

Operator's manual

Read carefully before starting the machine

KN226BGB_A



Disc mower



* K N 2 2 6 B G B A *

---A1025-70B00001 > ---A1025-70B999999

GMD24-GMD28 / HD



Original instructions

KN226BGB_A

- English - 07-2019

1. Dear Owner

In buying a Kuhn machine you have chosen wisely. Into it have gone years of thought, research and improvement. You will find, as have thousands of owners all over the world, that you have the best that engineering skill and actual field testing can produce. You have purchased a dependable machine, but only through proper care and operation can you expect to receive the performance and long service built into it.

This manual contains all the necessary information for you to receive full efficiency from your machine. The performance you get from this machine is largely dependent on how well you read and understand this manual and apply this knowledge. Please **DO NOT ASSUME YOU KNOW HOW TO OPERATE AND MAINTAIN YOUR MACHINE** before reading this manual carefully. **KEEP THIS MANUAL AVAILABLE FOR REFERENCE.** Pass it on to the next owner if you re-sell the machine.

Your KUHN dealer can offer a complete line of genuine KUHN service parts. These parts are manufactured and carefully inspected in the same factory that builds the machine to assure high quality and accurate fitting of any necessary replacements.

■ **About improvements**

We are continually striving to improve our products. We therefore reserve the right to make improvements or changes when it becomes practical to do so, without incurring any obligations to make changes or additions to the equipment sold previously.

■ **Wear parts**

Wearing parts fitted on our machines have been tested in very different situations to optimize their service life. Nevertheless, the service life depends highly on the conditions of use (products to handle, soil, weather conditions, etc...).

■ **Document illustrations**

The illustrations in this manual may be based on one type of machine only. However, all instructions apply to all machines covered in this manual.

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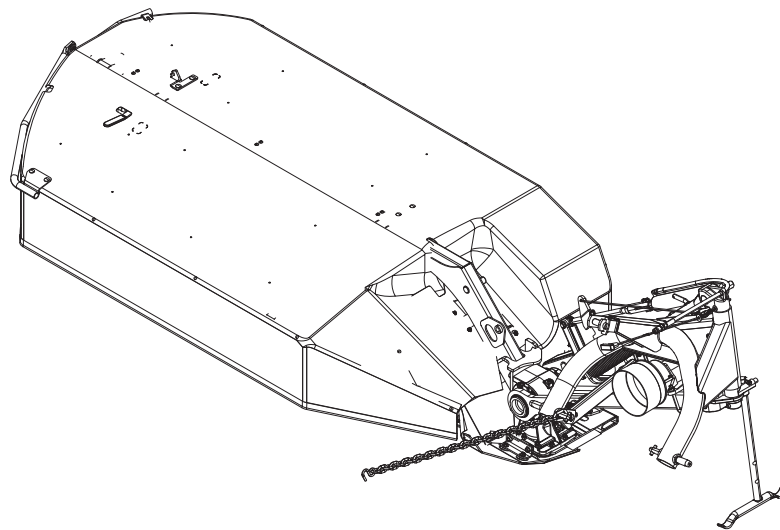
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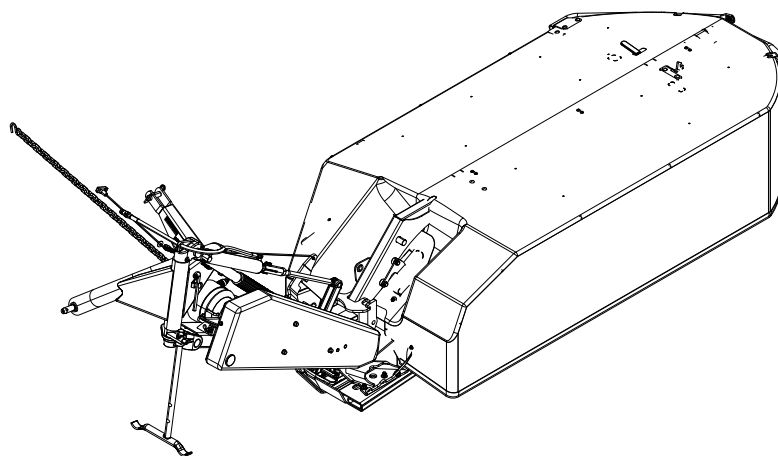
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3. Identification of the machine

3.1 Front view



3.2 Rear view



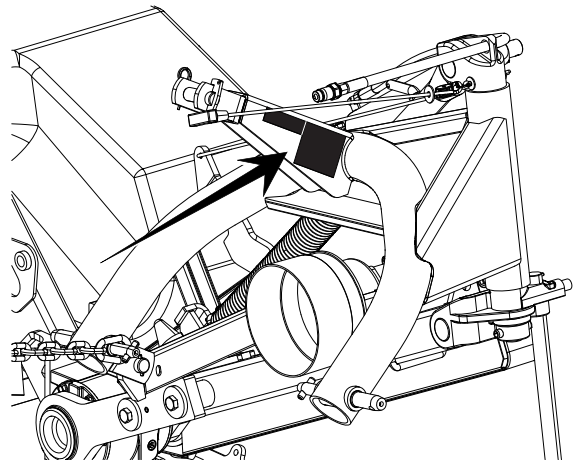
3.3 Identification of the machine



- Do not remove the manufacturer, homologation and marking plates attached to the machine.

3.3.1 Location of the plates

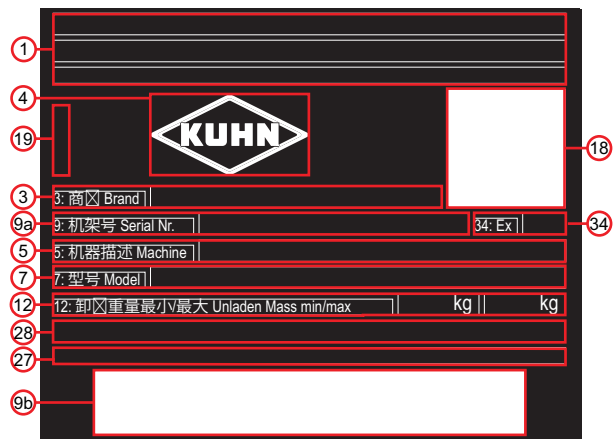
- Please write below the type and serial number of the machine:
 - Serial Number:
- This information is to be given to the Kuhn authorized dealer for any spare parts order or warranty claim.



3.3.2 Description

■ Model identification plate

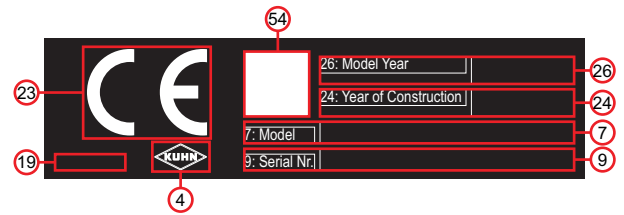
- 1: Manufacturer name and address
- 3: Brand
- 4: KUHN logo
- 5: Description of the machine
- 7: Model
- 9a: Machine serial number
- 9b: Barcode (Machine serial number)
- 12: Weight empty (Minimum/Maximum)
- 18: Data matrix
- 19: Plate reference
- 27: Place of manufacture
- 28: Manufactured by... for...
- 34: Special operation



■ Certification plate (CE)

For machines aimed at countries which are members of the European Union (EC marking).

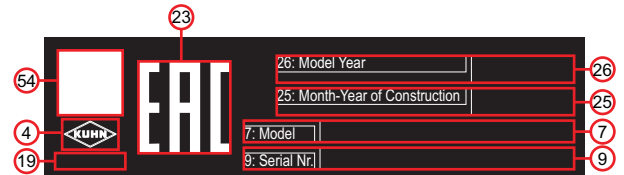
- 4: KUHN logo
- 7: Model
- 9: Machine serial number
- 19: Plate reference
- 23: Logo CE
- 24: Manufacturing year
- 26: Model year
- 54: Data matrix



■ Certification plate (EAC)

For machines aimed at countries member of the Eurasian customs union (EAC marking).

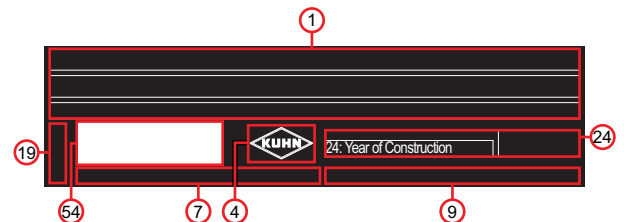
- 4: KUHN logo
- 7: Model
- 9: Machine serial number
- 19: Plate reference
- 23: Logo EAC
- 25: Manufacturing year
- 26: Model year
- 54: Data matrix



■ Importer plate (BRASIL)

For machines to be sent to Brazil.

- 1: Manufacturer name and address
- 4: KUHN logo
- 7: Model
- 9: Machine serial number
- 19: Plate reference
- 24: Manufacturing year
- 54: Data matrix





3.4 Optional equipment

- Tick box corresponding to the equipment fitted on your machine:

GMD24 / HD

- 1 3/8" - 6 spline pto shaft (With free wheel clutch).

GMD28

- High cone disc kit.

GMD24-28 / HD

- Female coupler.
- Raised skid shoes.
- Inner swath disc.
- Inner swath shield.
- Anti-riding plate.
- Side deflector with high cone disk.
- Frame connection arm/cutterbar.
- Lighting and signalling.
- Lateral signalling equipment (Only for France).
- Lighting and signalling (Only for USA).
- Auxiliary compensating spring.
- Toolbox.
- Wear skids.

4. Safety

4.1 Description of symbols used in this document

This symbol indicates a potentially hazardous situation that if not avoided, could result in serious bodily injury.



This symbol is used to identify special instructions or procedures which, if not followed strictly, could result in machinery damage.



This symbol is used to communicate technical information of particular interest.



4.2 Safety instructions

4.2.1 Introduction

The machine must only be operated, maintained and repaired by competent persons who are familiar with machines' specifications and operation and aware of safety regulations for preventing accidents.

The operator must imperatively respect safety instructions in this manual and in the warnings posted on the machine. The operator is also obliged to respect current legislation concerning accident prevention, work safety and public traffic circulation.

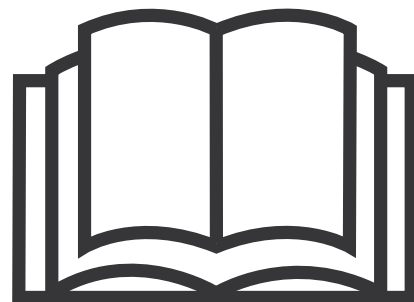
Designated use of the machine also means following operation, maintenance and repair recommendations given by the manufacturer, and using only genuine spare parts, equipment and accessories, as recommended by the manufacturer.

The manufacturer is not held liable for any damage resulting from machine applications other than those specified by the manufacturer. Any use other than the designated operation is at the risk and responsibility of the operator.

The manufacturer is not held liable for any damage or accident resulting from machine modifications carried out by the operator himself or by a third party without previous written agreement from the manufacturer.

4.2.2 Read and follow the safety instructions

- Before using the machine, carefully read all the safety instructions in this manual and the warnings placed on the machine.
- Before starting work, the operator must be familiar with all machine controls, handling devices and their functions. It is too late to learn once work has been started!
- Never let anyone operate the machine who is not trained to do so.
- Should you have any difficulties in understanding any parts of this manual, please contact your KUHN dealer.



4.2.3 Precautions to be taken before carrying out any operations on the machine

- Before leaving the tractor or before adjusting, maintaining or repairing the machine, disengage the PTO drive, turn off the engine, remove ignition key and wait until all moving parts have come to a complete stop and apply park brake.



4.2.4 Precautions to take before using the machine

- Do not wear loose clothing which could become caught up in moving parts.
- Wear the appropriate protective clothing for the work in hand (gloves, shoes, goggles, helmet, ear defenders, etc.).
- Ensure that all operating controls (ropes, cables, rods, etc) are placed so as they cannot be operated unintentionally and cause damage or injury.
- Before operating the machine, check tightness of nuts and bolts, particularly on fixing elements (tines, forks, blades, knives, etc). Retighten if necessary.
- Before operating the machine, ensure that all the safety guards are firmly in place and in good condition. Immediately replace any worn or damaged guard.



4.2.5 Precautions when coupling

- Before attaching the machine, make sure that it cannot accidentally start moving (chock the wheels) and that the parking stand is in the right position.

The machine must only be attached to the hitch points provided for this purpose.

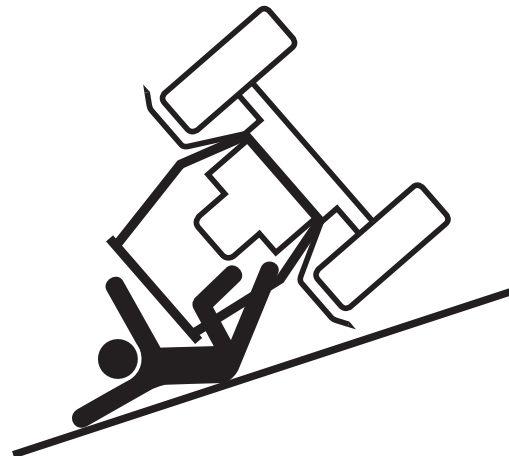
- Never stand between the tractor and the machine when operating the three point linkage.
- Do not stand between the machine and the tractor or on the machine without having first applied the tractor parking brake and placed the gearbox in the neutral position.



4.2.6 Precautions when driving

Tractor handling, stability, performance and braking efficiency are all affected by weight distribution, trailed or mounted implements, additional ballast and driving conditions. It is therefore of great importance that the operator exercises caution in every given situation.

- Groundspeed must be adapted to ground conditions as well as to roads and paths. Always avoid abrupt changes of direction.
- Be particularly cautious when turning corners, paying attention to machine overhang, length, height and weight.
- Never use a narrow track tractor on very uneven or steeply sloping ground.
- Never leave the tractor seat while the machine is operating.
- Carrying people or animals on the machine when working or in transport is strictly forbidden.



4.2.7 Hydraulic circuit

Caution! The hydraulic circuit is under high pressure. Maximum pressure at work: 200 bar (2901 psi).

Before connecting hoses to the tractor hydraulics, ensure that tractor and machine circuits are not under pressure. Before disconnecting a hose, depressurize the hydraulic circuit.

To avoid making incorrect connections, mark hydraulic couplers and corresponding hoses with colors. **WARNING!** Functions could be reversed (for example: lift/lower) and cause accidents.

- Regularly make visual inspection to check if hydraulic hoses are damaged or worn. In case of normal wear, the hydraulic hoses must be replaced every 5 years. Damaged or worn hoses must immediately be replaced. When replacing the hydraulic hoses, only use hoses with the specification recommended by the manufacturer of the machine.

- To locate a leak, use appropriate means. Protect body and hands from liquid under pressure.

Any liquid under pressure (particularly oil from hydraulics) can penetrate the skin and cause severe injury. If injured, see a doctor immediately, there could be danger of infection.

- Before any adjustments, maintenance or repairs are carried out, lower the machine to the ground, depressurize the hydraulics, turn off the engine, remove ignition key and wait until all moving parts have come to a complete stop.



4.2.8 Precautions when driving on public roads

■ Dimensions

- Depending on the dimensions of the machine, contact the relevant authorities to ensure that it can be legally transported on public roads.
- If the machine is over the maximum legal size, follow the local regulations for special transportation of oversize equipment.

■ Transport position

- Before transporting the machine on public roads, place the machine into its transport position, according to the instructions in this manual.

■ Lights and indicators

- Before transporting the machine on public roads, ensure that all legally required lightings and signallings are in place.
- Ensure that lightings and signallings are clean and in good working order. Replace any missing or broken equipment.



- **Always obey current regulations for driving on roads.**

■ Gross weight and weight per axle



The drawings are not legally binding, their only aim is to illustrate the method to use.



- Prior to driving on public roads, check that all criteria are met to be in conformity with the country's regulations:
 - When coupling a tool to the front and/or rear 3-point lift linkage, the maximum authorized payload must not be exceeded.
 - When coupling tools to the front and/or rear 3-point lift linkages, the maximum load on tractor's tires must not be exceeded.
 - The load on the tractor front axle must always represent 20 % of the tractor unladen weight.

For machines with hoppers or tanks:



- If the total unit weight exceeds the tractor Gross Combined Weight Rating in accordance with the country's legislation, empty the hopper to travel on public roads:
 - In any case, we recommend to travel on public roads with empty hoppers and tanks.

Description of symbols:

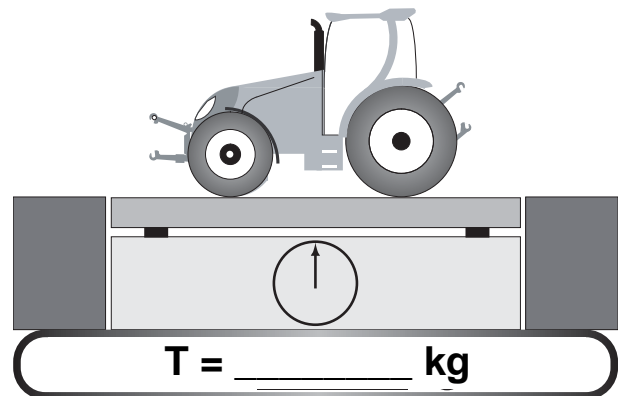
Description	Units	Description
T	kg	Tractor unladen weight
PTAC	kg	Gross Combined Weight Rating
T1	kg	Unladen load on tractor front axle
T2	kg	Empty load on tractor rear axle
t	kg	Axle loads (Tractor + machine)
t1	kg	Load on front axle (Tractor + machine)
t2	kg	Load on rear axle (Tractor + machine)
t1 max	kg	Maximum load authorized on the tractor front axle according to the tires
t2 max	kg	Maximum load authorized on the tractor rear axle according to the tires
M1	kg	Total weight of front tool or front ballast

How to proceed:

- Stage 1:

To measure:

- Tractor tare (T).



• **Stage 2:**

- Couple the machine to the tractor.

To measure:

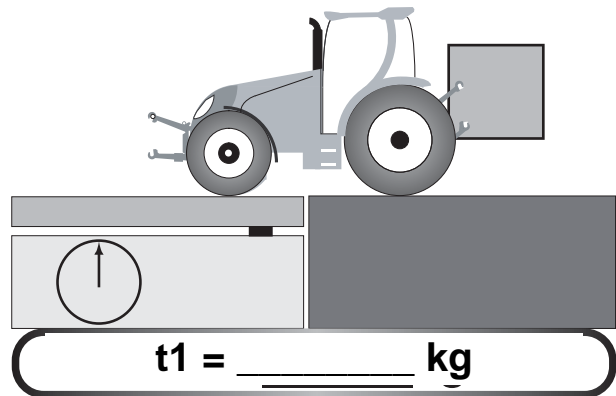
- Load on front axle (t1):
- Tractor + machine (transport position).

