



Operating Instructions

150 000 019 00 EN

Rotary tedder

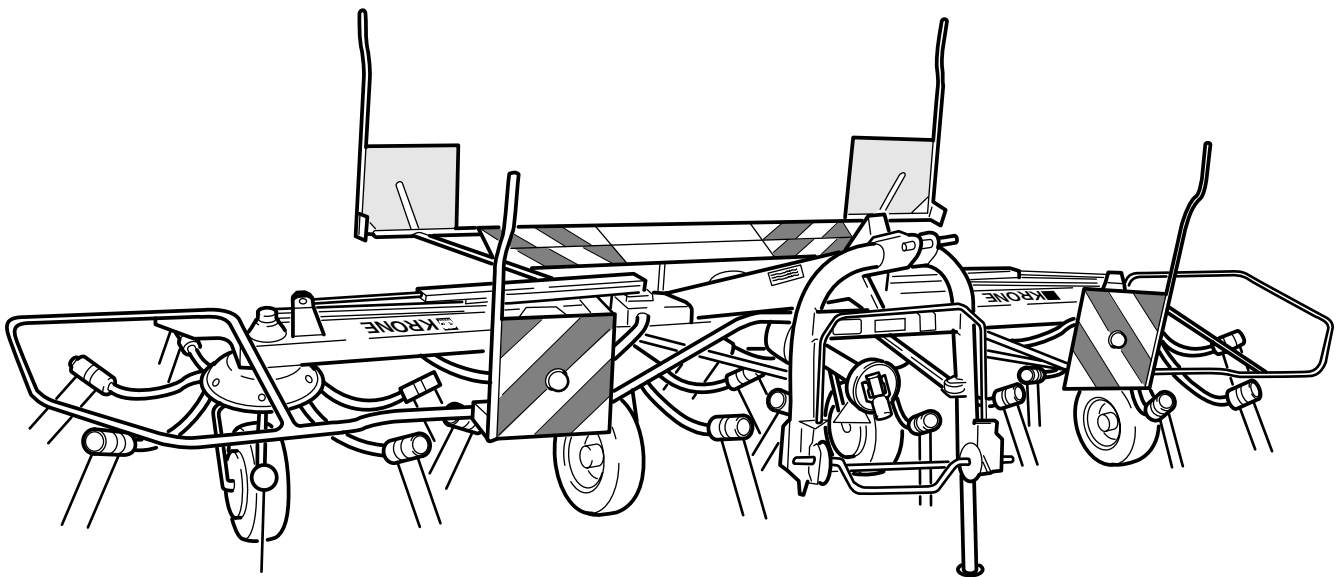
KW 5.50 / 4 x 7

KW 6.70 / 6

KW 7.70 / 6 x 7

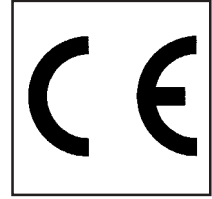
KW 8.80 / 8

(from machine no. 455 090)





EC Declaration of Conformity
corresponding to the EC Directive 98/37/EC



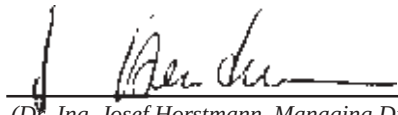
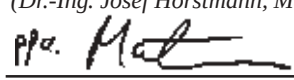
We **Maschinenfabriken Bernard Krone GmbH**
Heinrich-Krone-Str. 10, D-48480 Spelle

declare in our sole responsibility that the product

Type: Krone Rotary tedder
KW 5.50/4x7; KW 6.70/6; KW 7.70/6x7; KW 8.80/8

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

Spelle, 02.05.2005


(Dr.-Ing. Josef Horstmann, Managing Director)

(ppa. Dr.-Ing. Klaus Martensen, Manager of the engineering and design dep.)

Dear customer,

You have now received an operating manual for the KRONE product which you have purchased.

This operating manual contains important information for the proper use and safe operation of the machine.

If this operating manual should for any reason become wholly or partially unusable, you can obtain a replacement operating manual for your machine by stating the number given on the other side.

I. Foreword

Dear customer,

We thank you for the trust you have placed in us by purchasing this machine.

When you received this machine, the dealer should have given you instructions for the operation, maintenance and adjustment of the machine.

However, this **brief introduction** to the machine can not replace a detailed acquaintance with the different tasks and functions of the machine and the proper way of treating it.

These operating instructions are designed so that you are extensively informed of the activities required in each area, from commissioning and operation to the maintenance and care of the machine. The structure of the individual chapters in the text and illustrations corresponds to the sequence of work procedures when you use the machine.

Read these operating instructions carefully before you use the machine, and pay special attention to the safety instructions.

Important: To avoid accidents and to ensure maximum results, no alterations may be made to the machine without the manufacturer's permission. Similarly, the machine must only be used under the conditions prescribed by Krone.



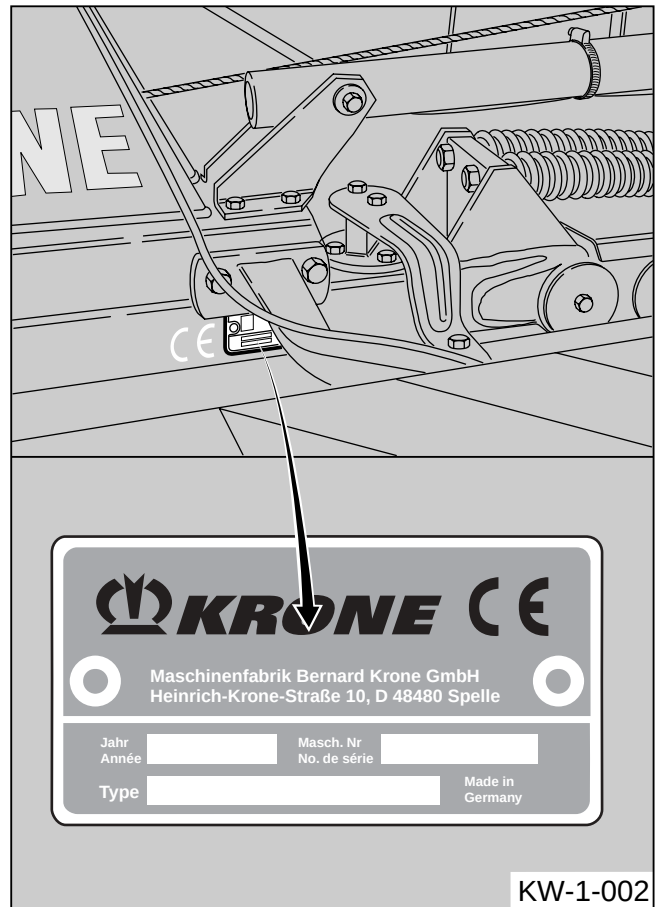
This symbol is designed to draw attention to the safety instructions contained in the operating instructions. These instructions must be observed to prevent accidents.



You will find this symbol at various points in the operating instructions. It gives special handling instructions which should be particularly observed in the use of the machine.

All information, illustrations and technical information in the operating instructions represent the latest status at the date of publication. The company reserves the right to make constructional alterations at any time and without prior notice or obligation.

Ordering Replacement Parts



Type

Mach. No.

Year

When ordering replacement parts, the machine type, machine number and year of manufacture must be given. These details can be found on the identification label on the machine.

We recommend that these details be entered in the above boxes so that they are readily available.

And please remember that imitations and copies of parts, especially wearing parts, do not keep what they appear to promise. Material quality is difficult to test visually, therefore special care is required when purchasing cheap offers and imitation parts!

The simplest remedy:
Purchase only **original KRONE parts!**

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III. General

1. Operation in Accordance with Specifications

The rotary tedder is designed solely for normal agricultural use (operation in accordance with specifications).

Any use of the machine for other purposes is deemed to be not in accordance with specifications. The manufacturer bears no responsibility for any resulting damage; such use is entirely at the operator's risk.

Use in accordance with specifications also includes adherence to the operating, maintenance and service instructions prescribed by the manufacturer.

The rotary tedder must only be used, maintained and repaired by personnel who are acquainted with the machine and have been informed of the danger involved.

The applicable accident prevention regulations and all other generally recognized safety, health and road traffic regulations must be adhered to.

Any unauthorized alterations to the machine render any liability for damage undertaken by the manufacturer null and void.

Basic rule:



Before any public roads are used and before the machine is started, check the rotary tedder and the tractor for road-worthiness and operational safety.

2. Safety and Accident Prevention Regulations

1. Take note of both the regulations in these operating instructions and also the general safety and accident prevention regulations!
2. The attached warning and information signs give important advice for safe operation. Observing them will enhance your safety!
3. When you use public roads, make sure you observe the relevant traffic regulations!
4. Make sure you know all equipment and controls before you begin working with the machine. When you are operating the machine, it's too late!
5. The operator's clothing should be tight fitting. Avoid wearing loose fitting clothes.
6. Keep the machine clean to prevent the danger of fire!
7. Before starting the machine and moving off, check the danger area around the tractor (children!). Good visibility is absolutely essential!
8. Carrying passengers on the implement during work or transport is not permitted.
9. Make sure that the implement is correctly coupled, and that it is only fixed and secured with the prescribed fittings!
10. Make sure that the supporting devices, jacks etc. are in the correct position during assembly and removal!
11. Special care is required when equipment is being coupled to the tractor or detached from the tractor!
12. Ballast weights must always be attached in the prescribed way at the designed attachment points!
13. Adhere to the permitted axle loads, total weights and transport dimensions!
14. Check and fit transport equipment – e.g. lighting, warning signs and, if required, protective equipment!
15. Operating equipment for remote controls (ropes, chains, rods etc.) must be laid out in such a way that, whatever the working or transport position, it can not inadvertently cause any movements.
16. Prepare equipment for road transport as prescribed by the manufacturer, and lock the equipment in accordance with the manufacturer's regulations!
17. Never leave the driver's position when the tractor is in motion!
18. The speed of travel must always be suited to the environmental conditions! Avoid any sudden turns when travelling uphill, downhill or across a slope!
19. The handling, steering and braking of the tractor is affected by integrated or attached equipment and ballast weights. Make sure that you allow for more flexibility in steering and braking!
20. When turning, remember to take account of the wide load and/or the greater weight of the equipment!
21. Only switch on equipment when all protective devices are fitted and in protection position!

22. Persons are not allowed to enter the working area!
23. Keep clear of the area of rotation and swing of the equipment!
24. Hydraulic controls must only be operated if no persons are in the swing area!
25. Power operated parts (e.g. by hydraulics) contain danger points which can cause injury by bruising and grazing!
26. Before leaving the tractor, rest the machine on the ground, switch off the engine and remove the ignition key!
27. Make sure that no personnel go between the tractor and the implement unless the tractor is protected from rolling by the parking brake and/or wheel blocks!

3. Attached Equipment

1. Special care is required when the implements is being connected to the tractor or disconnected from it!
 2. The implement must only be coupled to the appropriate fittings (e.g. the 3-point connection), and they must be so secured (transport, operation) that unintentional lifting or lowering of the implement is not possible.
 3. When connecting the three point linkage, it is absolutely essential that the hitching categories of the tractor and attachment (e.g. power take-off shaft speed, hydraulics) are matched!
 4. When operating the external controls for three-point connection, make sure that nobody goes between the tractor and the implement (danger of injury)!
5. When using P.T.O. shafts with overload or free wheel clutches that are not covered by the guards on the tractor, the overload or free wheel clutches must be fixed on the implement side!
 6. Always ensure correct assembly and guarding of the P.T.O. shaft!
 7. Protect the P.T.O. shaft guard from rotating with the shaft by fitting the chains!
 8. Before switching on the power take-off shaft, make sure that the p.t.o. speed of the tractor matches the permitted speed of the implement!
 9. Before switching on the power take-off shaft, make sure that nobody is in the danger area of the implement!
 10. Never switch on the power take off shaft when the tractor engine is turned off!
 11. Any work on the power take-off shaft may only be carried out when nobody is in the area of the rotating power take-off shaft or P.T.O. shaft.
 12. The power take-off shaft should always be turned off when the angle is too great or the p.t.o. shaft is not required!
 13. **Danger!** Working elements continue to rotate after the power take-off shaft is turned off! Do not approach the machine during this time! Work may only be carried out on the machine when the machine is fully stationary and the rotating parts have been secured.
 14. Cleaning, lubrication or adjustment of the P.T.O. shaft or any equipment driven by the power take-off shaft may only be carried out when the p.t.o. shaft and the engine are turned off and the ignition key has been removed! Rotating parts must be secured with the parking brake.
 15. Place the detached P.T.O. shaft on the support bracket provided!
 16. After removing the P.T.O. shaft, place the protective cover on the stub of the power take-off shaft!
 17. Any damage must be repaired immediately before any work is carried out with the attachment!

4. Power Take-Off shaft Operation

1. Only the P.T.O. shafts prescribed by the manufacturer may be used!
2. Both male and female guard tubes and cones of all P.T.O. shafts must be fitted and in good condition!
3. Observe the tube overlap prescribed for P.T.O. shafts in transport and operating position!
4. Before installing or removing the P.T.O. shafts, make sure to turn off the power take-off shaft and the engine, and remove the ignition key!

5. Hydraulic System

1. The hydraulic system is pressurized!
2. When connecting hydraulic cylinders and motors, make sure that the hydraulic hoses are correctly coupled!
3. When connecting hydraulic hoses to the tractor's hydraulic system, make sure that all pressure has been released from the hydraulics of both the tractor and the implement!
4. When there are functional hydraulic connections between the machine and the implement, all coupling sleeves and plugs must be marked to prevent operating errors. If the connections are switched, the functions are reversed (e.g. lifting and lowering) – **this can cause accidents!**
5. Hydraulic hoses must be checked regularly, and they must be replaced if they are damaged or worn. Replacement hoses must conform to the technical requirements of the implement manufacturer!
6. When tracing leaks, suitable aids should be used to prevent injury!
7. Fluid leaking under high pressure (hydraulic oil) can penetrate the skin and cause serious injury! When injury occurs, consult a doctor immediately! Danger of infection!
8. Before carrying out any work on the hydraulic systems, lower the machine to the ground, depressurize the system and turn off the engine!

6. Maintenance

1. Repair, maintenance and cleaning work and the correction of malfunctions must always be carried out only when the drive is turned off and the engine is at a standstill! Remove the ignition key! Apply the parking brake.
2. Nuts and bolts must be checked regularly for tightness, and tightened if necessary!
3. When carrying out maintenance work on the machine in a lifted position, it must always be supported on suitable jacks.
4. When replacing fittings that contain cutting blades, always use suitable tools and gloves!
5. **Oil, grease and filters must be correctly disposed of!**
6. The power supply must always be disconnected before any work is carried out on the electrical system!
7. If protective devices are subject to wear, they must be checked regularly and replaced in good time!
8. When electric welding is carried out on the tractor and any fitted attachments, the cables must be disconnected from the generator and battery!
9. Replacement parts must conform at least to the technical requirements defined by the manufacturer! **The best guarantee is to use only original KRONE parts!**
10. Where gases are stored, only refill with nitrogen. **Danger of explosion!**

1. Introduction

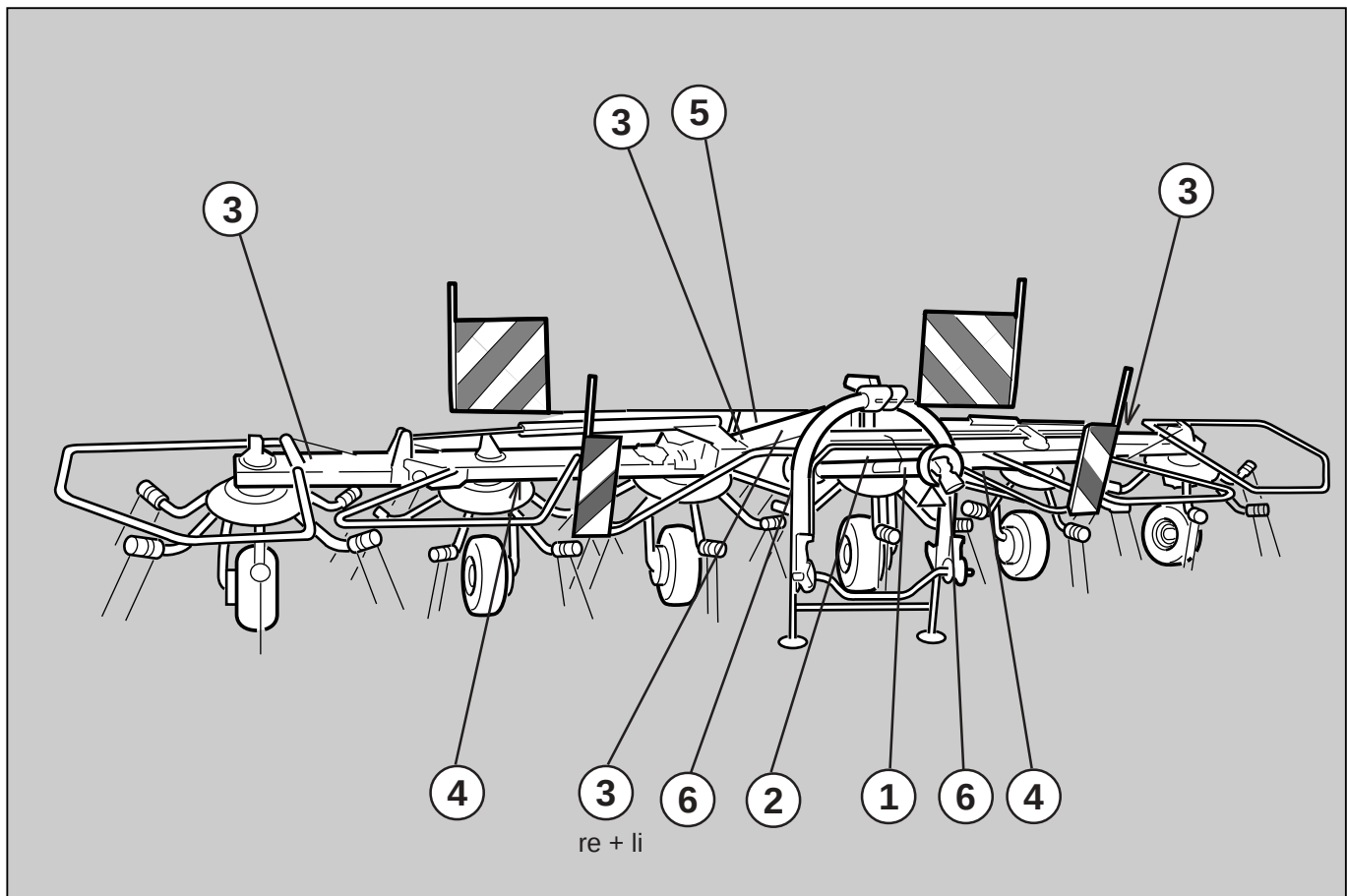
The KRONE rotary tedder is equipped with all necessary safety features (protective devices). Not all danger points on this machine can be completely secured with regard to the preserving of the function of the machine. The machine bears appropriate warning labels to point out these residual dangers.

We have designed these danger notices in the form of so-called warning symbols. This chapter contains important information on the position of these warning labels and their meaning/explanation!

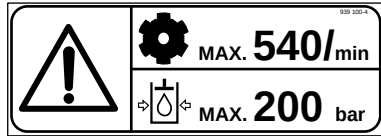


Make sure that you are fully conversant with the meaning of the warning symbols opposite. The text next to the symbols and the position of the signs on the machine give information about the specific danger points on the machine.

