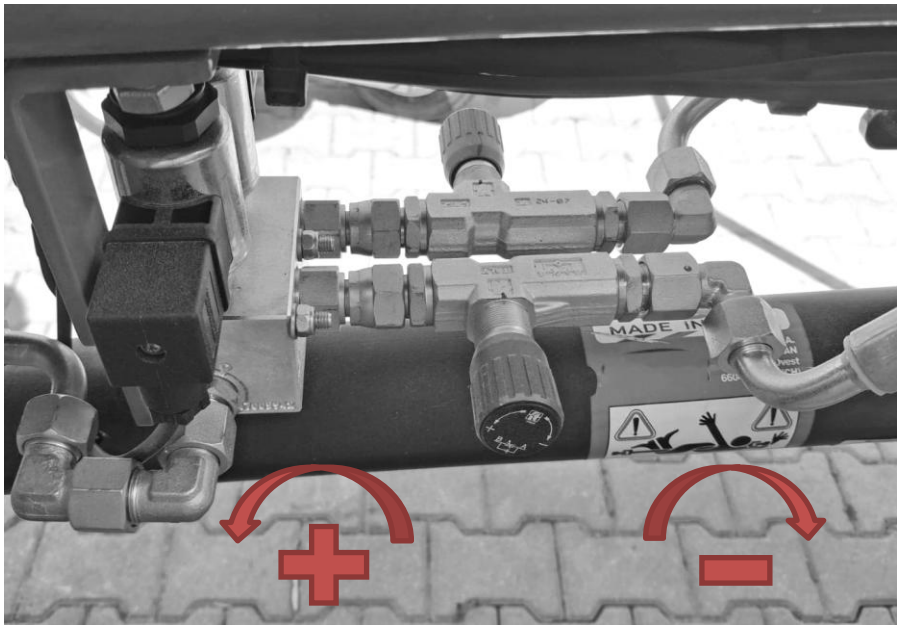


Figure 14. Rotor descent adjustment.

5.5. *Adjustment of the steering system on the transport axle*

The machine has been factory-set to move in a straight line behind the tractor. However, if there is a noticeable deviation to the left or right when looking backwards, it is possible to adjust the steering.

First, remove the pin (1) secured with a split pin (2), as shown in the diagram below. The next step is to loosen the M20 lock nut (4). If the machine should be driven further to the right when looking in the direction of travel, turn the forks clockwise. If it should ride closer to the left-hand side when facing forwards, the fork should be turned anti-clockwise. Once in position, tighten the M20 nut (4). The orientation of the view and the directions are shown in Figure 15.

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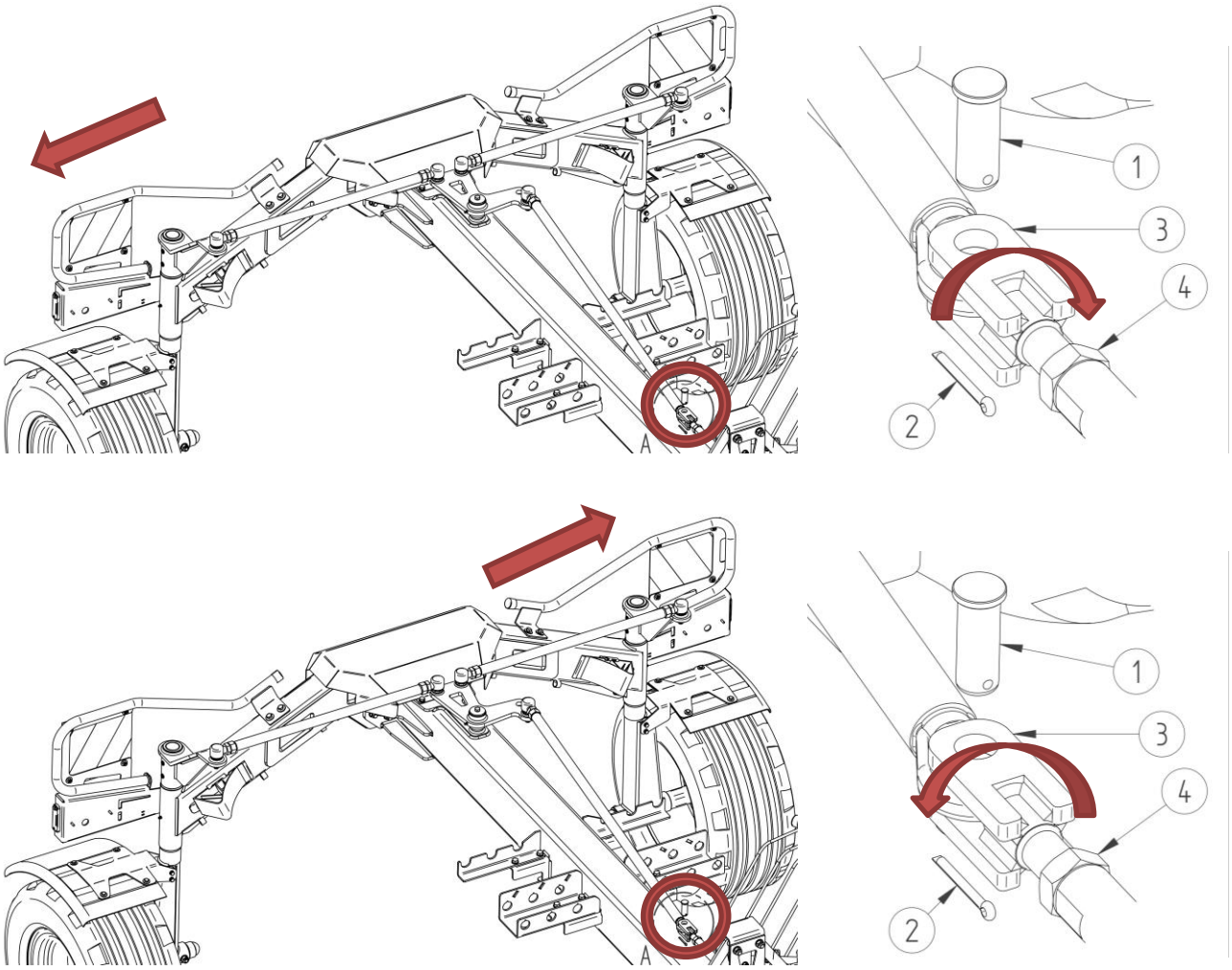


Figure 15. Track adjustment

If unusual tyre wear is observed on the drive axle, check the condition of the tie-rod ends and their alignment. If necessary, replace and adjust. The diagram below illustrates the correct alignment.

The alignment is correct if dimension X2 is approximately 1 mm to 4 mm greater than dimension X1.

The Y1 and Y2 dimensions must be equal.

To adjust, do the following:

- Loosen the M24 locknuts (#1 in Figure 16).
- Turn the tie rod (# 2 in Figure 16) to change the overall length.
- Check that Y1 = Y2 and that X1 and X2 dimensions fall within the specified range.
- Tighten the M24 nuts.

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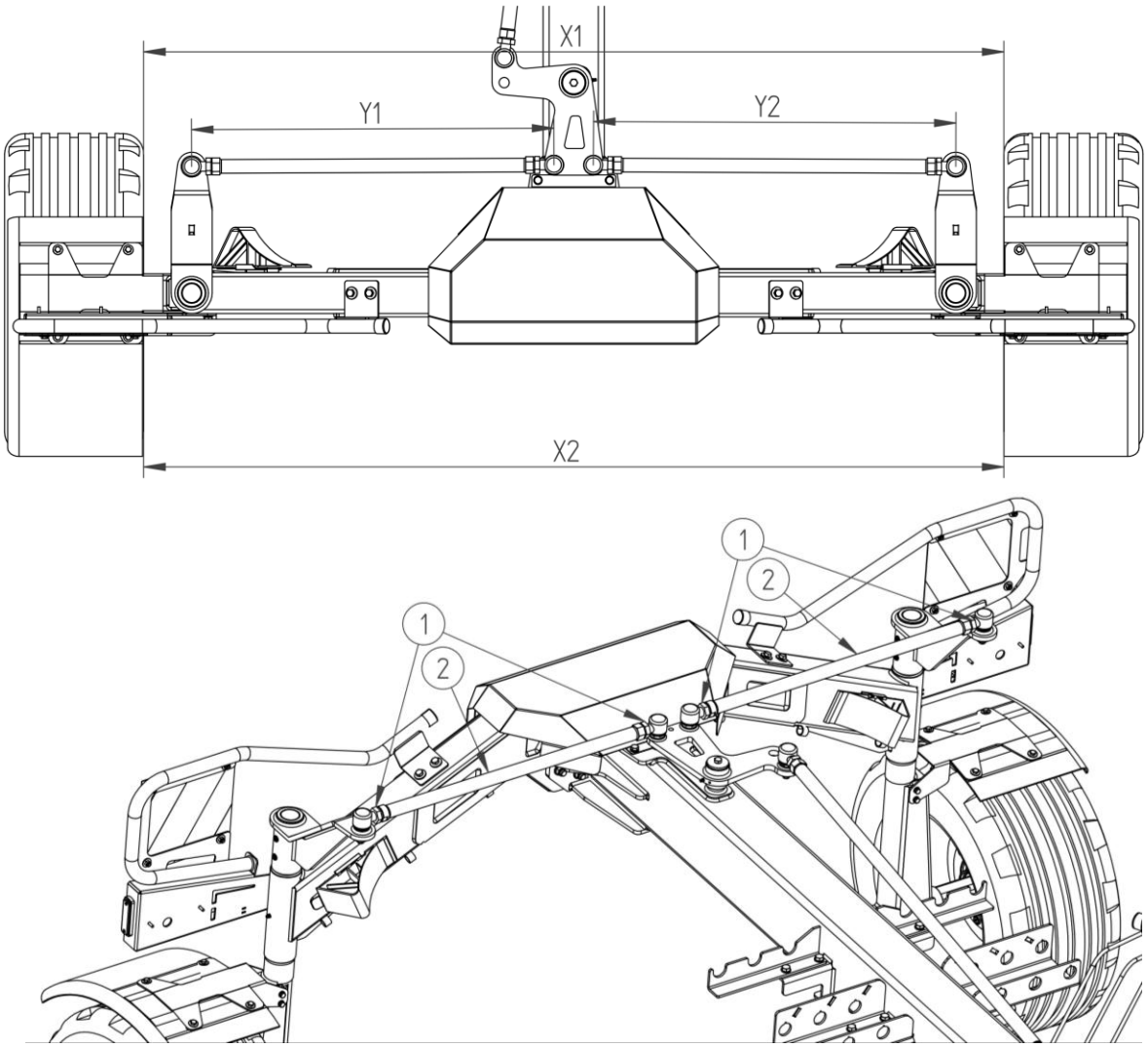


Figure 16. Adjustment of the transport axle wheels

5.6. *Rotor tilt control*

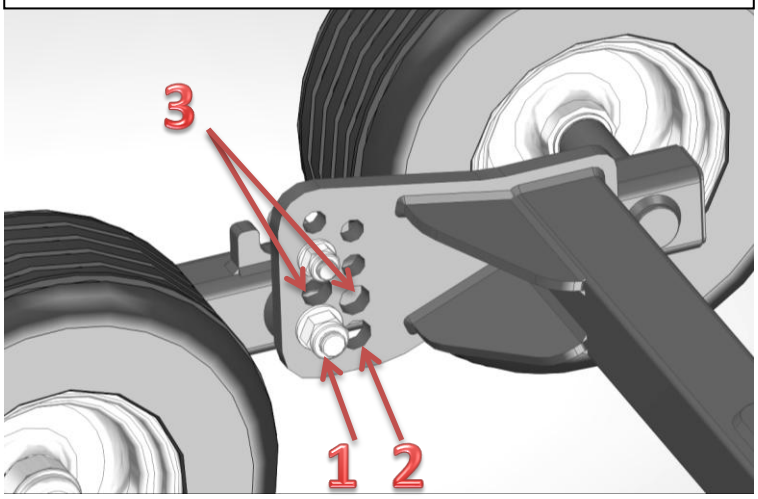
The tilt angle of the rotors has been set at the factory to be parallel to the ground. However, if the quality of the harvest is unsatisfactory, it is possible to adjust the rotor's angle of operation on each side. When harvesting large quantities of crop, the best results are achieved by tilting the rotor inwards.

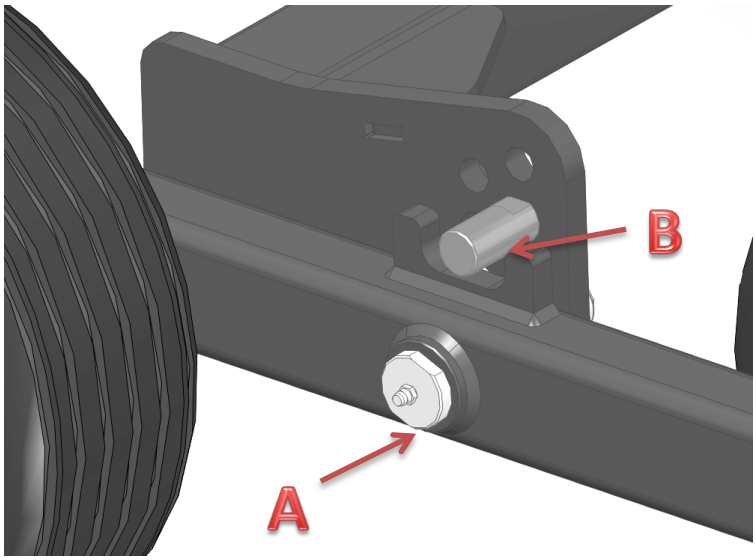
To adjust, unscrew the M20 nut on the pin (A and C in Figure 17) and move it into the appropriate hole. Reposition the stop (B in Figure 17) secured with an M16 nut too.

- When adjusting, raise the rotor just enough to allow the pins to be repositioned.
- Do not stand under the rotor whilst adjustments are being made.
- When adjusting the machine, it must be secured with chocks and placed on level ground.

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VERSION WITH A TANDEM DRIVE AXLE





Adjusting the position of the rotors.

1. Horizontal position – factory-set.
2. The rotor is tilted forwards.
3. The rotor is tilted backwards.

VERSION WITH A BASIC DRIVE SYSTEM

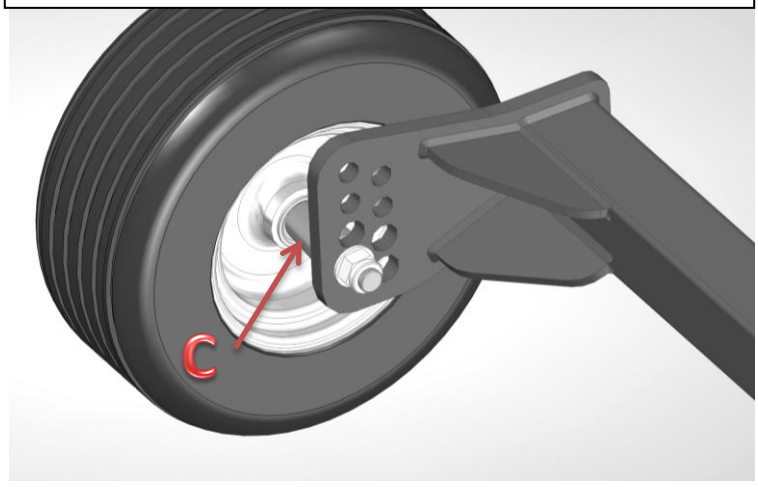


Figure 17. Adjusting the rotor tilt.

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In the case of the basic version without a tandem, the adjustment is exactly the same, except that there is no pin marked 'B' in Figure 17.

5.7. *Checking the rake tines*

- After using the rake for the first time, check that all the bolts securing the rake tines are tightened to the torque values specified in the table of torque values for bolts and nuts.
- When replacing arm components, the tightening torques must also be observed.
- Each time the rake tine (3) is replaced, the other fasteners (1, 2, 5, 6) must also be replaced.

The components of the arm are shown below:
1. Cylinder head screw M12x80 - T000734
2. Regular washer M12-T000458
3. Spring tine – T004348
4. Rake tine attachment – P540181
5. Spring washer M12-T000451
6. Self-locking nut M12 – T000291

Please note that there are arms for both the right and left rotors. Figure 18 shows a distinguishing mark that appears only on the arms of the right rotor.