To do:

- If the front axle load (t1) is below 20% of the tractor tare (T), add ballast weights (M1) to exceed the minimum load on the front axle.

Example:

- (T) = 7500 kg (16535 lb).
- 20% of T = 1500 kg (3300 lb).
- (t1) = 700 kg (1545 lb).
- 700 kg (1545 lb) < 1500 kg (3300 lb).
- Add ballast weights until the minimum front axle load is exceeded.
- Repeat checking procedure.



$t1 < 20\% T \rightarrow \text{X}$
 $t1 \geq 20\% T \rightarrow \checkmark$

• **Stage 3:**

To measure:

- Total weight (t):
- Tractor + machine (transport position).
- Ballast weights.

Checking:

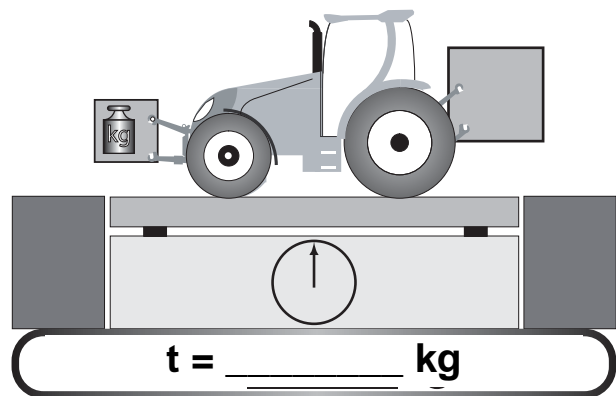
- To go to the next stage:
- Check in the tractor's operator's manual that the value measured is below the tractor's Gross Combined Weight Rating.

To do:

- If $t < PTAC$ go to the next stage.
- If the total unit weight exceeds the tractor Gross Combined Weight Rating in accordance with the country's legislation, empty the hopper to travel on public roads.

Example:

- (t) = 10000 kg (22046 lb).
- PTAC = 13000 kg (28660 lb).
- $t < PTAC$: Go to the next stage.



• **Stage 4:**

To measure:

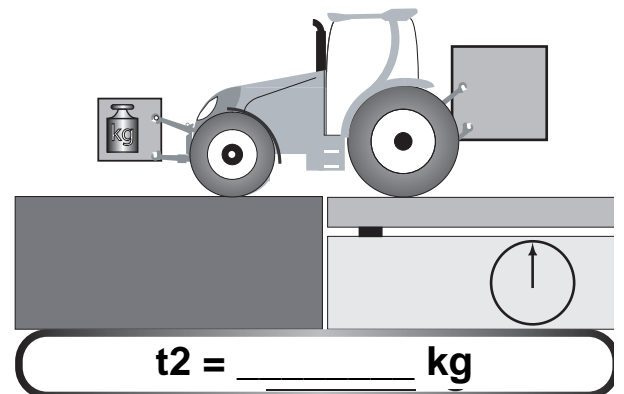
- Load on rear axle (t_2):
- Tractor + machine (transport position).
- Ballast weights.

Checking:

- Check in the tractor's operator's manual that the value measured is below the maximum allowed tractor rear axle load.
- Check that tyre and rim specifications are in conformity with the requirements of the tractor manufacturer.

Example:

- Load on rear axle (t_2) = 8500 kg (18740 lb).
- Check in the tractor's operator's manual that the value measured is below the maximum allowed tractor rear axle load.
- Check that tyre and rim specifications are in conformity with the requirements of the tractor manufacturer.



$$t_2 > t_2 \text{ max} \longrightarrow \times$$

$$t_2 \leq t_2 \text{ max} \longrightarrow \checkmark$$

4.2.9 Maximum speed

- Always keep to the legal speed limit for driving a tractor-machine assembly on public roads.

4.2.10 PTO shaft

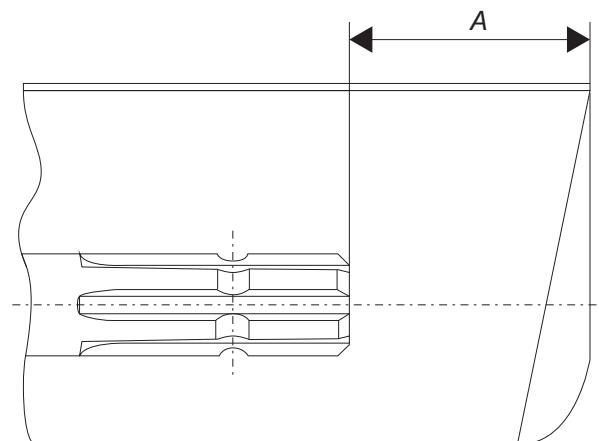
- Use only PTO shafts supplied with the machine or recommended by the machine manufacturer.
- The protective shield of the tractor PTO stub, the PTO shaft guards and the protective shield of the machine input shaft must always be in place and in good condition.
- Make sure that the PTO shaft guards are secured with the safety chains provided. Check that the PTO shaft guard can turn freely a full rotation independent of the shaft.
- Any worn or damaged guards must be replaced immediately. A worn guard or an unprotected PTO shaft can cause a serious or even a lethal accident.

- Do not wear loose clothing that could be caught in the rotating PTO shaft.



- Before attaching or removing a PTO shaft, or before doing any work on the machine, disengage the PTO drive, turn off the engine, remove ignition key and wait for all moving parts to come to a complete stop.
- If the primary PTO shaft is equipped with a torque limiter or a free wheel, these must be fitted on the machine side.
- Ensure that the PTO shaft is always correctly fitted and locked into place.
- Before connecting the PTO shaft, ensure that the PTO speed (rotational frequency) and direction of rotation are in line with the machine manufacturer's recommendations.
- Before engaging the PTO drive, make sure that there are no people or animals near the machine. Never engage the PTO drive when the tractor engine is stopped.

- Do not install any adapter device that results in a portion of the tractor PTO stub, the rotating PTO shaft, or the adapter to be unguarded. The tractor master shield shall overlap the end of the splined shaft and the added adaptor device as outlined in the table.

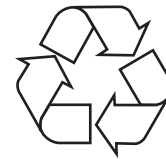


PTO type	Diameter	X splines	A ±5 mm (0.20")
1	35 mm (1.378")	6	85 mm (3.35")
2	36 mm (1.42")	8	85 mm (3.35")
3	35 mm (1.378")	21	85 mm (3.35")
4	45 mm (1.772")	20	100 mm (4.00")
5	44 mm (1.732")	6	100 mm (4.00")

- When uncoupling the machine, rest the PTO shaft on the support specially provided, and replace protective shield on the PTO stub of the tractor.
- Read and follow the instructions in the operator's manual provided with the PTO shaft.

4.2.11 Waste disposal

- Respect the environment! Never spill pollutants (oil, grease, filters, etc.) on the ground, never pour them down the drain and never discard them in any other place where they could pollute the environment. Never throw away or burn a tyre. Always take waste to specialized recycling or waste disposal centers.



4.2.12 Remote controlled components

- Danger of crushing and shearing can exist when components are operated by hydraulic or pneumatic controls. Keep away from these danger zones.

4.2.13 Safety decals

Safety warning decals are placed in pictorial form on various parts of the machine. They are there to warn you of potential dangers and to tell you how to avoid accidents.

- Always keep the safety decals clean and readable, and replace them when they are worn, damaged, missing or illegible.

4.2.14 Precautions for maintenance and repair work

Before leaving the tractor or before adjusting, maintaining or repairing the machine, disengage the PTO drive, turn off the engine, remove ignition key and wait until all moving parts have come to a complete stop and apply park brake.

Rest the machine on the ground, release the pressure from the hydraulic circuit and leave the machine to cool down.

Make sure that the parts of the machine that need to be lifted for maintenance or repair work are firmly propped up.

Before any work is done on the electric circuit or before any electric welding is carried out on the attached machine, disconnect the machine from the tractor electrical circuit. Also disconnect alternator and battery terminals.

Repairs on elements under pressure or tension (springs, pressure accumulators, etc.) must only be carried out by competent persons with regulation equipment.

Wear the appropriate protective clothing for the work in hand (gloves, shoes, goggles, helmet, ear defenders, etc.).

Do not solder, weld or use a blow torch near fluids under pressure or inflammable products.

For your own safety and for correct machine operation, only use original manufacturer parts.

- It is strongly recommended to have your machine checked by your Kuhn dealer after each season, especially tools and their attaching hardware.



4.2.15 Projection of stones and foreign objects

For driver safety, always use a tractor equipped with a cab. Keep the ground to mow free of foreign bodies. Avoid mowing on stony or rocky grounds. If this is not possible, take extra safety precautions, such as:

- Fit polycarbonate screens inside the tractor cab's side and rear windows, or install narrow mesh guards on their exterior.
- Increase the cutting height to avoid contact with stones or rocks.

Never start the machine when there are people nearby.

Even when the machine is used in accordance with its purpose, objects may be projected. Stones and other foreign objects projected by the moving parts can travel a considerable distance. Keep all persons and animals away from the danger zone.

The protection covers help reducing risks of projections. Therefore, make sure that all mower protection devices are in place and good condition prior to using the machine.

- Regularly check the condition of the protection covers. Immediately replace any worn, damaged or missing cover.



4.2.16 Precautions during manoeuvres

- When moving the machine from the transport position to the working position and vice versa, make sure that nobody is within the machine pivoting area.
-



4.2.17 Precautions for machine use

After each use, check the cutting tools (discs, knives) and their attachment hardware in accordance with the instructions given in the present manual. Immediately replace any worn, damaged or missing cutting tool or element. To do this, use the tool outfit supplied with the machine. For your safety, only use genuine parts !

- Regularly check the condition of the protection covers. Immediately replace any worn, damaged or missing cover. Before engaging the PTO, rest the cutterbar on the ground. Make sure all the guards are in place. Keep all persons and animals away from the danger zone.
- Stay a safe distance from the machine when the cutting tools are in movement.
- Never work in reverse.

After disengaging the PTO drive, cuttings tools can continue rotating for some time. Stay away from the machine until all moving parts have come to a complete standstill.

If the machine hits an obstacle, disengage the PTO drive, stop the tractor engine, remove the ignition key and wait for all moving parts to come to a complete standstill. Check the entire machine for any damage before resuming work.

4.2.18 Precautions to take before using the parking stands

134138: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

134139: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

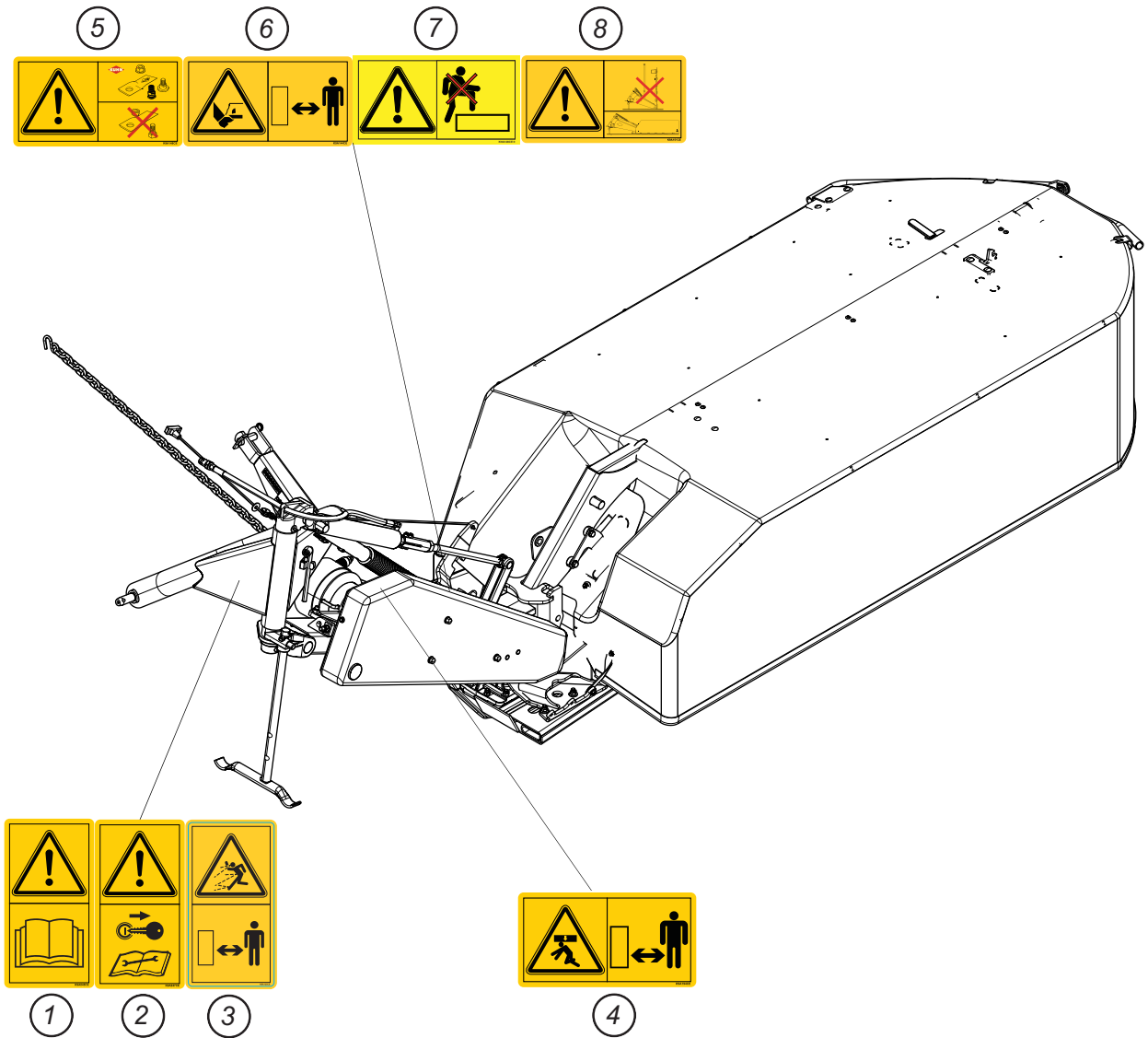
133983: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

133987: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

133988: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

4.3 Location and description of safety decals on the machine

4.3.1 Location of safety decals



4.3.2 Description of safety decals

■ Operating instructions (1)

- The operators' manual contains all the information necessary for using the machine safely. It is imperative to read and comply with all instructions.



■ Working on the machine (2)

- Before leaving the tractor or before adjusting, maintaining or repairing the machine, disengage the PTO drive, turn off the engine, remove ignition key and wait until all moving parts have come to a complete stop and apply park brake.



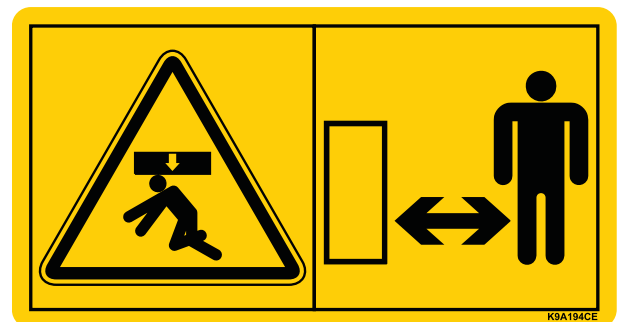
■ **Projections (3)**

- Stones and other debris projected by the moving parts can travel a long distance. The protection covers must always be in position and in good condition. Always stay at a safe distance from the machine.



■ **Body crushing (4)**

- Stay a safe distance from the machine. Crushing hazard.



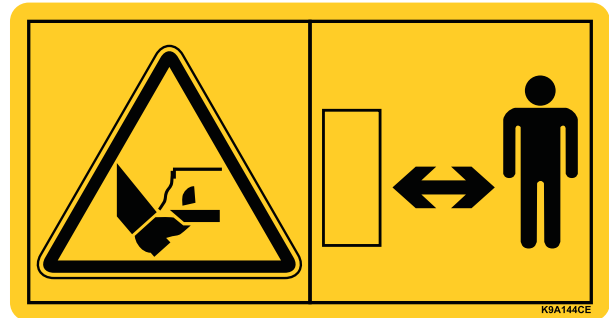
■ **Cutting tools (5)**

- The cutting tools and their attachment hardware meet safety and reliability criteria set by standards and by the manufacturer. For your own safety and for correct machine operation, only use original manufacturer parts.



■ **Rotating cutting tools (6)**

- Keep away from the mower knives all the time the engine is running, the PTO drive engaged and the moving parts have not come to a complete stop.



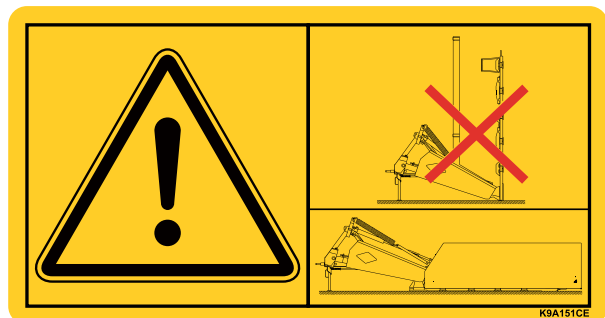
■ **Do not step on the machine (7)**

- Do not step on the machine : Risk of falling or damaging the protection device.



■ **Uncoupling the machine (8)**

- Always park the machine with the cutterbar in horizontal position.



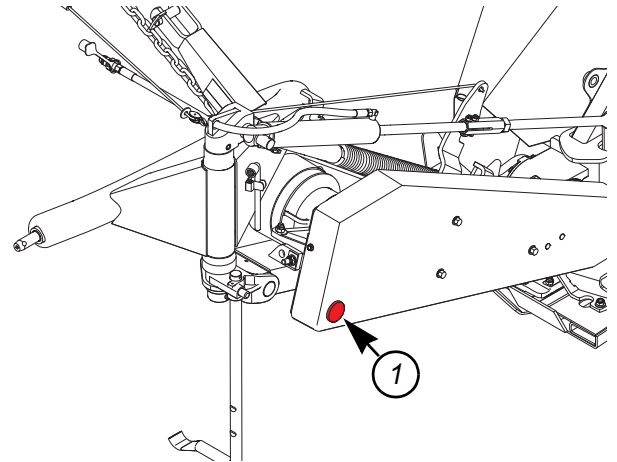
4.4 Road safety equipment and recommendations

The road safety equipment is mounted in the factory or by your authorized Kuhn dealer according to current safety regulations.

- Always keep to the legal speed limit for driving a tractor-machine assembly on public roads.
- Whatever this speed, we recommend, for everyone's safety, not to exceed a speed of 40 km/h (25 mph).

The rear device is made up of the following component:

- 1 red reflector (1).