1.1 Position of the warning signs, with safety-technical information, on the machine



①



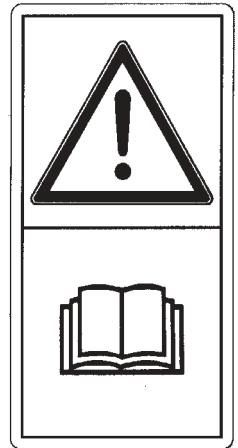
Do not exceed the maximum permitted PTO shaft speed!

Order No. 939 100-4 (1x)

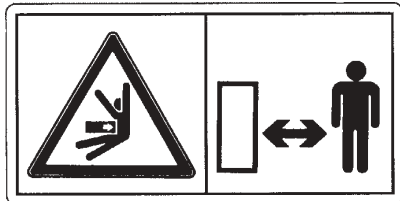
②

Read and take note of the operating manual.

Order No. 939 471-1 (1x)



③



Danger from self-turning swather disk arms. Maintain safe distance!

Order No. 939 472-2 (4x)

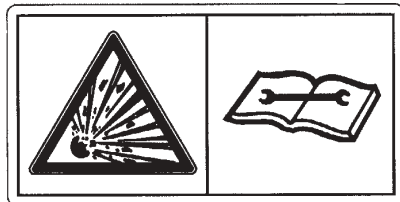
④



No personnel allowed inside swivel space of the operating equipment while the deployment arms are being folded down.

Order No. 939 469-1 (2x)

⑤



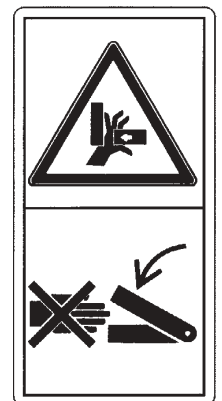
Accumulator is under gas and oil pressure. Repairs can be carried out only in connection with replacement of the complete unit.

Order No. 939 529-0 (1x)

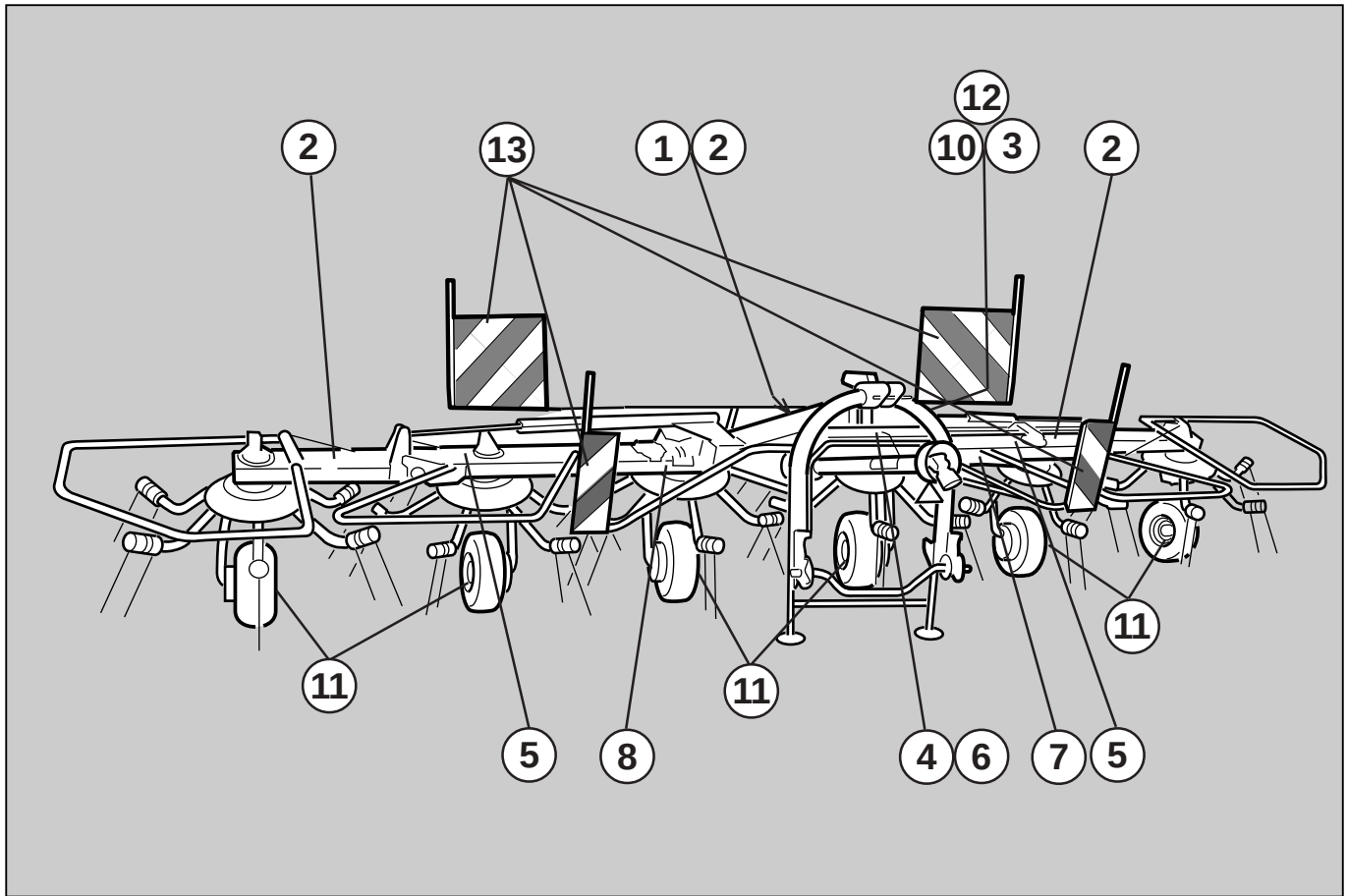
⑥

Never reach into the danger zone between the three-point frame and the carrier bar of the rotary tedder while any parts located there can still move by themselves.

Order No. 942 196-1 (2x)



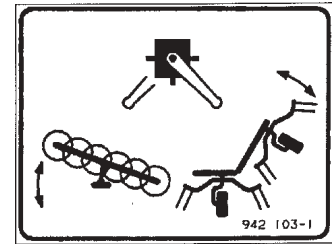
1.2 Location of General Information Labels on the Machine



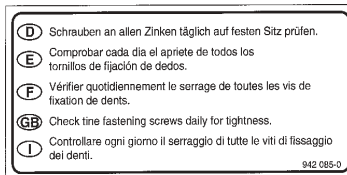


- ① 440 135-3 (1x) bei KW 5.50
939 429-2 (1x) bei KW 6.70
440 148-2 (1x) bei KW 7.70
942 273-1 (1x) bei KW 8.80

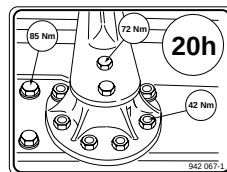
- ② 942 295-0 500 lang
942 296-0 370 lang
942 297-0 200 lang grün
942 298-0 200 lang beige



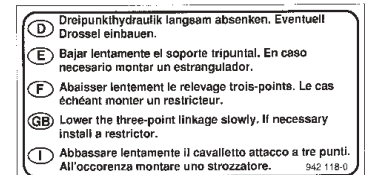
- ③ 942 103-1 (1x)



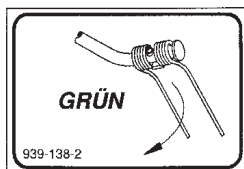
- ④ 942 085-0 (1x)



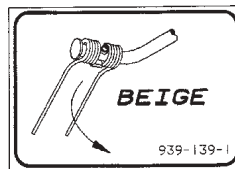
- ⑤ 942 067-0 (2x)



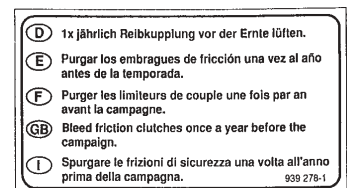
- ⑥ 942 118-0 (1x)



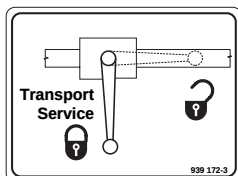
- ⑦ 939 138-2 (3x)



- ⑧ 939 139-1 (3x)



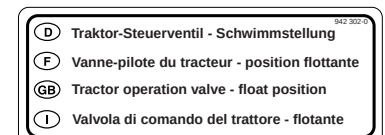
- ⑨ 939 278-1 (1x)
KW 7.70 ; KW 8.80



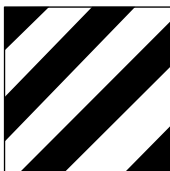
- ⑩ 939 172-3 (only KW 8.80)



- ⑪ 942 107-1 1,5 bar
939 170-1 2,0 bar



- ⑫ 942 302-0 (1x)
only KW 8.80



- ⑬ 924 569-0 (4x) KW 5.50 / KW 6.70 / KW 7.70 / KW 8.80
924 573-0 (1x) KW 6.70 / KW 7.70 / KW 8.80
924 574-0 (1x) KW 6.70 / KW 7.70 / KW 8.80

1.3 Technical data

Type	KW 550/4x7	KW 670/6	KW 770/6x7	KW 880/8
Working width [mm]	5500	6700	7700	8800
Number of swather discs	4	6	6	8
Tine arms per swather disc	7	6	7	6
Surface covered [appr. ha/hr]	5.5	6.7	7.7	8.8
Width in transport position [mm]	2930	2950	2980	2980
Height in transport position [mm]	2800	3250	3500	3450
Power consumption [KW/HP]	37/50	37/50	44/60	55/75
Max. allowable hydraulic pressure	200 bar			
Pto shaft speed [max. rpm]	540	540	540	540
Weight [kg]	640	800	890	1100
Equivalent continuous sound pressure level	under 70 d B(A)			
Tyres	for all types, 16/ 6.50 x 8 18/8.50/8 only middle			
Three-point mounting with quick coupler and run-on mechanism	Standard equipment			
Edge spreading mechanism [hydr.]	Standard equipment			
Spreading angle adjustmen	Standard equipment			
Additional tine loss protection	Special accessory			
Plug-in gearbox for night swathing	Special accessory			
Lighting unit	12 Volt			

Lubricant quantities and lubricant types for the gearbox

The main gearbox of the rotary tedder has a permanent grease lubrication and operates without any maintenance.

2. Preparations for use

2.1. Special safety instructions



- In all care, maintenance, repair and assembly work on the rotary tedder the PTO shaft must always be switched off. Switch off the engine and remove the ignition key. Take measures to prevent the tractor and rotary tedder from rolling!
- The maximum drive speed is 540 rpm.
- Control elements such as ropes, cables, hydraulic hoses and electrical cables must be so routed that accidental activation and contact with the tractor wheels are impossible. Accident risk!
- When raising and lowering the rotary tedder, no persons may be allowed to go between the tractor and the rotary tedder. High risk of injury!
- When lowering the outer swather discs, make sure that no persons are in the swivel area of the swather discs Accident risk!
- Before you switch on the PTO shaft, make sure that no persons are in the danger zone of the rotary tedder. Accident risk!
- Make sure that the protective features are correctly fitted during operation and when driving the tractor on public roads. Fit the lighting and check that it works.
- The operating personnel must not leave the tractor when the rotary tedder is in operation!

Safety instructions for the hydraulic system



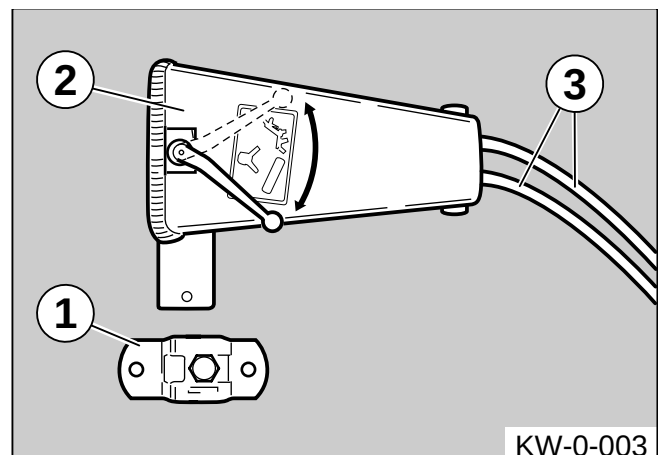
- The hydraulic system is under pressure!
- Hydraulic oil that squirts out under high pressure can cause severe injury. Consult a doctor immediately if such injuries occur. Risk of infection!
- Check hydraulic hoses and pipes regularly, and replace them if they are damaged or worn. The replacement hoses and pipes must conform to the requirements of the manufacturer of the machine!
- When connecting hydraulic hoses, take care to ensure that the hydraulic system in both the tractor and the attachment is depressurized.

2.2. Preparations on the tractor and rotary tedder



When fitting the bracket to the tractor, make sure that the switchover valve is easily accessible and the hydraulic hoses (3) do not obstruct the driver. Hose lines may must not be placed in the cabin.

Fix the bracket (1) for the hydraulic switchover valve (2) to the tractor. Make sure that the hydraulic hoses are not pulled tight or trapped when the attachment is raised and lowered.



KW-0-003

Mounting the PTO shaft on the rotary tedder

KW 5.50 / 4x7 and KW 6.70 / 6



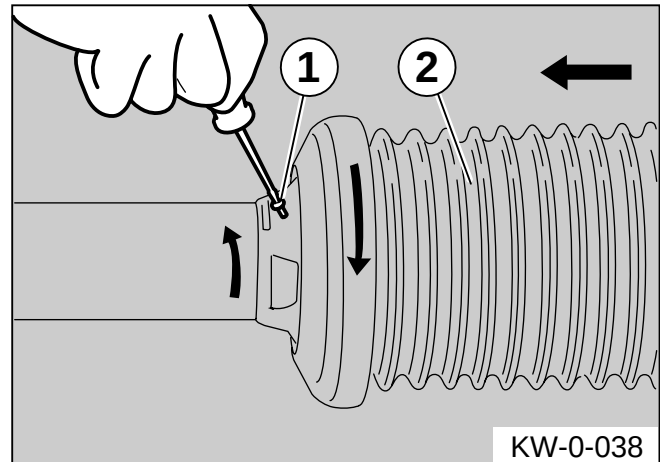
Only those PTO shafts provided may be mounted and used.

To mount the PTO shaft on the rotary tedder, unscrew the screw (1) on the rotary shaft protective sleeve (2), twist the protective socket and the protective tube against each other and push the PTO shaft protective sleeve in the direction of the arrow.

Push the PTO shaft with the overload clutch onto the PTO shaft end on the rotary tedder. Take care to ensure that the locking device (1) clicks into place. Fit the protective sleeve again and secure it with a screw.



Note direction of arrow on PTO shaft!

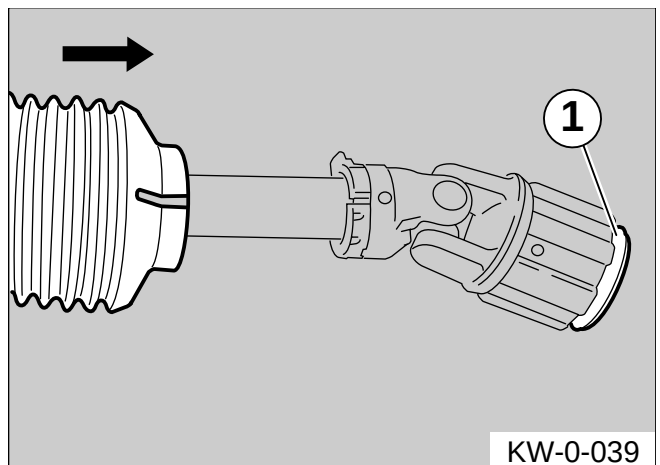


KW 7.70 / 6x7 and KW 8.80 / 8

The PTO shaft is fitted with the friction/free running coupling facing the rotary tedder. The disassembly of the PTO shaft protective sleeve is not necessary here. Make sure that the locking device clicks into place.



Vent the overload coupling before commissioning.(see chapter 6.1)

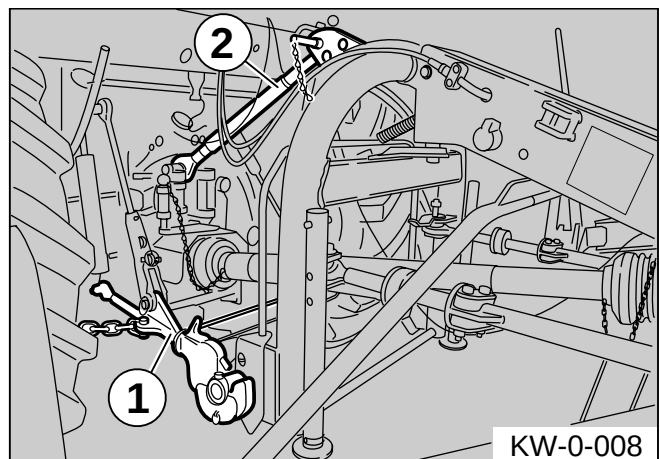


2.3 Attaching the rotary tedder to the tractor



- When fitting the rotary tedder, make sure that nobody enters the area between the implement and the tractor.
- Make sure that the tractor front wheels remain on the ground when the rotary tedder is raised. If necessary, raise the ballast on the front axle.

Couple the rotary tedder to the lower link arm (1) and upper link arm (2). Fix the lower link arms to the tractor use limiting chains or rods so that the rotary tedder does not swivel out to the side.



The withdrawal speed of the rear hydraulic system must be reduced by adjusting the lowering throttle so that the undercarriage of the rotary tedder is slowly lowered to the ground.

PTO shaft

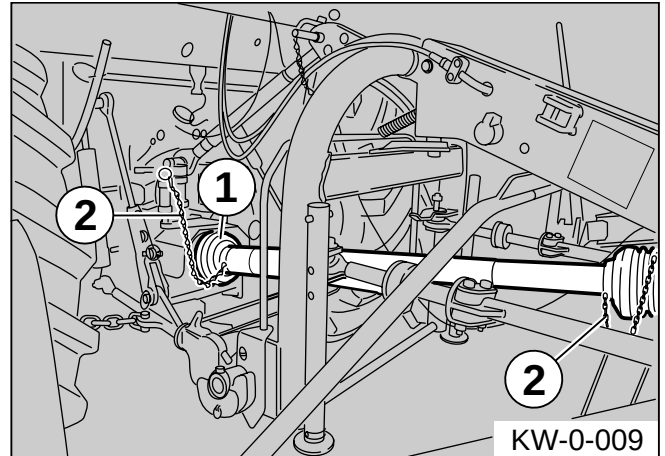


After the rotary tedder has been coupled to the upper and lower link arm, turn off the engine. Remove the ignition key. Protect the tractor from rolling!

Push the PTO shaft onto the PTO shaft end of the tractor. Make sure that the locking device clicks into place. Fix the protective sleeve (1) with chains (2) to prevent it from rotating with the shaft.



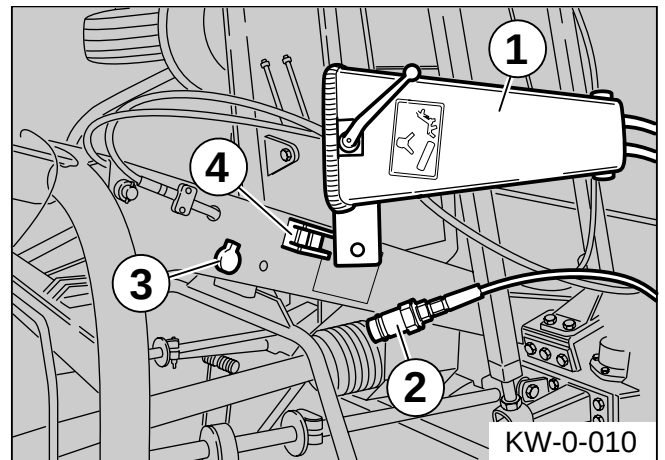
Check the PTO shaft for correct length the first time the rotary tedder is used and every time a different tractor is used. If the length of the PTO shaft is not correct for the tractor, it is essential to take note of section 2.4 "Adjusting the PTO shaft length".