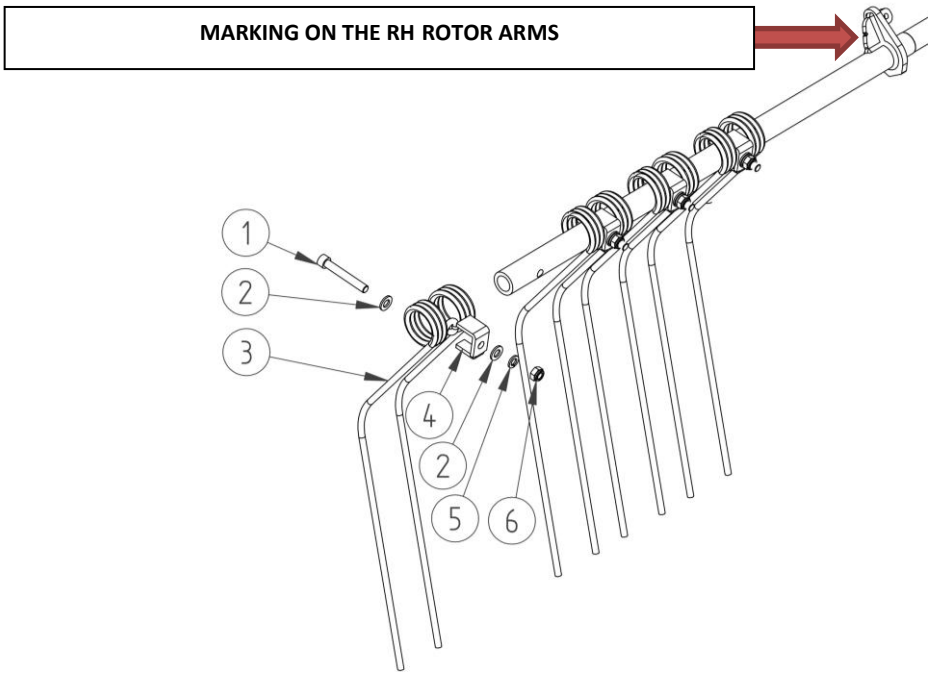
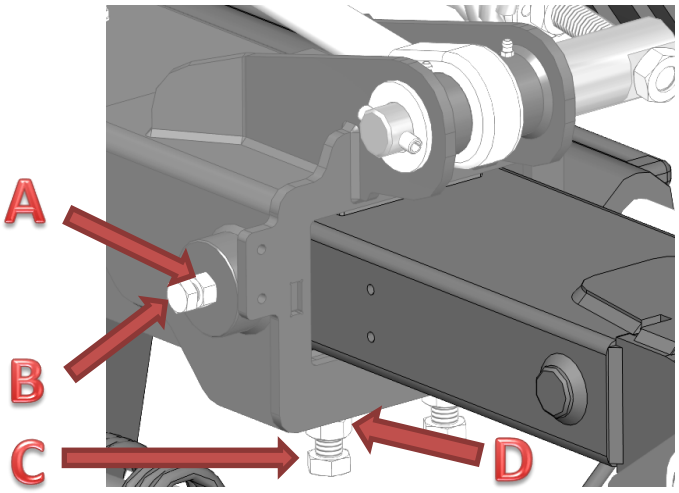


Figure 18. Rake arm

5.8. *Eliminating excessive operational play*

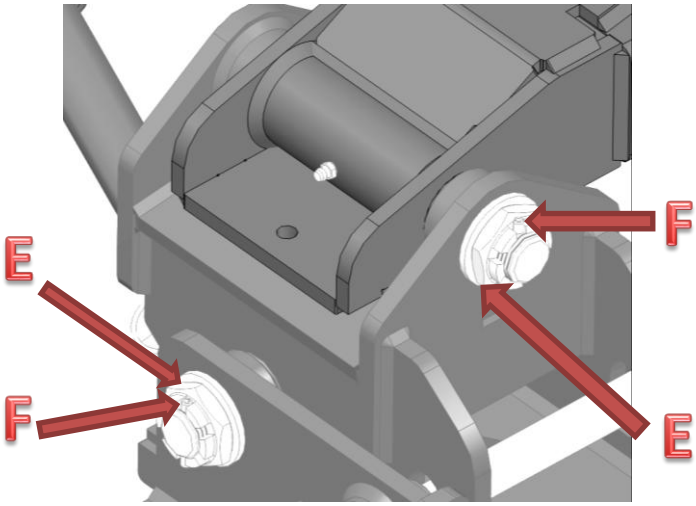
During operation, play may develop as a result of wear or abrasion, and this must be eliminated. As well as checking and tightening standard bolted joints, you should also check the points shown in Figure 19:

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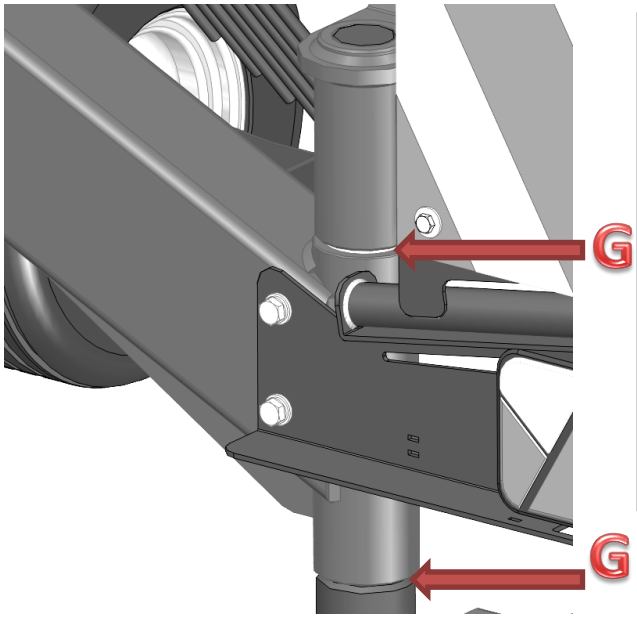
Eliminating excess play on the arm clamps:

1. Loosen the M12 nuts on the side slides (A).
2. Tighten the slides using M12(B) bolts.
3. Tighten the M12(A) nuts.
4. Loosen the M14(D) nuts on the lower slides.
5. Tighten the slides using M14(C) bolts.
6. Tighten the M14 nuts (D).
7. Check that the arms slide freely along the slides. Loosen the bolts, if necessary.



Eliminating excess play from the pins in the ground-following system:

1. Remove the retaining pin (F).
2. Tighten the M30 nuts (E).
3. Check whether movement is possible on the interacting components. If not, loosen the nut. The permissible play is approximately 0.5 mm.
4. Once adjusted, secure the pins with cotter pins (F).



Adjusting the play on the transport axle:

If there is any play at the points marked ‘G’, this must be eliminated using 50x62 shims, the thickness of which depends on the amount of play present.

For safety reasons, particular attention should be paid to any play in the transport axle.

Figure 19. Eliminating operational play

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6. Technical inspections, storage, disposal

Every day, at the end of work, clean the rake carefully and check its technical condition. Pay particular attention to the condition of the tines on the drive and running gear. Damaged or worn parts must be replaced with new ones. Check all the bolted connections and tighten loose connections, according to the table of tightening torque values for bolts and nuts. In addition, use anaerobic threadlocker on the screws securing the rake tines. If coating defects are identified, they should be remedied with a new coat of paint.

Tightening torque values for bolts and nuts

Strength Bolt class	6.8	8.8	10.9	12.9
Metric thread	Tightening torque [Nm]			
M6	7.2	9.5	14	16.5
M8	17.5	23	34	40
M10	35	46	68	79
M12	60	79	117	135
M14	95	125	185	215
M16	147	195	280	330
M18	202	280	390	460
M20	284	390	560	650
M22	385	530	750	880
M24	490	670	960	1120
M27	725	1000	1400	1650
M30	990	1300	1830	2200

COMMENTS:

1. The table gives the maximum tightening torques (according to ISO 898/1) that bolts and screws should be able to withstand. Without plastic deformation.
2. In the case of the use of lubricants or coatings that reduce the friction coefficient on the thread and under the bolt head, a tightening torque of 70% of that given in the table should be used.

After the end of the operating season:

- carefully clean the machine,
- carry out technical inspection and replace the damaged parts with new ones available from the manufacturer,
- lubricate the machine in accordance with the lubrication diagram (Figures 9, 10 and 11),
- remedy defects in the protective coating.



All repairs and replacements of parts of the rake drive system should be carried out by a proper workshop equipped with appropriate tools and instruments.

6.1. *Storage*

The rake must be stored in a dry place, protected from weather conditions. The machine should be positioned on stable, level ground and secured against uncontrolled movement. In the event of a long period of inactivity, the machine should be moved slightly to change the tire position and prevent permanent deformation.

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Additionally, the tire pressure should be checked. These actions should be carried out on average once every 3 months.

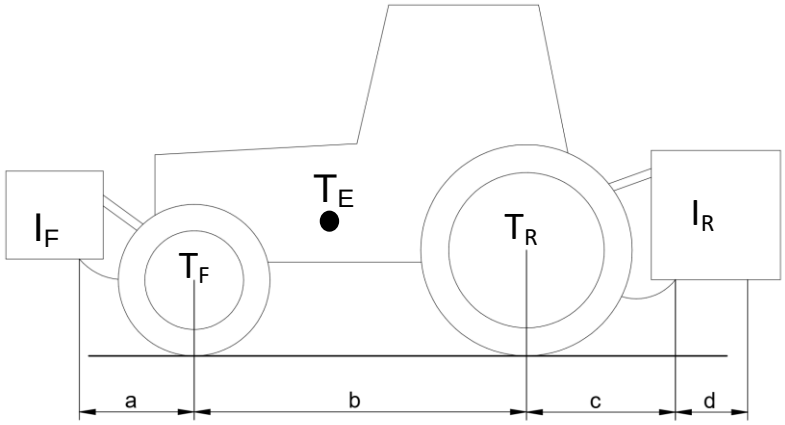
6.2. *Dismantling and disposal*

If the machine becomes worn to the extent which prevents its further use, it should be disposed of. This also applies to regular repairs and replacement of damaged parts. To do this, the machine must be thoroughly cleaned, its operating fluids removed and sent for disposal. Next, disassemble the machine by segregating its parts according to the materials used in them. The segregated parts should be taken to a recycling or a disposal centre.

6.3. *Stability*

In order to verify the overall stability, the following formula may be used to calculate the minimum additional front load $I_{F,min}$ expressed in kg, enabling the front axle load equal to 20% of the tractor weight to be achieved.

$$I_{F,min}=\frac{[I_R \times (c+d)]-(T_F \times b)+(0{,}2 \times T_E \times b)}{a+b}$$



Explanations:
T_E-empty tractor weight [kg]
T_F-front axle pressure, empty tractor [kg]
T_R-rear axle pressure, empty tractor [kg]
I_F-weight of the machine hitched in the front/front weights[kg]
I_R-weight of the machine hitched in the rear/rear weights[kg]
a-distance between the centre of gravity of the front-hitched machine/front weights and the centre of the front axle [m]
b-tractor wheelbase [m]
c-distance between the centre of the rear axle and the centre of ball joints of the rear suspension [m]
d-distance between the centre of the rear suspension ball joints and the centre of gravity of the rear-hitched machine/rear weights [m]

7. Spare parts catalogue

SPARE PARTS ORDERING PROCEDURE

Each order form should include the following:

- address of the buyer;
- exact shipping address (place where machine is located or other means for delivery collection);
- terms of payment;
- serial number of the machine and the year of manufacture (acc. to the nameplate on the machine);
- spare part number;
- spare part name;
- number of parts ordered.



Spare parts must be ordered at the points of sale of the machines or from the manufacturer. Use only the original spare parts provided by the manufacturer, to guarantee safe and reliable operation of the machine. The use of not original spare parts or parts, which have been repaired, will render the warranty void.

The manufacturer reserves the right to introduce changes to the design of parts presented in the particular assembly drawings in this spare parts catalogue. Such changes may not always be updated in the manual and the spare parts catalogue. Individual drawings may differ from the actual look of the parts.

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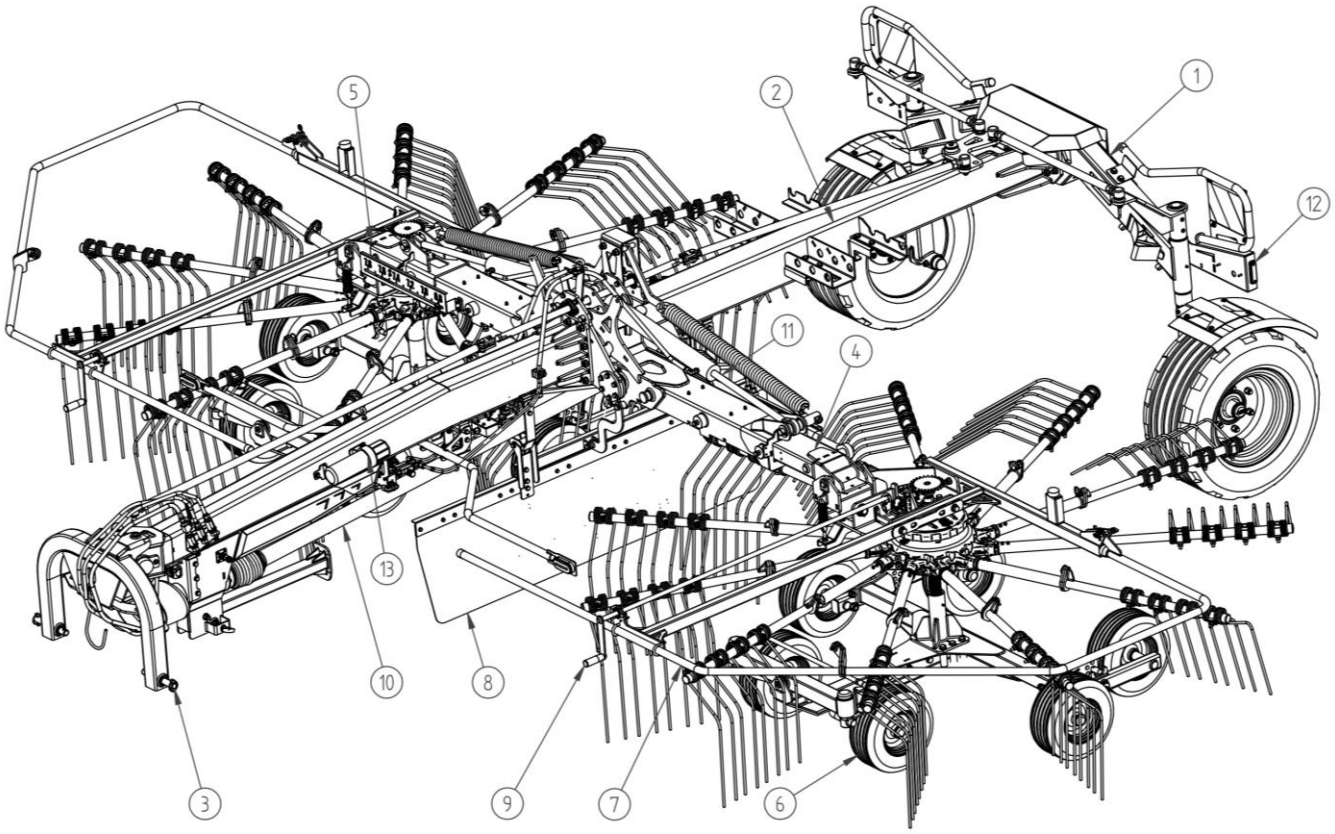
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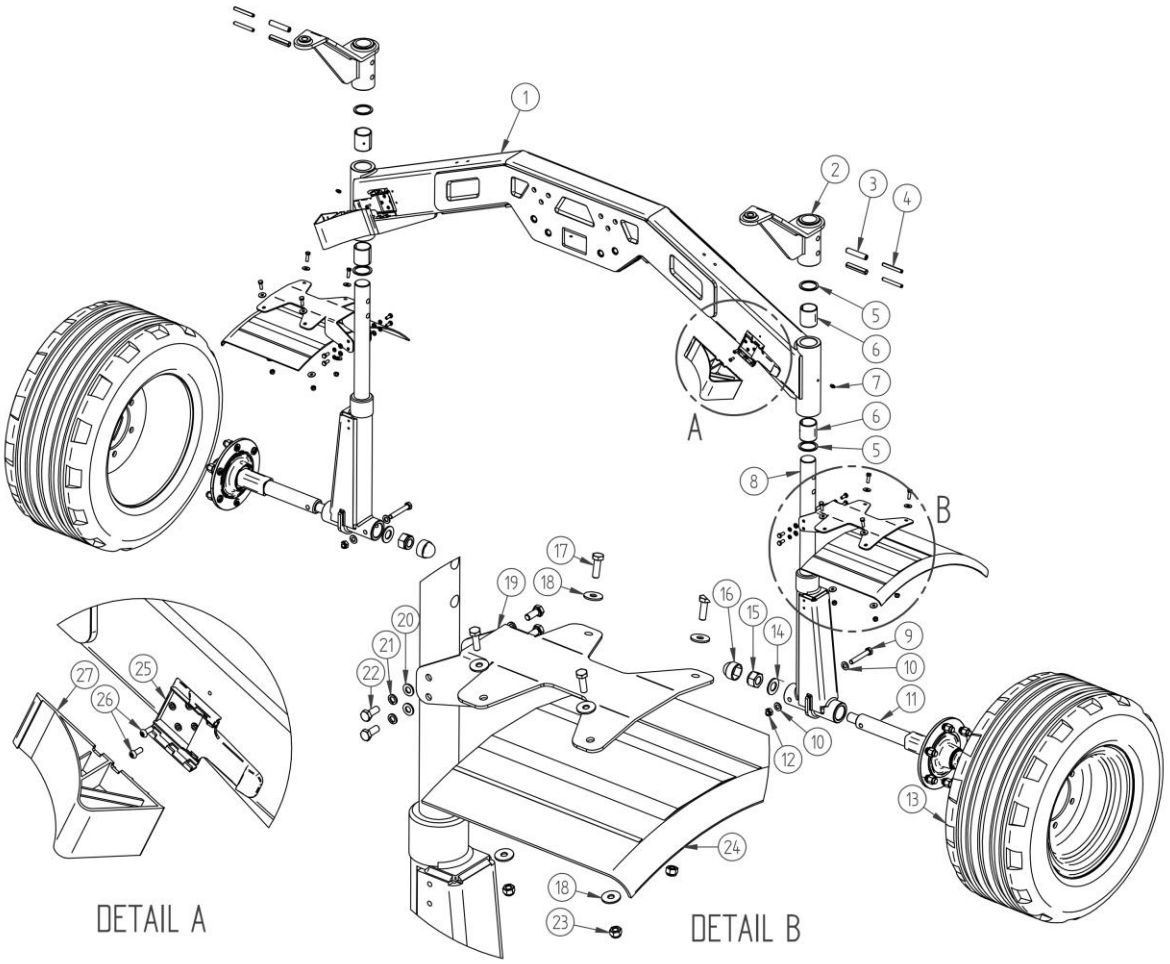
7.1. *General design*