When optional equipment is used, follow specific procedures mentioned in the related section:



- **Optional equipment / Lighting and signalling.**
- **Optional equipment / Lateral signalling equipment (Only for France).**
- **Optional equipment / Lighting and signalling (Only for USA).**

4.5 Likely critical failures

- 133993: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 133994: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 133995: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

4.6 Incorrect use of the machine by the user

133996: Specific requirements for countries member of the Eurasian Economic Community (EAC marking):

- 133998: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 133999: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134000: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134001: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 139867: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

134002: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

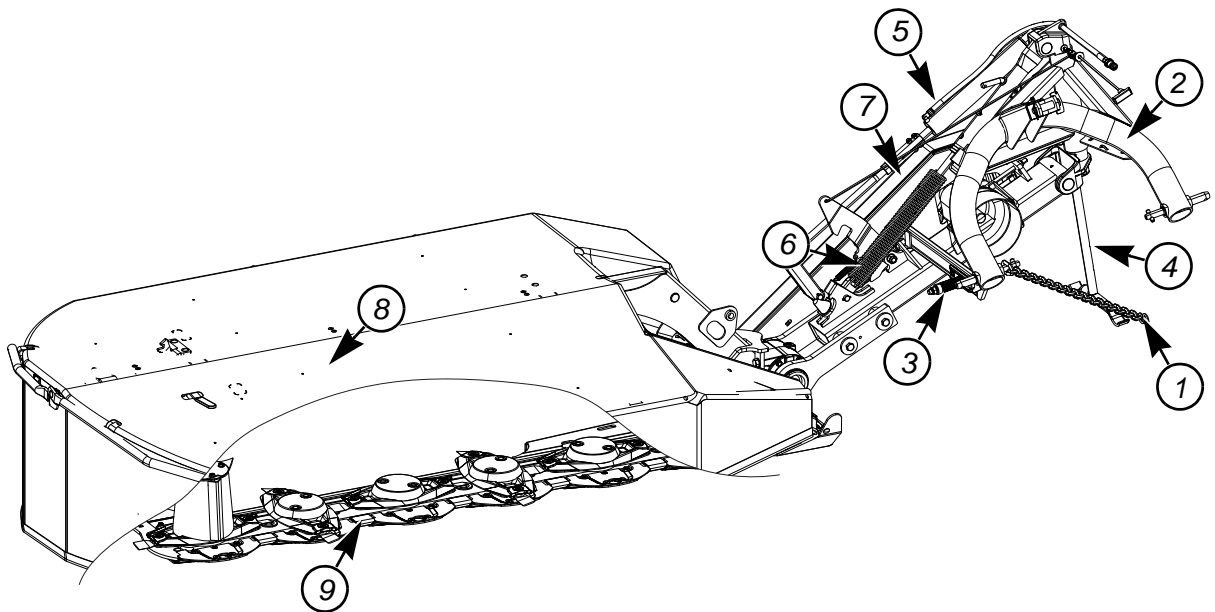
134003: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

4.7 Limit state criteria

- 134006: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
 - 134007: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
 - 134008: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
 - 134009: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
-

5. Machine specifications

5.1 Description and glossary



- | | |
|-----------------------------|-------------------------------|
| 1 : Check chain | 2 : Three-point hitch coupler |
| 3 : Safety breakback | 4 : Parking stand |
| 5 : Work/transport cylinder | 6 : Compensating spring |
| 7 : Belt guard | 8 : Front guard |
| 9 : Cutterbar | |

5.1.1 Designated use of the machine

The **GMD24-GMD28 / HD** mowers must only be used for the purpose for which they were manufactured: mowing on the ground of arable meadows, seeded grassland and permanent meadows for the purpose of harvesting fodder for feeding livestock.



5.2 Technical specifications

	GMD 24	GMD 28
Attachment type	3 point, Category 2	
Number of discs	6	7
Working width	2.44 m (7'10")	2.80 m (9'02")
Width in working position	4.26 m (13'11")	4.67 m (15'04")
Height in working position	1.15 m (3'9")	
Length in working position	1.42 m (4'8")	
Width in transport position	1.72 m (5'8")	
Height in transport position	2.91 m (9'7")	3.32 m (10'11")
Length in transport position	1.18 m (3'11")	
Disc rotational speed	2986/min	
PTO speed	540/min	
Weight:		
• Standard	544 kg (1200 lb)	600 kg (1322 lb)
• "HD" discs	552 kg (1217 lb)	608 kg (1340 lb)
Minimum PTO power requirement	31 kW (42 hp)	37 kW (50 hp)

5.2.1 Designated parameters

134013: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

5.3 Required equipment

The machine is factory fitted with the following equipment:

5.3.1 PTO shaft

GMD24 / HD:

- 1 3/8" - 6 spline pto shaft.

or

GMD24 - GMD28 / HD:

- 1 3/8" - 6 spline pto shaft (With free wheel clutch).

or

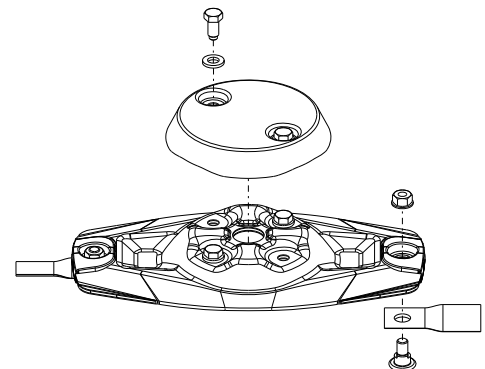
GMD24 - GMD28 / HD:

- 32 x 38 - 8 spline pto shaft.

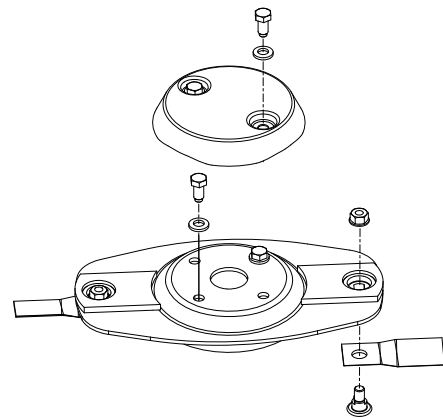
5.3.2 Cutter bar

■ Knife attachment per bolt and nut

- Standard



- "HD" discs



5.4 Sound levels

Sound levels have been measured in accordance with the measuring methods as defined in:

- **NF EN ISO 4254-1 «Agricultural machinery - Safety - Part 1: General requirements».**

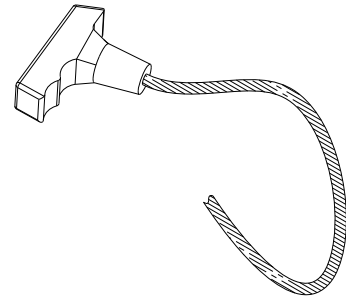
Weighted equivalent continuous acoustic pressure level at the driver's seat (closed cabin) L (A) eq:

- Tractor only: **76 dB(A).**
- Tractor + machine: **80.3 dB(A).**

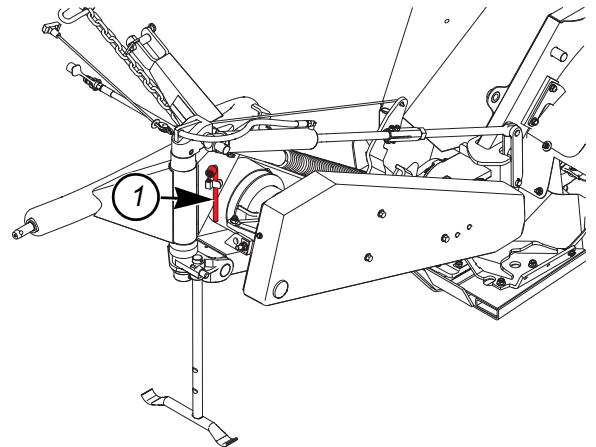
6. Putting into service

6.1 Description of control elements

The machine is fitted with a release cord operated from the tractor cab.



The machine is supplied with an 18 mm box wrench (1) to carry out certain adjustment and maintenance tasks.

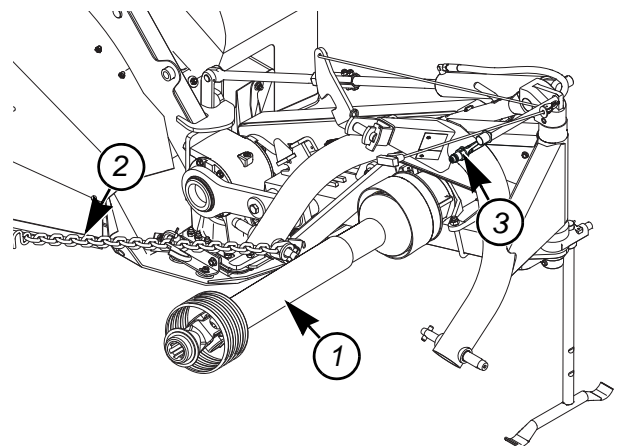


6.2 Coupling and uncoupling

The machine adapts to tractors fitted with a 3 point linkage category 2.

6.2.1 Description of coupling elements

- A PTO shaft 1 3/8" - 6 splines (1).
- A check chain (2).
- One hydraulic hose which controls the machine transport/work position setting (3).



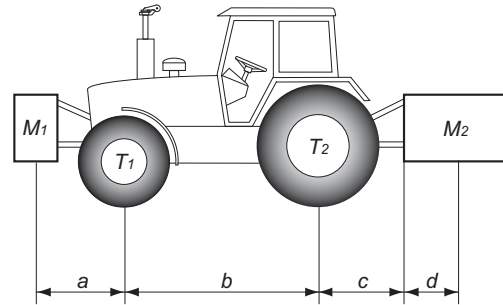
6.2.2 Preparing the tractor



- Check that the tractor's authorized gross weight as well as its lift capacity and maximum weight per axle are not exceeded.

See section:

- Safety / Safety instructions / Precautions when driving on public roads.
- Appendix.



The tractor must be fitted with lower link stabilizers.

- Select the tractor speed of 540/min.
- The tractor PTO must rotate at a speed of 540/min.

The tractor must be equipped with a single-acting hydraulic outlet.



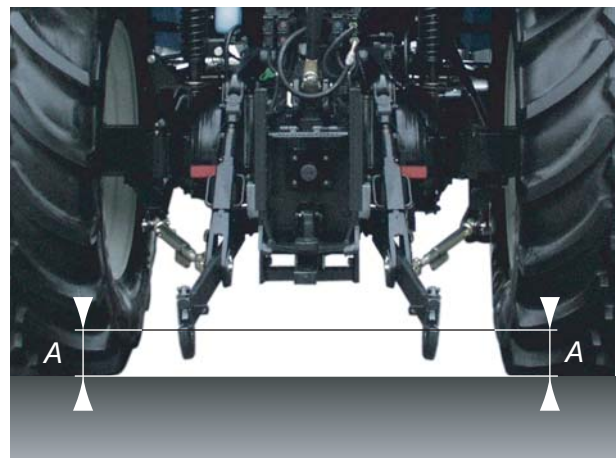
- Position the machine on level hard ground.

■ Tyre pressure

- Check tyre pressure (Left side = Right side).

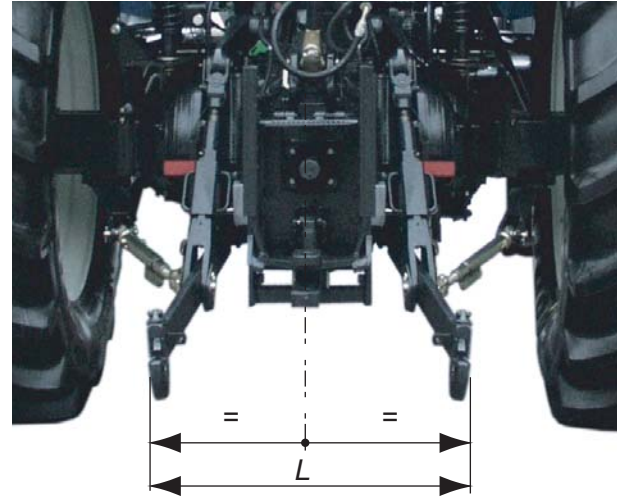
■ Parallelism of lower linkage arms

- Adjust tractor lift rods so that lower linkage arms are at equal height from ground.



■ **Lateral adjustment of the lower linkage arms**

- Distribute the play on each side of the lift linkage.
- Check that the stabilisers function properly (Adjustment, Locking/Unlocking).



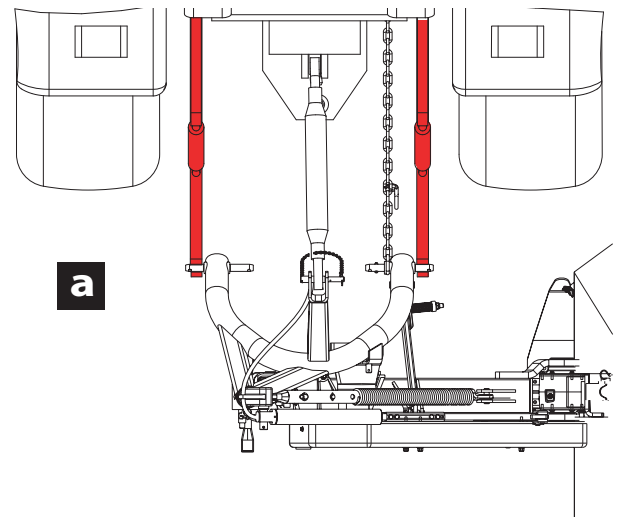
6.2.3 Preparing the machine

■ **Linkage adjustment**

The machine adapts to tractors fitted with a 3 point linkage category 2.

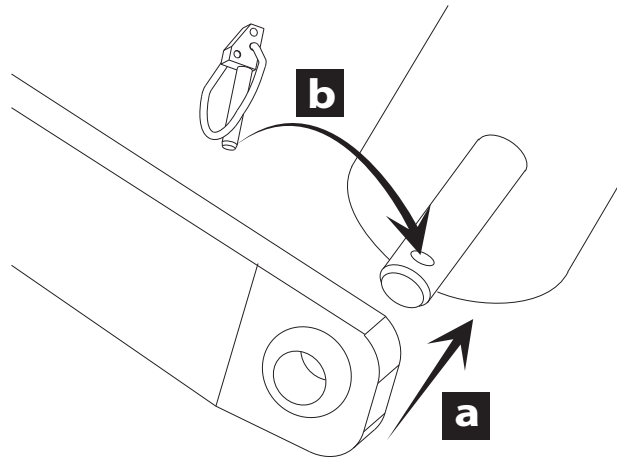
3 point, Category 2:

- Place lower links in position a.

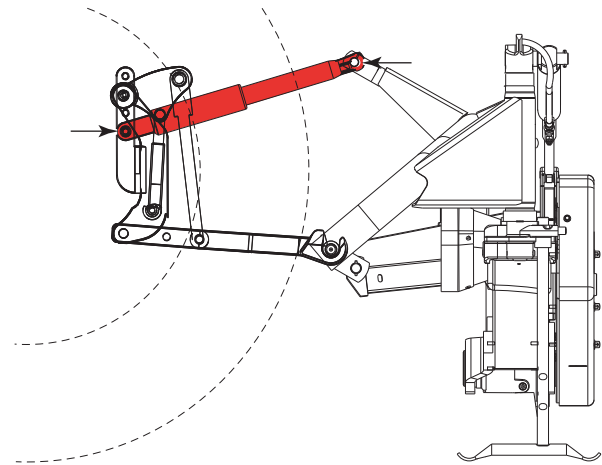


6.2.4 Coupling the machine

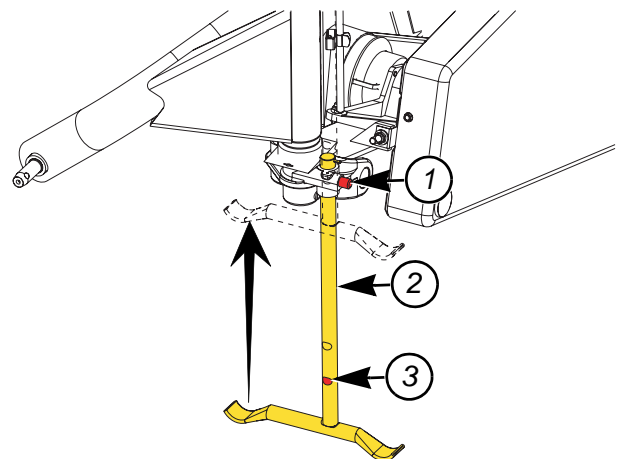
- Lower the tractor three-point linkage.
- Attach lower links to the hitch pins on either sides of the machine (a).
- Secure each hitch pin with lynch pin (b).



- Attach top link.

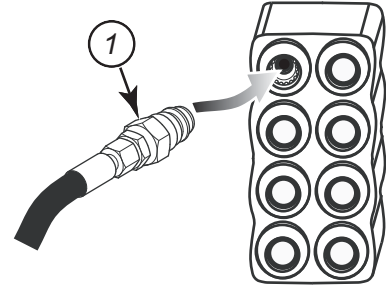


- Lift the machine using the tractor lift linkage until the parking stand no longer rests on the ground.
- Press push-button (1) and retract parking stand (2) until push-button engages in position (3).
- Lock tractor lower link stabilisers.



6.2.5 Hydraulic connections

- Connect the mowing unit lift cylinder to a single acting valve.



6.2.6 Electrical connection



When optional equipment is used, follow specific procedures mentioned in the related section:

- Optional equipment / Lighting and signalling.

6.2.7 Check chain

- Fit check chain.



- See section:

- Putting into service / Coupling and uncoupling / Adjusting the machine / Frame height and check chains.

6.2.8 Primary PTO shaft



Before using the machine for the first time:

- Grease the transmission.
- Check overlap of the u-joint drive shaft and adjust length if necessary to avoid any premature wear.

The direction of rotation is shown on a decal.

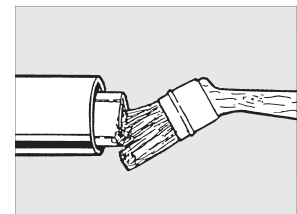
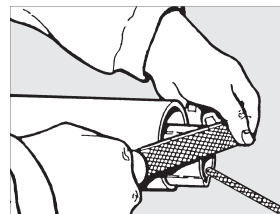
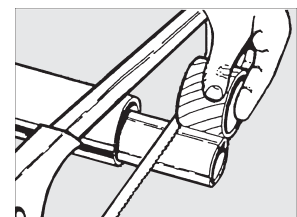
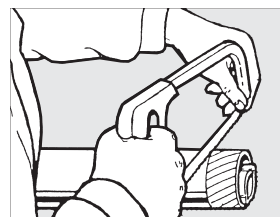
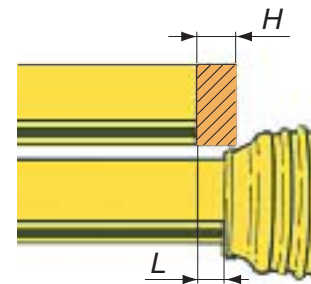
- The tractor PTO must rotate at a speed of 540/min.