Hydraulics



Make sure that the hydraulic system is depressurized in the tractor and in the rotary tedder attachment.



KW 5.50/4x7; KW 6.70/6 and KW 7.70/6x7

Take the hydraulic switchover valve (1) out of the bracket (4) and insert it into the holder on the tractor. Take the hydraulic hose (2) out of the bracket (3) and insert it into the coupling of a single action control valve.

KW 8.80/8

Insert the hydraulic hose into the coupling of a double action control valve.

Transport locking device

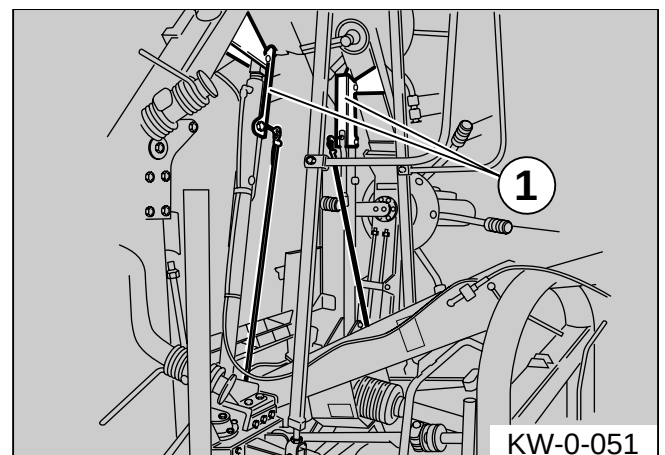
KW 5.50/4x7; KW 6.70/6 and KW 7.70/6x7

The rotary tedder is equipped with a mechanical locking device.

Fix the control cable to the tractor. Make sure that the cable does not come into contact with the tractor wheels.



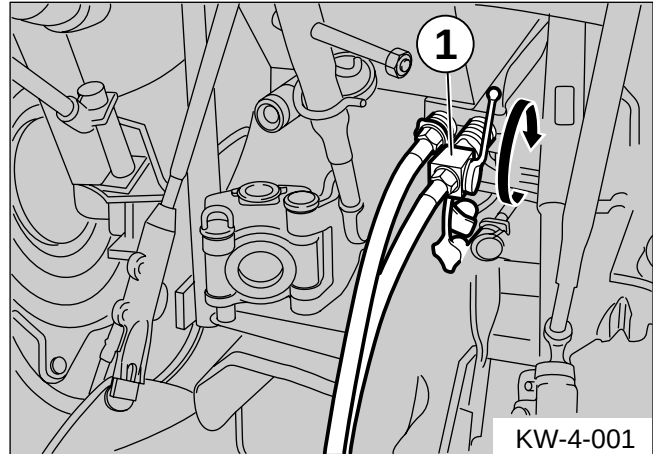
Make sure that the transport locking device is always correctly engaged when the machine is in transport position.



KW 8.80/8



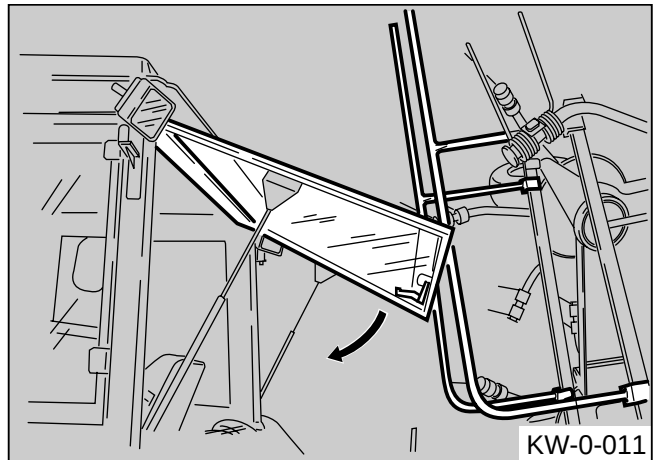
The swather disk arms are secured in transport position with hydraulic stop valves on the hydraulic cylinders. In cases of transport journeys, the shut-off valve (1) must be closed and the tractor control valve must be locked!



KW-4-001



Before raising the rear hydraulics, make sure that the rear window of the tractor cabin is closed. Otherwise, the protective frame of the rotary tedder could cause damage.

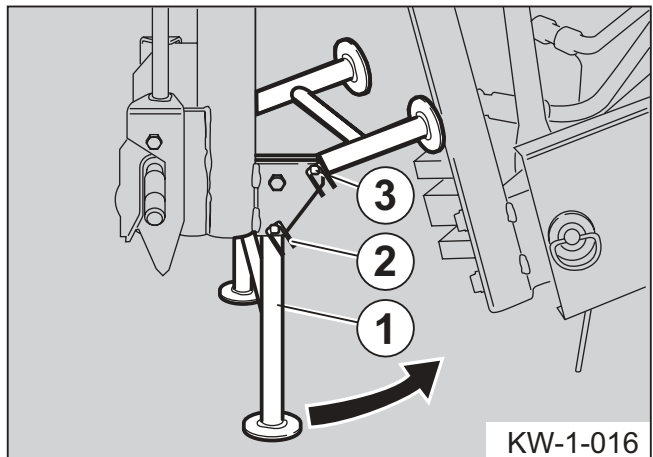


KW-0-011

Jack stand

Jack stand at front

The rotary tedders is fitted with a jack stand that folds away to the rear (1). The jack stand is folded away in working position. To do this, lift the rotary tedder slightly and remove the linch pin (2). Fold the jack up to **position "3"** and secure it with a linch pin (2).



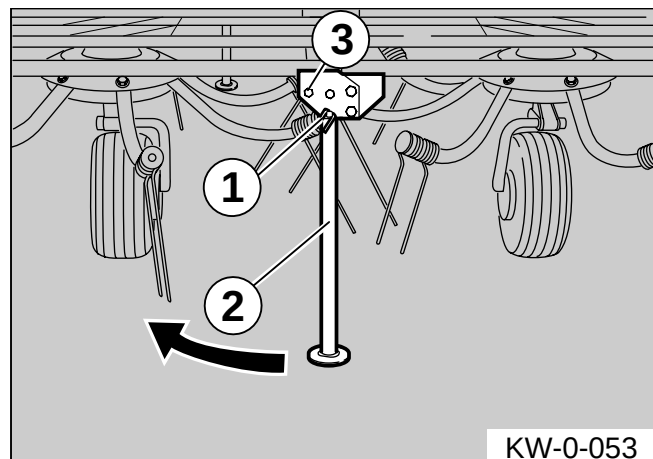
KW-1-016

Jack stand at rear

The rotary tedders KW 460, KW 550, KW 670 and KW 770 are fitted with a jack stand (2) at the rear. In working position, fold up the jack stand and secure it in **position "3"** with a linch pin (1).



The rear jack stand (2) mainly prevents the rotary tedder from tipping over backwards when it is stopped while in operating position. - Danger of accident!



KW-0-053

2.4 Adjusting the PTO shaft length

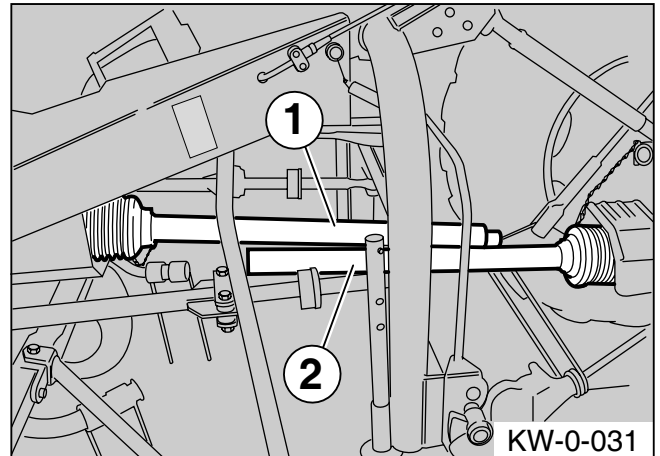


- Risk of damage to material. Do not raise the rotary tedder before the length of the PTO shaft has been adapted!
- The PTO shaft must be switched off before any, maintenance, repair and assembly work is carried out on the rotary tedder. Switch off the engine and remove the ignition key. Secure the tractor and rotary tedder to prevent them from rolling!
- When raising the rotary tedder, no persons must be allowed to enter the area between the rotary tedder and the tractor.

- Take apart the universal drive shaft.
- Clip one half (1) and (2) onto the tractor and the other to the implement.
- Move the rotary tedder to the position where the universal drive shaft is at its shortest. (headstock steered up to the limit stop)
- The rest of the procedure can be found in the manual provided by the universal drive shaft manufacturer.



The PTO shaft reaches its shortest position when the rotary tedder is raised.

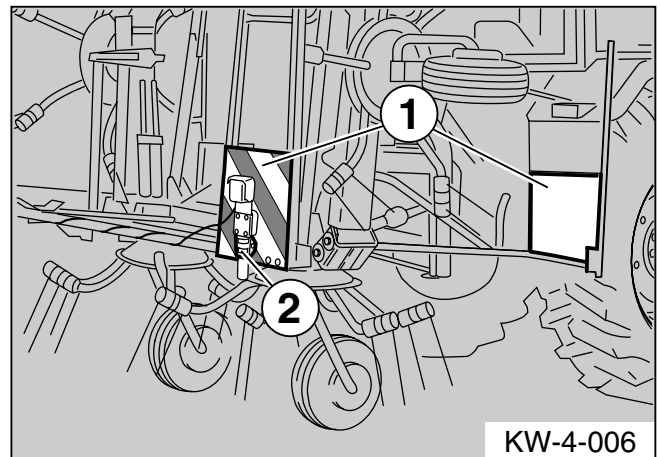


2.5 Lighting, Warning and protection features



Before driving the tractor and machine on public roads, mount and connect the lighting system and check that it is working.

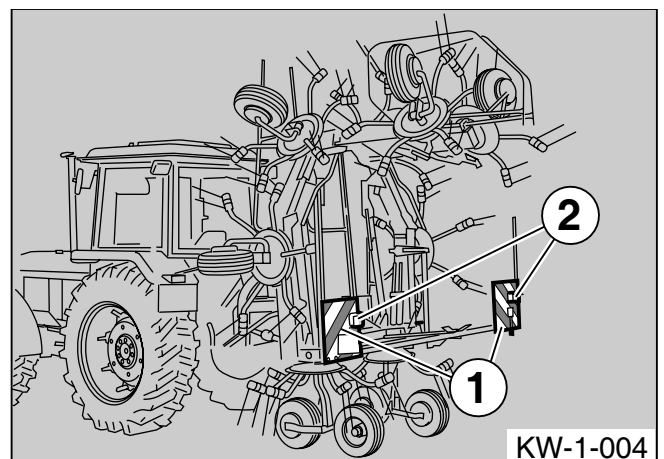
All types of rotary tedder are equipped with the standard brackets (2) for lighting systems on the warning signs (1). White limiting lights must be fitted to the brackets on the front warning signs. Three-unit lamps must be fitted on the rear warning signs.



If the tractor's license plate is hidden by the rotary tedder, then it must also appear at the rear of the machine.

Note: The rotary tedder can also be equipped with a pre-assembled lighting unit!

Before driving on public roads, check the lighting (2) and warning signs (2).



2.6 Converting from transport to working position



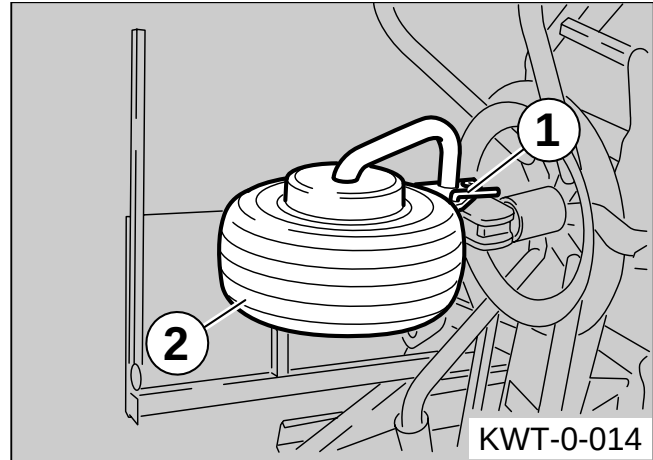
When the outer swather discs are being lowered, no persons may be allowed to enter the swivel area of the outer swather discs.

Only for KW 7.70/6x7 and KW 8.80/8

Move the undercarriage wheel (2) on the second swather disk forward into working position. Secure with the bolt (1) and linch pin.

NOTE:

Observe the position of the individual wheels when lowering into working position. (see chapter "Adjusting the swather disk spreading angle")



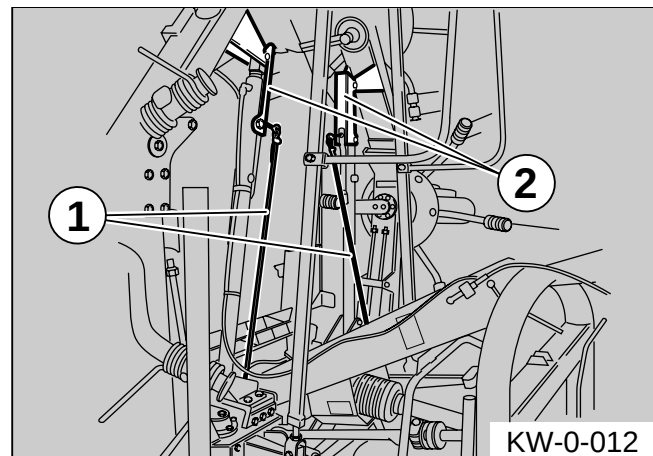
Select the position "**Lower/raise outer swather discs**" on the switchover valve.

KW 5.50/4x7; KW 6.70/6 and KW 7.70/6x7

Activate the single action control valve on the tractor and pressurize the hydraulic cylinder. This relieves the pressure on the locking device (2). Pull the control cable (1) to release the locking device (2). Keep the cable taut. Slowly lower the outer swather discs with the control valve until the wheels rest on the ground.



When in use, leave the control valve in the „**Lower**“ position.

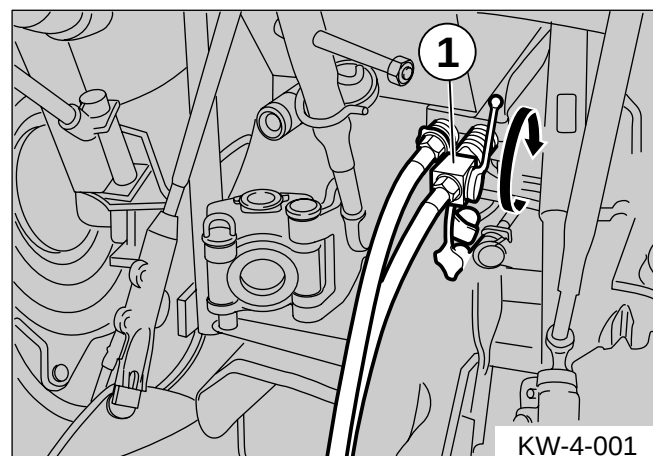


KW 8.80/8

Open the shut-off valve (1) and actuate the double-acting control valve on the tractor and slowly lower the outer swather disks.



When in use, leave the control valve in the „**Float Position**“.



2.7 Conversion from working to transport position

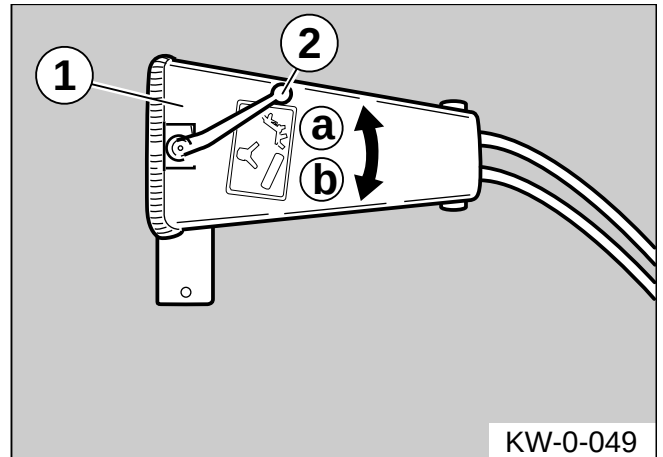


- Make sure that no persons are in the swivel area of the outer swather discs.
- Before driving on public roads, attach all protective devices, warning signs and lights, check them and make sure that they work.



The PTO shaft must be switched off before the outer swather discs are lifted into transport position. Set edge spreading mechanism to central position.

Select position a "Raise/lower outer swather discs" on the switchover valve (1). Lift the outer swather discs by operating the tractor hydraulic system.



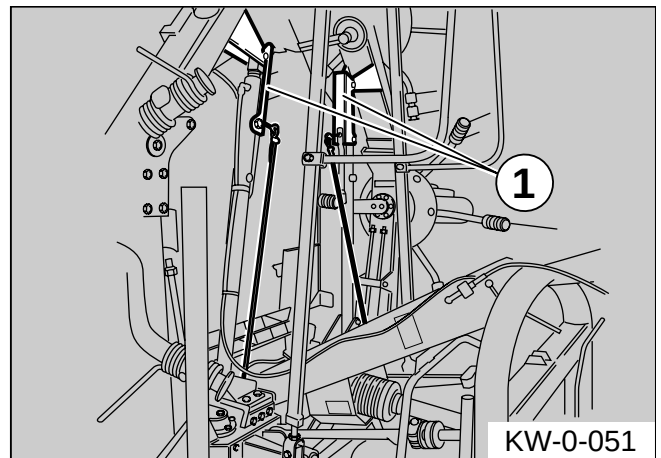
KW-0-049

KW 5.50/4x7; KW 6.70/6 and KW 7.70/6x7

Raise the outer swather discs until the locking devices (1) have fully clicked into place.



Be sure that the transport locking device has correctly engaged and that the control cable is not taut.



KW-0-051

KW 8.80/8

Lift outer swather disks until the cylinders have travelled completely inward. Close shut-off valve (1).

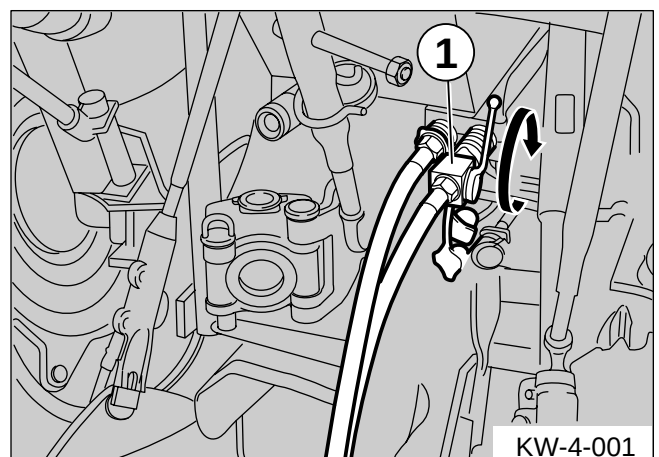


Before raising the rear hydraulics, check that the rear window of the tractor cabin is closed. Otherwise, the protective frame could cause damage.

Attach the lighting system. Check that the lights work.



The swather disk arms are secured in transport position with hydraulic stop valves on the hydraulic cylinders. In cases of transport journeys, the shut-off valve (1) must be closed and the tractor operation valve must be blocked!