Item	Name	Index/Section
1.	Transport axle	Section 7.2
2.	Frame and steering system	Section 7.3
3.	Hitch suspension system	Section 7.4
4.	LH arm with ground-following system	Section 7.5
5.	RH arm with ground-following system	Section 7.6
6.	Running gear	Section 7.7
7.	Protective barriers	Section 7.8
8.	Swath curtain	Section 7.8
9.	Rake height adjustment	Section 7.10
10.	Drive and working systems	Section 7.11
11.	Hydraulic system	Section 7.12
12.	Lighting with signage	Section 7.13
13.	Other	Section 7.14

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7.2. *Transport axle*



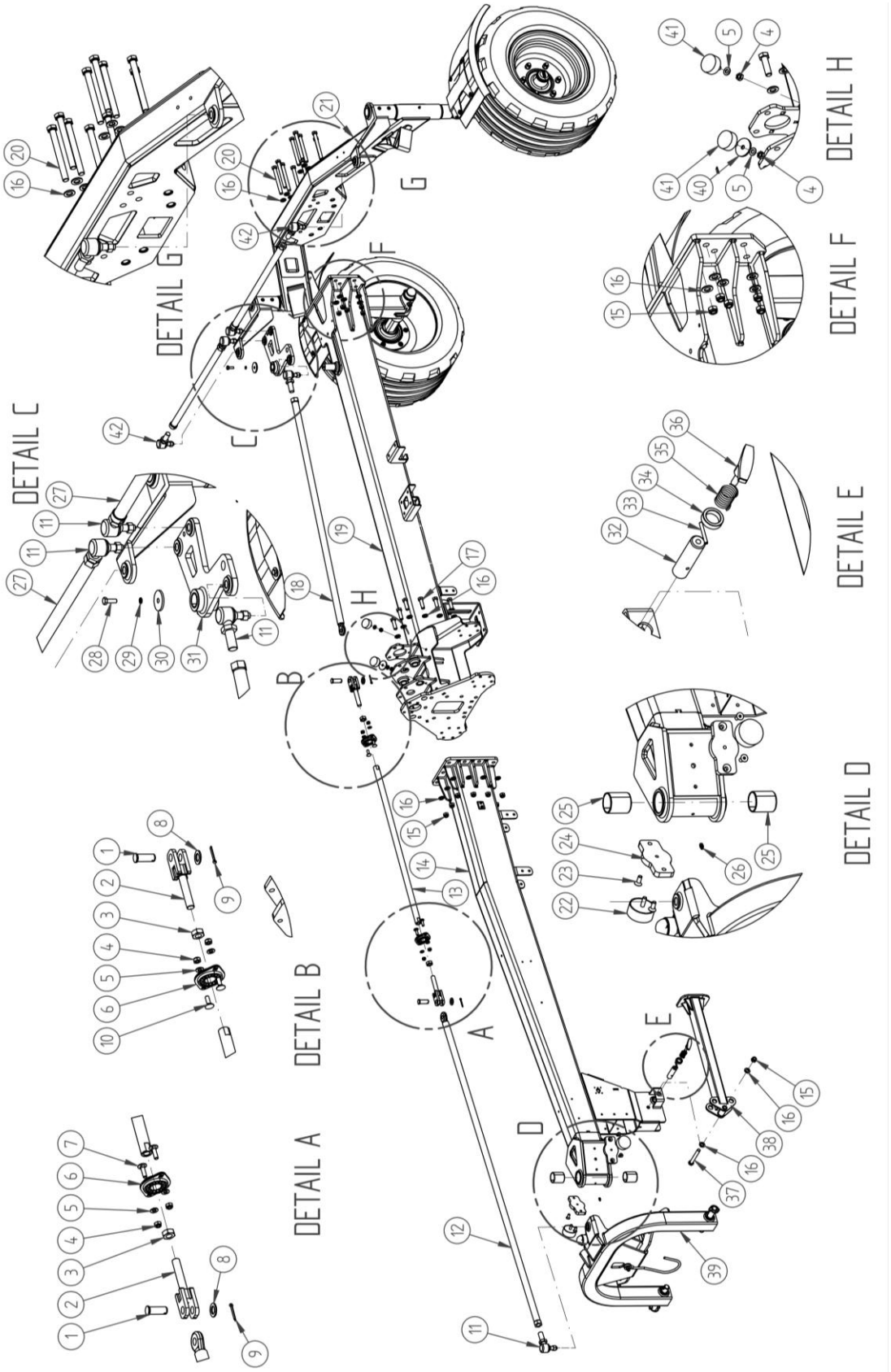
Item	Name	Index/Section	Qty
1.	Main section of the transport axle	P370001	1
2.	Twist connector	P370017	2
3.	Spring-type straight pin 16x80	T004642	4
4.	Spring-type straight pin 10x80	T000085	4
5.	Washer 50x62x3	T004640	4
6.	Slip bushing EGB5060-E50	T004628	4
7.	Grease nipple M8x1	T000647	2
8.	ZC-axis swivel section	P370011	2
9.	Bolt M14x90-10.9	T004652	2
10.	Regular washer M14	T000459	4
11.	Cross shaft	P370351	2
12.	Self-locking nut M14	T000293	2
13.	Wheel 340/55-16	T002568	2
14.	Regular washer M30	T000466	2
15.	Self-locking nut M30x2	T000296	2

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16.	Nut cover M30	T004492	2
17.	Bolt M8x25-8.8	T000805	8
18.	Extensional washer M8	T000443	16
19.	Mudguard mount	P370029	2
20.	Regular washer M8	T000471	8
21.	Spring washer M8	T000455	8
22.	Bolt M8x20-8.8	T000804	8
23.	Self-locking nut M8	T000256	8
24.	Fender	P370403	2
25.	Brake wedge bracket (supplied with item 27)	T004487	2
26.	Cylindrical head screw M6x12	T000940	4
27.	Brake wedge	T004487	2

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7.3. *Frame and steering system*

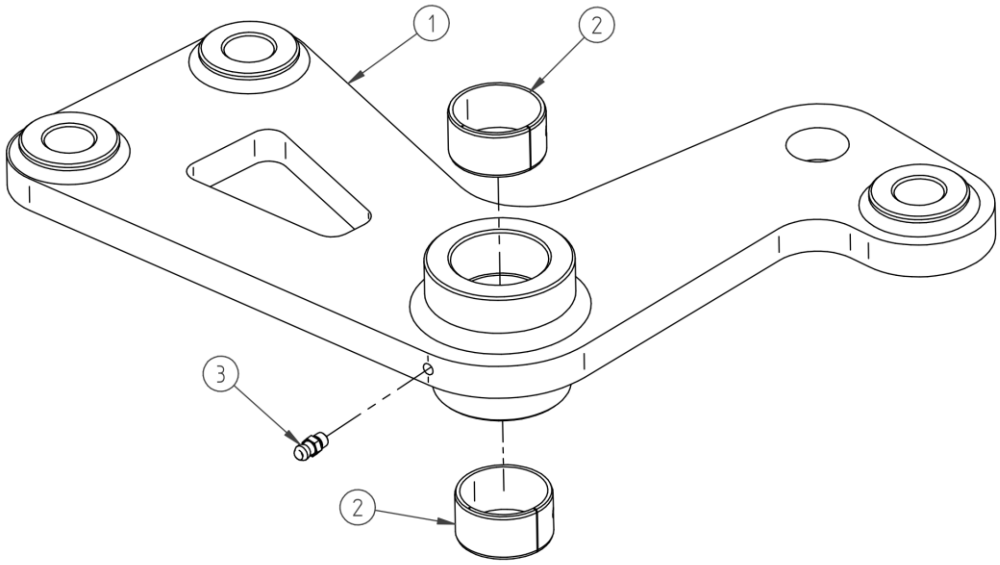


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Item	Name	Index/Section	Qty
1.	Steering rod pin	P370118	2
2.	Sliding link fork	P370112	2
3.	Nut M20	T000272	2
4.	Self-locking nut M10	T000292	8
5.	Regular washer M10	T000292	8
6.	Flanged bearing, PFL206	T004636	2
7.	Lock bolt M10x35-10.9	T000744	2
8.	Regular washer M20	T000462	2
9.	Cotter pin 5x40	T000985	2
10.	Lock bolt M10x30-10.9	T000742	2
11.	Right steering rod end	T004614	4
12.	Front steering rod	P370115	1
13.	Steering rod sliding link	P370117	1
14.	Bent frame section	P370053	1
15.	Self-locking nut M16	T000294	21
16.	Lock washer M16	T004622	42
17.	Bolt M16x55-10.9	T004658	10
18.	Rear steering rod	P370109	1
19.	Straight frame section	P370031	1
20.	Bolt M16x160-10.9	T004653	10
21.	Transport axle	Section 7.2	1
22.	Vibration damping mount, DVA.4-70-30-M10-28-70	T004606	2
23.	Countersunk bolt M10x25-10.9	T003428	2
24.	Bumper base	P370085	2
25.	Slip bushing EGB5060-E50	T004628	2
26.	Grease nipple M8x1	T000647	1
27.	Short steering rod	P370106	2
28.	Bolt M12x30-8.8	T000755	1
29.	Spring washer M12	T000451	1
30.	Steering system link washer	P370347	1
31.	ZC steering link set	P370359	1
32.	Support foot locking pin	P370081	1
33.	Spring-type straight pin 5x40	T000080	1
34.	Spacer bushing	P607954	1
35.	Compression spring	T004694	1
36.	Handle K0180.27110x30	T002436	1
37.	Bolt M16x120-10.9	T004660	1
38.	Support foot	P370072	1
39.	Hitch suspension system	Section 7.4	1
40.	Spacer	P540237	2
41.	Vibration isolator 50-20-M10-28-70	T002706	4
42.	Left steering rod end	T004806	2

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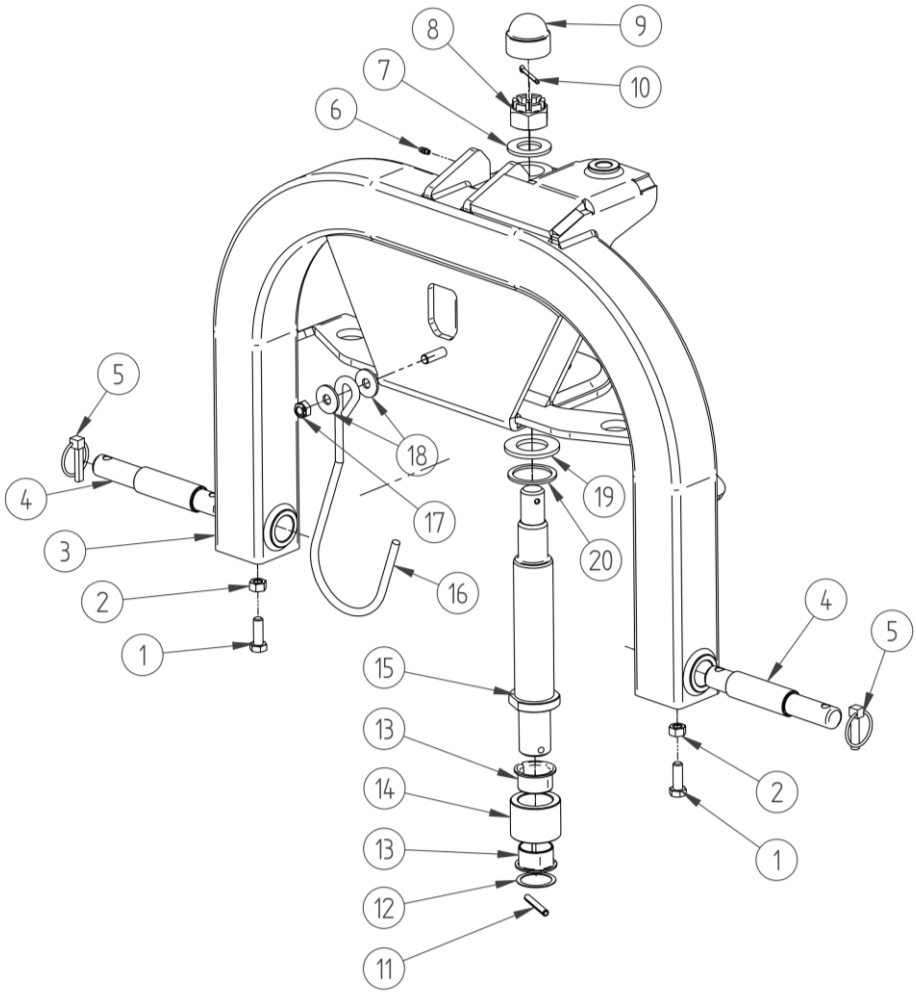
7.3.1 Steering rod link cpl



Item	Name	Index	Qty
1.	Steering link connector	P370102	1
2.	Slip bushing EGB3520-E50-Y	T004632	2
3.	Grease nipple M6x1	T000645	1

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7.4. *Hitch suspension system*

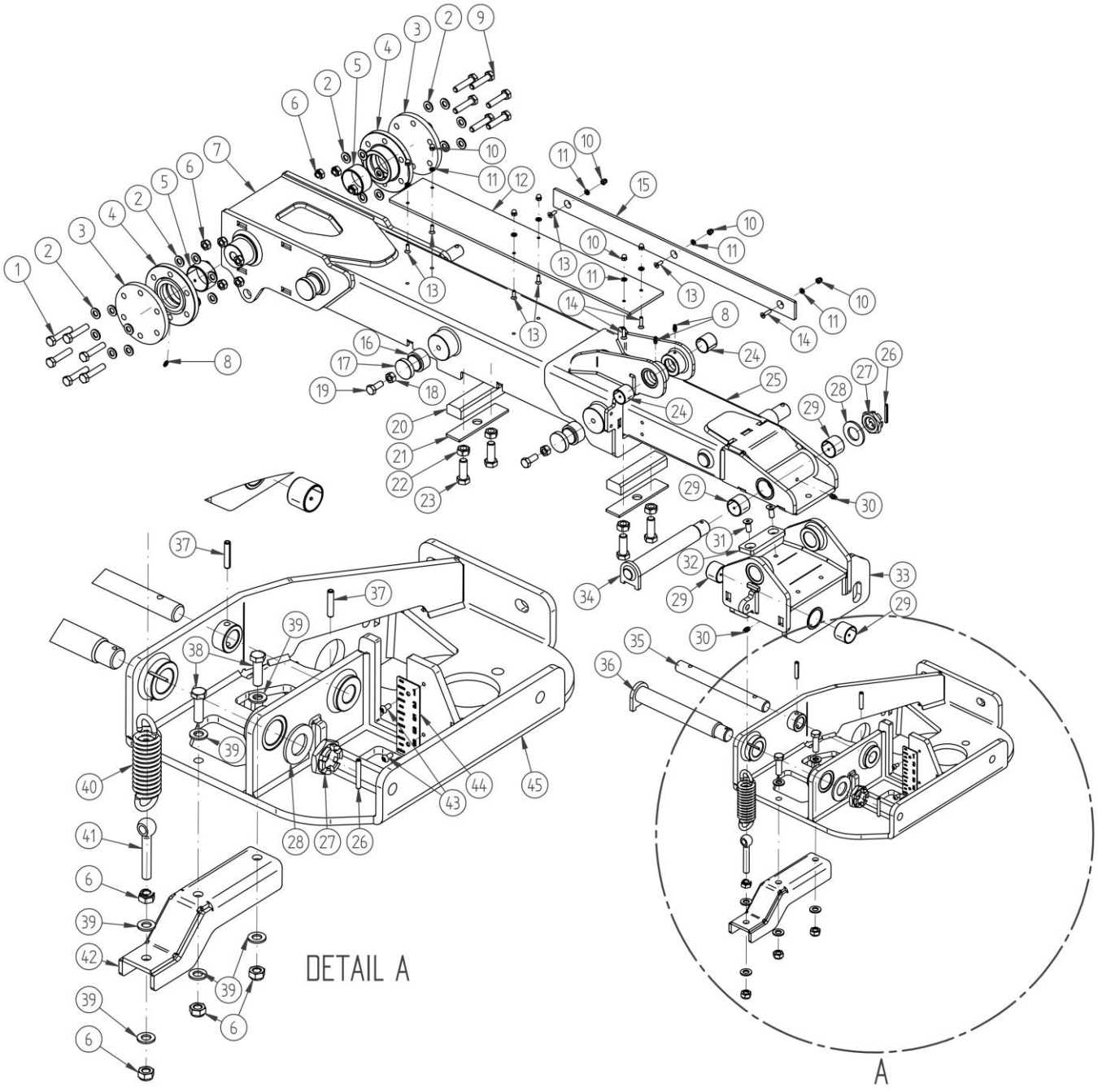


Item	Name	Index/Section	Qty
1.	Bolt M12x40-8.8	T000757	2
2.	Nut M12	T000267	2
3.	Twist-beam suspension	P370087	1
4.	Lower suspension pin	P370098	2
5.	Universal plug LP10KR	T000981	2
6.	Grease nipple M6x1	T000645	1
7.	Regular washer M30	T000466	1
8.	Castellated nut M27x1.5	T004673	1
9.	Nut cover M30	T004492	1
10.	Cotter pin 5x40	T000985	1
11.	Spring-type straight pin 8x60	T000078	1
12.	Washer 50x62x1	T000446	1
13.	Slip bushing EGF40260-E40-Y	T004633	2
14.	Suspension roller	P370100	1

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15.	Main hitch pin	P370099	1
16.	PTO shaft pendant	P640021	1
17.	Self-locking nut M12	T000291	1
18.	Extensional washer M12	T000442	2
19.	Main suspension pin washer	P370349	1
20.	Washer 50x62x3	T004640	1