- Separate the two half PTO shafts and connect them to the machine's input shaft and to the tractor PTO stub.
- Check the length of the PTO shaft:
 - When the PTO shaft is in its maximum overlap position (retracted), tubes should not butt against the yokes. Keep a minimum safety travel L of 25 mm (1").
 - When extended to the maximum, the tube overlap must not be below 250 mm (10").

If this is not the case:

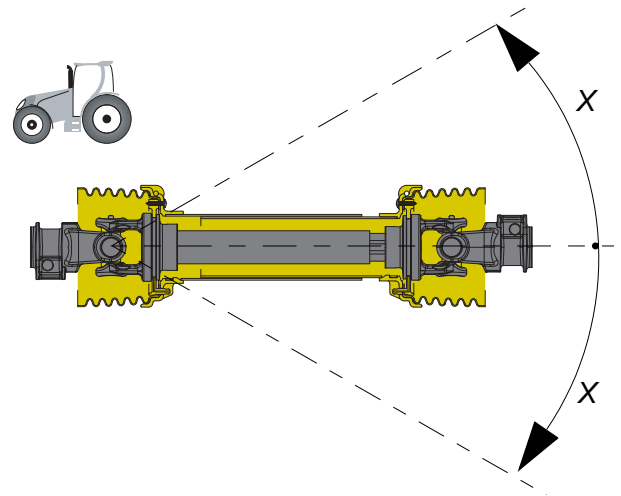
- Mark length (H) to cut when the transmission is the maximum overlap position.
- Shorten the guard tubes and the transmission tubes by the same length.
- Bevel and clean the tubes.
- Grease the inside of the outer tube.



Never operate the PTO shaft at an angle X exceeding 30°.



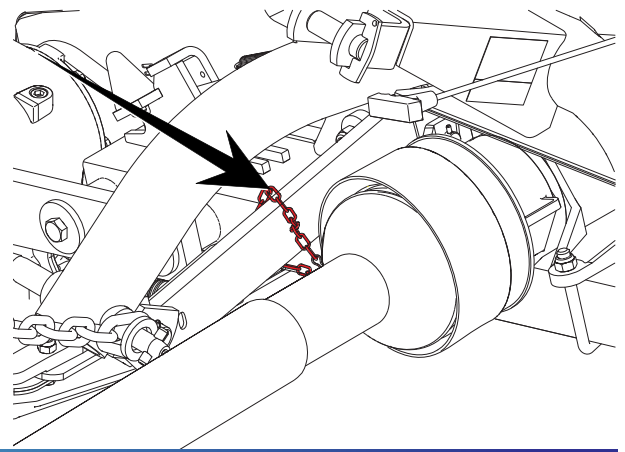
To avoid serious accidents, the PTO drive shaft guards must be properly in place and fixed with the chains provided.



- Attach PTO shaft guard using chain provided in order to prevent it from rotating.



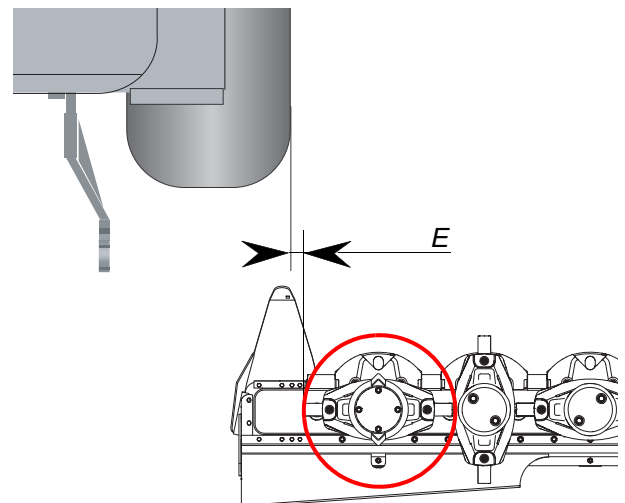
- Immediately replace any worn or damaged guard.



6.2.9 Adjusting the machine

■ Positioning of lower links

- Measure dimension E.
- Adjust the side stabilizers of the tractor's lower links to obtain a measure E of 50 mm (2").



■ **Hitch pin parallelism.**

From the working position:

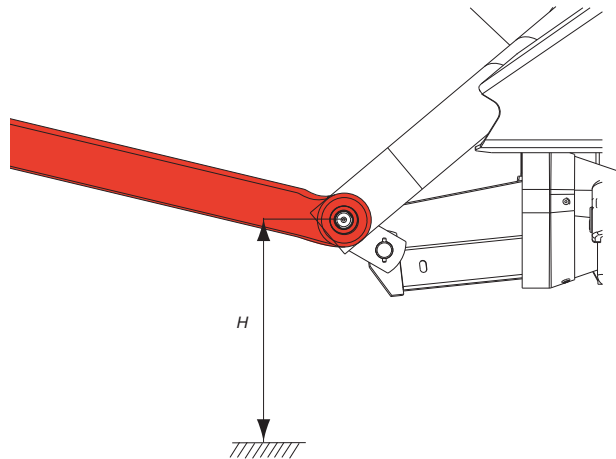
- Measure and adjust the height of the hitch pins until the same measure is obtained on each side:
 - A = B = 450 mm (1'6").



■ **Frame height and check chains**

Tractor fitted with a hydraulic position control function:

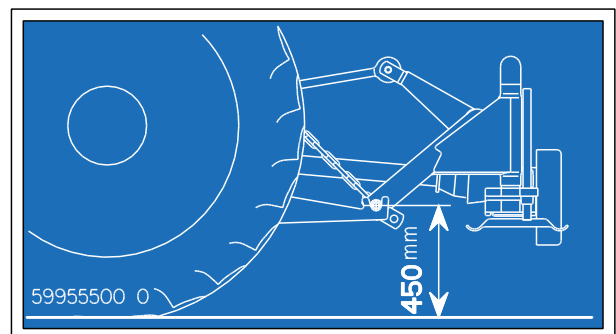
- Lower the tractor lift to obtain a distance of $H = 450$ mm (1'6") between the Hitch pin axis and the ground.
- Note the corresponding lever position in the tractor cab.



It is not necessary to use the check chain supplied with the machine.

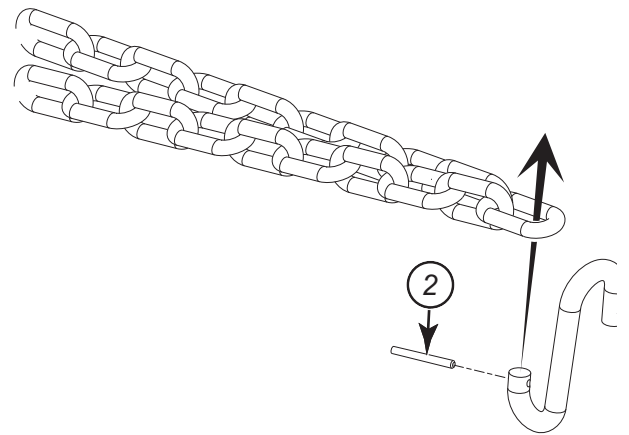


- Refer to the decal fitted on the machine to check the distance between the hitch pins and the ground.

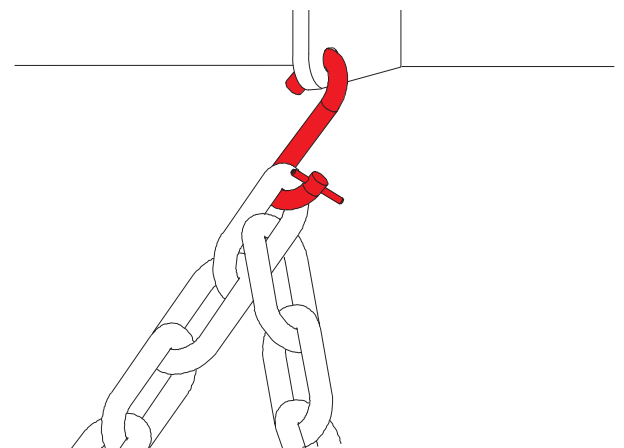


Tractor not fitted with a hydraulic position control function:

- Lower the tractor lift to obtain a distance of $H = 450$ mm (1'6") between the Hitch pin axis and the ground:
 - Insert hook (1) in check chain link corresponding to the required frame height and lock using roll pin (2).



- Attach each check chain with its hook supplied with the machine to one of the upper free holes at the tractor's top link attachment clevis.
- Lower the machine until the check chain is under tension.



The tractor lift linkage is in working position.

The height is correct when:

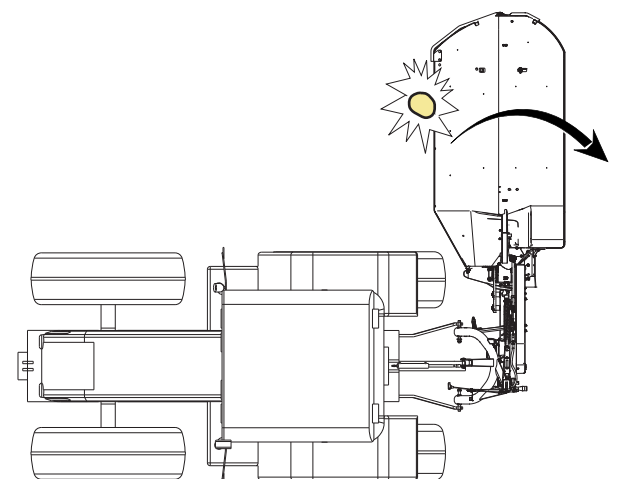
- The cutterbar is resting on the ground.
- The check chain is under tension.
- The distance H equals 450 mm (1'6").
- The 2 hitch pins are parallel to the ground.

■ **Safety breakback**

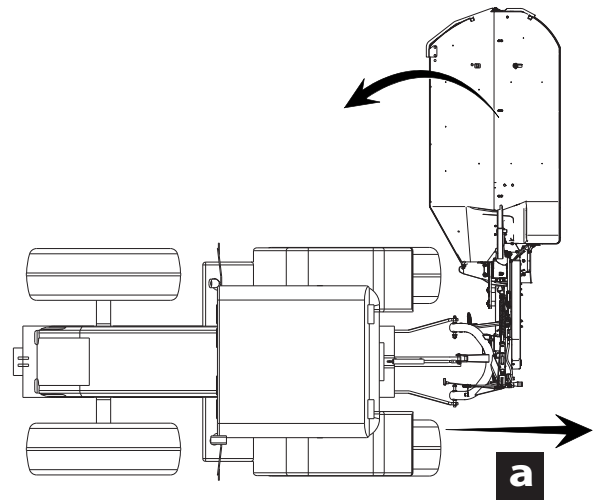
On hitting an obstacle, the safety breakback causes the cutterbar to pivot rearwards.



- If the machine hits an obstacle, disengage the PTO drive, stop the tractor engine, remove the ignition key and wait for all moving parts to come to a complete standstill.
- In case an obstacle has been struck, check that the mowing unit has not been damaged.



The safety breakback is reset by reversing (a).



- If the safety breakback releases after reset, tighten screw (1) to increase spring washer compression.

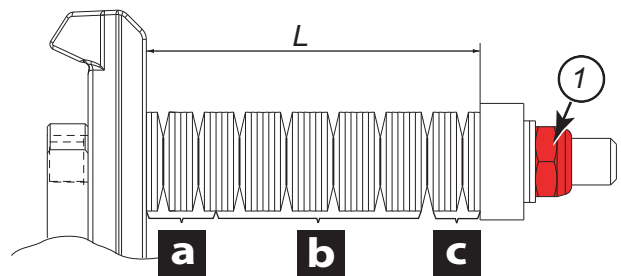
Basic adjustments:

L = 94 mm (3.7").

a = 4 times 2 washers.

b = 9 times 3 washers.

c = 3 times 2 washers.



6.2.10 Uncoupling the machine

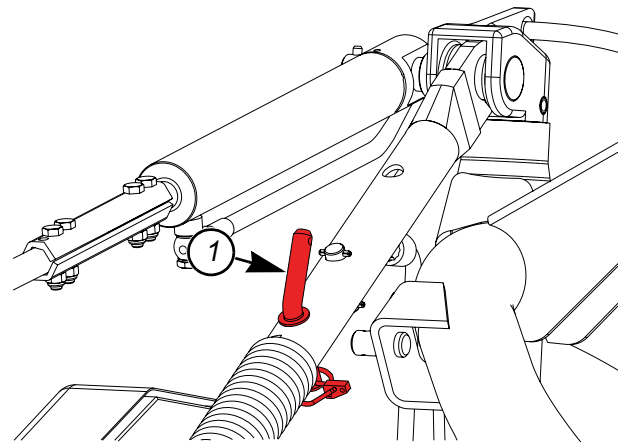


- For tractors not fitted with a hydraulic position control function, unhook check chain.

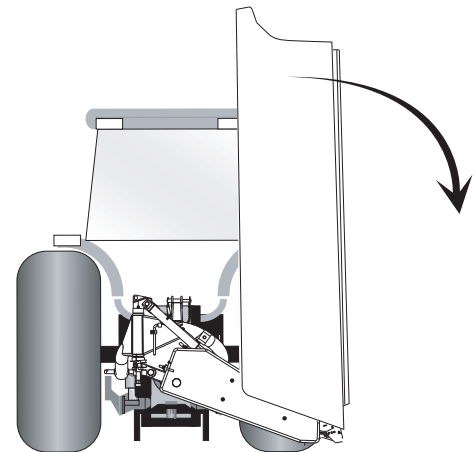
The machine must be uncoupled in working position.

From the transport position:

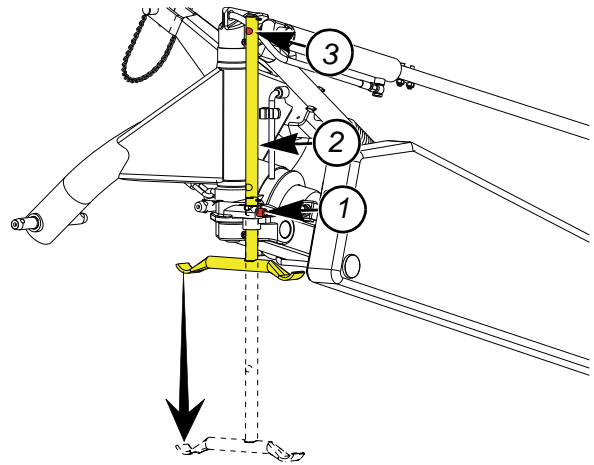
- Lift the machine with the tractor's three point linkage.
- Check that lock (1) of the suspension system is in transport position.



- Activate single acting valve of transport/work positioning cylinder to lighten pressure on transport lock.
- Pull the release cord until transport lock is released.
- Place the single acting valve of the mowing unit lift cylinder in floating position to lower the mowing unit.



- Press push-button (1) and lower parking stand (2) until push-button engages in position (3).
- Lower the tractor three-point linkage to rest the machine on the ground.



- Detach the top link from the machine end.
- Uncouple the PTO shaft.
- Support PTO shaft with check chain attached around the hitch pin.
- Disconnect hydraulic hose from tractor.
- Remove cord from tractor and store it in its holder on the machine.
- Release the lower links.
- Lower the tractor three-point linkage.

The machine is uncoupled.

7. Instructions for transport



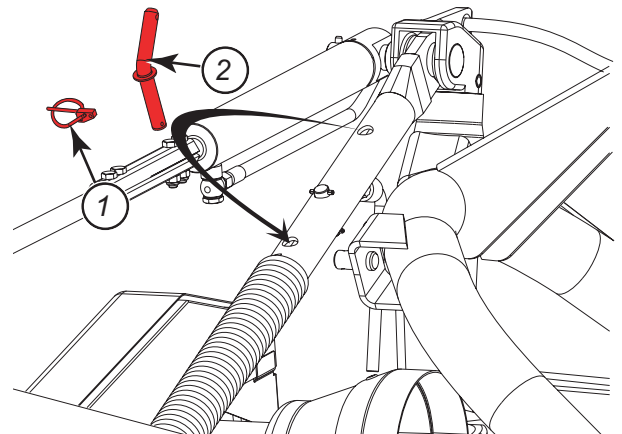
Before placing the machine into transport position:

- Check that nobody is within the machine pivoting area.
- If there is someone, make sure the person moves away.

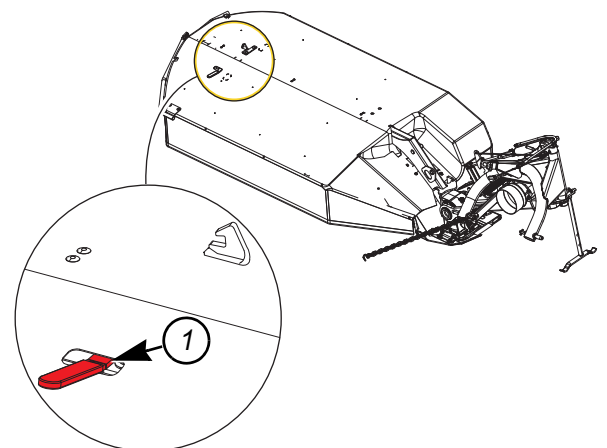
7.1 Putting the machine into transport position

From the working position:

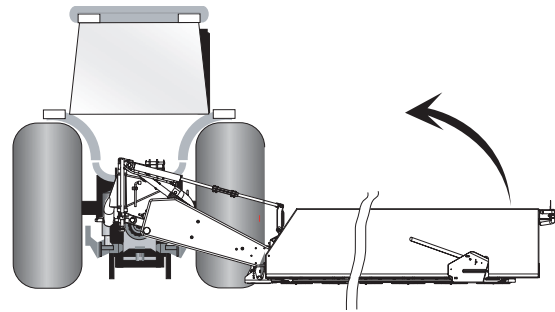
- Lift the machine with the tractor's three point linkage.
- Remove lynch pin (1) and pin (2).
- Lock compensation system in transport position using pin (2) and lynch pin (1).



- Pull handle (1) to unlock front guard.
- Raise front guard until lock is automatically engaged.
- Lift the machine using the tractor's lift linkage.