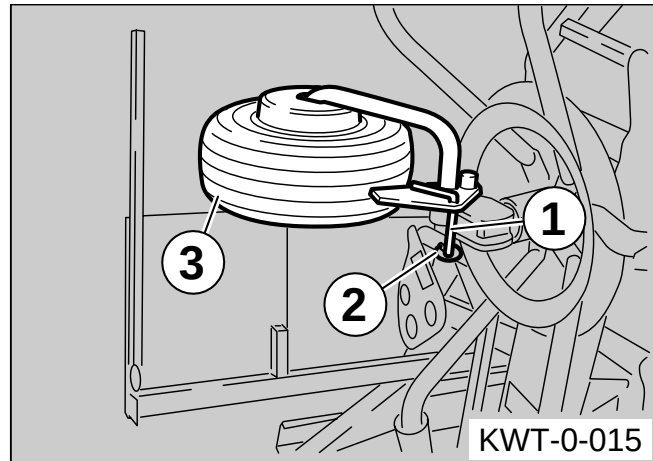
KW-4-001

Only for KW 7.70/6x7 and KW 8.80/8

CAUTION: Observe the maximum width of the machine when travelling on public roads.

For reducing the transport width (< 3 m):

- Lower the undercarriage wheel (3) on the second wather disk backwards into transport position
- Secure with the bolt (1) and the linch pin (2)



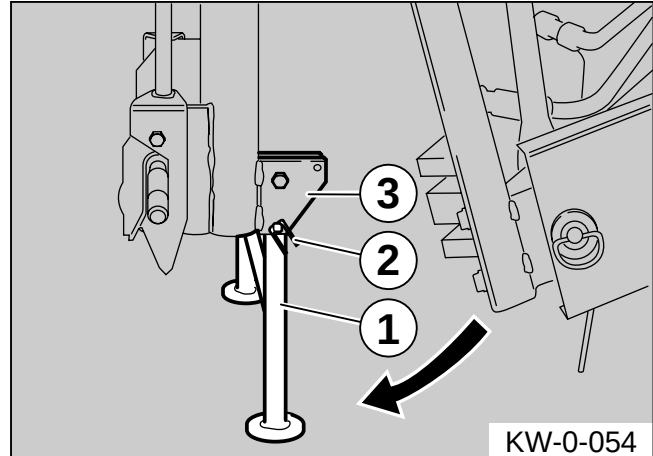
2.8 Removing from the tractor



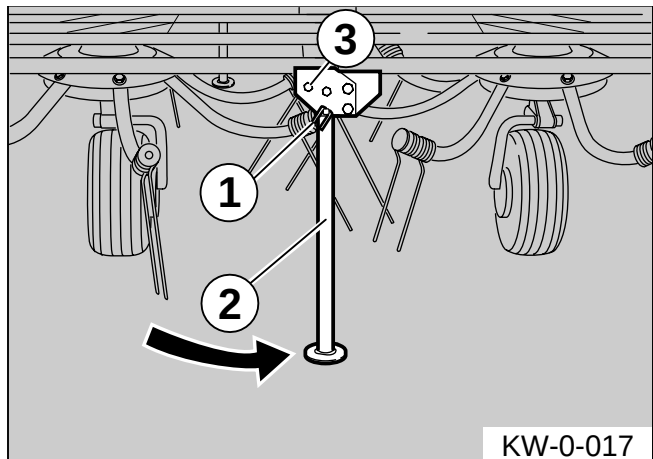
- When removing the rotary tedder, make sure that the ground is level and firm.
- When the rotary tedder is being raised and lowered, make sure that no persons enter the space between the tractor and the attachment.
- Make sure that you observe all other safety instructions.

Jack stand at front

Fold down the front jack stand (1) from position (3) and secure with a linch pin (2).



Fold down the rear jack stand (2) from **position "3"** and secure it with a linch pin (1).



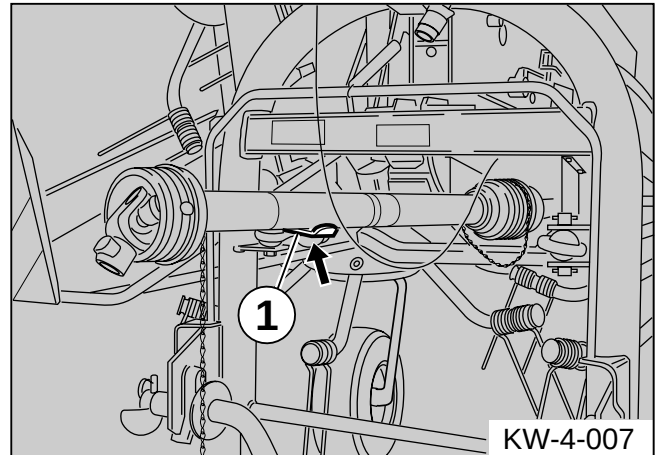


Switch off the engine and remove the ignition key. Protect the tractor from rolling. Only then pull off the PTO shaft.

Loosen the holding chain, pull off the PTO shaft and lay it on the PTO shaft support bracket (1).

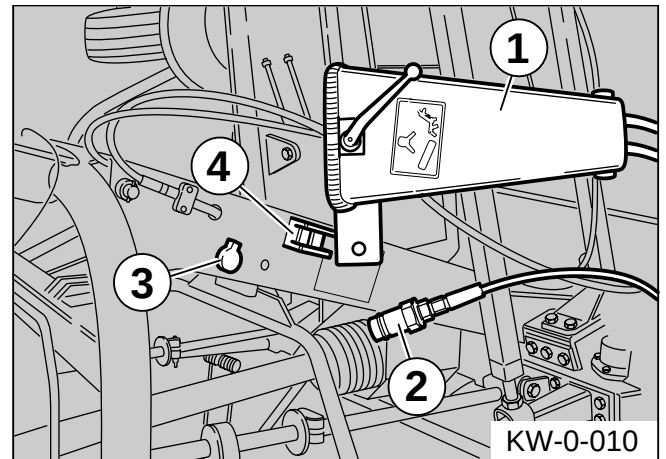


The holding chains of the protective tubes are not designed or suitable for holding up the PTO shaft.



Depressurize the hydraulic system before pulling off the hydraulic hoses.

- Pull off the hydraulic hose (2). (one hydraulic hose for KW 5.50/4x7, KW 6.70/6 and KW 7.70/6x7; two hydraulic hoses for KW 8.80/8)
- Take the hydraulic switchover valve (1) from the bracket on the tractor and place it in the corresponding bracket (4) on the rotary tedder.
- Insert the coupling of the hydraulic hose into the bracket (3) on the three-point frame.
- Disconnect the control cable (for KW 5.50/4x/, KW 6.70/6 and KW 7.70/6x7) and the electrical lighting cable from the tractor and place them on the rotary tedder.
- Remove the upper and lower link arms.



3. Settings

3.1 Special safety instructions



- The adjustments described here must only be carried out when the machine is at a complete standstill. Switch off the engine and remove the ignition key.
- Secure the rotary tedder and tractor from rolling.
- When the rotary tedder is raised by the rear hydraulic system, take steps to prevent it from being accidentally lowered!

3.2 Spreading angle settings for the swather discs



The settings for the spreading angle of the tedder tines must be adapted to the conditions of the ground and crop. Adjustments are made on the under-carriage wheels of the rotary tedder.

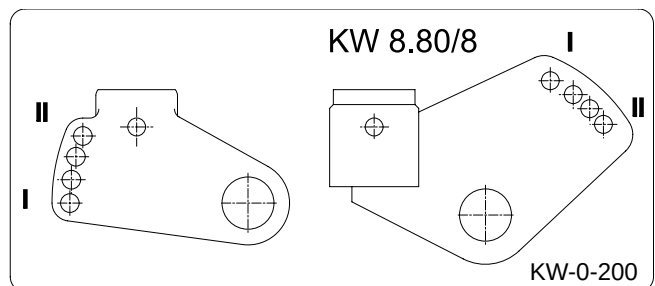
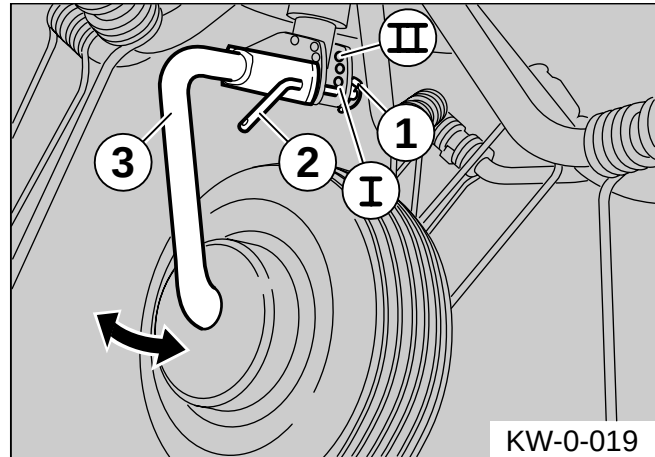
Basic data for the spreading angle setting:

Flat spreading angle II:

- large intake width
- short crops
- crop lying out wide
- fodder with less than 40 % moisture content

Steep spreading angle I:

- large output width
- long crops
- better spreading effect for mown swaths
- wilted silage
- fodder with more than 40% moisture content



Settings:

Remove the linch pin (1) and pull out the pin (2). Move the wheel bracket (3) to the selected position between position I and position II. Insert the pin again and secure it with the linch pin.

- Pin towards position I = steeper spreading angle
- Pin towards position II = flatter spreading angle

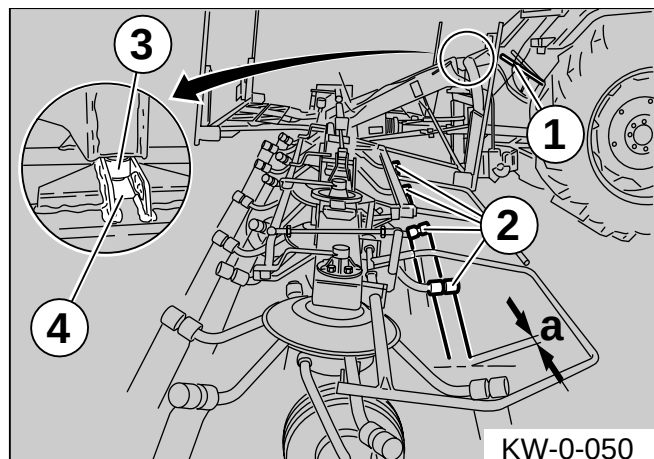
Setting the working depth of swather disc tines

Setting the working depth of the swather disc tines is carried out on the upper link arm (1). Move the rotary tedder to working position on a level surface. Adjust the rear hydraulic system to float position. Shorten or lengthen the upper link arm until the distance "a" between the front tines (2) and the ground is approx. 2 cm. The roller (3) of the carrier bar must be resting at the back of the U-profile (4) of the three-point frame.

This setting is a basic setting. In practice, the height setting of the tines must be adapted to the conditions.



If the spreading angle is altered, then the working depth adjustment of the swather disk tines must be checked and recalibrated.



3.3 Drive rpms

Wide spreading (tedding)

Take the mowing swaths as much as possible between the swather disks.

In cases of heavy fodder, move with high rpm (540/min) and a not-too-high travel speed (4 - 6 km/h) (steep spreading angle).

Turning

The drier the fodder, the lower the PTO rpm to be chosen (approx. 450/min), in order to avoid damaging the fodder. The movement speed (6 - 8 km/h) should be adjusted to the condition of the fodder. If the fodder is moist, the rpm and the movement speed should be selected as with wide spreading (flat spreading angle).

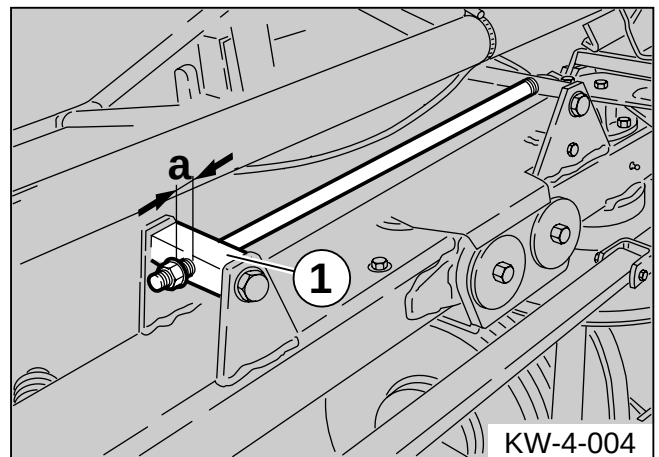


These specifications are approximate values which will need to be adjusted in practice to the actual circumstances.

3.4 Adapting the swather discs to the ground

Second swather disc on KW 8.80 / 8

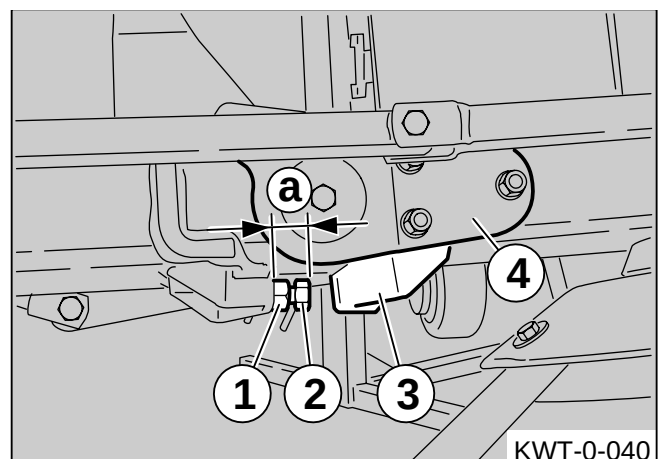
Bring rotary tedder into working position. With the KW 8.80 rotary tedder, the second swather disk's adjustment for the ground can be set on the tow bar (1). For the basic setting, the bolt on the tow bar is set with a gap of **a = 1 cm**. In cases of greater ground unevenness, the dimension „a“ can be increased where necessary. (The cylinder must not however come into contact with the tow bar.)



Outer swather disc of KW 6.70/6 and KW 7.70/6x7

The outer swather discs of the KW 6.70 and KW 7.70 can be adapted to the ground conditions.

- Move the rotary tedder into working position
- Raise the outer swather disks slightly. The stop (3) must not rest on the adjusting screw (2)
- Undo the counter nut (1)
- Turn the adjusting screw until in the required position (**a = at least 41 mm**).
- Tighten the counter nut again after adjustment.

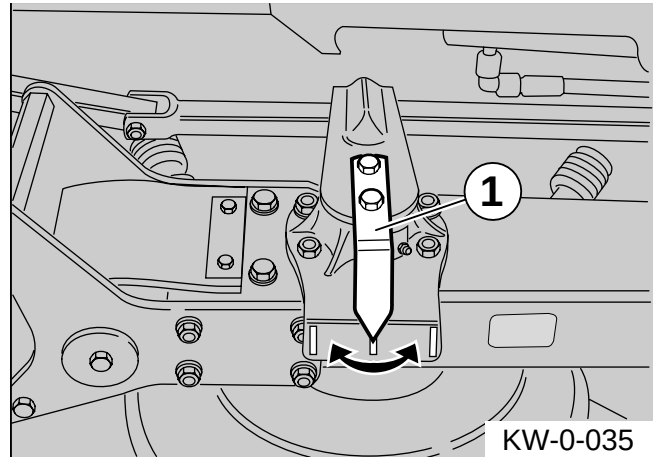


3.5 Edge spreading mechanism

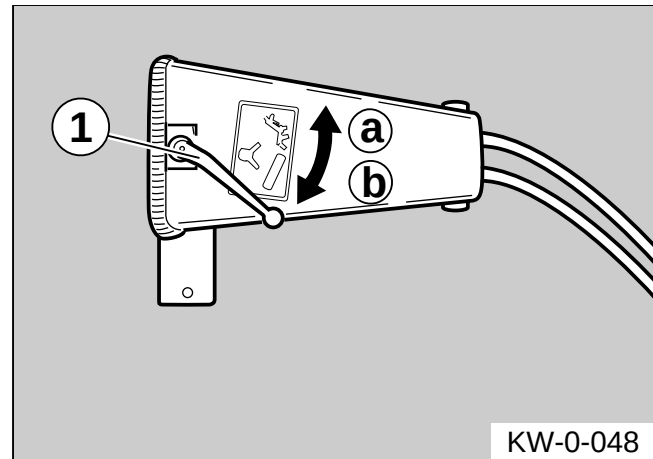
The undercarriage wheel setting can be seen on the pointer (1). It is situated to the right of the carrier bar in forward direction.



To keep the load on the running wheels as low as possible, avoid cornering too tightly when boundary spreading is set.



To adjust the edge spreading mechanism, raise the rotary tredder. Switch the hydraulic switchover valve (1) to position "b" (edge spreading mechanism). The edge spreading mechanism can be adjusted from the control valve on the tractor. The setting of the undercarriage wheels can be seen on the pointer.

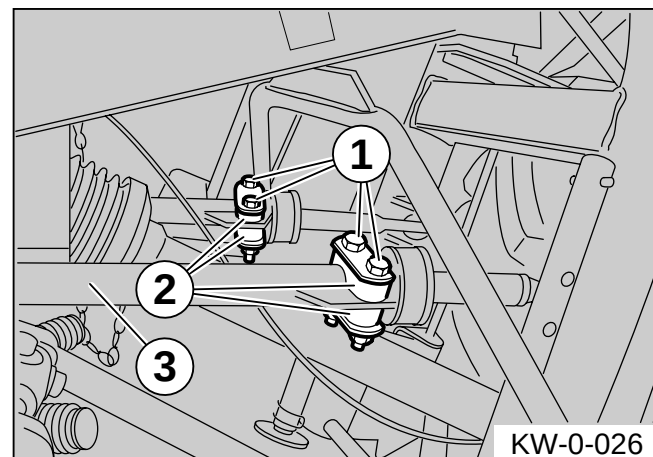


3.6 Stabilizers

For rotary tedders with a large working width, the machine could start to wobble on uneven ground. A greater pre-tensioning of the stabilizers can suppress this effect. To achieve this, tighten the screws (1) of the friction plates (2) on the stabilizer tubes (3).

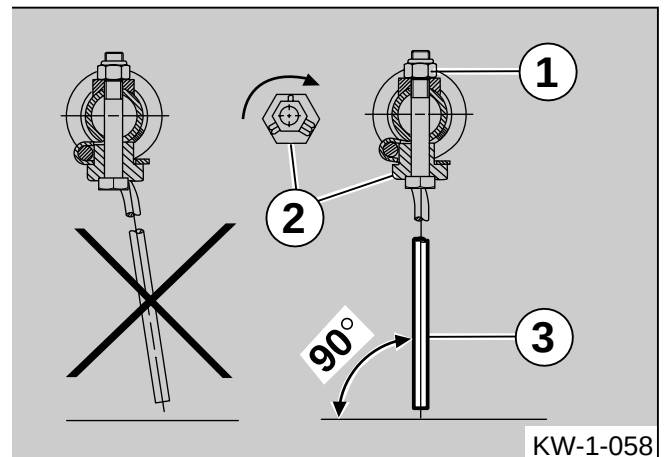


Do not tighten the friction plates too tightly, or the stabilizers may lock!



3.7 Tine adjustment

The tines (3) must be aligned vertically to the ground. The alignment of the tines can be changed by turning the eccentric. For adjustment release securing bolt (1) and turn eccentric (2) to the next position. Tighten the adjustment screw to a torque setting of **95 Nm**.