7.5. *LH arm with ground-following system*



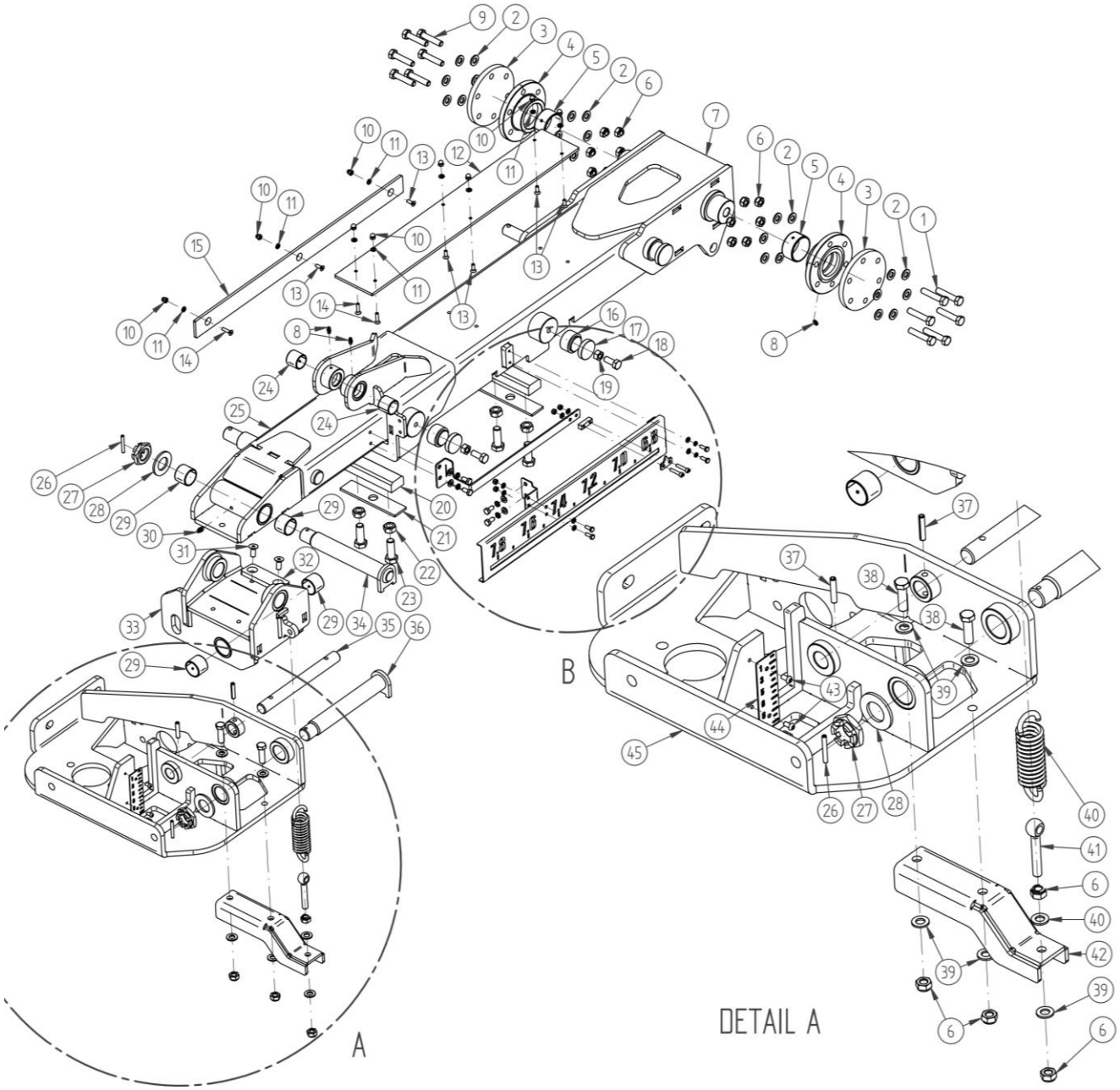
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Item	Name	Index/Section	Qty
1.	Bolt M12x60-10.9	T004656	6
2.	Lock washer M12	T004621	24
3.	Arm bolt tension plate	P370154	2
4.	Side arm bracket	P370120	2
5.	Slip bushing PCM 556030M	T004629	2
6.	Self-locking nut M12	T000291	16
7.	Fixed arm LH	P370123	1
8.	Grease nipple M6x1	T000645	4
9.	Bolt M12x55-10.9	T004657	6
10.	Acorn nut M6	T004674	9
11.	Regular washer M6	T000469	9
12.	Large arm slide	T004683	1
13.	Countersunk bolt M6x18-8.8	T004669	6
14.	Countersunk bolt M6x25-8.8	T004670	3
15.	Small arm slide	T004680	1
16.	Arm clamp	T004685	2
17.	Arm clamping socket	P370336	2
18.	Nut M12	T000267	2
19.	Bolt M12x30-8.8	T000755	2
20.	Lower arm slide	T004682	2
21.	Slide clamping plate	P370153	2
22.	Nut M16	T000270	4
23.	Nut M16x45-8.8	T002565	4
24.	Slip bushing EGB3030-E50-Y	T004630	2
25.	Extendable arm LH	P370144	1
26.	Spring-type straight pin 6x45	T002777	2
27.	Low castellated nut M22x1.5	T004481	2
28.	Regular washer M30	T000466	2
29.	Slip bushing PAP3530 P20	T004631	4
30.	Grease nipple M8x1	T000647	2
31.	Countersunk bolt M10x25-10.9	T003428	2
32.	Swing limiter	P370180	1
33.	Transverse swivel mount	P370156	1
34.	Short clevis foot pin	P370175	1
35.	Float pin	P370181	1
36.	Long clevis foot pin	P370178	1
37.	Spring-type straight pin 8x40	T000083	2
38.	Bolt M12x40-8.8	T000757	2
39.	Regular washer M12	T000458	6
40.	Spring 7x38x150	T003785	1
41.	Eye bolt M12x80-8.8	T004644	1
42.	Spring holder	P370324	1

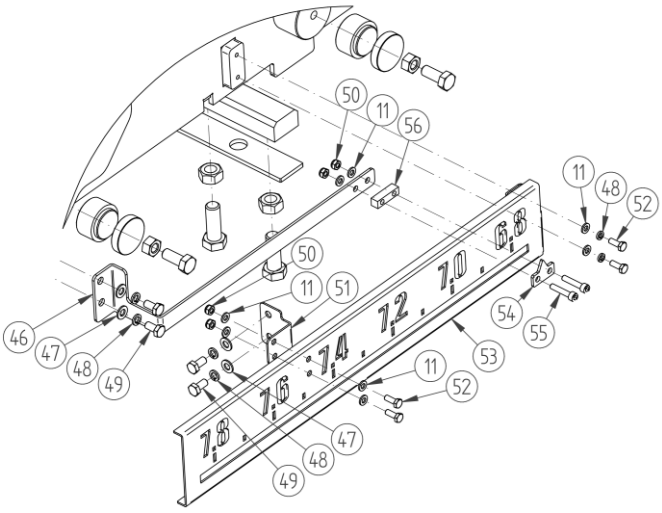
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43.	LH carousel rake height scale	P370329	1
44.	Cylindrical head screw M6x12-8.8	T000940	2
45.	Longitudinal clevis foot LH	P370164	1

7.6. *RH arm with ground-following system*



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DETAIL B

Item	Name	Index/Section	Qty
1.	Bolt M12x60-10.9	T004656	6
2.	Lock washer M12	T004621	24
3.	Arm bolt tension plate	P370154	2
4.	Side arm bracket	P370120	2
5.	Slip bushing PCM 556030M	T004629	2
6.	Self-locking nut M12	T000291	16
7.	Fixed arm RH	P370141	1
8.	Grease nipple M6x1	T000645	4
9.	Bolt M12x55-10.9	T004657	6
10.	Acorn nut M6	T004674	9
11.	Regular washer M6	T000469	17
12.	Large arm slide	T004683	1
13.	Countersunk bolt M6x18-8.8	T004669	6
14.	Countersunk bolt M6x25-8.8	T004670	3
15.	Small arm slide	T004680	1
16.	Arm clamp	T004685	2
17.	Arm clamping socket	P370336	2
18.	Bolt M12x30-8.8	T000755	2
19.	Nut M12	T000267	2
20.	Lower arm slide	T004682	2
21.	Slide clamping plate	P370153	2
22.	Nut M16	T000270	4
23.	Nut M16x45-8.8	T002565	4

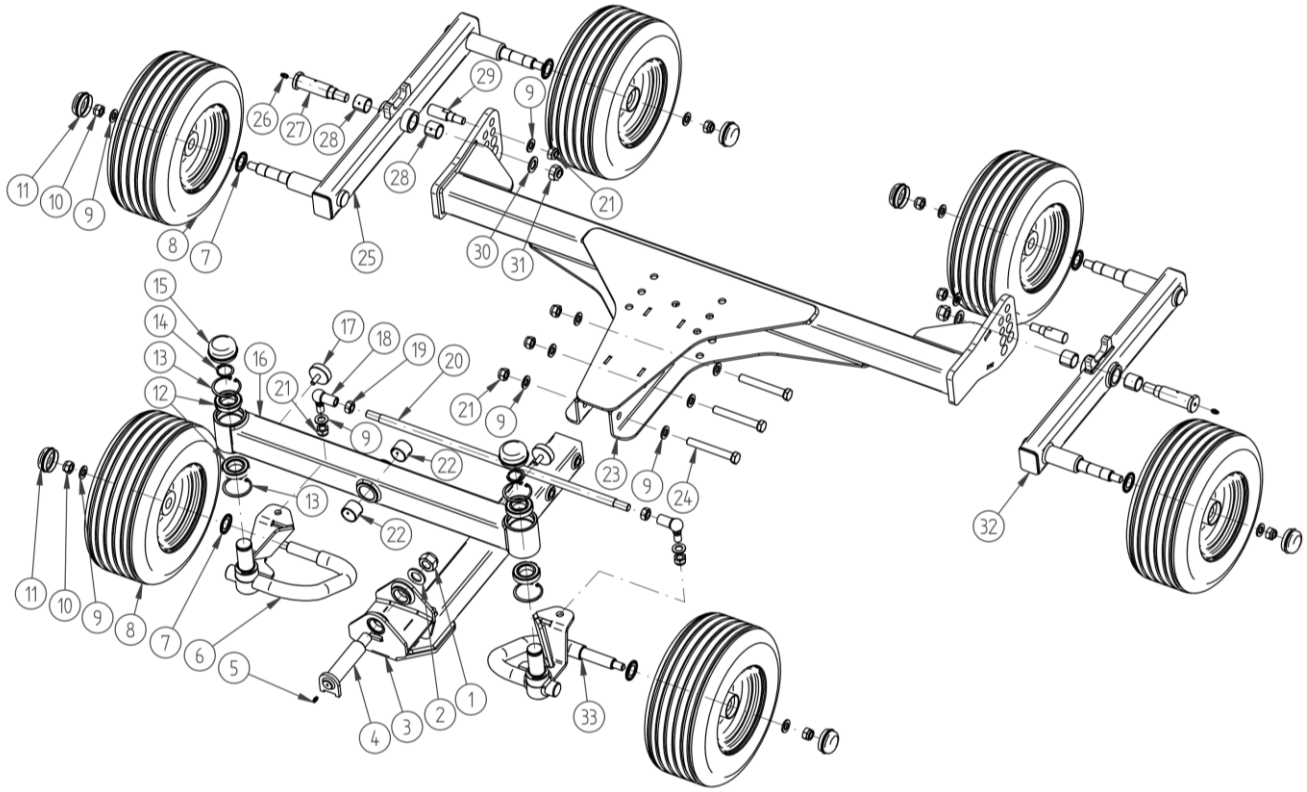
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24.	Slip bushing EGB3030-E50-Y	T004630	2
25.	Extendable arm RH	P370152	1
26.	Spring-type straight pin 6x45	T002777	2
27.	Low castellated nut M22x1.5	T004481	2
28.	Regular washer M30	T000466	2
29.	Slip bushing PAP3530 P20	T004631	4
30.	Grease nipple M8x1	T000647	2
31.	Countersunk bolt M10x25-10.9	T003428	2
32.	Swing limiter	P370180	1
33.	Transverse swivel mount	P370156	1
34.	Short clevis foot pin	P370175	1
35.	Float pin	P370181	1
36.	Long clevis foot pin	P370178	1
37.	Spring-type straight pin 8x40	T000083	2
38.	Bolt M12x40-8.8	T000757	2
39.	Regular washer M12	T000458	6
40.	Spring 7x38x150	T003785	1
41.	Eye bolt M12x80-8.8	T004644	1
42.	Spring holder	P370324	1
43.	RH carousel rake height scale	P370332	1
44.	Cylindrical head screw M6x12-8.8	T000940	2
45.	Longitudinal clevis foot RH	P370172	1
46.	Working width marker mount	P370311	1
47.	Regular washer M8	T000471	4
48.	Spring washer M8	T000455	4
49.	Bolt M8x16-8.8	T000803	4
50.	Self-locking nut M6	T000297	4
51.	Working width scale mount angle	P370310	1
52.	Bolt M6x16-8.8	T000800	4
53.	Raking working width scale	P370309	1
54.	Working width marker	P370313	1
55.	Cylindrical head screw M6x30	T000732	2
56.	Working width marker slide	T004681	1

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7.7. *Running gear*

7.7.1. Running gear – tandem version



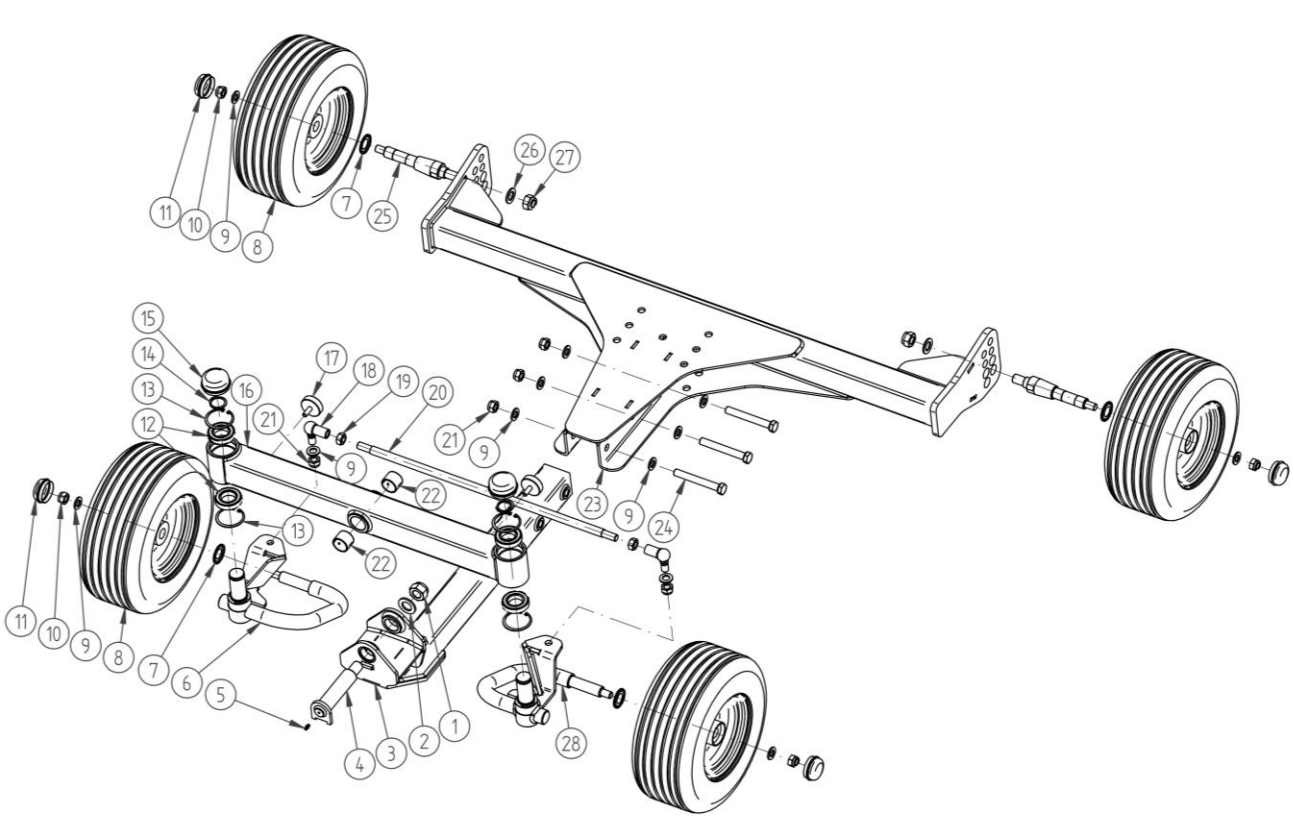
Item	Name	Index/Section	Qty
1.	Self-locking nut M24	T000290	1
2.	Regular washer M24	T000464	1
3.	Connector between the rotary axles	P370205	1
4.	Carousel front axle pin	P370220	1
5.	Grease nipple M6x1	T000645	1
6.	Wheel arch RH	P370204	1
7.	Washer Nilos 6205_av	T004607	6
8.	Wheel 16x6.50-8 82A4 TR13 10-PR	T004504	6
9.	Regular washer M16	T000460	16
10.	Self-locking nut M16x1.5	T003503	6
11.	Wheel end cap 52 mm	T002852	6
12.	Bearing 6007 2RS	T002104	4
13.	Snap ring W62	T000418	4
14.	Snap ring AS35	T004608	2
15.	Wheel end cap 62 mm	T004639	2
16.	Carousel front axle	P370195	1
17.	Bumper D5015M10X28-60	T004397	2
18.	Angle joint M16	T004618	2

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19.	Nut M16	T000270	2
20.	Carousel steering rod	P370224	1
21.	Self-locking nut M16	T000294	7
22.	Slip bushing PAP3530 P20	T004631	2
23.	Carousel rear axle	P370183	1
24.	Bolt M16x120-8.8	T000774	3
25.	Carousel tandem RH	P370218	1
26.	Grease nipple M8x1	T000647	2
27.	Tandem pin	P370225	2
28.	Slip bushing EGB3030-E50-Y	T004630	4
29.	Tandem movement-limiting pin	P370226	2
30.	Regular washer M20	T000462	2
31.	Self-locking nut M20	T000255	2
32.	Carousel tandem LH	P370213	1
33.	Wheel arch LH	P370199	1