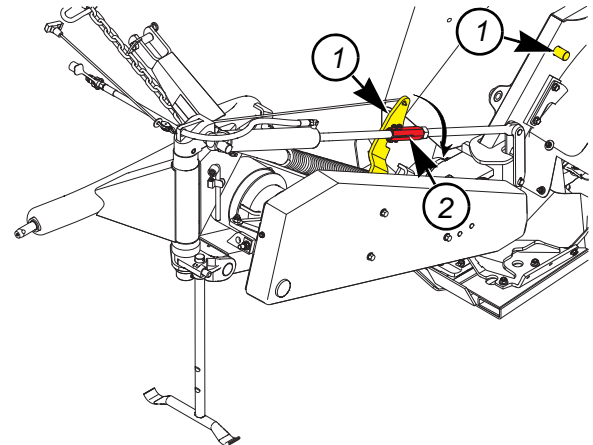
- Operate single acting transport/work position cylinder to place the mowing unit in transport position:
 - The machine automatically locks in transport position.



The machine is in transport position.

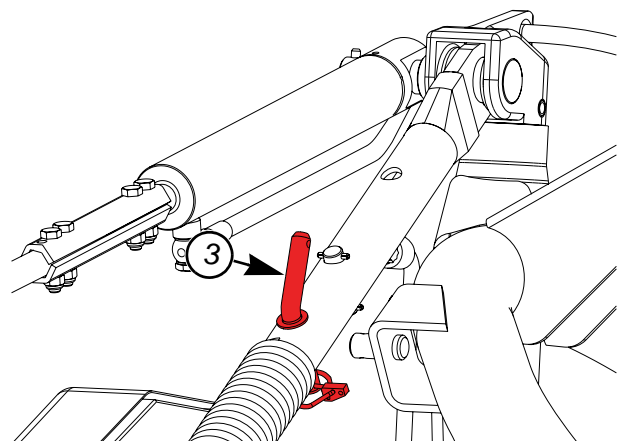


- Never engage the tractor PTO drive when the machine is in transport position.



If the transport lock does not engage (1):

- Rotate adjustable tie-rod (2) to reduce the cylinder rod length:
 - 1 turn = 3 mm (0.12").
- Check the setting:
 - In transport position and with the cylinder pressurized, lock (3) must be free to rotate.



7.2 Conformity with the road regulations

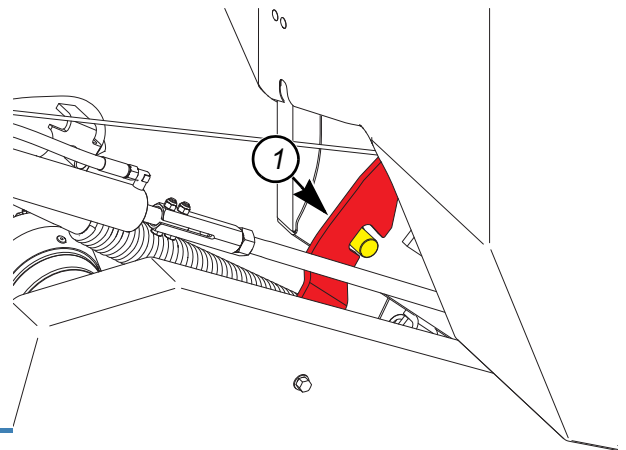


- Before driving the machine on public roads, ensure that the machine complies with current highway code regulations.

- Check that the retroreflective signalling equipment is clean before going on public roads.



- Replace worn or damaged reflectors.
- Make sure the release cord cannot be operated inadvertently.
- Make sure that transport lock (1) is fully engaged.



7.3 Machine transport using transport means

- 134035: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134036: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

8. Instructions for work



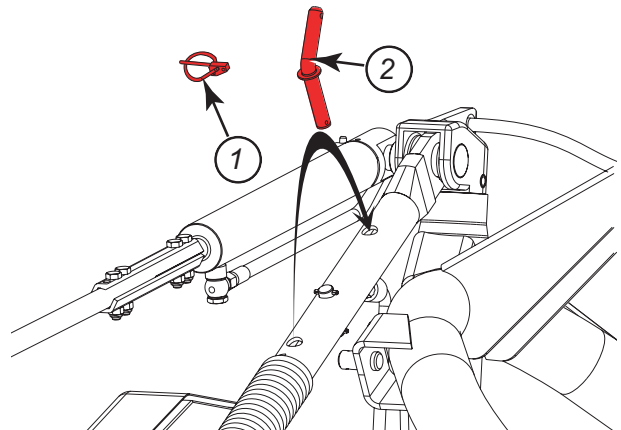
Before placing the machine in working position:

- Check that nobody is within the machine pivoting area.
- If there is someone, make sure the person moves away.

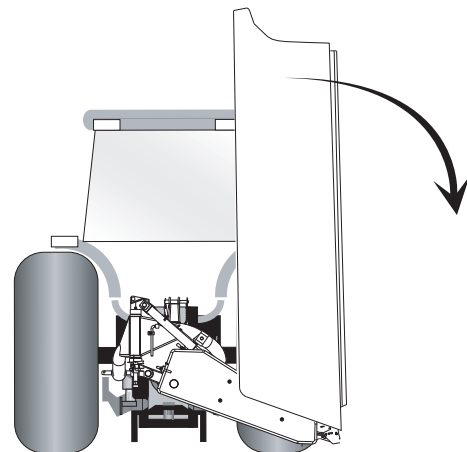
8.1 Putting the machine into work position

From the transport position:

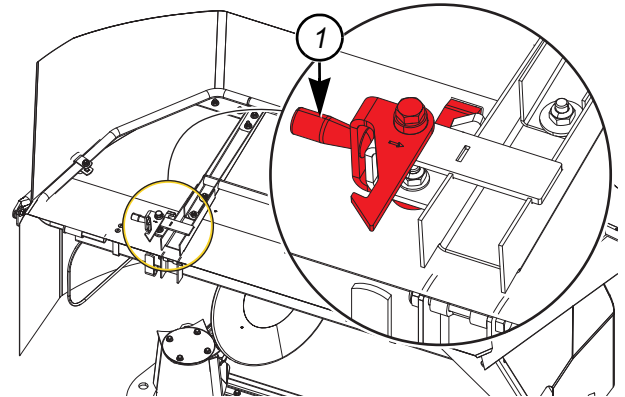
- Lift the machine with the tractor's three point linkage.
- Remove lynch pin (1) and pin (2).
- Put compensation system in working position using pin (2) and lynch pin (1).



- Activate single acting valve of transport/work positioning cylinder to lighten pressure on transport lock.
- Pull the release cord until transport lock is released.
- Place the single acting valve of the mowing unit lift cylinder in floating position to lower the mowing unit.



- Pull handle (1) to unlock front guard.
- Lower and lock front guard.



The machine is in working position.



During work, only use the tractor lift linkage to place the machine in headland turn position.

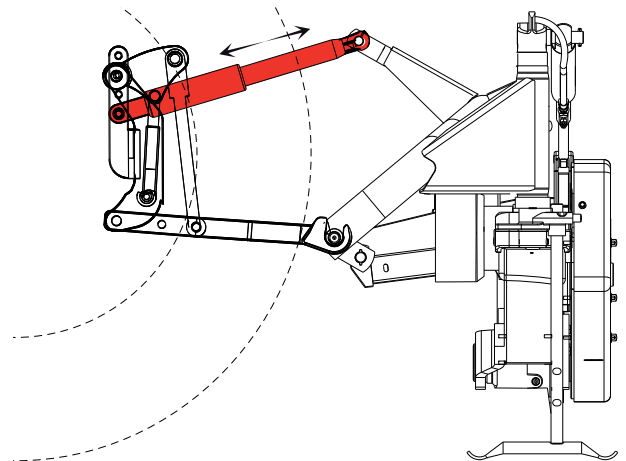
8.2 Adjustments in working position

8.2.1 Cutting height

The desired cutting height is obtained directly by adjusting the top link length. This height is adjustable between 30 and 80 mm (1.1" - 3.1") depending on the tractors.

To obtain a different cutting height:

- Place the machine in working position.
- Lower the machine on the ground to remove weight from the top link.
- Modify the top link length to alter the machine tilt angle.



- Check cutting height.

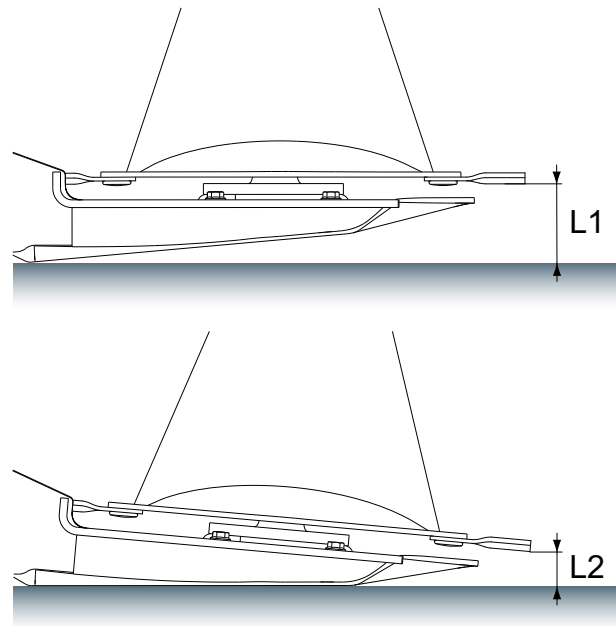
The maximum cutting height $L1 = 80 \text{ mm}$ (3.1") is obtained when the disks are parallel to the ground.

The minimum height must not be below $L2 = 30 \text{ mm}$ (1.1").



Too low a cutting height can lead to:

- Excessive disc and knife wear.
- Crop being contaminated by soil.
- Delay in regrowth.

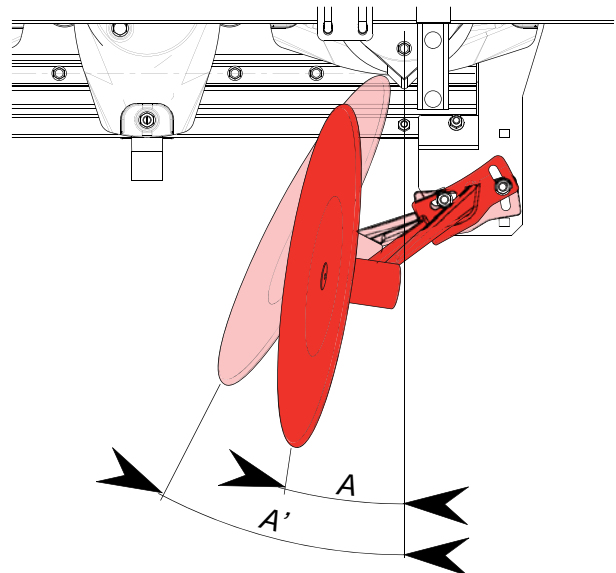


8.2.2 Outer swath disc

The swathing system comprises the following component:

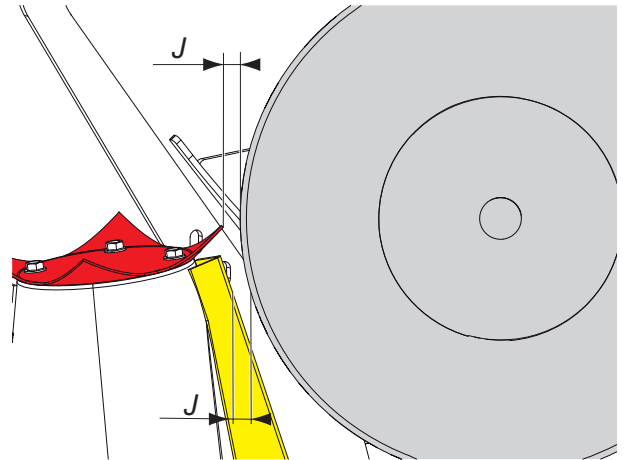
- 1 outer swath wheel (Adjustable).

- Position the swath wheel in order to obtain an angle between 16° (A) and 32° (A').





- Check that there is still a play J equalling minimum 15 mm (0.59") between the shell, the cone rib and the swath wheel.



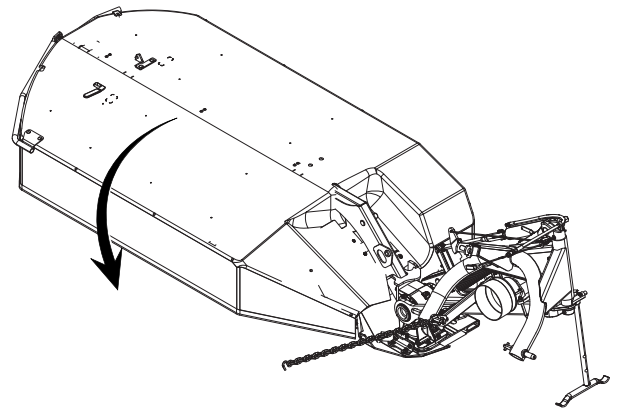
8.3 Machine use



- Before mowing and to reduce risks of projections, lower the front guard.
- Keep all persons and animals away from the machine danger zone.



- Never lean or step on the protection cover.



Before the machine engages the crop:

From the working position.

- Engage the tractor PTO and gradually increase speed until reaching a rated speed of 540 min⁻¹.

During work, only use the tractor lift linkage to place the machine in headland turn position.



8.3.1 Drive speed



- Adapt the forward speed to the working conditions.

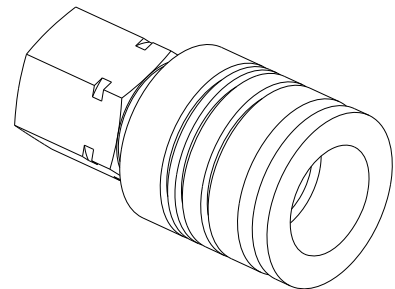
9. Optional equipment

9.1 1 3/8" - 6 spline pto shaft (With free wheel clutch)

Only for GMD24 / HD:

A specific pto shaft is available as option for tractors equipped with a 1 3/8" - 6 spline pto stub.

9.2 Female coupler



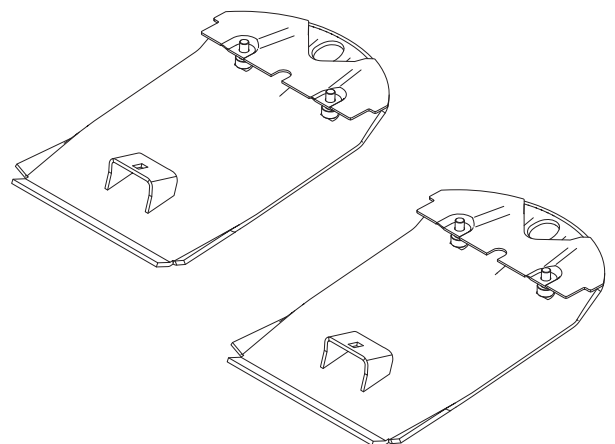
9.3 Raised skid shoes

The raised skids shoes allow mowing higher, between 35 and 90 mm (1.4" - 3.5").

- Replace the end disc skids by the 2 raised skid shoes.



The use of raised skid shoes is also recommended on sticky grounds.



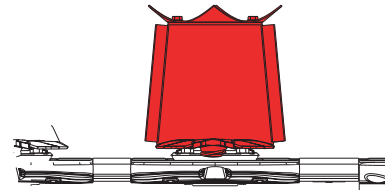
9.4 High cone disc kit

Only for GMD28:

The high cone disc enables reducing the swath width.

The swath width equals 1.80 m (5'10") depending on the forage density.

- Replace flat disc with the high cone disc.



9.5 Inner swath disc



Only for GMD28:

Use this kit in combination with the high cone disc kit.

The swath width equals 1.50 m (4'11") depending on the forage density.



9.6 Inner swath shield

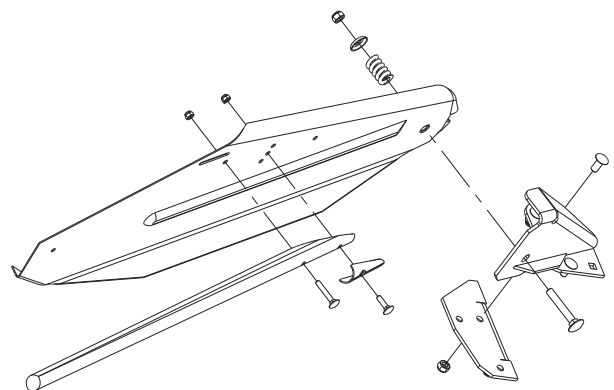
The inner swath shield allows reducing the swath width to approximately 1.20 m (3'11") depending on the forage density.

Only for GMD24 - GMD24HD:

The inner swath shield must always be used in combination with the inner swath disk.

Only for GMD28 - GMD28HD:

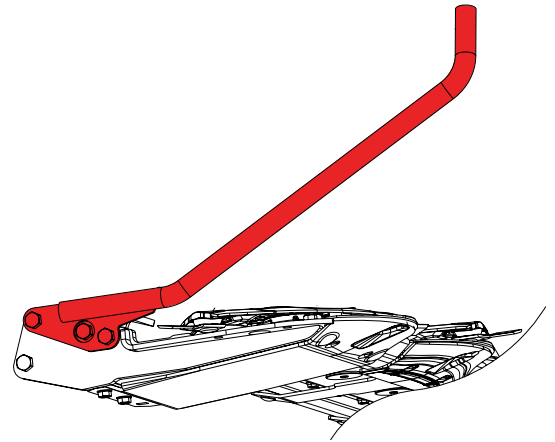
The inner swath shield must be used in combination with the inner swath disk and with the high cone disk.



9.7 Side deflector

The side deflector enables mowing dense or down crops with long stems.

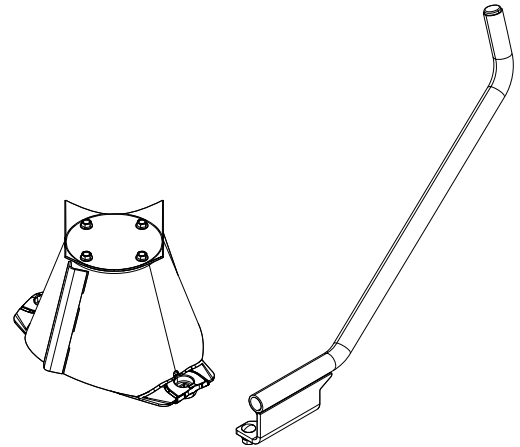
- Fit side deflector on the outer side plates of the cutterbar stiffener.



9.8 Side deflector with high cone disk

Large cone discs allow mowing dense or down crops with long stems.

The side deflector prevents crop from wrapping around the outer large cone disk when mowing in dense or down crops with long stems.

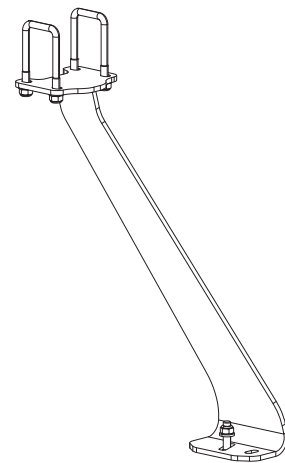


9.9 Frame connection arm/cutterbar

The frame connection arm/cutter bar makes it possible to establish a connection between the cutter bar and the frame outside the mowing unit.