4. Care and maintenance

4.1 Special safety instructions



- Repair, service, maintenance and cleaning work must only be carried out when the machine is at a standstill. Switch off the engine and remove the ignition key.
- Protect the rotary tedder and tractor from rolling.
- The raised rotary tedder must be prevented from accidentally being lowered!
- After service and maintenance work has been completed, all protective panels and other protective devices must be correctly fitted again.
- Avoid skin contact with oil and grease.
- If any injury is caused by oil escaping from the system, consult a doctor immediately.
- Observe all other safety instructions to prevent injuries and accidents.

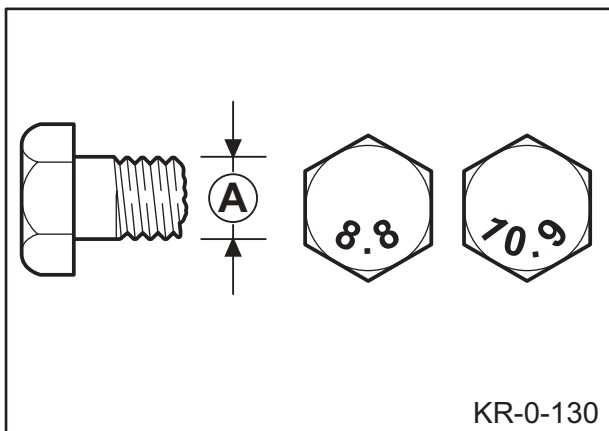
4.2 General



To ensure the correct operation of the rotary tedder and reduce wear, certain maintenance and service intervals must be observed. These include intervals for the cleaning, greasing and oiling of parts and components and the inspection and tightening of bolts. The bolts on all tines must be checked after the first hours of operation and tightened if necessary (95 Nm), and thereafter checked daily and tightened if necessary.

After each extended period of non-operation, ventilate the friction coupling on the PTO shaft (KW 7.70; KW 8.80)

Torque moment M_A (if not stated differently).



A = thread size

(Property class can be seen on bolt head.)

Independently of the adjacent table, the following torque moments M_A [Nm] apply:

Bolts/nuts	M_A [Nm]
Tines	95
Swather disc bearings	42
Hinge plate on the bar joints	85

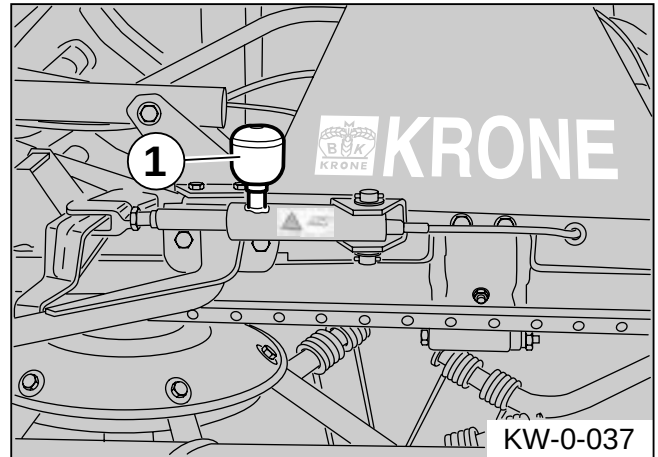
A Ø	5.6	6.8	8.8	10.9	12.9
	M_A (Nm)				
M 4		2,2	3,0	4,4	5,1
M 5		4,5	5,9	8,7	10
M 6		7,6	10	15	18
M 8		18	25	36	43
M 10	29	37	49	72	84
M 12	42	64	85	125	145
M 14		100	135	200	235
M 14x1,5			145	215	255
M 16		160	210	310	365
M 16x1,5			225	330	390
M 20			425	610	710
M 24			730	1050	1220
M 24x1,5	350				
M 24x2			800	1150	1350
M 27			1100	1550	1800
M 27x2			1150	1650	1950
M 30			1450	2100	2450

4.3 Hydraulics

The rotary tedder has a hydraulic cylinder with an integrated hydraulic accumulator (1) in the edge spreading mechanism. The system is maintenance-free.



The cylinder unit is under pressure.
If a defect occurs, the complete unit must be replaced.
Hose lines are subject to ageing.
As a rule, they should be replaced every six years.



4.4 Gearbox

The main gearbox of the rotary tedder is grease filled and needs no maintenance.

Designation/Brand	Quantity lit
Flowing gearbox grease GFO 35	0,5 l

4.5 Tyres



- Repair work on the tyres must only be carried out by qualified personnel and with suitable equipment.
- Before repair work begins, make sure that the rotary tedder is at a standstill. Switch off the engine and remove the ignition key.
- Place the rotary tedder on a firm, level surface. Fit wheel blocks to protect it from accidental rolling.
- Check the air pressure regularly.

	Pressure [bar]
Undercarriage wheels (Single Axle)	1,5
Undercarriage wheels (Single Axle)	2,0

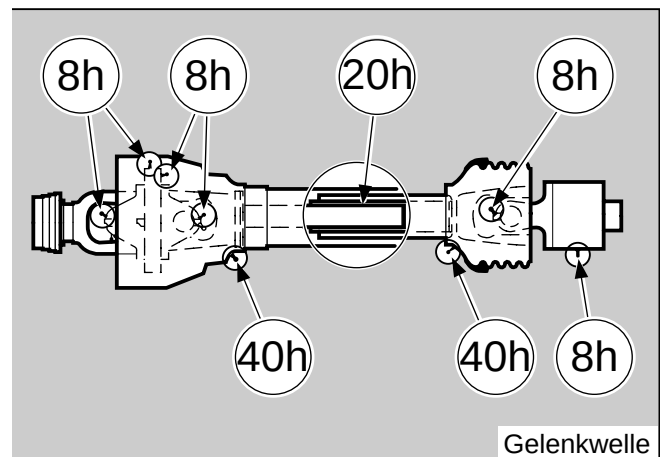
4.6 Lubrication points on the rotary tedders

PTO shaft



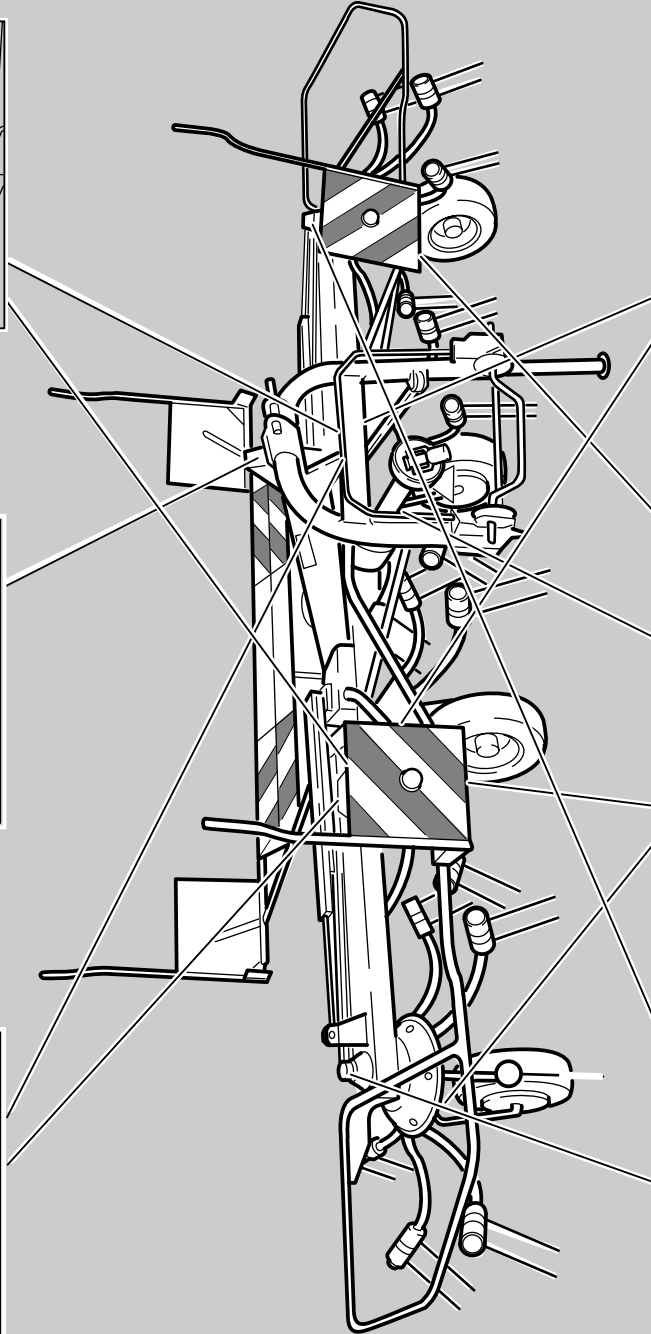
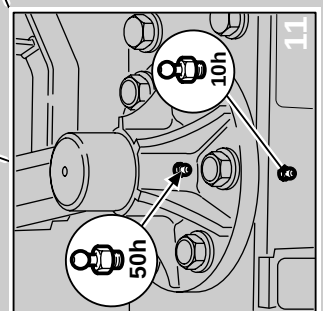
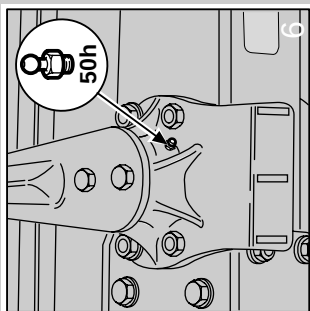
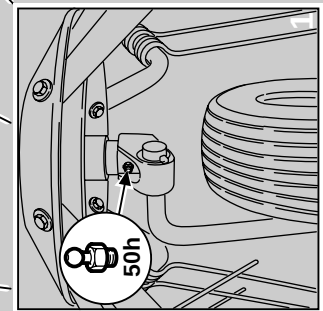
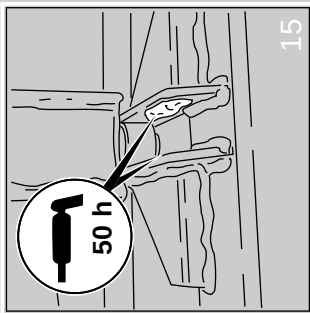
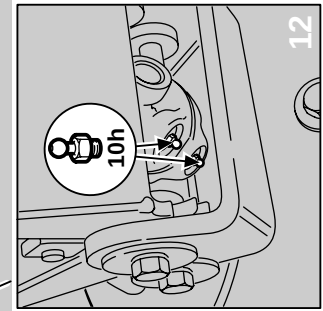
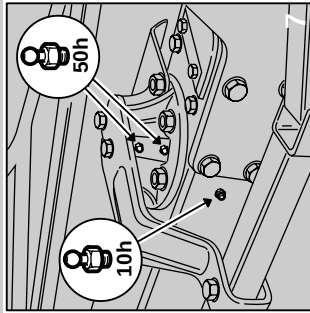
The specified lubrication intervals refer to hours of operation!

The PTO shaft(s) on the machine should be greased at the points shown in the illustration at the time intervals shown. At the same time, observe the operating instructions of the PTO shaft manufacturer.



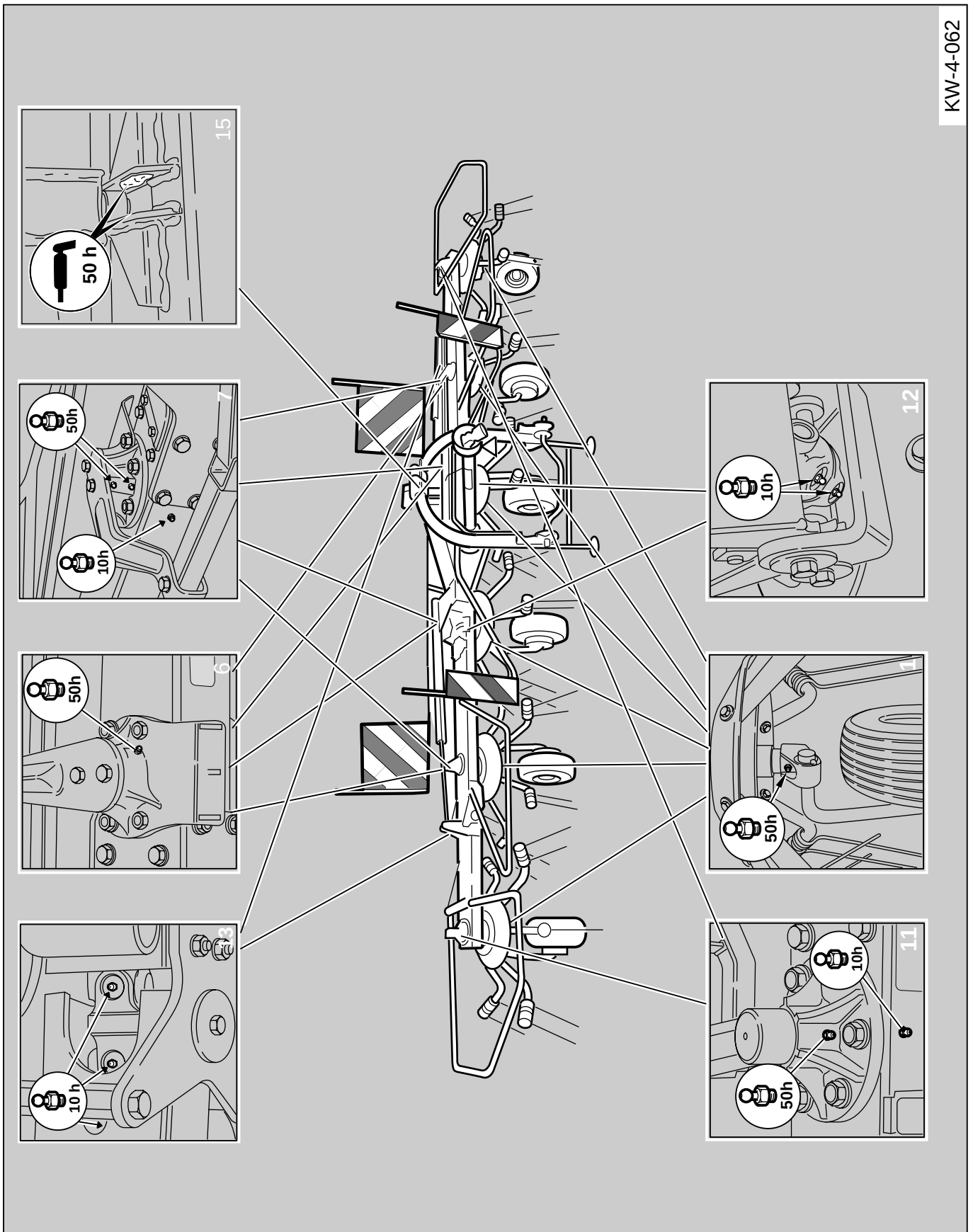
Lubrication points on the KW 5.50 / 4x7

KW-0-061



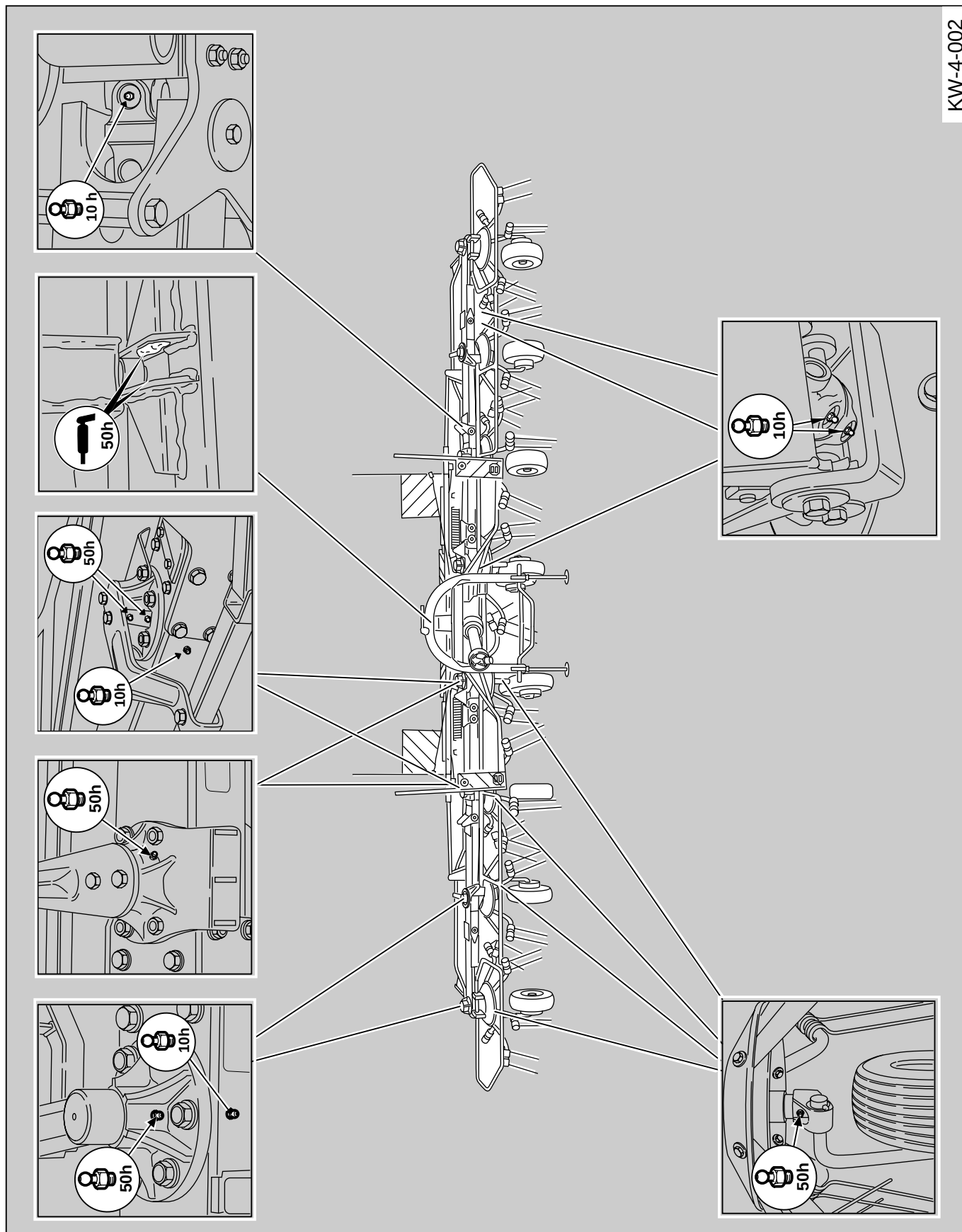
Lubrication points on the KW 6.70 / 6 and KW 7.70 / 6x7

KW-4-062



Lubrication points on the KW 8.80 / 8

For reasons of clarity, the lubrication points have been shown on only one side of the rotary tedder. On the other side, there are lubrication nipples at exactly the same points (as a mirror image).



KW-4-002

5. Winter storage

5.1 Safety instructions



- Repair, service, maintenance and cleaning work must only be carried out when the machine is at a standstill.
- Switch off the engine and remove the ignition key.
- After service and maintenance work has been completed, all protective panels and other protective devices must be correctly fitted again.
- Avoid skin contact with oil, grease, cleansing agents and solvents.
- In the event of injury or cauterization caused by oil, cleansing agent or solvents, consult a doctor immediately.

5.2 General

Thoroughly clean the rotary tedder before placing it in winter storage. If a high-pressure water cleaner is used, do not aim the water jet directly at the bearings. After cleaning, grease all lubrication nipples. **Do not** wipe off grease that oozes out of the lubrication points. The grease ring provides additional protection from moisture.

Check all moving parts for freedom of movement. Where appropriate, dismantle and clean them, then lubricate them and fit them again. If necessary, replace with new parts. Only use **original KRONE replacement parts**.