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7.7.2. Running gear – basic version



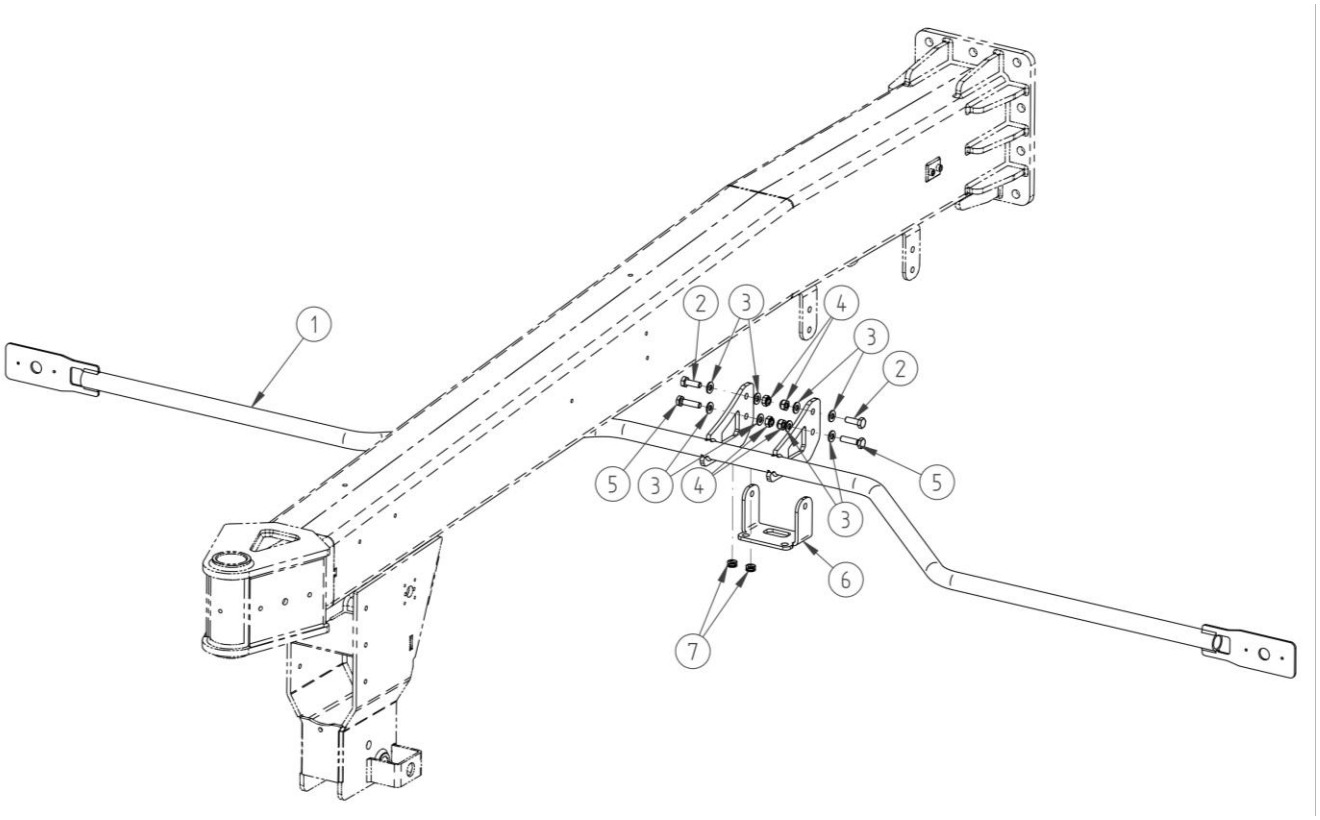
Item	Name	Index/Section	Qty
1.	Self-locking nut M24	T000290	1
2.	Regular washer M24	T000464	1
3.	Connector between the rotary axles	P370205	1
4.	Carousel front axle pin	P370220	1
5.	Grease nipple M6x1	T000645	1
6.	Wheel arch RH	P370204	1
7.	Washer Nilos 6205_av	T004607	4
8.	Wheel 16x6.50-8 82A4 TR13 10-PR	T004504	4
9.	Regular washer M16	T000460	12
10.	Self-locking nut M16x1.5	T003503	4
11.	Wheel end cap 52 mm	T002852	4
12.	Bearing 6007 2RS	T002104	4
13.	Snap ring W62	T000418	4

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14.	Snap ring AS35	T004608	2
15.	Wheel end cap 62 mm	T004639	2
16.	Carousel front axle	P370195	1
17.	Bumper D5015M10X28-60	T004397	2
18.	Angle joint, M16	T004618	2
19.	Nut M16	T000270	2
20.	Carousel steering rod	P370224	1
21.	Self-locking nut M16	T000294	5
22.	Slip bushing PAP3530 P20	T004631	2
23.	Carousel rear axle	P370183	1
24.	Bolt M16x120-8.8	T000774	3
25.	Carousel axle pin	P370222	2
26.	Regular washer M20	T000462	2
27.	Self-locking nut M20	T000255	2
28.	Wheel arch LH	P370199	1

7.8. *Protective barriers*

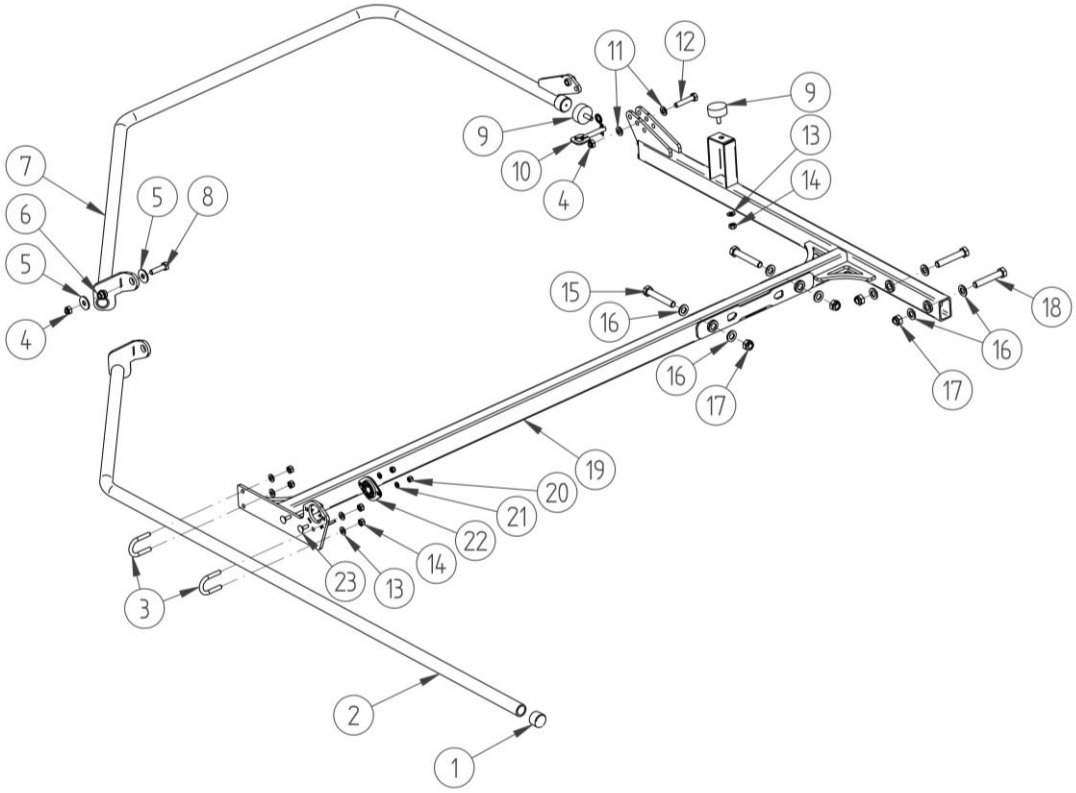
7.8.1. Front barrier cpl



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Item	Name	Index/Section	Qty
1.	Front barrier	P370254	1
2.	Bolt M10x30-8.8	T000741	2
3.	Regular washer M10	T000456	8
4.	Self-locking nut M10	T000292	4
5.	Bolt M10x40-8.8	T000745	2
6.	PTO shaft support	P370341	1
7.	Cable grommet 12/10	T004645	2

7.8.2. Protective barrier RH

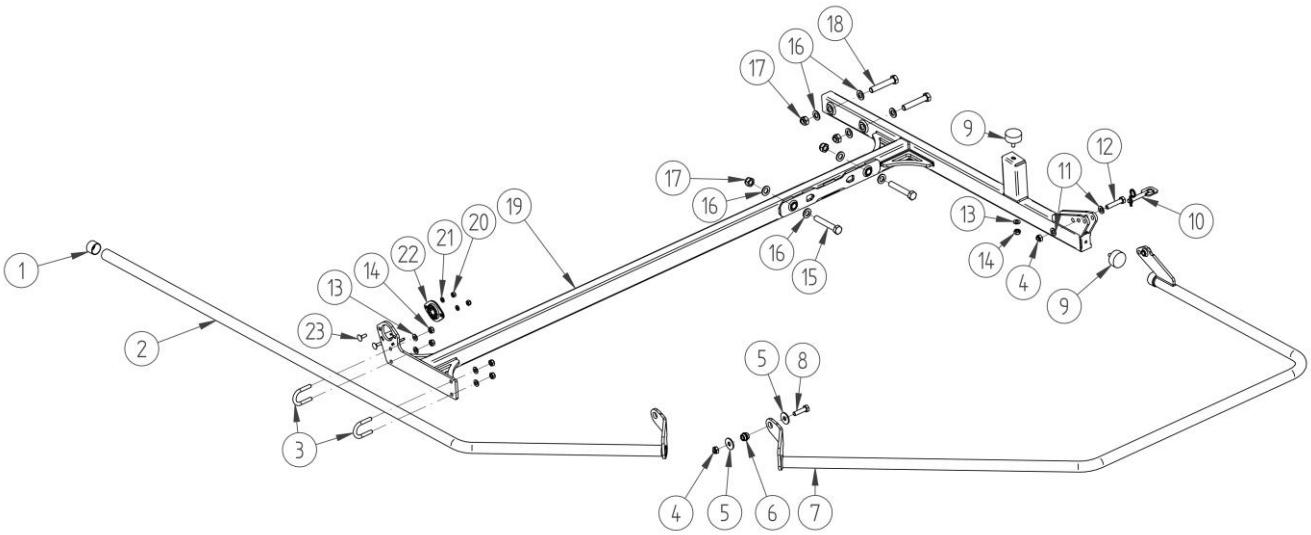


Item	Name	Index/Section	Qty
1.	Tube cover	T000485	1
2.	Front barrier RH	P370244	1
3.	Hose clamp M10x35 Type B	T000026	2
4.	Self-locking nut M12	T000291	2
5.	Extensional washer M12	T000442	2
6.	Barrier screw sleeve	P370258	1
7.	Folding barrier RH	P370252	1
8.	Bolt M12x45-10.9	T004661	1
9.	Vibration isolator 50-20-M10-28-70	T002706	2
10.	Pin PK550 cpl	P002164	1
11.	Regular washer M12	T000458	2

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12.	Bolt M12x60-10.9	T004656	1
13.	Regular washer M10	T000456	1
14.	Self-locking nut M10	T000292	1
15.	Bolt M16x100-10.9	T004655	2
16.	Lock washer M16	T004622	8
17.	Self-locking nut M16	T000294	4
18.	Bolt M16x90-10.9	T004654	2
19.	Main barrier RH	P370240	1
20.	Self-locking nut M8	T000256	2
21.	Regular washer M8	T000471	2
22.	Flanged bearing PFL204	T004635	1
23.	Lock bolt M8x25-10.9	T000826	2

7.8.3. Protective barrier LH



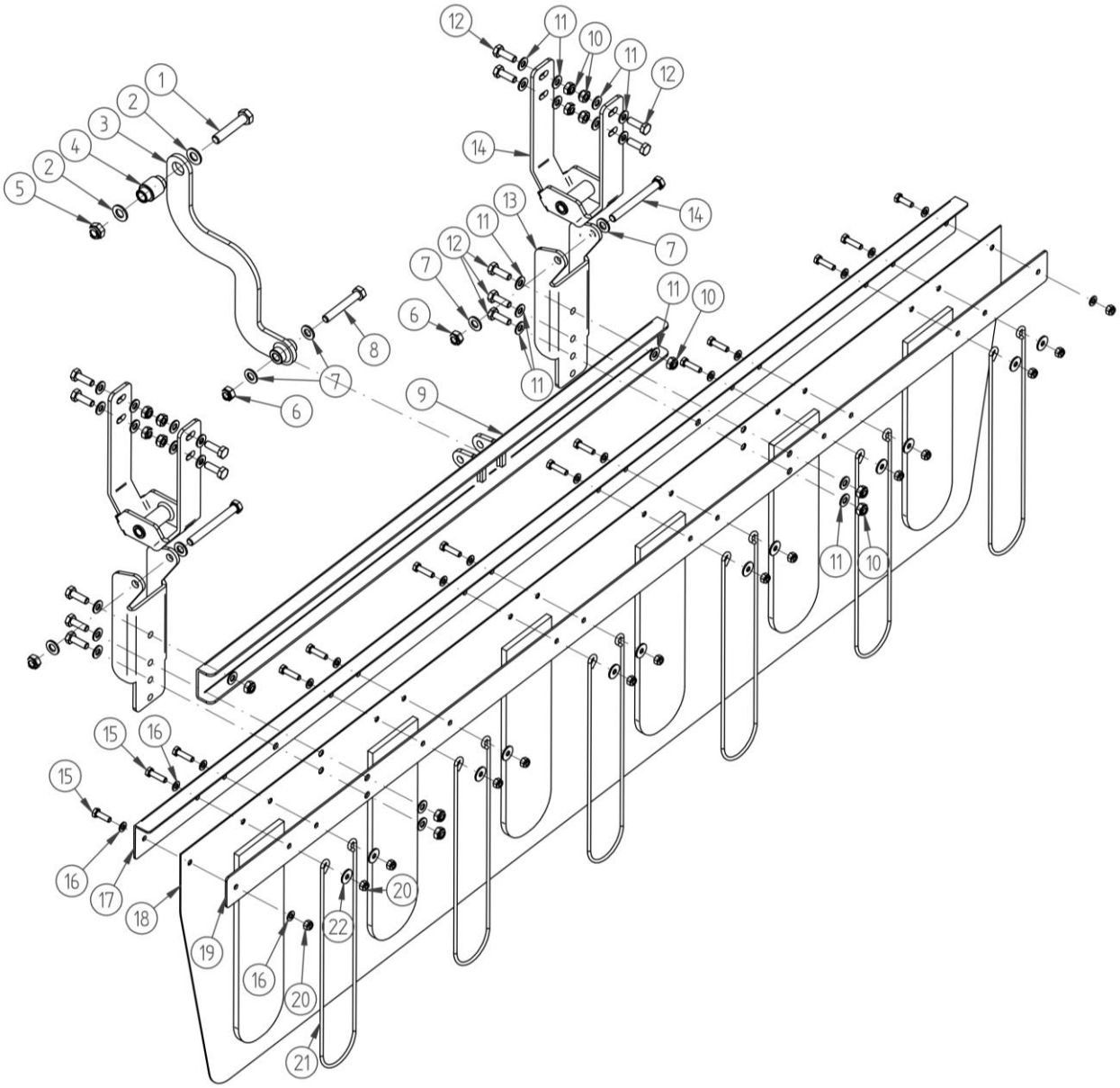
Item	Name	Index/Section	Qty
1.	Tube cover	T000485	1
2.	Front barrier LH	P370241	1
3.	Hose clamp M10x35 Type B	T000026	2
4.	Self-locking nut M12	T000291	2
5.	Extensional washer M12	T000442	2
6.	Barrier screw sleeve	P370258	1
7.	Folding barrier LH	P370246	1
8.	Bolt M12x45-10.9	T004661	1

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9.	Vibration isolator 50-20-M10-28-70	T002706	2
10.	Pin PK550 cpl	P002164	1
11.	Regular washer M12	T000458	2
12.	Bolt M12x60-10.9	T004656	1
13.	Regular washer M10	T000456	1
14.	Self-locking nut M10	T000292	1
15.	Bolt M16x100-10.9	T004655	2
16.	Lock washer M16	T004622	8
17.	Self-locking nut M16	T000294	4
18.	Bolt M16x90-10.9	T004654	2
19.	Main barrier LH		1
20.	Self-locking nut M8	T000256	2
21.	Regular washer M8	T000471	2
22.	Flanged bearing, PFL204	T004635	1
23.	Lock bolt M8x25-10.9	T000826	2