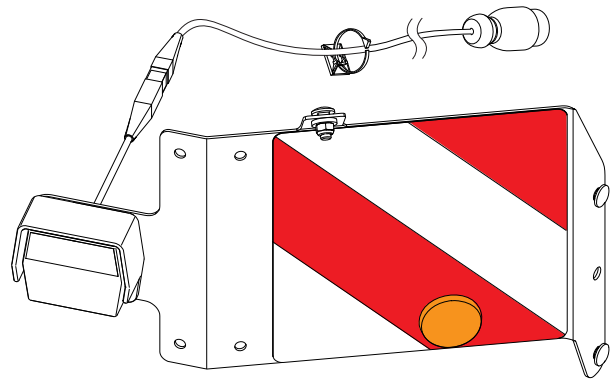
This equipment performs the following functions:

- Improvement of the mechanical resistance.
- Improve the ground adaptation.



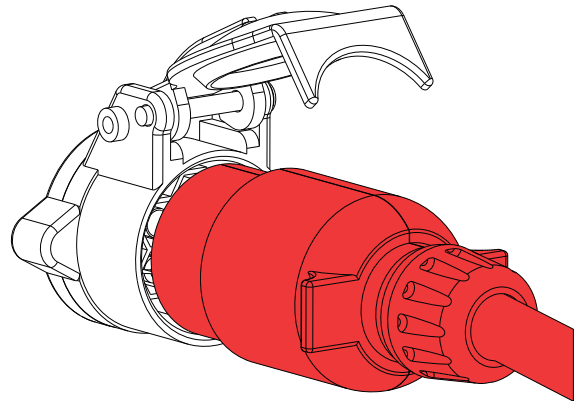
9.10 Lighting and signalling

The machine can be fitted with specific signalling lights to comply with the road regulations.



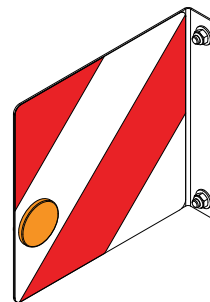
9.10.1 Electrical connection

- Connect machine 7-pin plug on the tractor 7-pin socket.
- After making the connections, check that there is no risk of the hoses being caught during operation.



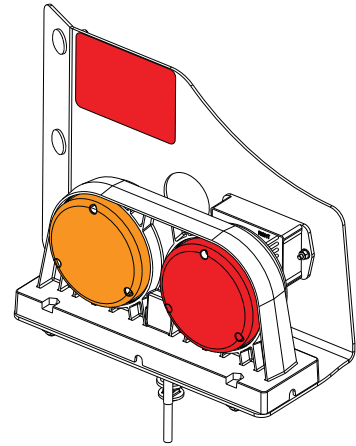
9.11 Lateral signalling equipment (Only for France)

The machine can be fitted with specific signalling lights to comply with the road regulations (in combination with signalling panel).



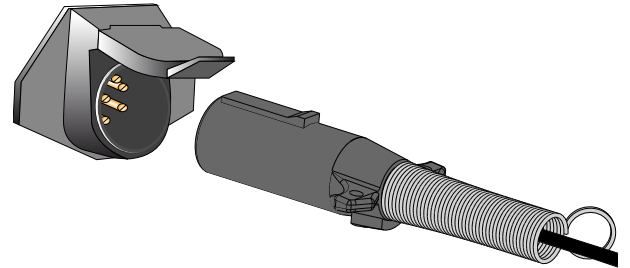
9.12 Lighting and signalling (Only for USA)

The machine can be fitted with specific signalling lights to comply with the road regulations.



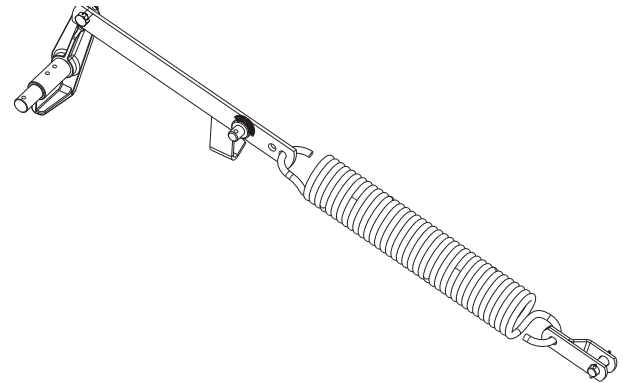
9.12.1 Electrical connection

- Connect machine 7-pin plug on the tractor 7-pin socket.
- After making the connections, check that there is no risk of the hoses being caught during operation.



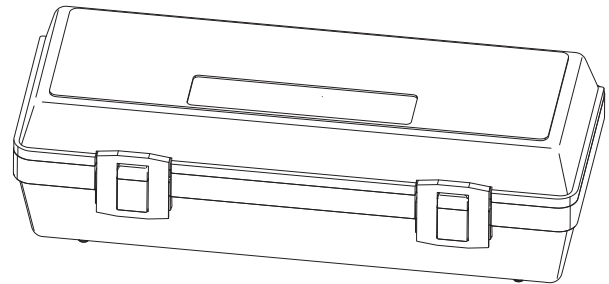
9.13 Compensating spring

The additional compensating spring provides better floatation on very irregular or soft grounds.



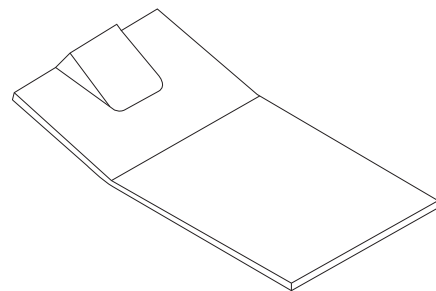
9.14 Toolbox

This equipment allows storing the tools, knives, bolts and nuts necessary for the machine maintenance.



9.15 Wear skids

Wear skids can be welded underneath the disk guard to improve its resistance to wear in difficult working conditions.



10. Maintenance and storage



- Before adjusting, maintaining or repairing the machine, turn off ignition key and wait until all moving parts have come to a complete stop.



10.1 Frequency chart

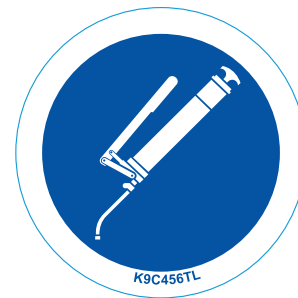


Maintenance intervals are indicated for normal conditions of use.

	After the first 10 hours of use	Every 50 hours	Every 200 hours or at the end of the season
Lubrication			
Grease: <ul style="list-style-type: none"> • Primary PTO shaft. 		✓	
Oil change: <ul style="list-style-type: none"> • The cutterbar. • The side angle gearbox. 	✓		✓
Oil: <ul style="list-style-type: none"> • The moving parts and pivot points. 		✓	

10.2 Lubrication

The pictorials show the points to be greased.
 - Clean grease nipples before greasing.



- Lubricate with multi-purpose grease grade NLGI 2.

10.2.1 PTO shafts

■ Primary PTO shaft



- Place the machine in working position.
- Stop the tractor engine and remove ignition key.



Before using the machine for the first time:

- Grease the transmission.

During intensive use with tractors of maximum authorized power, it is recommended to grease at closer intervals.

Configuration: Standard

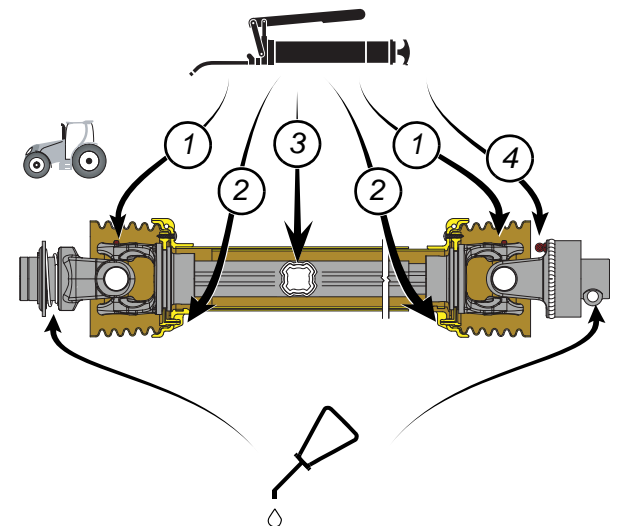
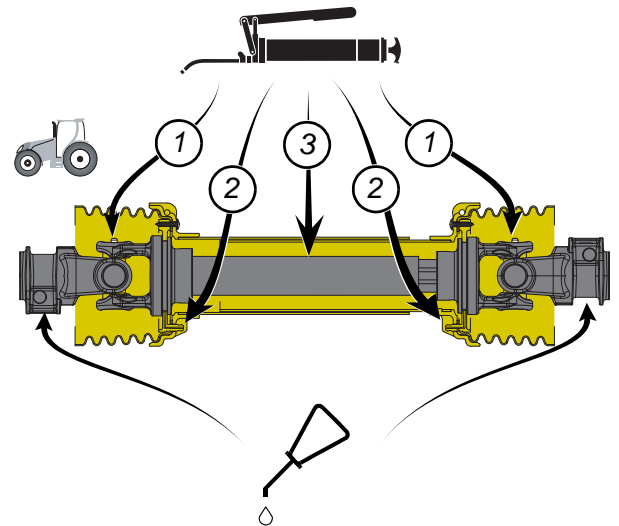
Every 50 hours:

- (1): Cross-bars.
- (2): Guide rings.
- (3): Transmission tube.

Configuration: Free wheel

Every 50 hours:

- (1): Cross-bars.
- (2): Guide rings.
- (3): Guide rings.
- (4): Free wheel.



10.2.2 Draining

■ The cutterbar



- Before draining oil, operate the machine for a few minutes so that the oil warms up.

Oil and lubricants specifications

	GMD24	GMD28
Oil volume	2.00 L (0.53 US gal)	
Type of oil	Gear oil (mineral oil)	
Viscosity	SAE 80W90	
Specification	API - GL5 (extreme pressure)	



When changing the oil, it is recommended to use either an identical mineral oil or a synthetic oil of type PAO (Poly-Alpha-Olefine) with viscosity grade SAE 75W90.



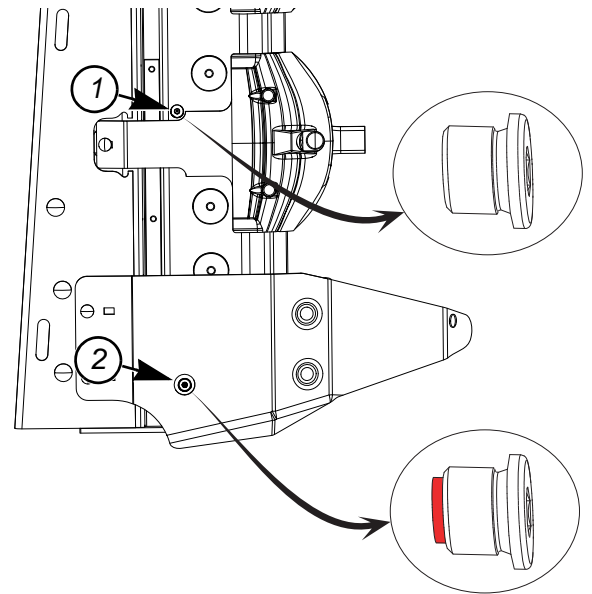
- **Never use an oil of viscosity SAE 90 in the cutterbar.**

From the transport position:



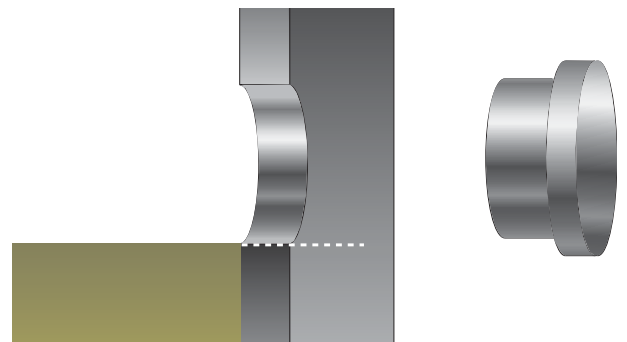
- **For safety reasons, hook check chain as high as possible.**

- Place a container of sufficient capacity under drain plug.
- Remove filler plug (1) and its washer.
- Unscrew drain plug (2) and its seal.
- Allow oil to drain completely.
- Wait for dripping to stop.
- Clean and reinstall drain plug (2) and its washer. Replace if necessary.
- Pour the correct oil quantity and quality through the opening of the filler plug.



Checking cutterbar oil level:

- The oil must reach the lower edge of the filling hole (1).
- Clean and reinstall filler plug (1) and its washer. Replace if necessary.



■ The side angle gearbox



- Before draining oil, operate the machine for a few minutes so that the oil warms up.



Oil and lubricants specifications

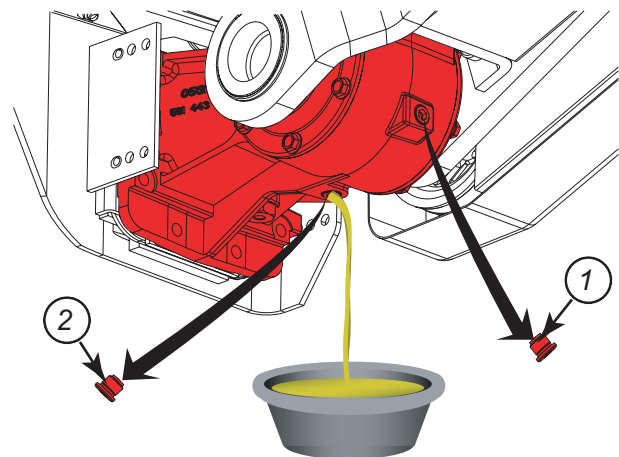
	GMD24	GMD28
Oil volume	0.45 L (0.12 US gal)	
Type of oil	Gear oil (mineral oil)	
Viscosity	SAE 80W90	
Specification	API - GL5 (extreme pressure)	



When changing the oil, it is recommended to use either an identical mineral oil or a synthetic oil of type PAO (Poly-Alpha-Olefine) with viscosity grade SAE 75W90.

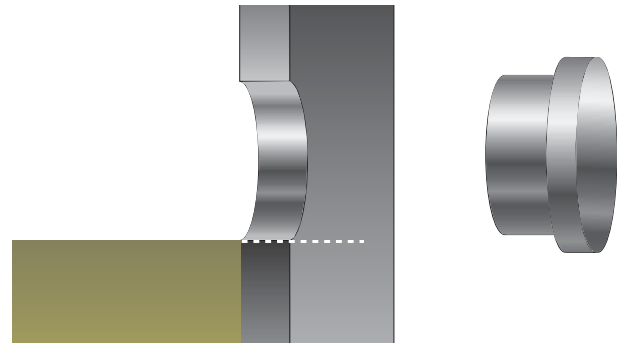
From the transport position:

- Remove filler plug (1) and its washer.
- Place a container of sufficient capacity under drain plug.
- Remove drain plug (2) and its washer.
- Allow oil to drain completely.
- Wait for dripping to stop.
- Place the cutterbar in horizontal position.
- Pour the correct oil quantity and quality through the opening of the filler plug (1).



Checking oil level of the lateral bevel gearbox:

- Place the cutterbar in horizontal position:
 - The oil level must reach the lower edge of the emptying hole.
- Clean and reinstall drain plug (2) and its washer.
- Clean and reinstall filler plug (1) and its washer.



10.3 Maintenance



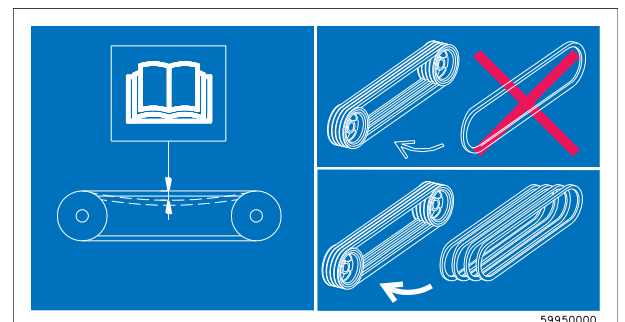
- Before adjusting, maintaining or repairing the machine, turn off ignition key and wait until all moving parts have come to a complete stop.



10.3.1 Belt tension

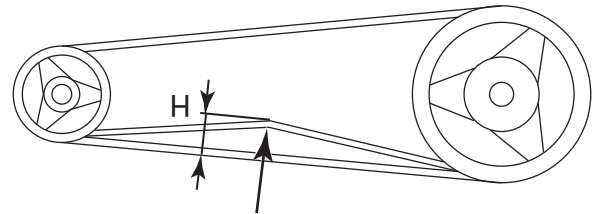
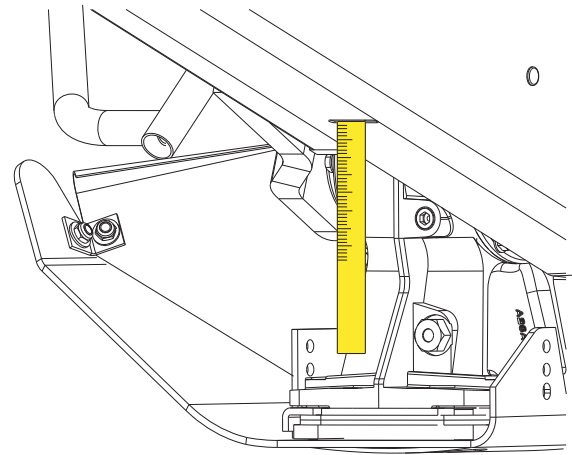


- Regularly check belt tension and in particular during the first hours of use.
- Never replace belts individually.
- Replace belts in full sets.



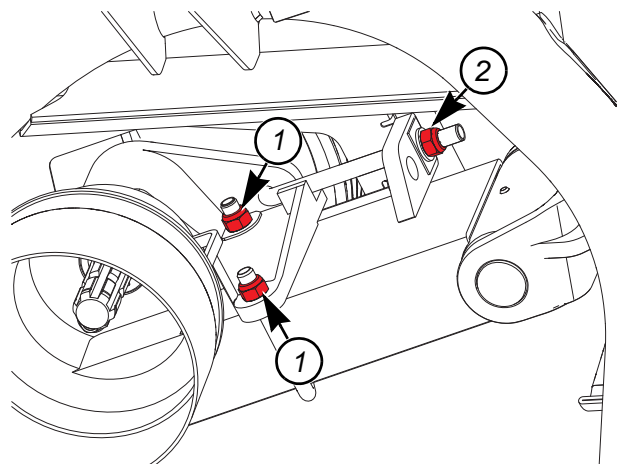
■ **Checking the tension**

- Press belt using a force of 3.5 daN (7.9 lbf):
 - The belt should not deflect more than $H = 10\text{ mm}$ (0.39").