Pull the PTO shaft apart. Lubricate the inner tubes and the protective tubes with grease. Grease the lubrication nipples on the universal joint and the bearing rings of the protective tubes.

Store the rotary tedder in a dry place, and not near artificial fertilizers or stables.

Touch up paintwork. Bare metal must be thoroughly preserved with anti-corrosion agent.



The rotary tedder must only be jacked up with a suitable jack. Make sure that the rotary tedder is solidly supported when it is jacked up.

To lift the tyres (the tyres can be damaged if the rotary tedder stands on the same spot for a long period), jack the rotary tedder up on a support stand. Protect the tyres from outside factors such as oil, grease, direct sunlight etc.

Have necessary repair work carried out in the period directly after the harvest season. Make up a collective list of all replacement parts required. This will make it easier for your KRONE dealer to deal with your orders, and it will give you the security of knowing that your machine will be fully operational at the beginning of the new season.

6. Starting up after winter storage

Wipe off the grease and oil used for conservation.

Carry out all the activities described in the chapter on maintenance.

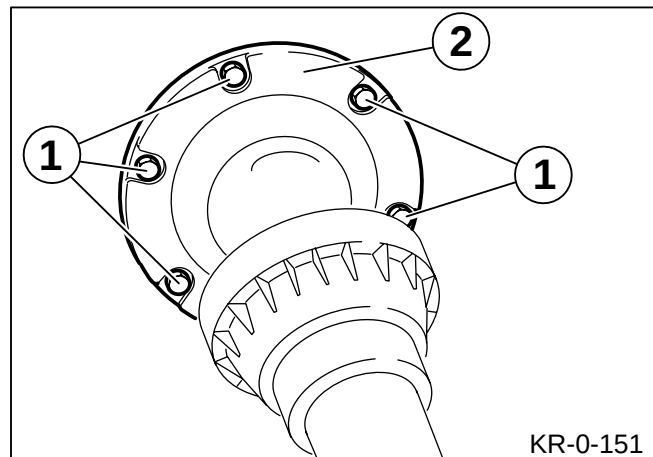
Carefully read through the operating manual again.

6.1 Vent Overload Coupling on the PTO Shaft

(friction clutch only)

Following extended downtimes, overload coupling surfaces (2) may stick to the contact surfaces. Vent the overload coupling before use.

- Tighten the nuts (1) crosswise.
- Turn the PTO shaft manually.
- Undo the nuts crosswise.



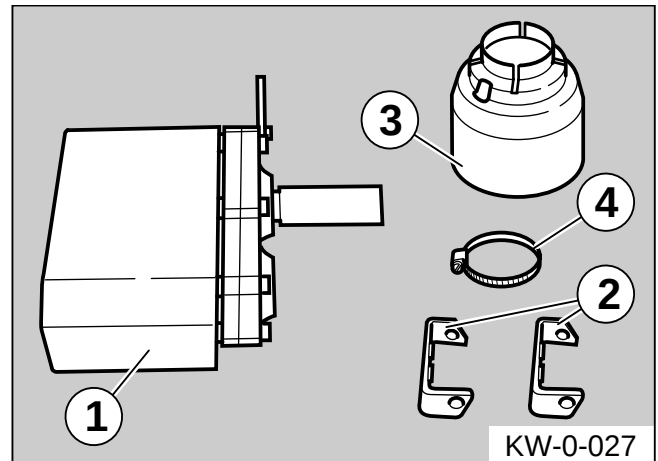
7. Special accessories

7.1 Night swathing gearbox

The rotary tedder can be equipped with a night swathing gearbox.

The following parts are supplied:

- Night swathing gearbox (1) (maintenance-free due to permanent grease filling)
- Two angle brackets (2)
- Protecting pot (3)
- Clamp fitting (4)
- Four bolts with nuts and washers



To mount the night swathing gearbox (1), dismantle the PTO shaft from the rotary tedder drive (cf. chapter 2.2 "Preparations on the tractor and rotary tedder"). Fit the protecting pot (3) and fix with the clamp fitting (4).



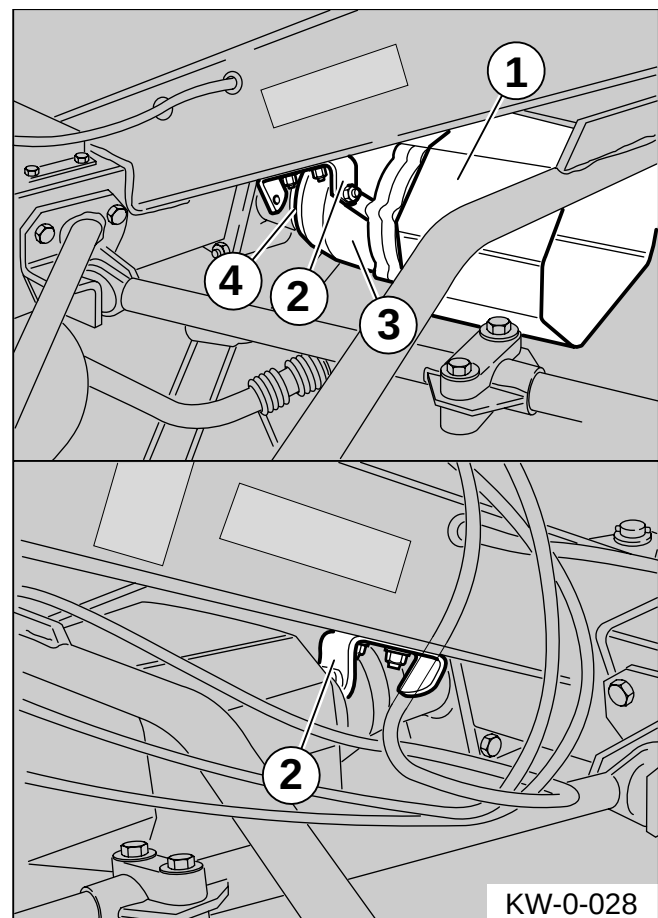
On the KW 7.70 and KW 8.80, the existing PTO shaft guard must be dismantled.

Fix the angled bracket (2) to the designed holes with bolts (5) and nuts on the left and right side of the carrier bar.



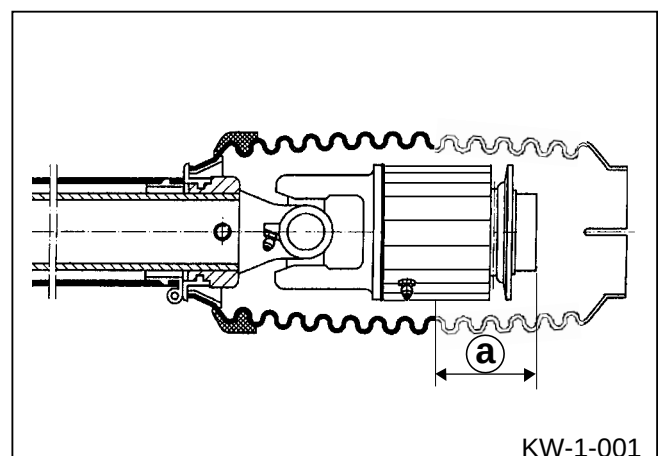
On the KW 5.50, fit the angled brackets in such a way that the short bevelled surface points forwards. This is where the night swathing gearbox is bolted.

Push the night swathing gearbox onto the PTO shaft stub of the rotary tedder and bolt it to the angled brackets.



In case of the types KW 5.50 and KW 6.70, shorten the guard of the pto drive shaft (a = max. 80 mm).

Check PTO shaft length!



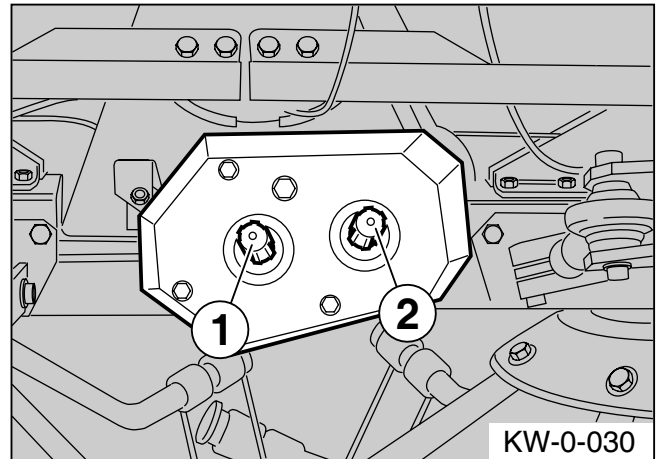
The PTO shaft stup (1) is designed for spreading and tedding. To lay night swathes, push the PTO shaft onto stup (2).



As the swathes are deposited by the same swather discs that are used for tedding, ideal spreading is assured after the swathing process.



It is essential to place a protective cover on the free PTO stup shaft.



7.2 Additional tine loss safety mechanism



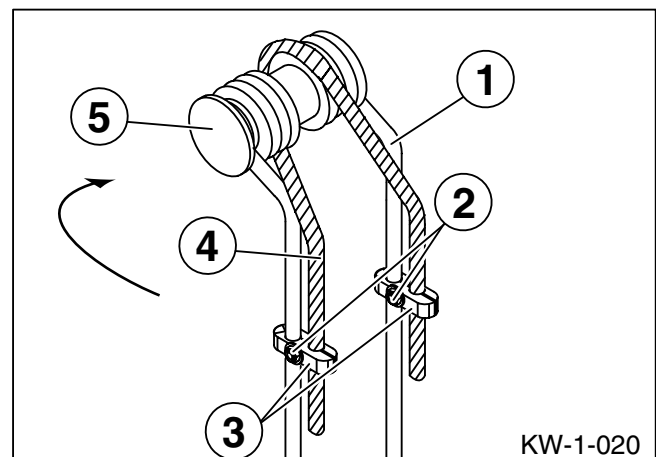
- For all care, maintenance, repair and assembly work on the rotary tedder, always switch off the PTO shaft.
- Switch off the engine and remove the ignition key.
- Protect the tractor and rotary tedder from rolling!

Apart from the standard tine loss safety mechanism(5), it is possible to fit an additional tine securing mechanism. Per tine, it consists of:

- one cable
- two cable clamps, each with
- two flat round washers and safety washers

Fit the cable (4) with the cable clamps (3) to the swather tines (1). Seen in the direction of rotation, the cable must be behind the swather tine. The nuts (2) of the cable clamps must face outwards.

Additional tine loss protection
Order-No.: 153 479 0



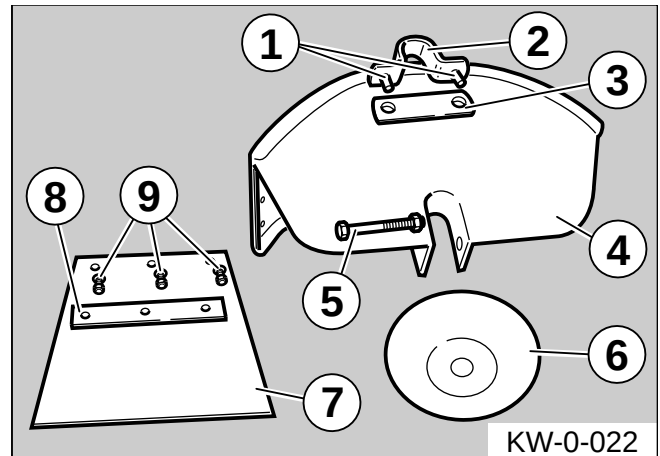
7.3 Wheel guards



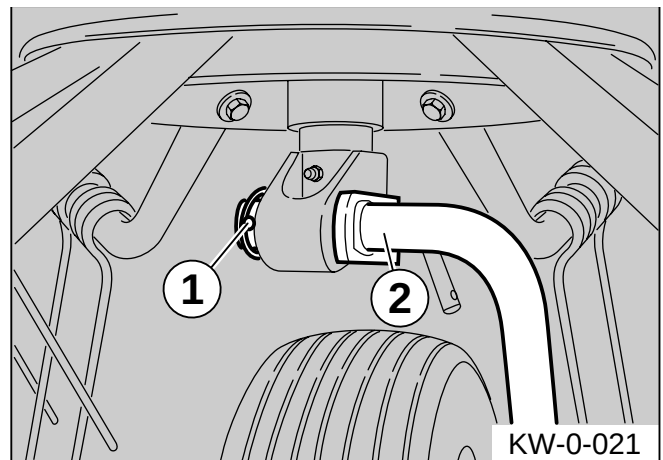
- For all service, maintenance, repair and assembly work on the rotary tedder, always switch off the PTO shaft.
- Switch off the engine and remove the ignition key.
- Protect the tractor and rotary tedder from rolling!
- The raised rotary tedder must be prevented from accidentally being lowered!

A wheel guard is available for the middle wheels. The wheel guard kit consists of:

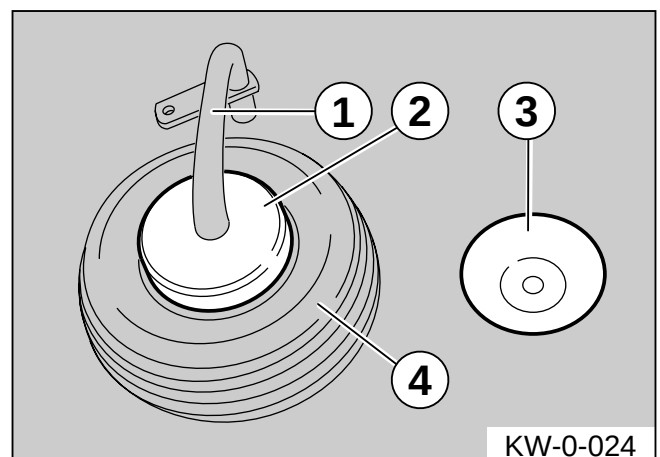
- Wheel cover (4) with screw-on clip (2) and distance plate (3)
- Two M 10 hexagonal bolts with spring washers (1)
- M 8 clamp screw with washer and nut (5)
- Anti-winding disc (6)
- Guard extension (7) with reinforcement strip (8) and three M 6 flat round screws with washers and nuts (9)



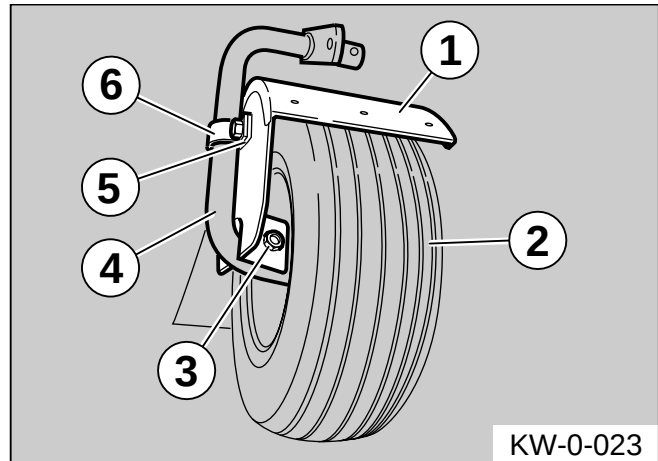
To mount the wheel guards, lift the rotary tedder. Dismantle the wheel bracket (2). To do so, pull out the linch pin (1) and remove the wheel bracket and wheel from the rotary tedder.



The anti-winding pot (2) is replaced by the anti-winding disc (3). To do so, take the wheel (4) off the wheel bracket (1) by dismantling the hub cap and releasing and unscrewing the self-locking nut. Take the wheel off the wheel bracket. Then remove the anti-winding pot. Push the anti-winding disc onto the wheel bracket. Assemble the wheel in the opposite order.

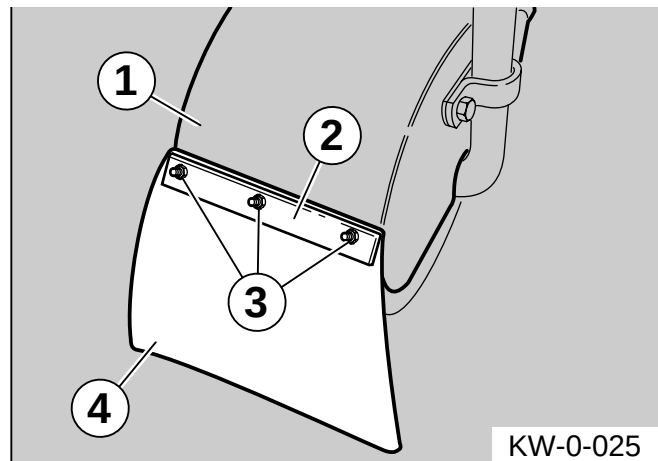


Fit the wheel guard (1) from above onto the wheel bracket (4). The bolt (3) must lie on the wheel bracket. Mount the distance plate (5) between the wheel bracket and the wheel guard. Put the screw-on clip (6) in place and screw it tight. After assembly has been completed, check whether the wheel (2) rubs against the wheel guard. If necessary, align the wheel guard.



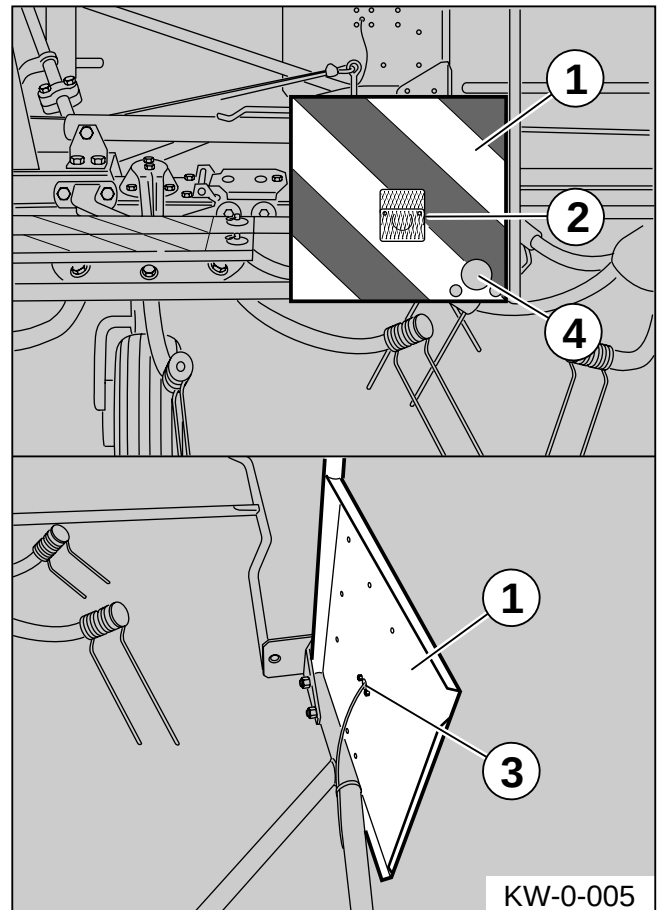
To fit the wheel guard extension, push the flat round screws supplied from the inside through the wheel guard (1). First push the guard extension (4) onto the screws. Secure the reinforcement plate (2) with the securing nuts (3).

After wheel guard has been mounted, remount the undercarriage wheel - ensure the correctness of the spreading angle setting position!