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7.9. *Swath curtain*



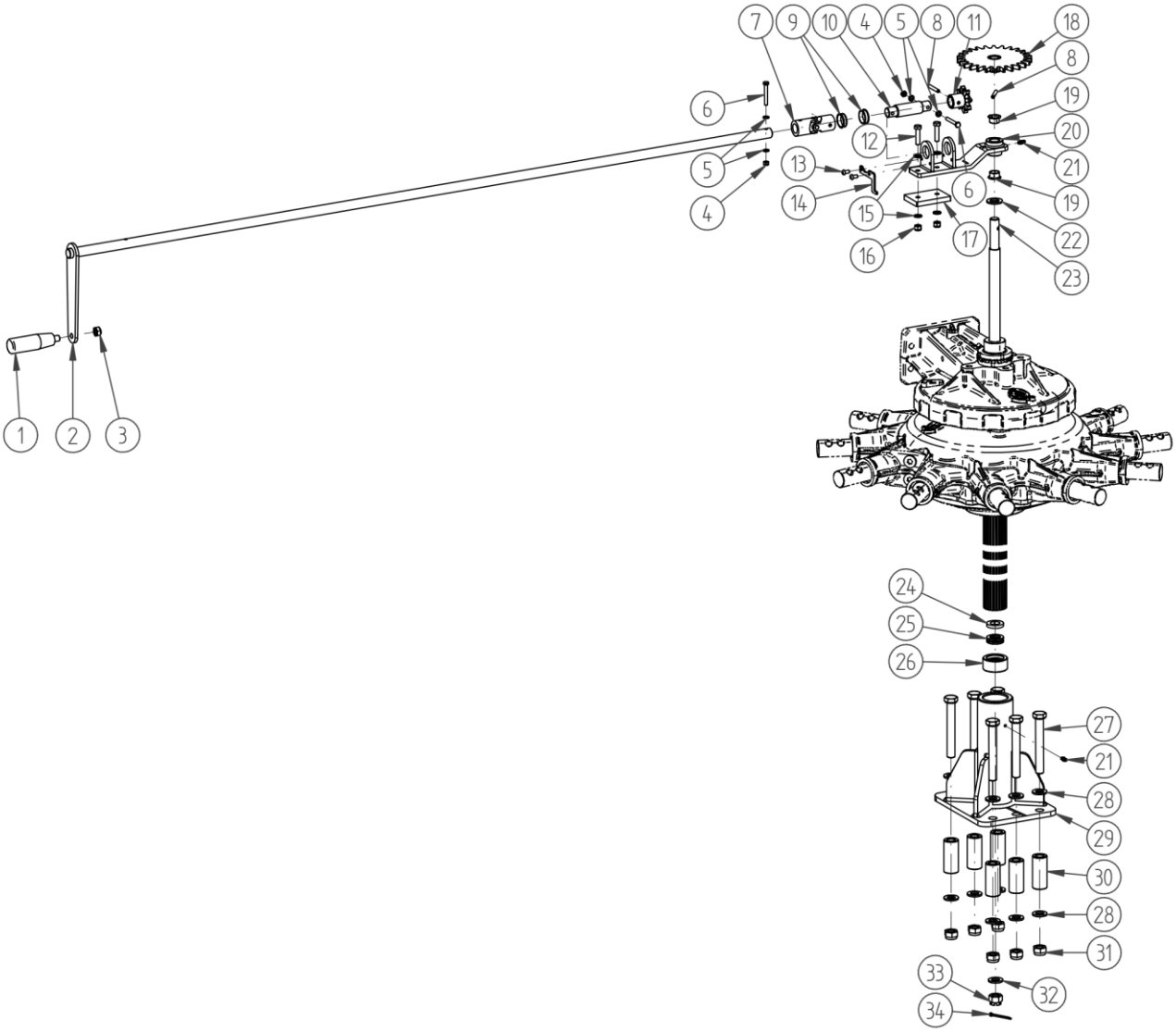
Item	Name	Index/Section	Qty
1.	Bolt M14x70-8.8	T000770	1
2.	Regular washer M14	T000459	2
3.	Tie-rod	P370266	1
4.	Bushing	P370272	1
5.	Self-locking nut M14	T000293	1
6.	Self-locking nut M12	T000291	3

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7.	Regular washer M12	T000458	6
8.	Bolt M12x80-8.8	T000762	1
9.	Curtain beam	P370263	1
10.	Self-locking nut M10	T000292	14
11.	Regular washer M10	T000456	28
12.	Bolt M10x30-8.8	T000741	14
13.	Curtain bracket	P370271	2
14.	Bolt M12x110-8.8	T003199	1
15.	Bolt M8x25-8.8	T000805	14
16.	Regular washer M8	T000471	16
17.	Curtain angle section	P370269	1
18.	Protective shield	T004601	1
19.	Curtain flat section	P370270	1
20.	Self-locking nut M8	T000256	14
21.	Stiffener	T004599	6
22.	Extensional washer M8	T000443	12

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7.10. ***Rake height adjustment***



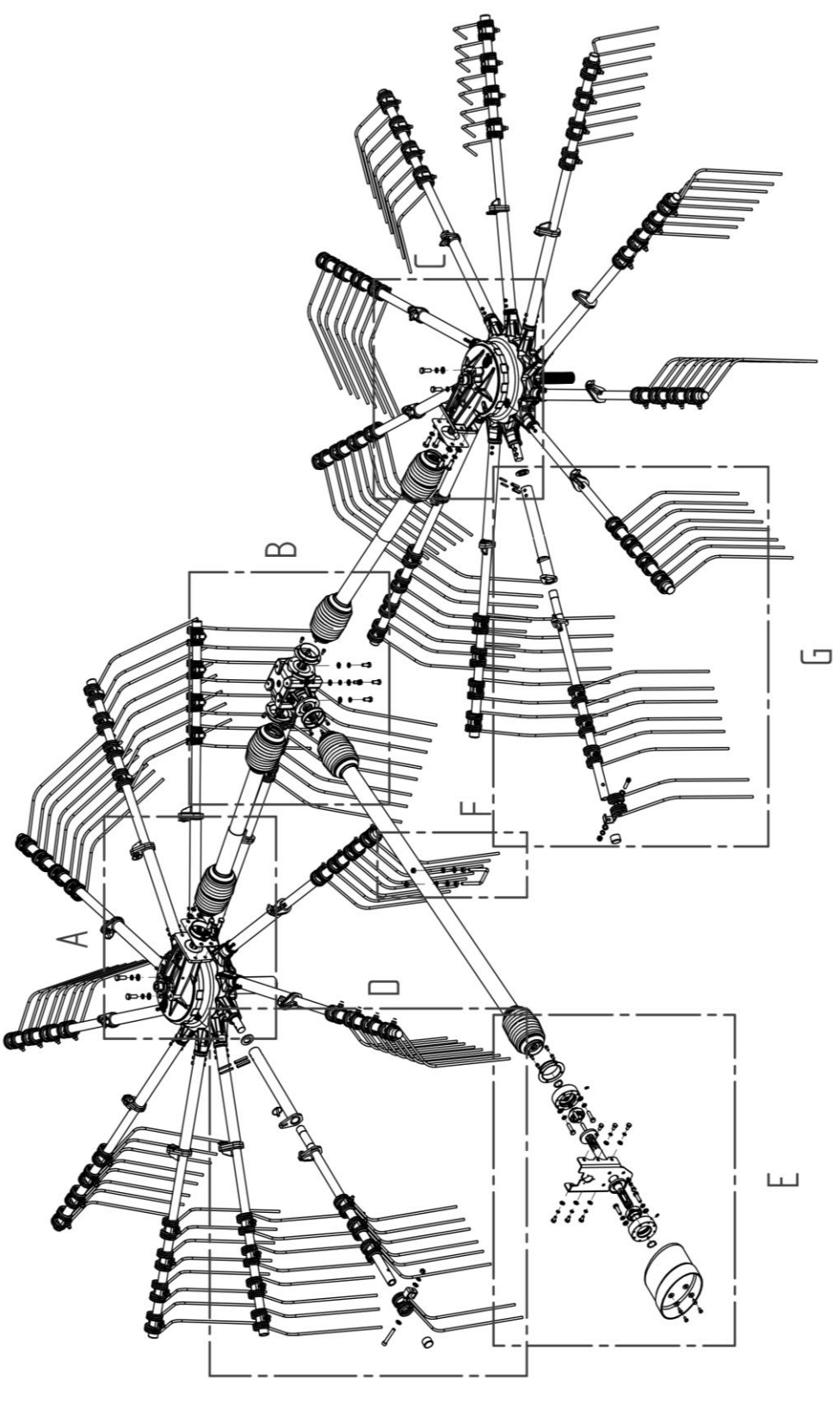
Item	Name	Index/Section	Qty
1.	Handle	T002436	1
2.	Rake height adjustment crank	P370284	1
3.	Self-locking nut M10	T000292	1
4.	Self-locking nut M6	T000297	2
5.	Regular washer M6	T000469	4
6.	Bolt M6x45	T004664	2
7.	Cardan joint	P370350	1

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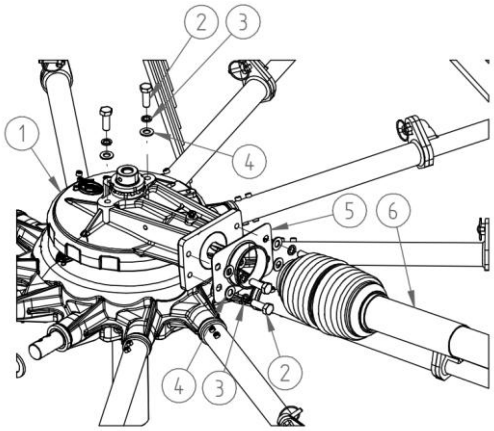
8.	Spring-type straight pin 6x40	T000087	2
9.	Slip bushing MCM25-06	T004604	2
10.	Crank intermediate component	P370287	1
11.	Small pulley	P370281	1
12.	Bolt M8x35-8.8	T001369	2
13.	Cylindrical head screw M6x12-8.8	T000940	2
14.	Rake height marker	P370328	1
15.	Regular washer M8	T000471	4
16.	Self-locking nut M8	T000256	2
17.	Slide	T004684	1
18.	Large pulley	P370278	1
19.	Slide sleeve PAF 18120	T004615	2
20.	Intermediate bracket	P370274	1
21.	Grease nipple M6x1	T000645	2
22.	Regular washer M18	T000461	1
23.	Rake height adjustment screw	T004649	1
24.	Height adjustment screw washer	P370289	1
25.	Bearing 51104	T004613	1
26.	Bearing Seat	P370290	1
27.	Bolt M16x120-8.8	T000774	6
28.	Lock washer M16	T004622	12
29.	Transmission fixing	P370190	1
30.	Gearbox mounting bolt sleeve	P370223	6
31.	Self-locking nut M16	T000294	6
32.	Regular washer M16	T000460	6
33.	Castellated nut M16x1.5	T004637	1
34.	Cotter pin 4x50	T000984	1

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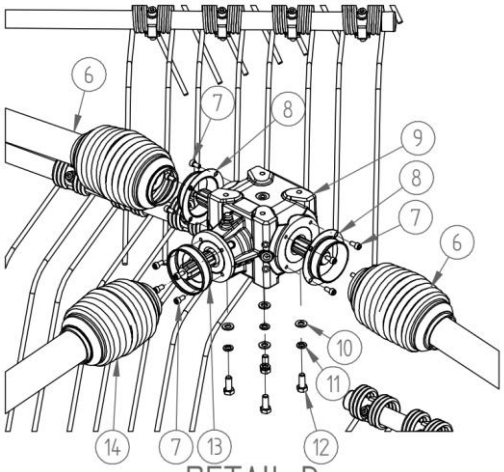
7.11. ***Drive and working systems***



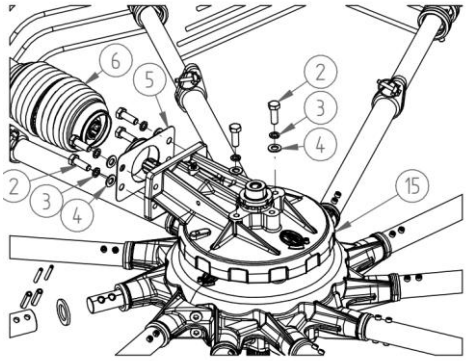
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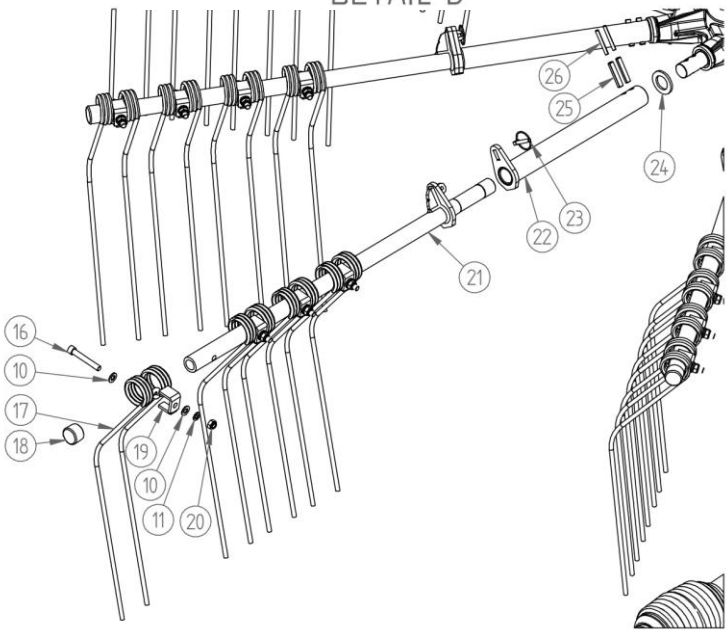
DETAIL A



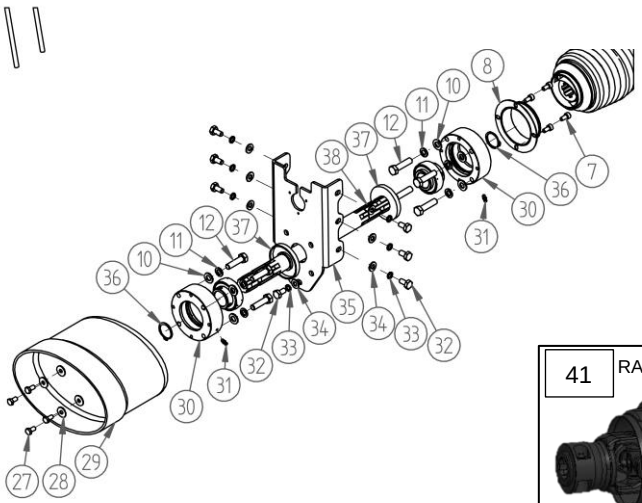
DETAIL B



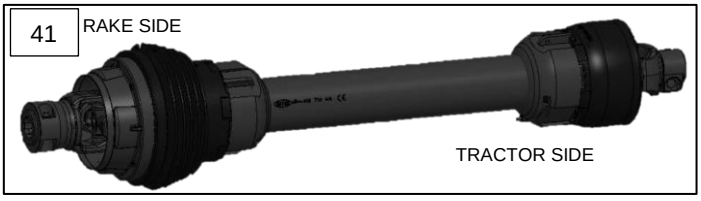
DETAIL C



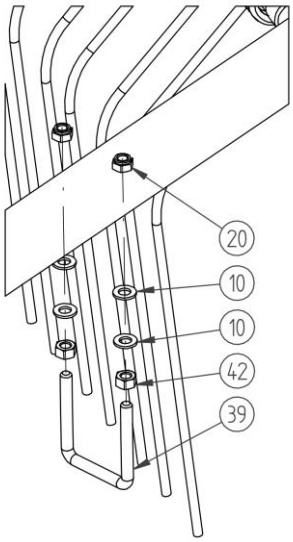
DETAIL D



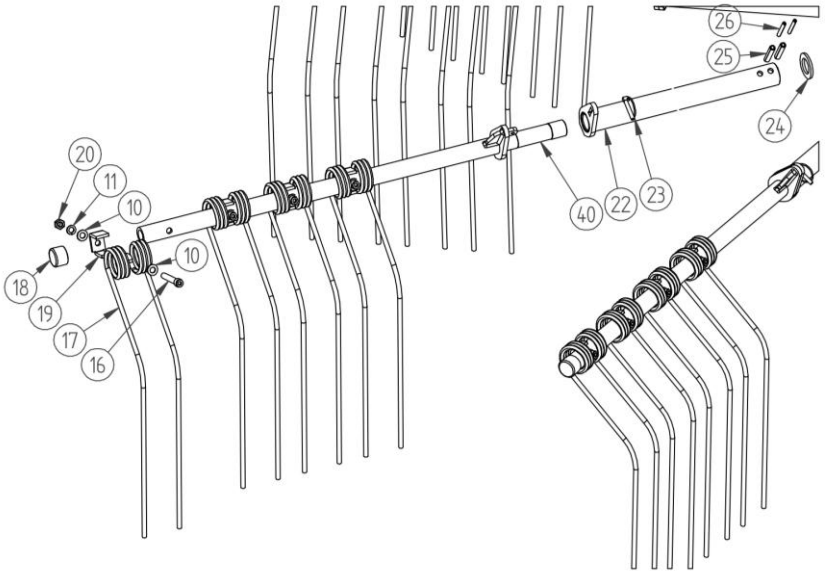
DETAIL E



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DETAIL F



DETAIL G

Item	Name	Index/Section	Qty
1.	Side gear RH	T004436	1
2.	Bolt M14x40-8.8	T000767	12
3.	Spring washer M14	T000452	12
4.	Regular washer M14	T000459	12
5.	Shaft mount S11*		2
6.	Shaft 460Nm L-1420	T004564	2
7.	Cylindrical head screw M8x16-8.8	T000733	16
8.	Shaft mount T45-1	T004736	3
9.	Central gear	T004435	1
10.	Regular washer M12	T000458	192
11.	Spring washer M12	T000451	100
12.	Bolt M12x40-8.8	T000757	12
13.	Shaft mount T45-2**		1
14.	Shaft 460Nm L-2000	T004563	1
15.	Side gear LH	T004437	1
16.	Cylindrical head screw M12x80-8.8	T000734	88
17.	Spring tine	T004348	88
18.	Cover 38x28	T003016	22
19.	Rake tine mount	P540181	88
20.	Self-locking nut M12	T000291	90
21.	Rake arm RH	P370299	11
22.	Fixed rake arm	P370292	22
23.	Cotter pin with lock 7.5 mm	T004616	22
24.	Gear arm washer	P370348	22
25.	Spring-type straight pin 12x60	T000079	44
26.	Spring-type straight pin 7x60	T000082	44