■ **Adjusting the tension**

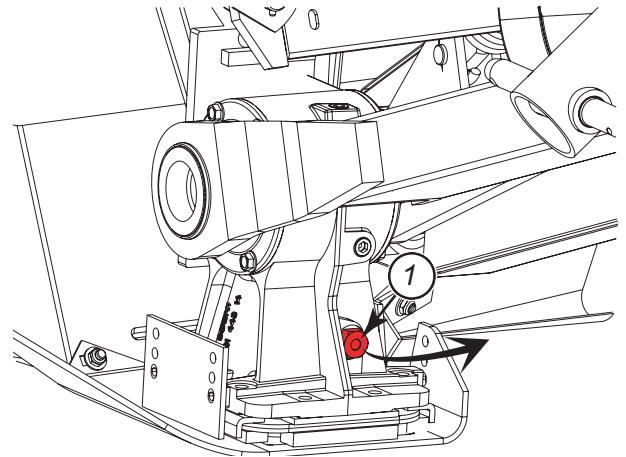
- Unscrew the 2 nuts (1).
- Tighten screw (2) to tension belts.
- Check belt tension.
- Tighten the 2 nuts (1):
 - Torque: 13 daNm (96 lbf ft).



10.3.2 Breather plug checking and cleaning

From the working position:

- Remove breather plug (1).
- Clean and check breather plug for good functioning (1).
- Reinstall breather plug (1).

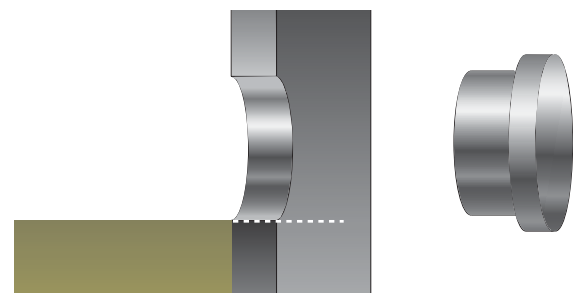
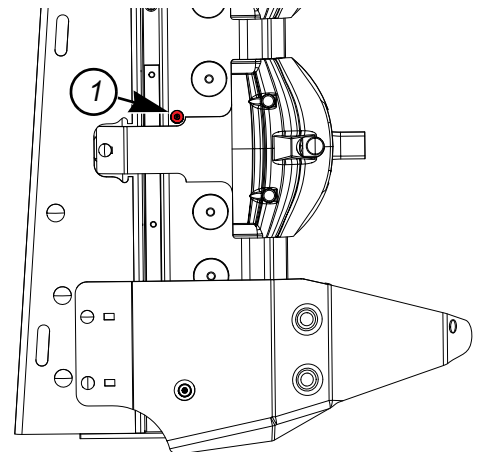


10.3.3 Checking cutterbar oil level

- Regularly check the cutterbar oil level:

From the transport position:

- Remove filler plug (1) and its washer.
- Check the oil level:
 - The oil must reach the lower edge of the filling hole.
 - Top up if necessary.
- Clean and reinstall filler plug (1) and its washer. (Replace if necessary).



If it is found that the transmission case is very hot to touch by hand, there is no cause of alarm provided:



- Lubrication recommendations have been respected.
- Discs can be rotated freely by hand when the machine is hot.



Before checking that the discs rotate freely by hand:

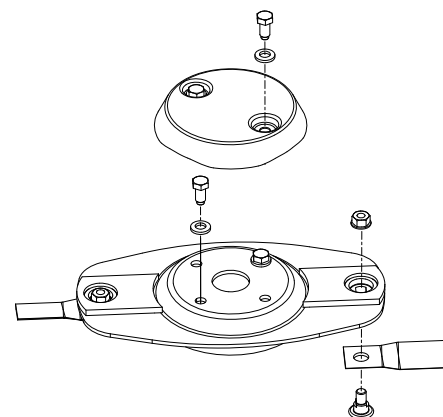
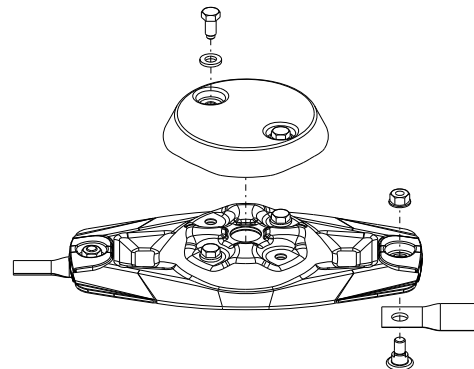


- Turn off the engine, remove ignition key and wait until all moving parts have come to a complete stop.

10.3.4 Inspection of knives and securing elements



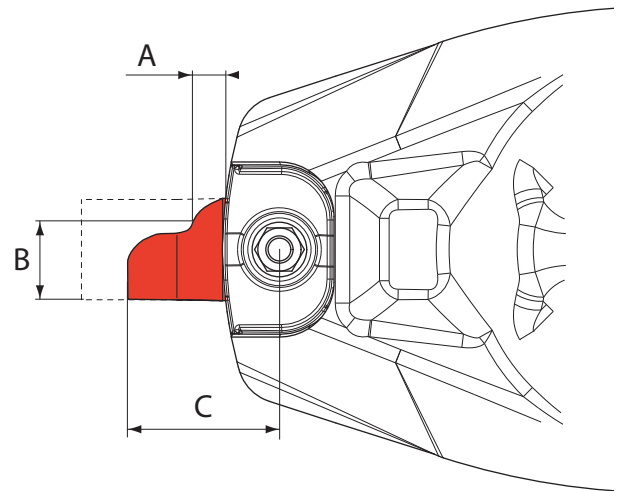
- Immediately replace worn or damaged parts with genuine KUHN parts.



■ Knives

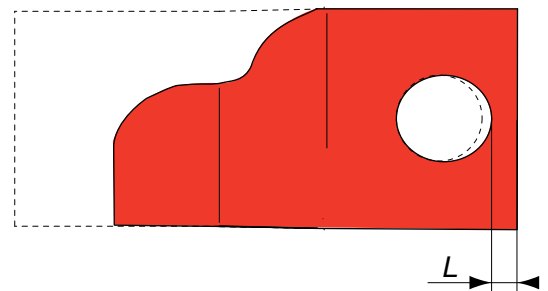
- Inspect systematically all knives before the machine is operated to:
 - ensure the cutting quality.
 - ensure safety in use.
 - Prevent cutterbar damage risks.
- Replace knives in the following cases:
 - Damaged knives: Very rough conditions can cause knives to crack and become deformed.
 - Worn knives:

The length C of a knife must exceed 65 mm (2.6").
The width B of a knife, measured at A = 10 mm (0.4") of the disk, must exceed 34 mm (1.34").

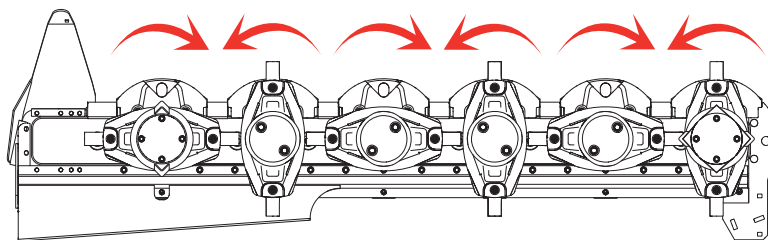


Elongation of hole due to wear:

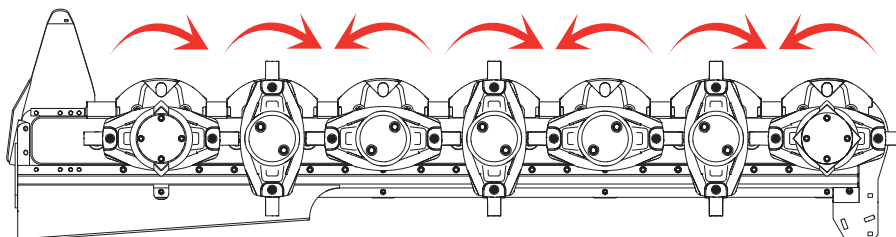
- Check that there is still a minimum value L equalling 9 mm (0.35").
- Always replace both knives per disc to avoid creating an out-of-balance force.



GMD 24:



GMD 28:

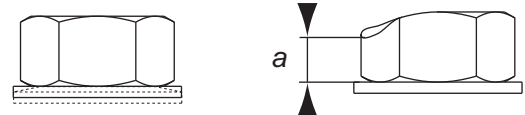
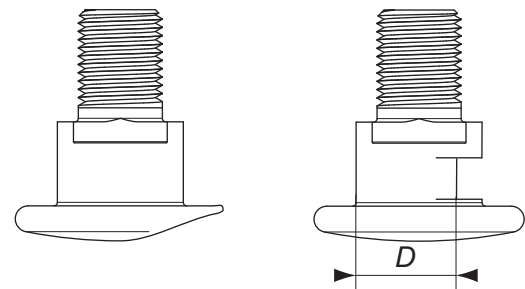
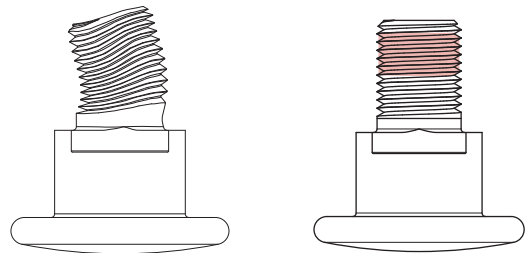


■ Securing elements



- Check the condition of the securing elements regularly and also the torque of the knife-fixing bolt:
 - Torque: 12 daNm (89 lbf ft).

- Check the securing elements:
 - After hitting an obstacle.
 - When replacing knives.
 - At the beginning of each season.
- The fixing bolts should be changed in the following cases:
 - When there is visible distortion.
 - When the locking compound is worn or inoperational.
 - When the bolt head wear reaches the center line of the bolt.
 - When diameter D of the bolt's body is below 11 mm (0.43").
 - After having been removed 5 times.
- Replace nuts in the following cases:
 - When the contact washer has lost its elasticity.
 - When the contact washer loosens itself from the nut.
 - When the nut wear reaches $a = 5$ mm (0.2").
 - After having been removed 5 times.



10.3.5 Knife replacement



- Replace knife lock-nuts and bolts when they have been removed 5 times.
- Replace immediately all worn or distorted knives. Never straighten a bent knife.
- Always replace both knives per disc.



- Clean the nut case.
- Place a wooden wedge between two discs to stop them from rotating.
- Loosen nut using box spanner supplied with the machine.
- Remove bolt through opening located at the front of the disc guard.

Knives can be turned over on the same disc to use the other cutting edge or replaced. On each knife, an arrow indicates the disc's direction of rotation.

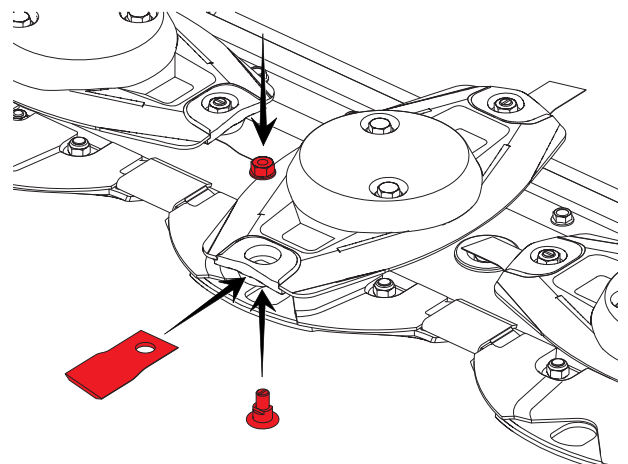


Knife for disk rotating to the left.

Knife for disk rotating to the right.

- Make sure that the securing nut and bolt are in good condition and if necessary, replace them.
- Tighten the securing nut of the knives to 12 daN.m (89 lbf ft).

Dull knives require more horse power and have a negative effect on the cut quality.



10.3.6 Disc replacement

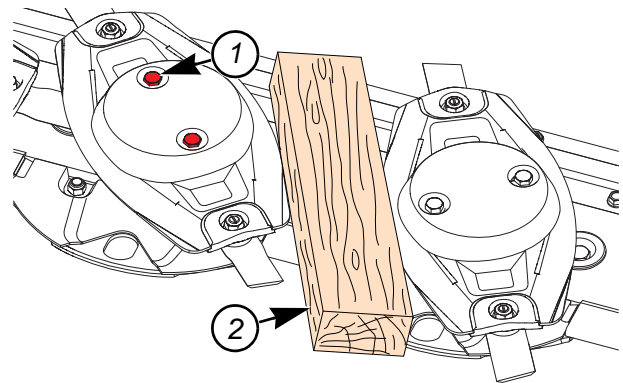
■ Inner disc



The replacement of the inner disk must be carried out by your Kuhn authorized dealer.

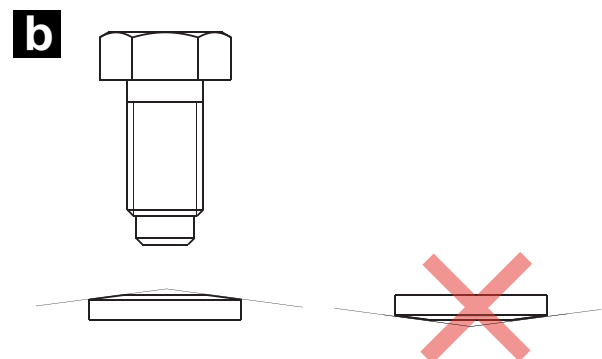
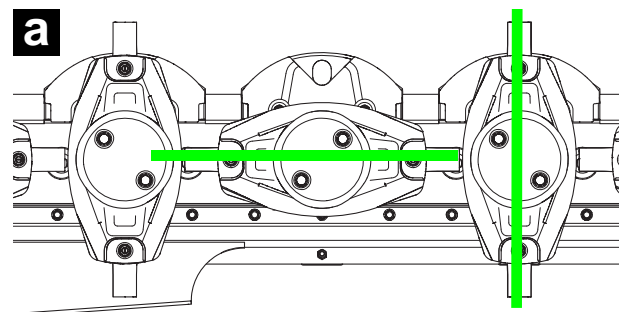
■ Intermediate discs

- Place a wooden wedge (2) between two discs to stop them from moving.
- Remove 2 bolts (1) and their spring washers using the box spanner supplied with the machine.
- Remove the disc conical cover.
- Remove the 2 other nipple-screws and their spring washers.
- Remove the disc.



When remounting:

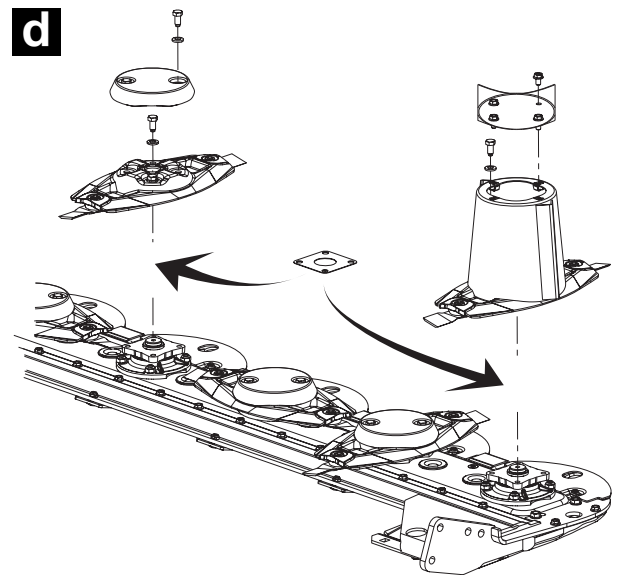
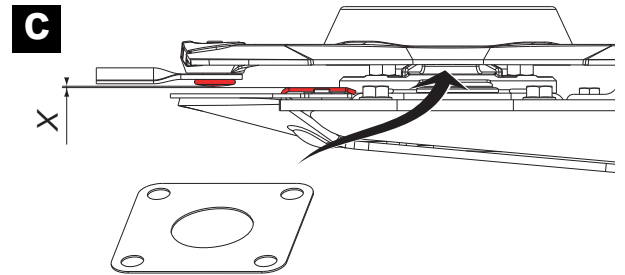
- Position their largest diameters at right angles to each other: (a).
- Position conical centre of spring washer at the top: (b).





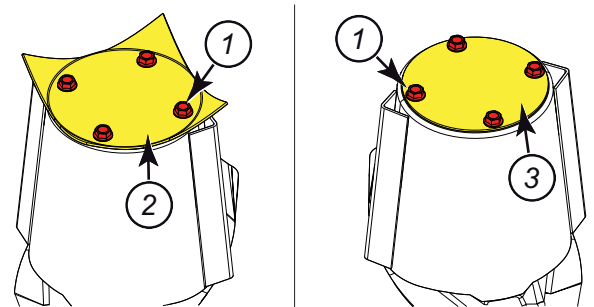
- Check if there is still a minimum gap $X = 1$ mm (0.04") between the disk lower part and the cutter bar wear plates(c).
- If this is not the case, fit one (maximum two) spacer(s) between the disc and the mounting hub (d).

- Tighten screws:
 - Torque: 12 daNm (89 lbf ft).



10.3.7 Outer and inner cones

- Check torque of attachment bolts (1) of outer and inner cone covers (2) and (3):
 - Torque: 6 daNm (44 lbf ft).
- Replace any lost or damaged cover.

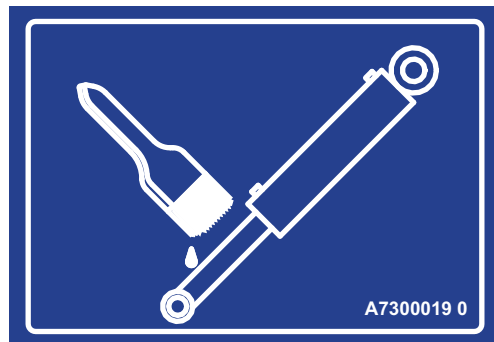


10.4 Storage

10.4.1 At the end of each season

- Clean the machine thoroughly.
- Drain all gearboxes and cutterbar and refill with new oil.
- Grease the cylinder rods in contact with the outside.

- Grease the cylinder rods in contact with the outside.



- Touch up any areas of damaged paintwork.
- Store the machine in a sheltered dry place with the cutter bar in horizontal position.
- Inspect and replace worn knives and bolts.
- Slacken V-belts and check their condition.
- Fully lubricate the machine.