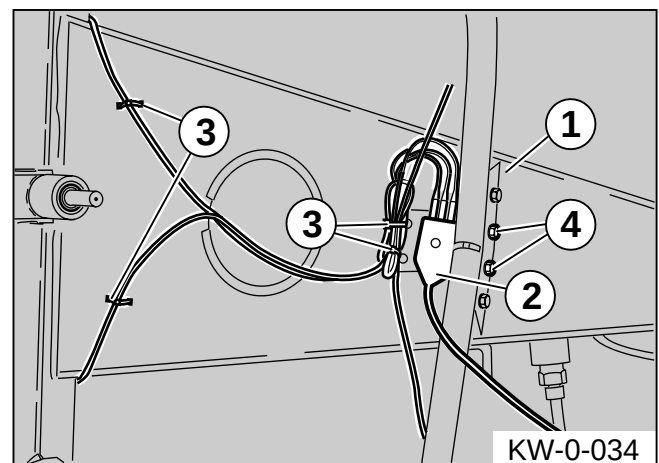


7.4 Fixed lighting

A permanently fixed lighting system can be mounted on all rotary tedders. To fit the system, unscrew the brackets for fitting the removeable lights on the warning signs (1). In the middle of the square warning signs and at the lower end of the oblong warning signs there is a hole (3) through which the supply cable to the lamps (2) can be passed. Next to this hole are two further holes which can be used for screwing the lights in place. Screw back lights (4) onto the rear warning signs as shown in the illustration.

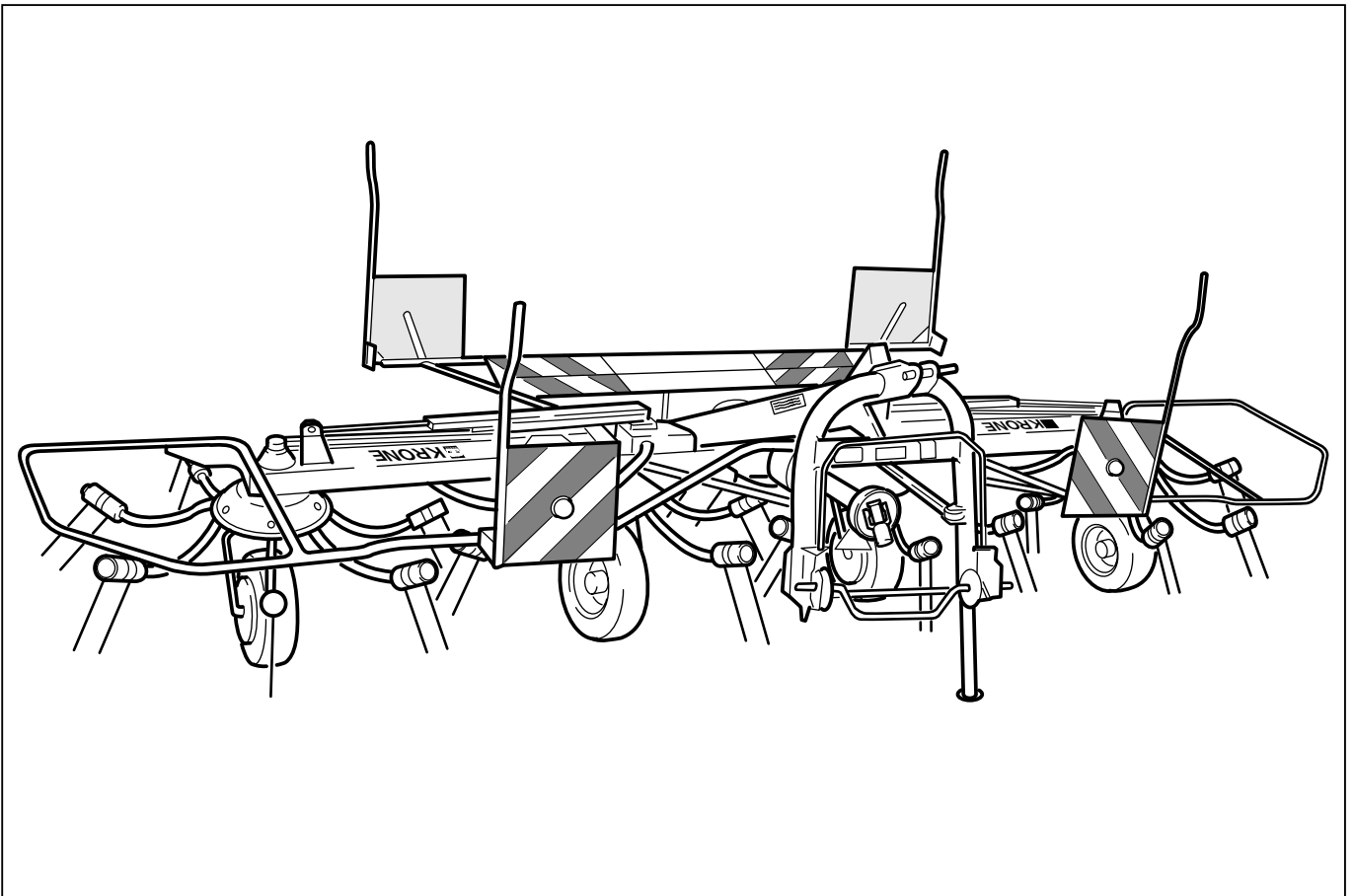


The cables of the lighting system should be routed along the protective frame to a point below the carrier bar (1). Fix the cable to the frame with cable ties. The bracket for the plug connector between the tractor and the light connection cable should be mounted to the carrier bar (4). Connect the plug-in connectors and screw the connectors to the retaining panel. Check that the lighting system works. The cables should also be secured to the carrier bar with cable ties at the holes (3) provided. The illustration shows the carrier bar as seen from below.



Appendix to the Operating Instructions

Assembly instructions for the KW 5.50 / 4x7, KW 6.70 / 6, KW 7.70 / 6x7 and KW 8.80 / 8



The work described on the following pages must only be carried out by authorized specialist dealers.

Because safety devices must be mounted as well, the rotary tedder cannot be put into operation until all the tasks described below have been completely carried out.

1. Special safety instructions



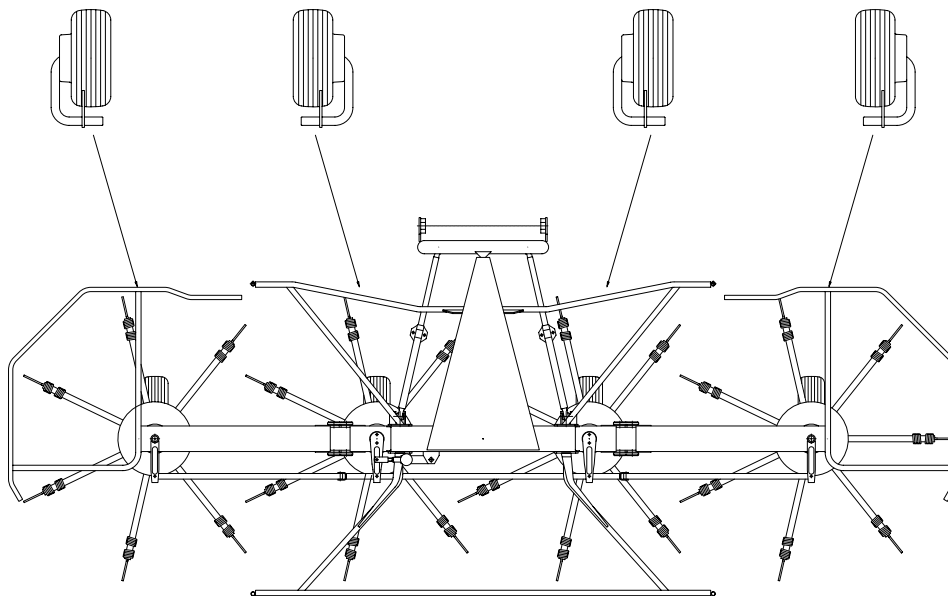
- Place the rotary tedder on a firm, level surface.
- Before starting the rotary tedder, fit all safety equipment.
- When folding the outer discs to working position, make sure that nobody is in the swivel area of the discs.
- Special care is required when mounting the components supplied with the rotary tedder.

2. Preparations

- Dismantle the protective frame that is screwed for the transport to the rotary tedder.
- Take off the PTO shaft.
- Unscrew the tine arms with the tines from the control tube of the border spreading attachment.
- Move the rotary tedder to working position.

3. Mounting the wheels

KW 5.50/4x7



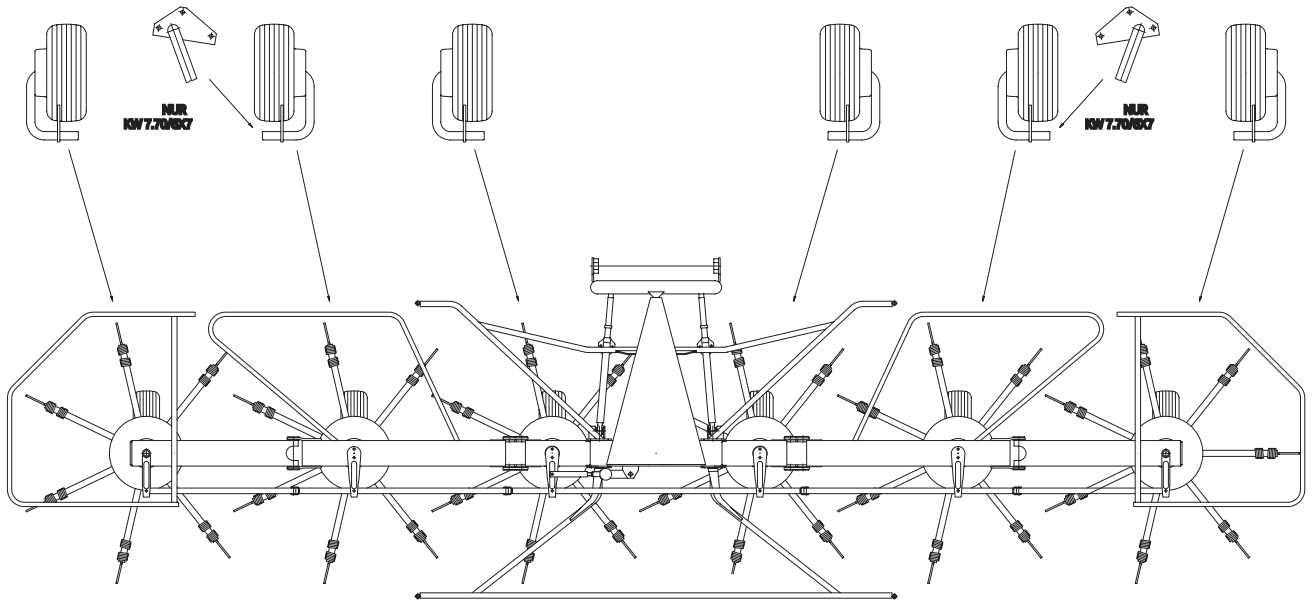
KW-4-009



Make sure that the height adjustment of the wheels is the same

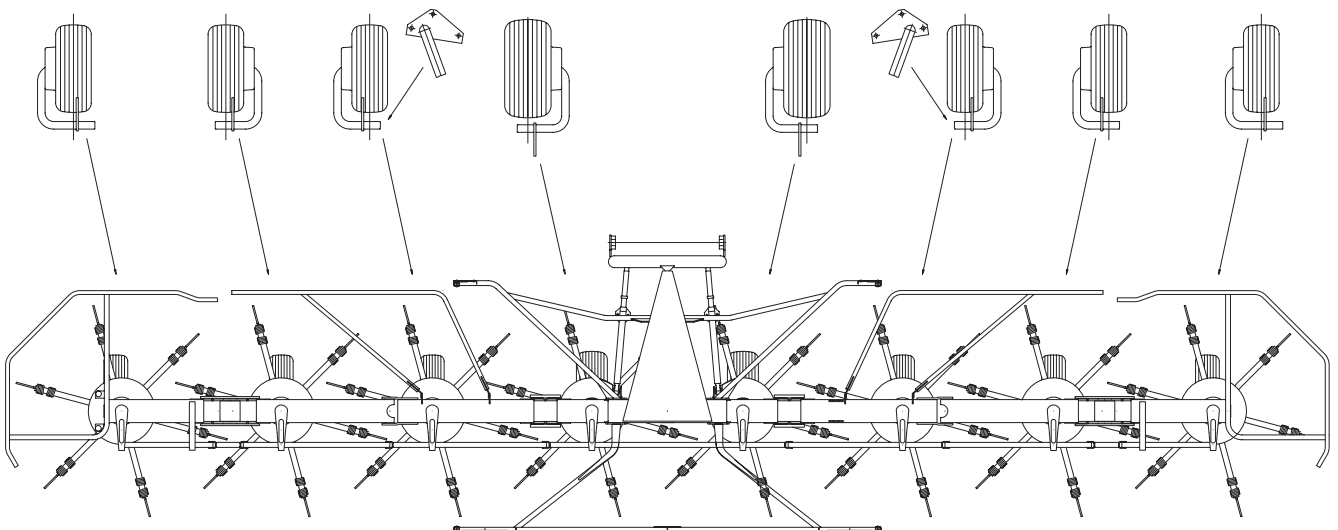
KW 6.70/6

KW 7.70/6x7



KW-4-010

KW 8.80/8



KW-4-011

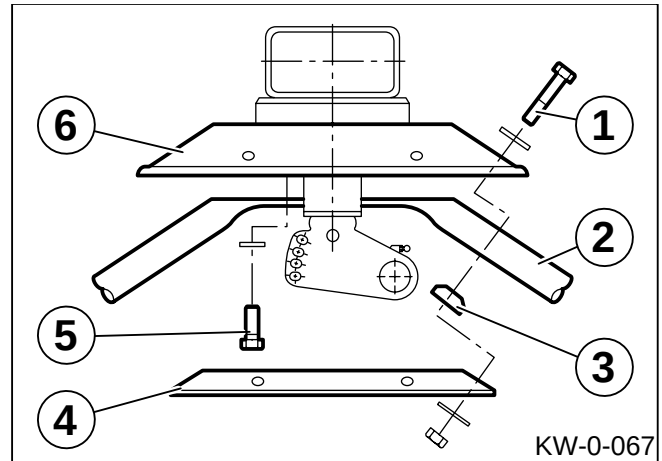
4. Mounting the disc arms to the disc plates



The disc arms that are fitted with the tines must be mounted in accordance with the direction of rotation. Take note of the stickers on the rotary tedder.

- Beige tines = anti-clockwise disc
- Green tines = clockwise disc

Fix the tine arms (2) from below to the disc plates (6) with M16 bolts (5) and spring washers. Do not tighten the bolts. Then insert M12 bolts (1) with washers from above and place them through the hole in the tine arm. Push on the semi-round support (3) as shown in the illustration. When all tine arms have been fitted as described, place the reinforcement ring (4) on the bolts and secure the bolts with nuts and washers. For the torque settings, see chapter 4 "Care and maintenance".

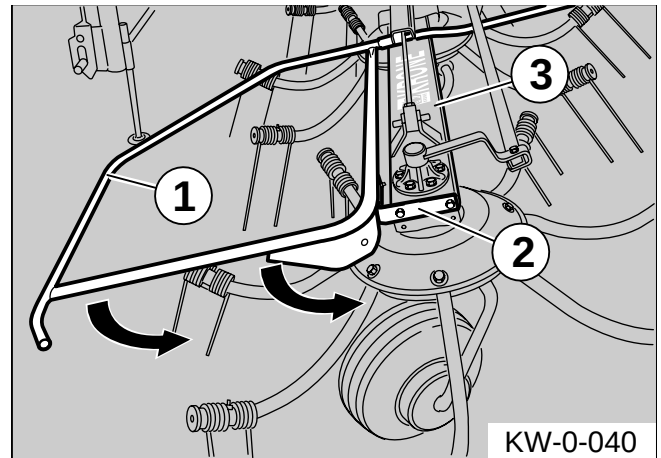


5. Mounting the protective frames

5.1 Mounting the protective frames to the KW 5.50/4x7

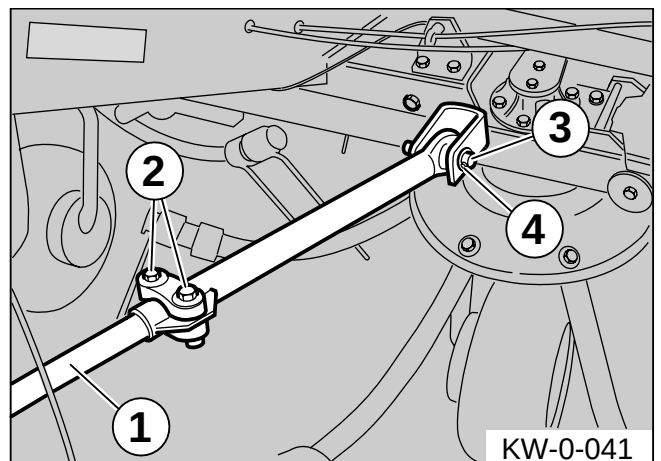
Side protective frames to right and left:

The side protective frames (1) are fixed to the bar (3) with an angled bracket (2). Detach the angled bracket from the protective frame and bar. Then turn the left and right protective frame outwards and mount them on each end with 4 M10 bolts.

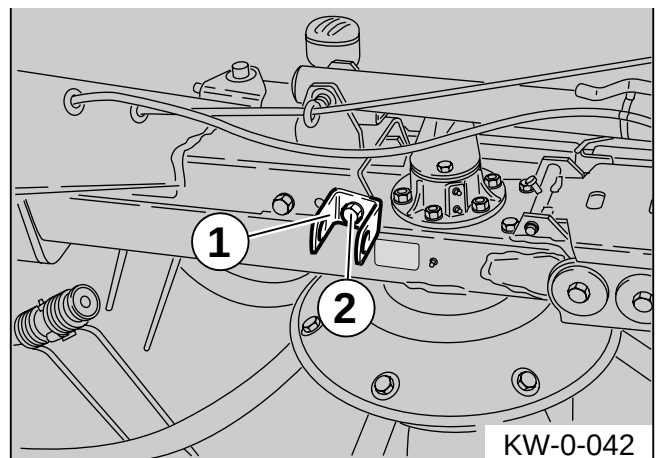


Front protective frames on the left and right:

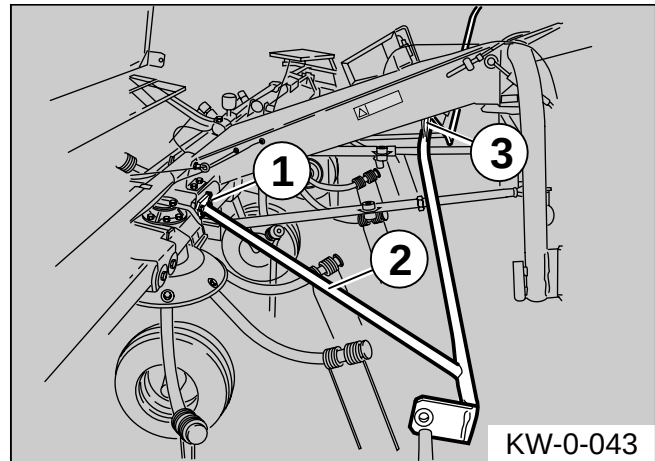
Tighten the bolts (2) on the left and right stabilizer (1) until the stabilizer is fixed. Remove the roll pin (4) and knock out the bolt (3).



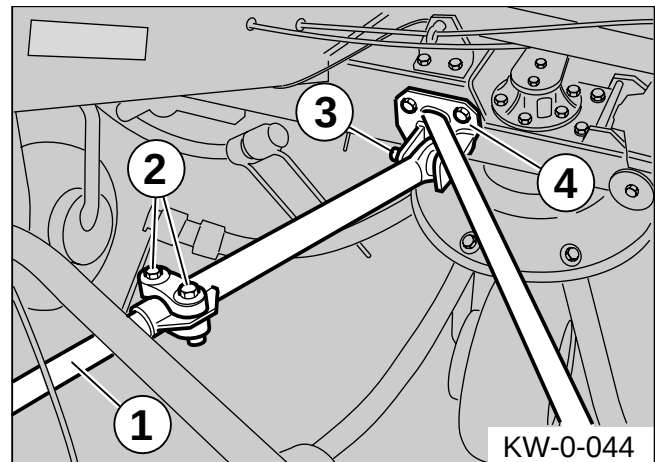
Release the bolt (2) on the left and right side of the machine and detach the transport bracket (1).