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27.	Bolt M8x16-8.8	T000803	4
28.	Extensional washer M8	T000443	4
29.	Shaft cover MP00385CE	T004605	1
30.	Intermediate shaft bearing housing	P370080	2
31.	Grease nipple M6x1	T000645	2
32.	Bolt M10x20-8.8	T000738	7
33.	Spring washer M10	T000450	7
34.	Regular washer M10	T000456	7
35.	Intermediate shaft lock	P370079	1
36.	Snap ring Z35	T000412	2
37.	Seal 35x80x10	T000890	2
38.	Intermediate shaft	T004676	1
39.	Pipe clamp M12x72x106	T004553	1
40.	Rake arm LH	P370295	11
41.	Single-sided wide-angle shaft 830 Nm L-1052	T004562	1
42.	Nut M12	T000267	2

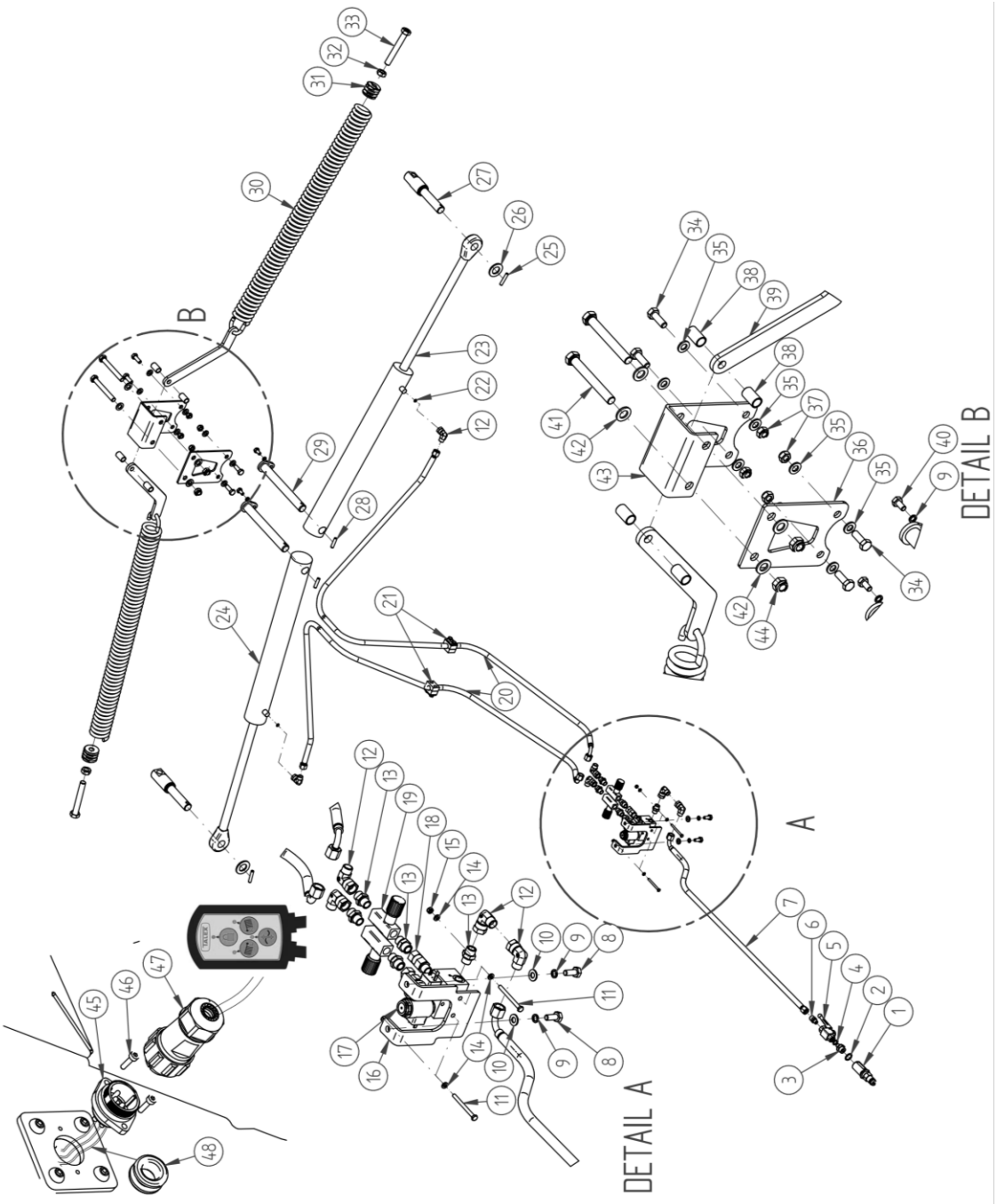
* supplied with gearbox; available on request

** supplied with gearbox; available on request

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7.12. *Hydraulic system*

7.12.1. Hydraulic arm lift system



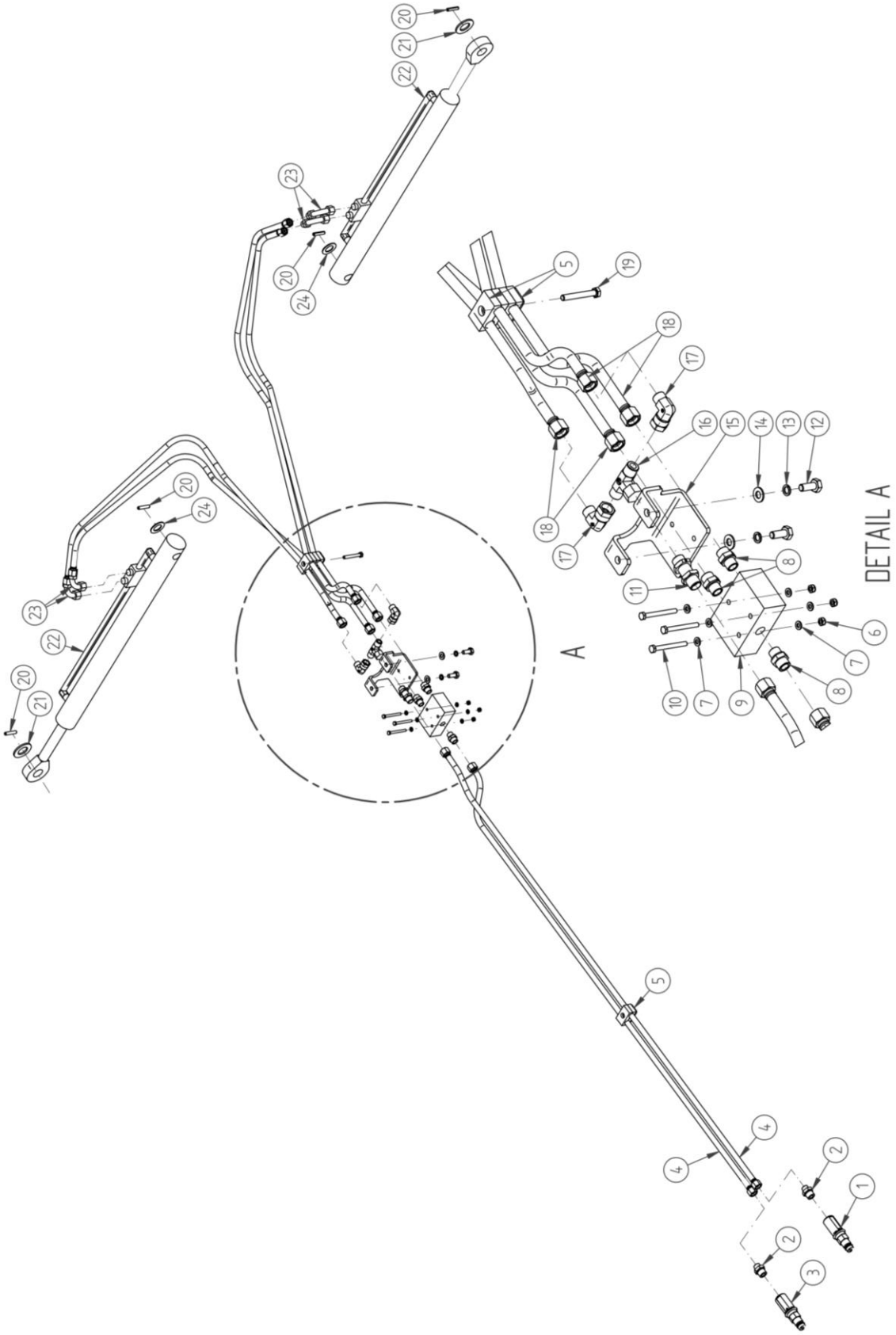
Item	Name	Index/Section	Qty
1.	Blue plus connector	T004589	1
2.	Metal and rubber washer 1/2	T004392	1
3.	Straight coupling 1/4 - 1/2	T004702	1
4.	Metal and rubber washer 1/4	T003086	1
5.	Ball valve 2/2 1/4	T000996	1

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6.	Straight connector G1/4 M18x1.5	T000580	1
7.	Cable P51/P52 18x1,5 2SN DN10 L-3050	T002904	1
8.	Bolt M10x25-8.8	T000740	2
9.	Spring washer M10	T000450	4
10.	Regular washer M10	T000456	2
11.	Bolt M6x70-8.8	T004662	2
12.	Elbow connector AB M18x1.5	T001032	6
13.	Straight connector G3/8 M18x1.5	T000582	5
14.	Regular washer M6	T000469	4
15.	Self-locking nut M6	T000297	2
16.	Control unit mount	P370314	1
17.	Control unit	T004461	1
18.	Straight connector AB M18x1.5/12L - G3/8 ED	T000577	2
19.	One-way check and throttle valve 3/8	T002740	2
20.	Cable P51/P52 18x1,5 2SN DN10 L-2050	T004730	2
21.	Bracket 18MM	T004643	2
22.	Choke 11.5x2	T004778	2
23.	Carousel actuator LH	T004598	1
24.	Carousel actuator RH	T004597	1
25.	Spring-type straight pin 10x50	T002776	2
26.	Regular washer M30	T000466	2
27.	Actuator and relief spring pin	P370318	2
28.	Spring-type straight pin 10x40	T000084	2
29.	Arm cylinder pin	P370301	2
30.	ZC relief spring	T004600	2
31.	Relief spring connector	P370345	2
32.	Nut M20	T000272	2
33.	Bolt M20x180-10.9	T004668	2
34.	Bolt M12x35-8.8	T000756	4
35.	Regular washer M12	T000458	8
36.	Flat spring retainer	P370323	1
37.	Self-locking nut M12	T000291	4
38.	Relief string sleeve	P370219	4
39.	Spring relief string	P370321	2
40.	Bolt M10x20-8.8	T000738	2
41.	Bolt M16x130-10.9	T004659	2
42.	Regular washer M16	T000460	4
43.	Relief spring holder channel section	P370322	1
44.	Self-locking nut M16	T000294	2
45.	Connector ARSPU4-TXZGR-1 V1.0 EAN	T004523	1
46.	Cylindrical head screw M3x12	T004667	2
47.	Controller ARSPU-TXZGR-V1.0 12V/24V	T004524	1

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7.12.2. Arm extension hydraulic system



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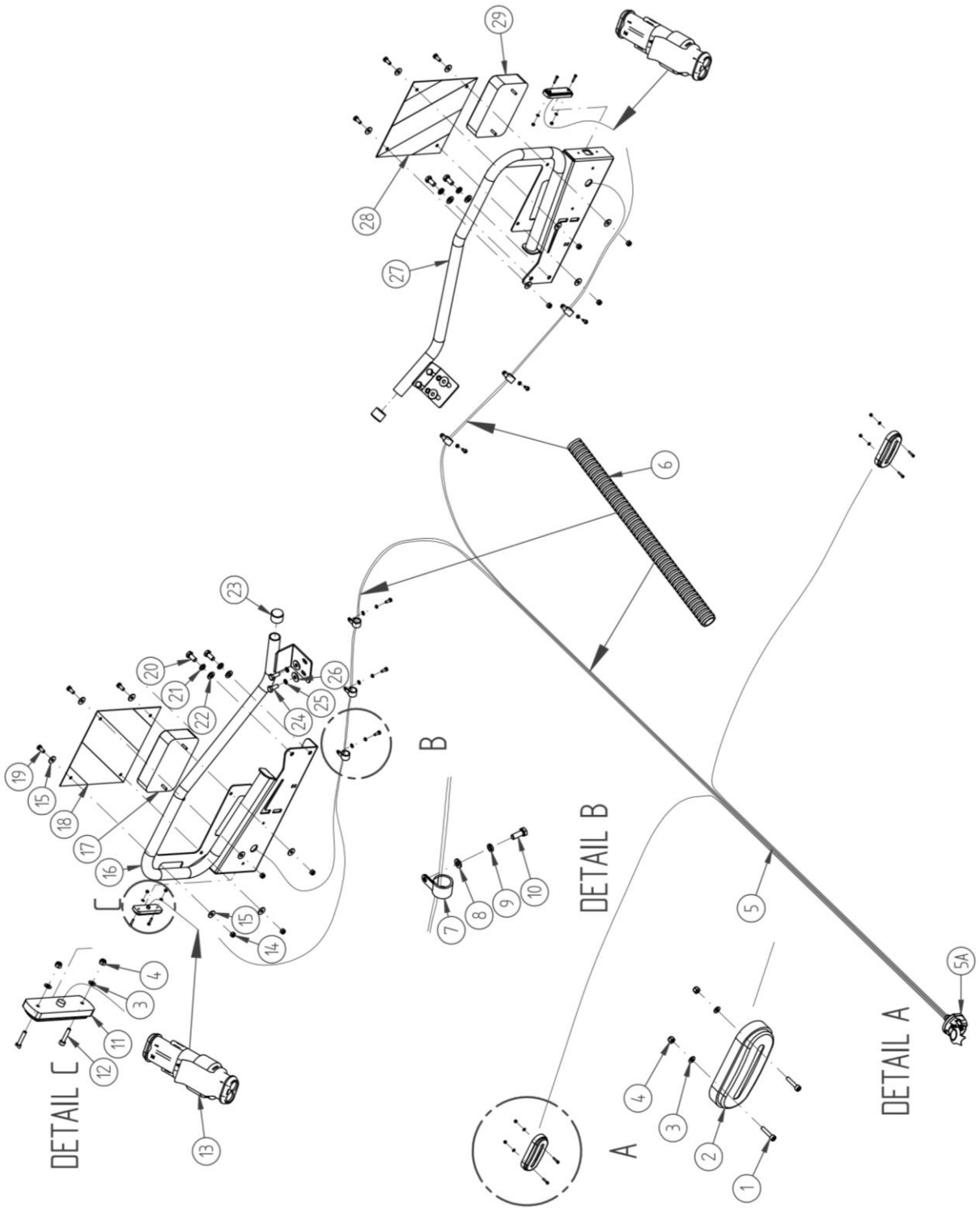
Item	Name	Index/Section	Qty
1.	Red minus connection	T004590	1
2.	Straight coupling 1/2 M18x1.5	T000578	2
3.	Red plus connection	T004588	1
4.	Cable P51/P51 M18x1,5 1SN DN8 L-3625	T000539	2
5.	Bracket 2X15mm	T000318	3
6.	Self-locking nut M6	T000297	3
7.	Regular washer M6	T000469	6
8.	Straight connector G3/8 M18x1.5	T000582	3
9.	Flow divider DFL 20/l C056V1023	T004498	1
10.	Bolt M6x60-8.8	T004663	3
11.	Bulkhead fitting M18X1.5 / M18X1.5	T004525	1
12.	Bolt M10x25-8.8	T000740	2
13.	Spring washer M10	T000450	2
14.	Regular washer M10	T000456	2
15.	Flow divider mount	P370315	1
16.	T-fitting BAB M18x1.5	T002900	1
17.	Elbow connector AB M18x1.5	T001032	2
18.*	Cable P51/P51 M18x1,5 1SN DN8 L-1435	T000533	4
19.	Bolt M8x60-8.8	T000809	1
20.	Spring-type straight pin 8x40	T000083	4
21**	Shim	P730156	2
22.	Arm movement actuator	T004596	2
23.	Fitting bend AB M18x1.5	T002730	4
24.	Regular washer M24	T000464	2

* additionally, a woven cover T000366 is included (1.25 m per pair of hydraulic hoses)

** quantities may vary

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7.13. ***Lighting with signage***



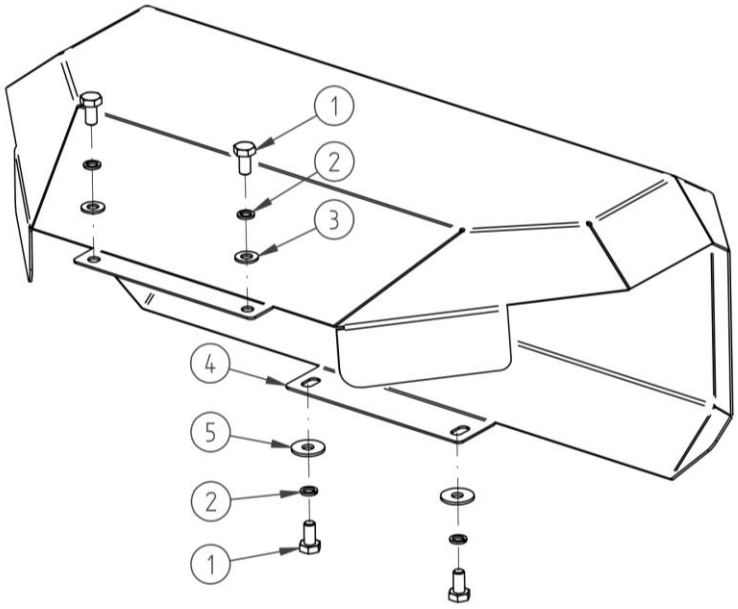
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Item	Name	Index/Section	Qty
1.	Cylindrical head screw M4x16-8.8	T001466	4
2.	Lamp FT-070B white	T004627	2
3.	Regular washer M4	T003897	8
4.	Self-locking nut M4	T003894	8
5.	Lighting system	P370402	1
5 A.	7-pole socket	T004626	1
6.	Corrugated pipe 20/14	T004648	8.3 m
7.	Cable tie W1 12-25 M6	T004650	6
8.	Regular washer M6	T000469	6
9.	Spring washer M6	T002773	6
10.	Bolt M6x16-8.8	T000800	6
11.	Lamp LD 676 orange	T004647	2
12.	Cylindrical head screw M4x20-8.8	T003895	4
13.	2-pin connector	T004651	2
14.	Self-locking nut M8	T000256	8
15.	Extensional washer M8	T000443	16
16.	Rear light mount RH	P370022	1
17.	Rear light RH	T004620	1
18.	Double-sided oversize vehicle board 282×282 RH	T004624	1
19.	Bolt M8x20-8.8	T000804	8
20.	Bolt M12x25-8.8	T002633	4
21.	Spring washer M12	T000451	4
22.	Regular washer M12	T000458	4
23.	Tube cover	T000485	2
24.	Bolt M10x25-8.8	T000740	4
25.	Spring washer M10	T000450	4
26.	Extensional washer M10	T000457	4
27.	Rear light mount LH	P370028	1
28.	Rear light LH	T004619	1
29.	Double-sided oversize vehicle marker board 282×282 LH	T004623	1

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7.14. *Other*

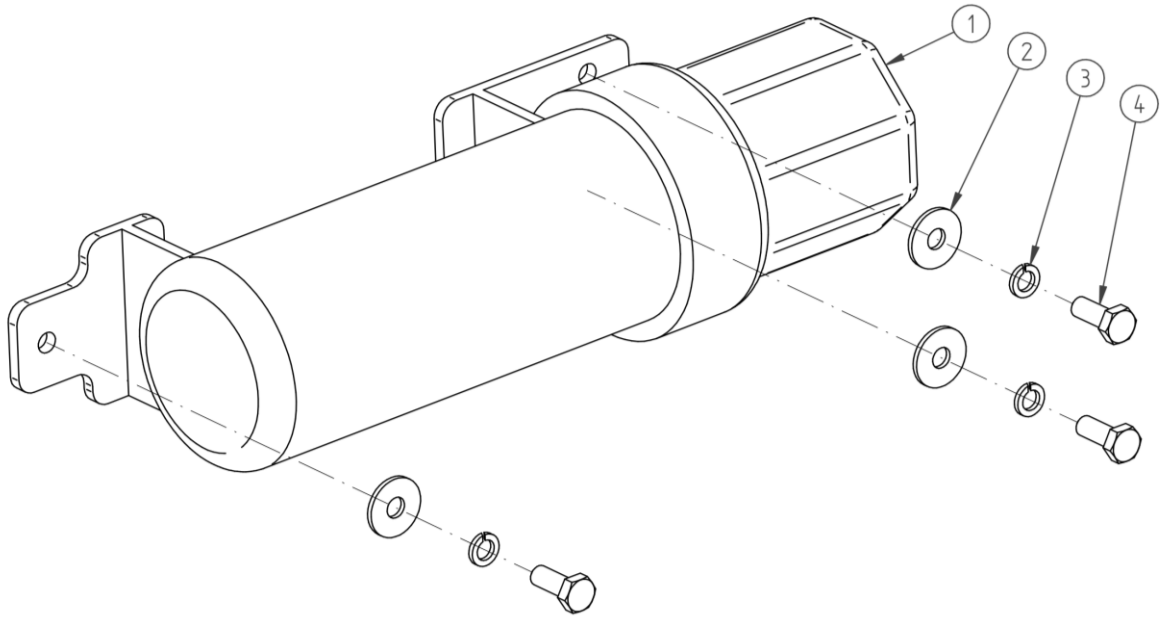
7.14.1. Rear cover



Item	Name	Index/Section	Qty
1.	Bolt M10x20-8.8	T000738	4
2.	Spring washer M10	T000450	4
3.	Regular washer M10	T000456	2
4.	Under-logo cover	P370320	1
5.	Extensional washer M10	T000457	2

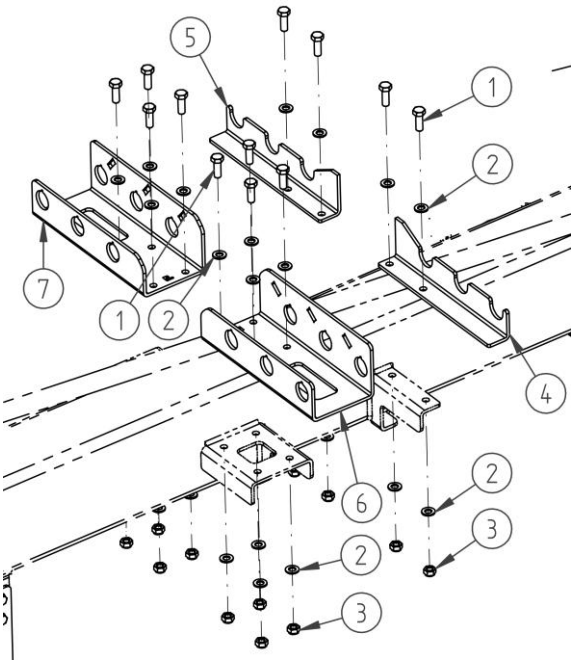
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7.14.2. Document holder



Item	Name	Index/Section	Qty
1.	Document holder	T000477	1
2.	Extensional washer M8	T000443	3
3.	Spring washer M8	T000455	3
4.	Bolt M8x20-8.8	T000804	3

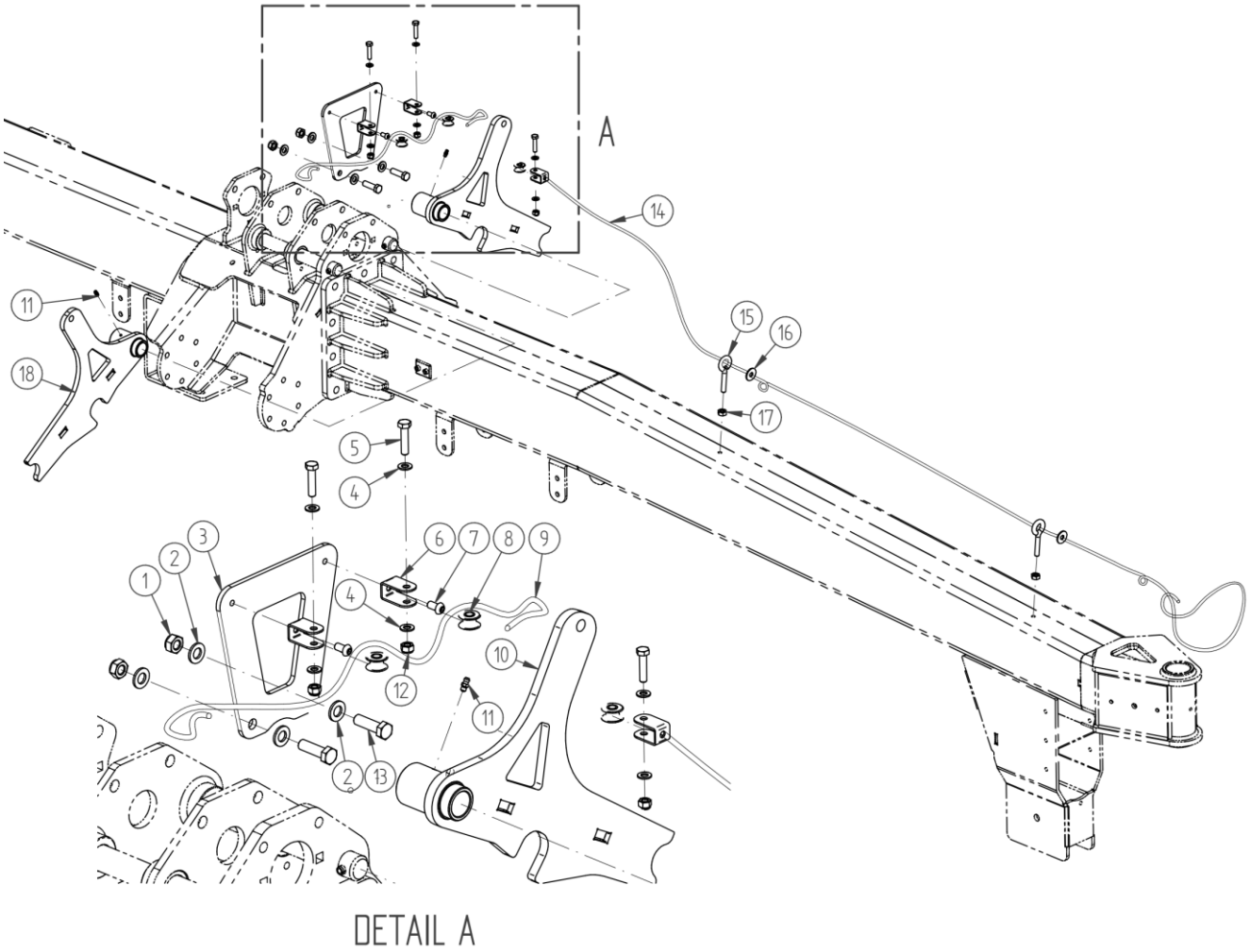
7.14.3. Rake arm storage area



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Item	Name	Index/Section	Qty
1.	Bolt M12x35-8.8	T000756	12
2.	Regular washer M12	T000458	24
3.	Self-locking nut M12	T000291	12
4.	Part 2 of LH rake arm storage area	P370331	1
5.	Part 2 of RH rake arm storage area	P370326	1
6.	Part 1 of LH rake arm storage area	P370325	1
7.	Part 1 of RH rake arm storage area	P370330	1

7.14.4. Transport locks

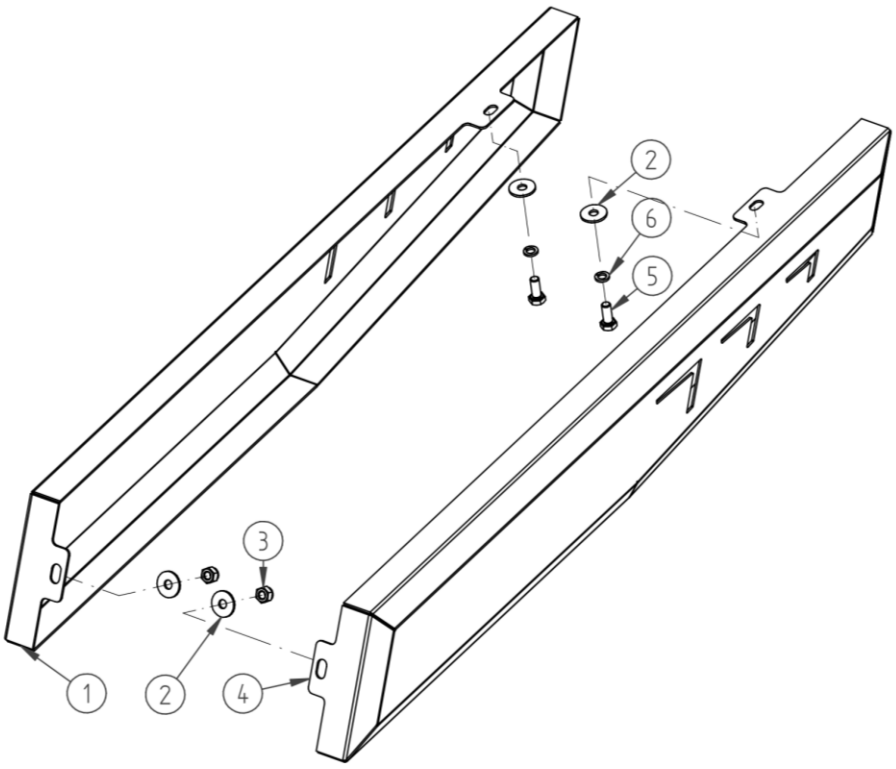


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Item	Name	Index/Section	Qty
1.	Self-locking nut M12	T000291	2
2.	Regular washer M12	T000458	4
3.	Transport lock cable grommet	P370316	1
4.	Regular washer M8	T000471	6
5.	Bolt M8x35-8.8	T001369	3
6.	Roller clamp	P980291	3
7.	Cylindrical head screw M8x8-8.8	T004734	2
8.	Roller D=25	T004493	3
9.	Braided cable	T000162	1.8 m
10.	Transport lock LH	P370304	1
11.	Grease nipple M6x1	T000645	2
12.	Self-locking nut M8	T000256	3
13.	Bolt M12x40-8.8	T000757	2
14.*	Long cable cpl	P370390	1
15.	Hook M10x100	T004638	2
16.	Nylon washer	T004737	2
17.	Nut M10	T000265	2
18.	Transport lock RH	P370308	1

***available as set including items 4, 5, 6, 8 and 12**

7.14.5. Under-frame guards



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Item	Name	Index/Section	Qty
1.	Under-frame cover RH	P370084	1
2.	Extensional washer M8	T000443	4
3.	Self-locking nut M8	T000256	2
4.	Under-frame cover LH	P370083	1
5.	Bolt M8x20-8.8	T000804	2
6.	Spring washer M8	T000455	2

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8. Warranty

WARRANTY CARD

Serial no.	……	Type	……
Year of manufacture	……	Quality Control Department	……

Under the warranty, the manufacturer undertakes to repair, free of charge, any physical defects revealed during the warranty period, i.e. 12 months from the date of sale.

The manufacturer will be exempt from liability under the warranty in case of:

- Mechanical damage of the machine, which occurred after it had been delivered to the user;
- Improper use, maintenance, storage of the machine, in particular if not compliant with the Instruction Manual;
- Execution of any repairs by unauthorized persons and without the consent of the manufacturer;
- Introducing design changes without consulting the manufacturer;
- Transmission fitting cracks caused by the shaft run-out;

The warranty card is valid provided it has the vendor's signature and the date of sale certified with the company stamp. It must not contain deletions and amendments by unauthorized persons.
A duplicate of the warranty card may be issued upon a written request after presentation by the user of the proof of purchase.
In the case of an unjustified service call to warranty repair, the related costs will be borne by the user.
The user will file complaints within 14 days from the date of damage/defect directly to the vendor.
The manufacturer will carry out warranty repairs within 14 days from the date of the complaint.
The warranty will be extended by the repair time counted from the date of the complaint until the date of completion of the service if the defect prevents the use of the machine.
The warranty does not cover components subject to natural wear and tear such as hydraulic hoses, plastic and rubber covers, sliders, working shaft, spring rake tines , fasteners, bearings, bushings and sliding components.

Date of sale: _____ _____

(day, month, year) *(signature and stamp of the point of sale)*

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WARRANTY REPAIRS RECORDS

Filled in by the manufacturer

Date of complaint claim: _____

The scope of repair and parts used: _____

_____

_____

_____

Date of complaint processing: _____

Warranty extended until: _____

_____
(signature and stamp of the service)

Date of complaint claim: _____

The scope of repair and parts used: _____

_____

_____

_____

Date of complaint processing: _____

Warranty extended until: _____

_____
(signature and stamp of the service)

Date of complaint claim: _____

The scope of repair and parts used: _____

_____

_____

_____

Date of complaint processing: _____

Warranty extended until: _____

_____
(signature and stamp of the service)

Date of complaint claim: _____

The scope of repair and parts used: _____

_____

_____

_____

Date of complaint processing: _____

Warranty extended until: _____

_____
(signature and stamp of the service)

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Declaration of conformity WE

Within the meaning of the Machinery Directive 2006/42/WE, enclosure II,1.A

Manufacturer: ***TALEX Sp. z o.o.*** adress: *ul. Dworcowa 9C 77-141 Borzytuchom*

The undersigned hereby declares that the product

Brand (trade name): ……..*ZK*……..,

Function: *The rotary rake is intended for field work associated with the preparation of feed for livestock. It may only be used for raking cut grass, straw, or hay and forming it into a single windrow. The machine shall be operated on meadows or pastures from which stones have previously been removed, or on terrain free of stones.*

type/model: ….*800*….. serial number: ……0001……,

Meets the requirements of the following EU directives:

- **Machine directive 2006/42/WE** from 17.05.2006 r. (Dz.U. L 157 from 9.06.2006 r. p.24) and its modification 2009/127/WE from 21.10.2009 r. (Dz.U. L 310 from 25.11.2009 r. p.29).

Meets the requirements of the following harmonized standards:

- **PN-EN ISO 4254-1:2016-02** Agricultural machinery. Safety. Part 1: General requirements
- **PN-EN 15811:2015-04** Agricultural machinery – Fixed and locked guards, with or without locking guards for moving transmission parts
- **PN-EN 12100/2012** Machinery safety. General principles of design. Risk assessment and risk reduction
- **PN-ISO 11684/1998** Safety signs and hazard pictograms
- **PN-EN ISO 4254-10/2011** Agricultural machinery. Safety. Part 10 Rotary tedders and rakes
- **PN-EN ISO 4413:2011** Hydraulic drives and controls – General rules and safety requirements for systems and their components

Meets the requirements of other applied technical standards and specifications

- **Welding manual** Welding instruction MIG/MAG 2022/08 edition 02
- **Painting manual** Paiting manual, application of wet lacquered covers 2022/08 edition 2
- **KJ manual** Quality control manual 2022/08 edition 02

Conformity with directives and standards requirements was stated on the basis of tests carried out by the company:
SIMP Stowarzyszenie Inżynierów i Techników Mechaników Polskich w Gdańsku.
The tests were carried out by: M.A. Eng. Zbigniew Myszka –Expert SIMP Nr cert. 748

Person responsible of preparing the technical documentation: Karol Jaworski. Adress: Dworcowa 9c, 77-141 Borzytuchom

PREZES ZARZĄDU

Borzytuchom 08.10.2026 *Karol Jaworski*

Place and date of issue First name, surname and signature of person autorized by the manufacturer