Bolt the front protective frame (2) into place in position "1" to the left and right of the carrier bar and in position "3" below the carrier bar.

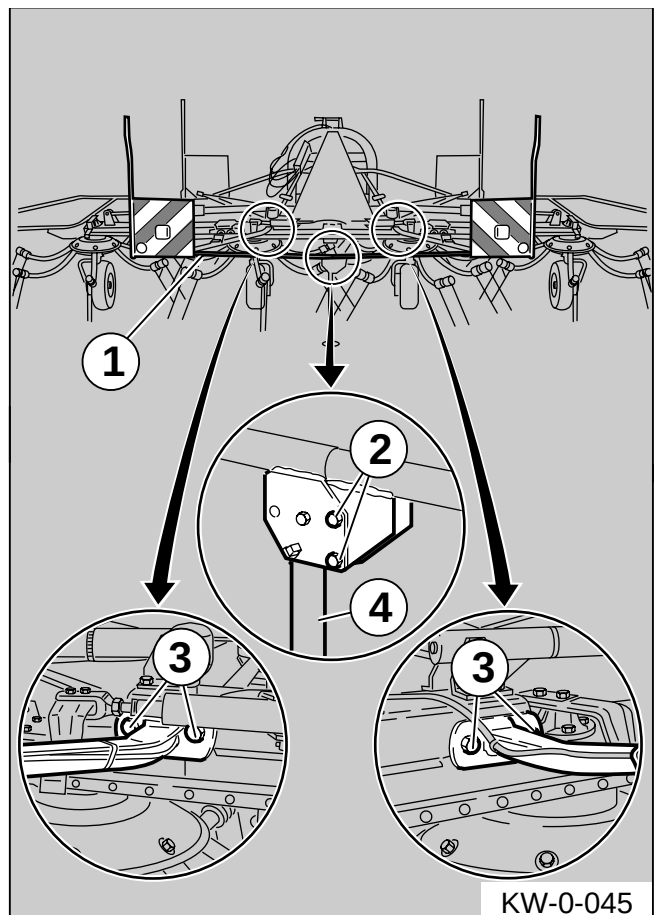


After mounting the front protective frame, fix the stabilizer (1) to the holding bracket (4) of the protective frame with bolts (3) and secure it with a roll pin. Release the adjustment bolts (2) on the stabilizer again.

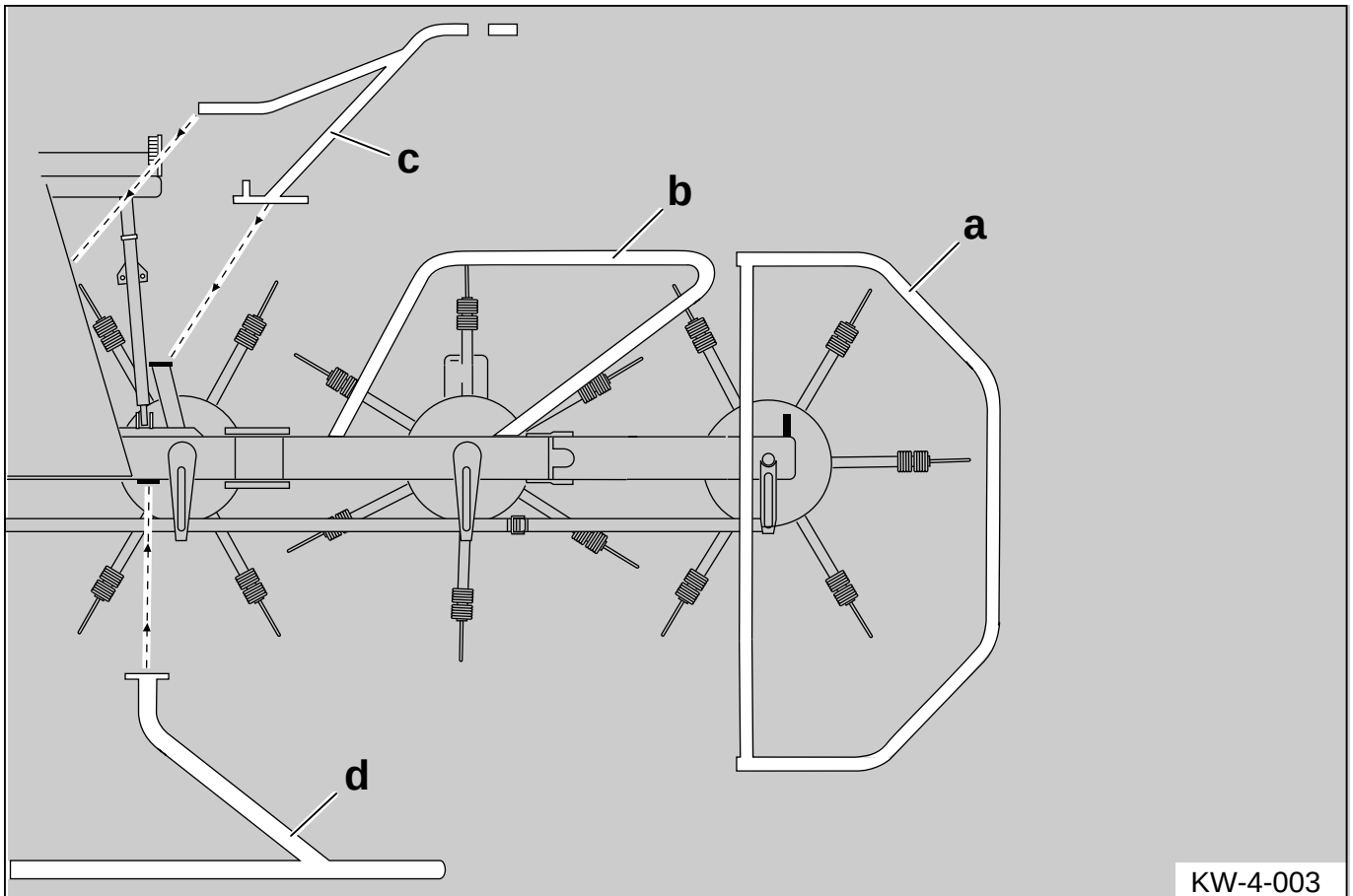


Rear protective frame:

Fix the rear protective frame (1) to the carrier bar with bolts (3). For connecting of the rear protective frames to together use bolts (2) at the support foot (4).

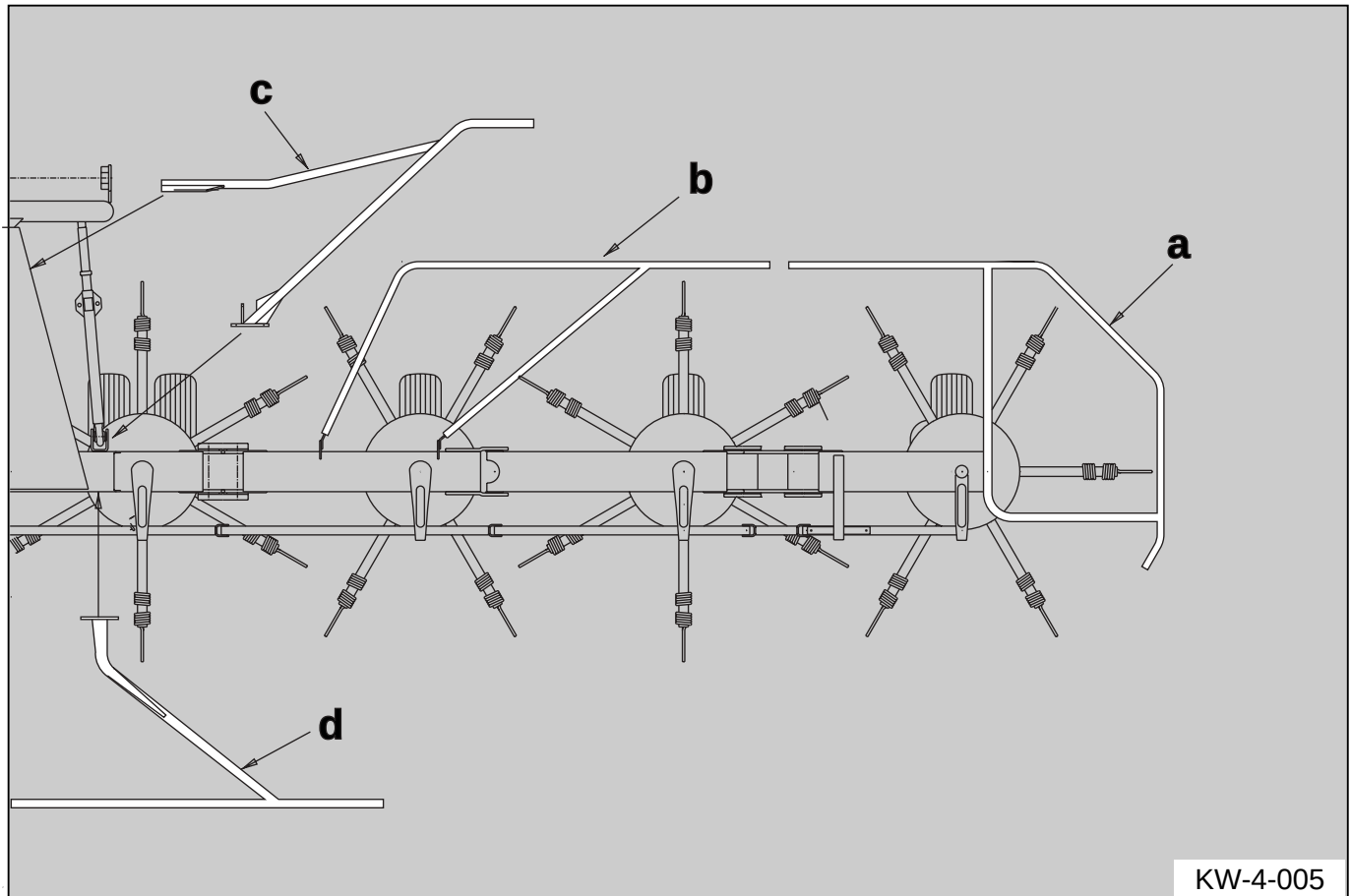


5.2 Mounting the protective frames to KW 6.70 / 6 and KW 7.70 / 6x7



Protective frames "a" and "b" are mounted in the factory. Mounting of the protective frames "**c = front protective frames**" and "**d = rear protective frames**" is carried out as described for the KW 5.50 / 4x7 (see 5.1).

5.3 Mounting of the protective frames to the KW 8.80 / 8

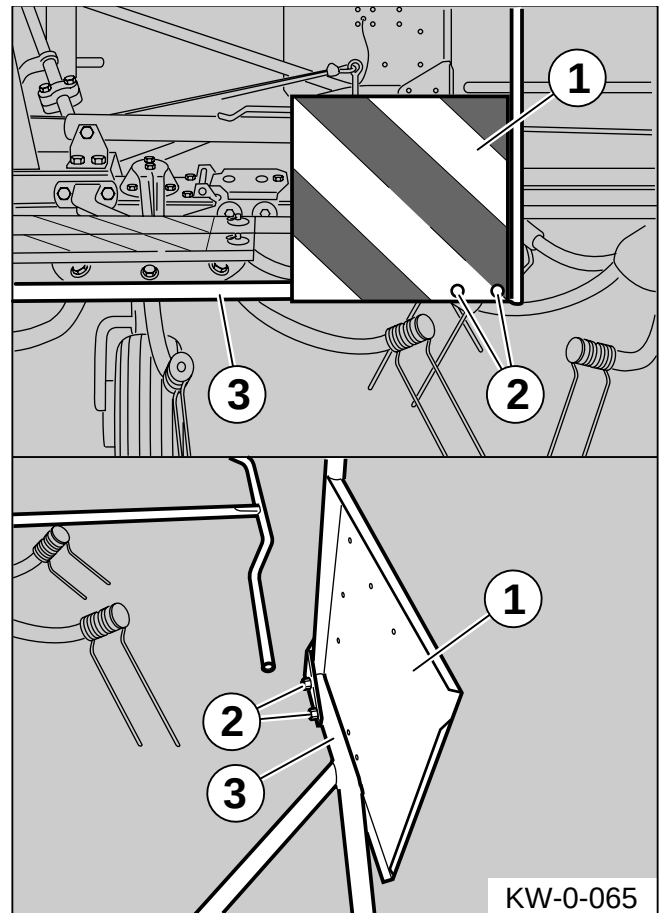


Protective frames "a" and "b" are mounted in the factory. Mounting of the protective frames "**c = front protective frames**" and "**d = rear protective frames**" is carried out as described for the KW 5.50 / 4x7 (see 5.1).

5.4 Mounting the warning signs

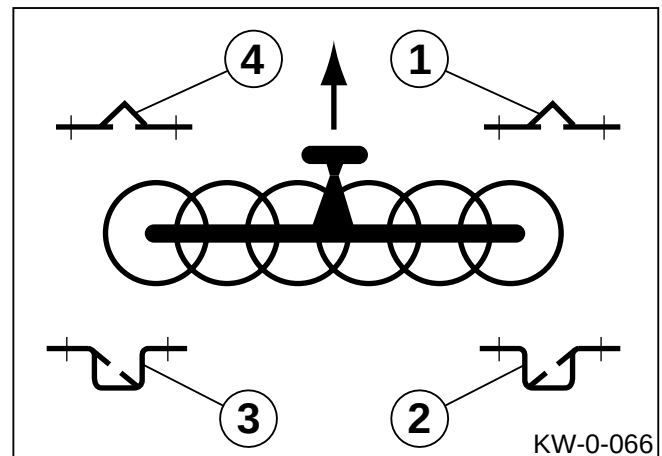
KW 5.50/4x7

The warning signs (1) are fitted from below to the front and rear protective frames (3) and fixed in place with two bolts (2) that are inserted right through.



Light brackets for removeable lights

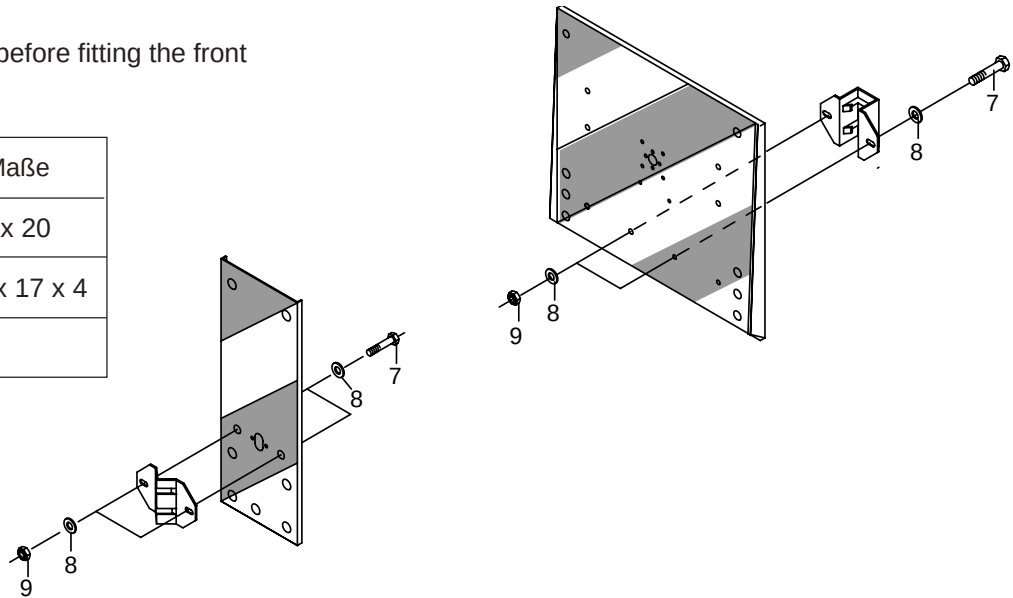
The illustration shows the mounting positions of the front light brackets (1) and (4) and the rear light brackets (2) and (3) on the warning signs. The lights can only be inserted when the brackets have been mounted.



KW 6.70/6, KW 7.70/6x7 and KW 8.80/8

Install the lighting brackets before fitting the front warning panels.

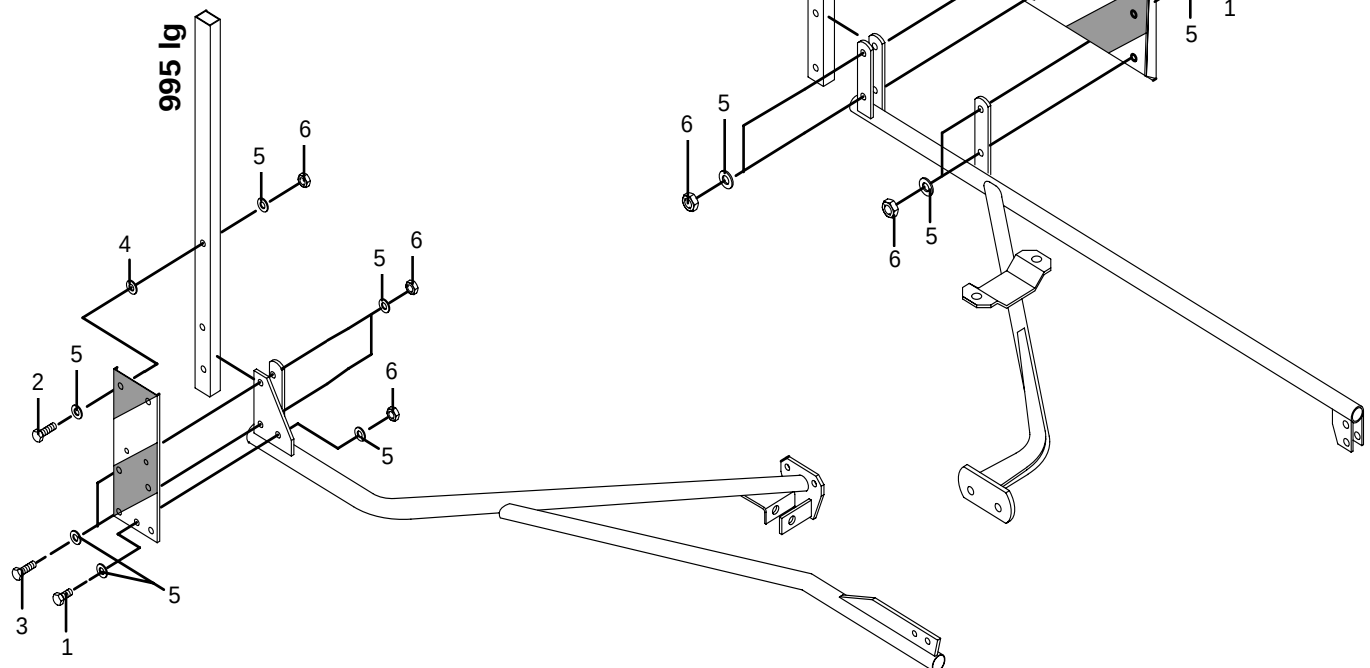
Anzahl	Pos.	Maße
8	⑦	M 8 x 20
16	⑧	8.4 x 17 x 4
8	⑨	M 8



Anzahl	Pos.	Maße
6	①	M 10 x 25
4	②	M 10 x 45
8	③	M 10 x 55
4	④	10.5 x 25 x 4
36	⑤	10.5 x 21 x 2
18	⑥	NM 10



Always mount the warning signs so that the stripes are pointing downwards and showing outwards!





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