10.4.2 At the start of each season

- Check that all nuts and bolts are sufficiently tightened.
- Check belt condition.
- Retension belts.
- Check that safety breakback system functions.
- Wipe off grease on cylinder rods.
- Re-read the operators' manual.
- Make sure that all protection devices are in place and in good condition.

10.4.3 Storage

- 139884: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 139885: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 139886: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 139888: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134014: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134062: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134063: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134064: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).
- 134192: Specific requirements for countries member of the Eurasian Economic Community (EAC marking).

10.5 Dismantling and scrapping of the machine

At the end of the machine's life, the various machine components must be disposed of or recycled in compliance with local regulations in force.

- Make sure the machine is stable (parking stands, holders, slings, etc.) prior to carrying out any repair or maintenance.
- Before any repair or maintenance on a circuit including an accumulator, depressurize the circuit. Do not grind or drill on the shell of the hydro-pneumatic accumulator. Always empty and recover the oil of the machine's gearboxes and the hydraulic circuit to entrust it to waste oil recycling companies.
- Empty fluids or components such as coolant, cooling liquid, brake fluid, batteries, filters and entrust them to a specialized company.
- Cut the electric power prior to carrying out any repair or maintenance on the circuits or electric/electronic components. Entrust electronic waste such as control box, wiring harness... of the machine to a specialized company.
- Separate the metal components, plastic components and rubber components and entrust them to specialized companies.

11. Troubleshooting guide

■ Problem	■ Cause	■ Remedy
Uneven stubble.	Dull or broken knives.	Replace knives.
	Knives not installed correctly.	Make sure the arrow on the knife upper face is pointing in the disc's direction of rotation.
	Insufficient disk speed.	Check belt tension.
	Too low PTO speed (rotational frequency).	Increase the speed to 540/min.
Soil build up in front of the cutterbar.	Very wet working conditions.	Adjust main frame height with regards to the ground. Fit raised skid shoes.
	Too much cutterbar down pressure.	Fit compensating spring.
Bad ground contour adaptation.	Incorrect main frame setting.	Adjust main frame height with regards to the ground.
	Excessive ground speed.	Reduce groundspeed.
	Cutter bar pivot bushes are worn or seized.	Check condition of pivot bushes. Replace if necessary.
	Hydraulic cylinder blocked.	Set hydraulic valve in floating position.
Insufficient cutterbar ground clearance in "headland turn" position.	Incorrect tractor lift linkage setting.	See machine attachment.
	Too long levelling rod adjustment on tractor 3-point lift.	Shorten levelling rods on tractor 3-point lift.
Considerable vibrations.	Nylon plug missing.	Immediately replace missing cap.
Too frequent safety breakback release.	Insufficient spring washer compression.	Increase spring washer compression.
Poor division between cut and uncut crop.	Tangled and down crops.	Check swath shield retaining spring tension.

12. Appendix

12.1 Calculating the load on an axle

When coupling a tool to the front and/or rear 3-point lift linkage, the maximum authorized payload must not be exceeded.



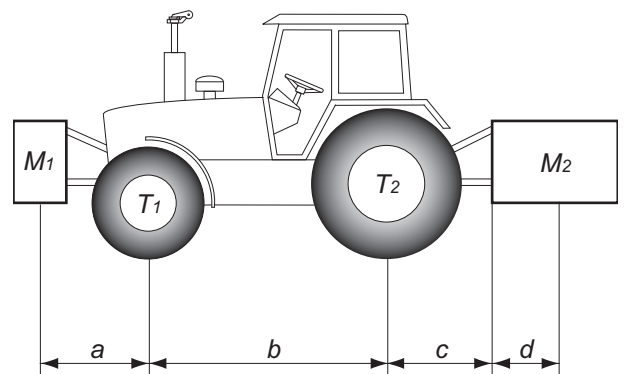
When coupling tools to the front and/or rear 3-point lift linkages, the maximum load on tractor's tires must not be exceeded.

The load on the tractor front axle must always represent 20 % of the tractor unladen weight.

Prior to use, check that these conditions are satisfied by making this calculation or by weighing the tractor-machine unit

- Define the total weight, axle loads, tyre capacity and minimum additional mass

The following values are required for the calculation:





Description	Units	Description	Obtained by
T	kg	Tractor unladen weight	① ④
T1	kg	Unladen load on tractor front axle	① ④
T2	kg	Empty load on tractor rear axle	① ④
t	kg	Axle loads (Tractor + machine)	④
t1	kg	Load on front axle (Tractor + machine)	④
t2	kg	Load on rear axle (Tractor + machine)	④
M1	kg	Total weight of front tool or front ballast	② ④
M2	kg	Total weight of rear tool or rear ballast	② ④
a	m	Distance between the tools' centre of gravity or the front ballast and the front axle centre	② ③
b	m	Distance between the tractor axles	① ③
c	m	Distance between the rear axle center and the center of the lower link ball joints	① ③
d	m	Distance between the centre of the lower link ball joints and the centre of gravity of the rear tool or rear ballast	②

① Refer to the tractor operators' manual

② Refer to the machine price-list or operators' manual

③ Dimensions

④ Measure on scale

Rear tool or front-rear combination:

1) Calculation of the minimum front ballast weight $M1_{\text{minimum}}$

$$M1_{\text{minimum}} = \frac{M2 \times (c+d) - T1 \times b + 0.2 \times T \times b}{a+b}$$

- Write the minimal additional weight in the chart.

Front tool:

1) Calculation of the minimum front ballast weight $M2_{\text{minimum}}$

$$M2_{\text{minimum}} = \frac{M1 \times a - T2 \times b + 0,45 \times T \times b}{b + c + d}$$

- Write the minimal additional weight in the chart.

2) Calculation of the actual load on the front axle $T1_{\text{real}}$

If the front tool (M1) is lighter than the minimum load required at the front (minimum), increase tool weight until the required minimum front load is reached.

$$T1_{\text{real}} = \frac{M1 \times (a + b) - T1 \times b - M2 \times (c + d)}{b}$$

- Indicate front axle calculated load value and the one indicated in the tractor operators' manual.

3) Calculation of the total weight M_{real}

If the rear tool (M2) is lighter than the minimum load required at the rear (minimum), increase tool weight until the required minimum rear load is reached.

$$M_{\text{real}} = M1 + T + M2$$

- Indicate calculated total load value and the one authorized as indicated in the tractor operator's manual.

4) Calculation of the actual rear axle load $T2_{\text{real}}$

$$T2_{\text{real}} = M_{\text{real}} - T1_{\text{real}}$$

- Indicate rear axle calculated load value and the one indicated in the tractor operator's manual.

5) Tyre carrying capacity

- Indicate double (2 tyres) the authorized load value (see tyre manufacturer indications).

■ **Table**

	Actual value obtained by calculation	Value authorized according to operator's manual	Double value of the authorized capacity per tyre (2 tyres)
Minimum front/rear ballasting	kg		
Total weight	kg	< kg	
Load on front axle	kg	< kg	< kg
Load on rear axle	kg	< kg	< kg

The minimum ballasting must be made by fitting a tool or an additional mass to the tractor.
The values obtained must be below or equal the authorized values.

■ **Determining the machine weight (M2) and the position of its centre of gravity (d)**

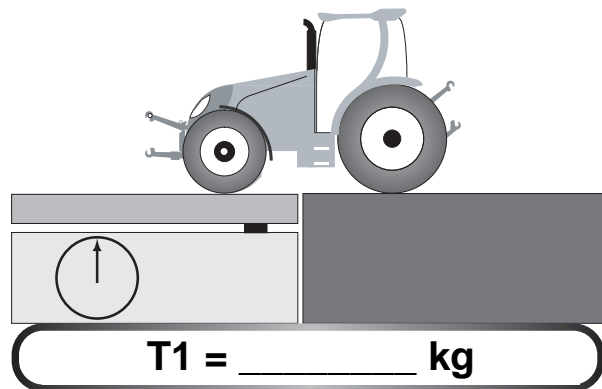
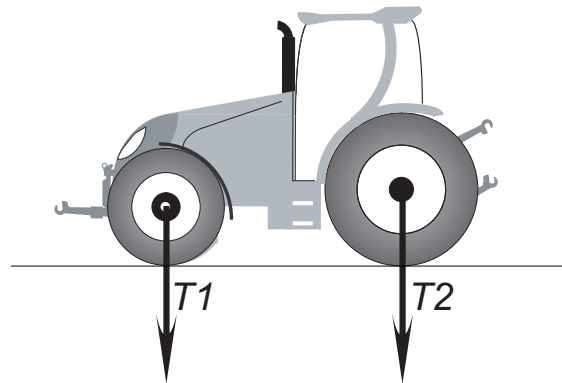


- If the data required to calculate the total weight, axle loads and minimum ballasting are not supplied, use the following method.

Tractor only:

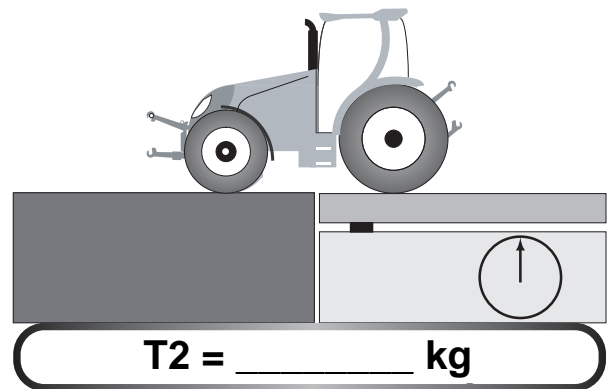
T1: Load on front axle.

- Tractor only.



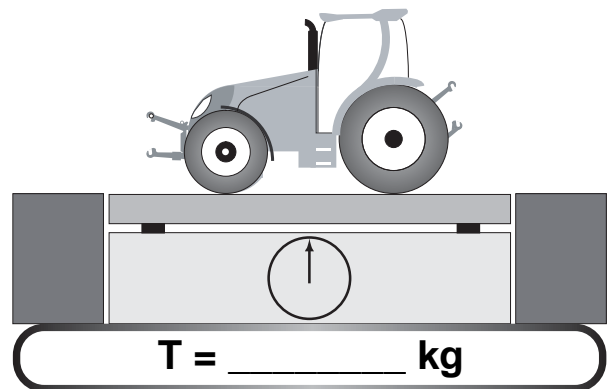
T2: Load on rear axle.

- Tractor only.



T: Axle loads.

- Tractor only.



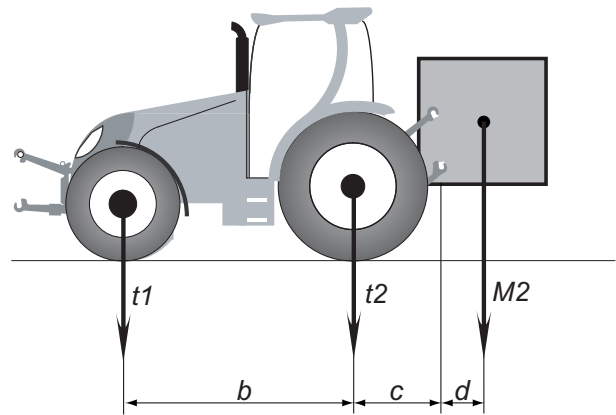
■ Rear tool or front-rear combination



- If the total unit weight exceeds the tractor Gross Combined Weight Rating in accordance with the country's legislation, empty the hopper to travel on public roads.

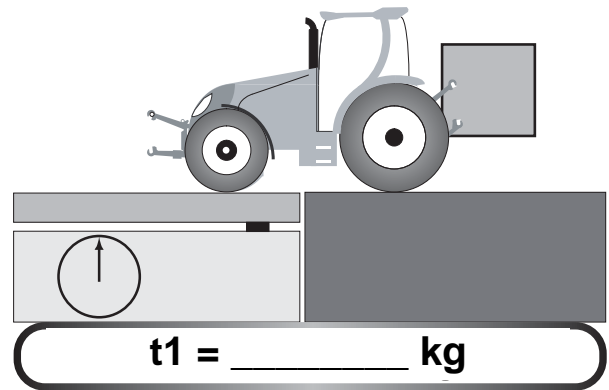
In any case, we recommend to travel on public roads with empty hoppers and tanks.

- Measure dimension (b).
- Measure dimension (c).



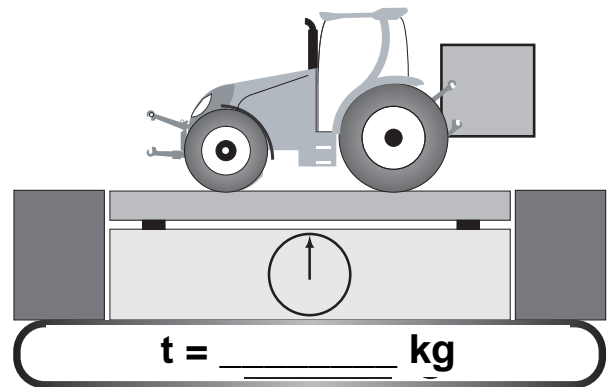
t1: Load on front axle.

- Tractor + machine.
- Hopper empty.



t: Axle loads.

- Tractor + machine.
- Hopper empty.



Calculating the rear tool weight (M2):

- $M2 = T - t$

Calculating the distance (d):

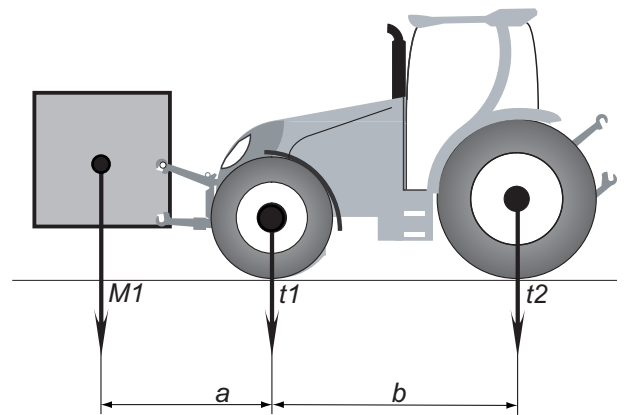
- $d = ((b \times (T1 - t1)) / M2) - c$

■ **Front tool**

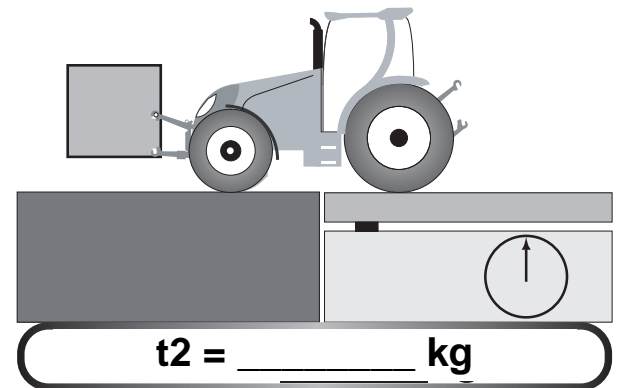


- If the total unit weight exceeds the tractor Gross Combined Weight Rating in accordance with the country's legislation, empty the hopper to travel on public roads. In any case, we recommend to travel on public roads with empty hoppers and tanks.

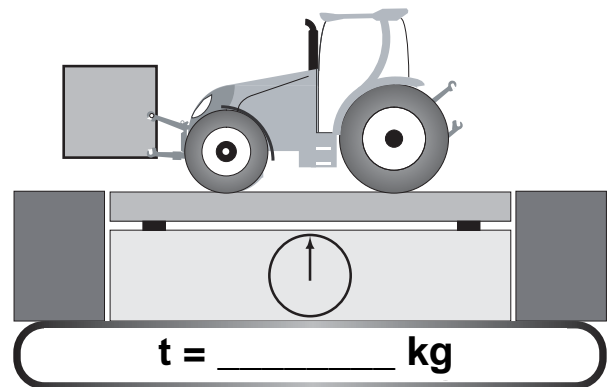
- Measure dimension (b).



t2: Load on rear axle.
 • Tractor + machine.



- t: Axle loads.
- Tractor + machine.



Calculating the front tool weight:

- $M1 = t - T$

Calculating the distance (a):

- $a = (b \times (T2 - t2)) / M1$



13. Limited Warranty

KUHN S.A. 4, Impasse des Fabriques, 67706 SAVERNE Cedex FRANCE (hereinafter called "the Company") warrants, in accordance with the provisions below, to each retail purchaser of a new KUHN equipment from an authorized KUHN dealer, that such equipment is, at the time of delivery to such purchaser, free from defects in material and workmanship, and that such equipment is covered under this Limited Warranty providing the machine is used and serviced in accordance with the recommendations in the Operator's manual.

This Limited Warranty covers the equipment for a period of one year starting from the date the equipment is delivered to the retail purchaser and during this period up to a limit of 500 hours of use.

The date of invoice to the retail purchaser and the registration of the machine by the dealer are taken as evidence of delivery of the machine.

This Limited Warranty covers the reimbursement (or repair) of components as well as labor charges incurred, based on the Company warranty labor rate and allowable time for repair.

■ **These conditions are subject to the following exceptions:**

- Parts of the machine which are not of KUHN manufacture, such as tires, PTO shafts, slip clutches, hydraulic cylinders, etc. are not covered by this Limited Warranty, but are subject to the warranty of the original manufacturer.

Warranty claims applying to these types of parts must be submitted in the same way as if they were parts manufactured by KUHN. However, compensation will be paid in accordance with the warranty agreement of the manufacturer concerned, in as much as the latter justifies such a claim.

- This Limited Warranty does not apply to failure through normal wear and tear, to damage resulting from negligence or from lack of inspection, from misuse, from lack of maintenance and/or if the machine has been involved in an accident, lent out or used for purposes other than those for which it was intended by the Company.
- This Limited Warranty will not apply to any product that has been altered or modified in any way without the express permission of the Company, or if parts and/or equipment not approved by Kuhn are used on a machine manufactured by the Company and/or if repairs have been carried out by anyone other than an authorized KUHN dealer.
- The Company shall not be responsible for any damage to the machine or its equipment in transit or handling by any common carrier, within or without the Warranty period. Machines, equipment and parts are transported at recipient's risk.
- The Company cannot be held responsible for any claims or injuries to the owner or to any third party, nor to any resulting responsibility.
- Also, on no account can the Company be held liable for incidental or consequential damages (including loss of anticipated profits) or for any impairment due to a failure, a latent defect or a breakdown of the machine.

■ **The customer will be responsible for and bear the costs of:**

- Normal maintenance such as greasing, maintenance of oil levels, minor adjustments, etc.
- Dealer travel time, or travelling costs to and from the machine.
- Transporting machines, equipment or parts to the repair site and returning them to the user site.
- Parts defined as normal wearing items such as, but not limited to belts, blades, discs, knives, shares, tines, tine holders, slip clutches, etc. that are not covered by the Limited Warranty.



■ **The Limited Warranty is dependent on the strict observance of the following conditions:**

- The machine has been put in service by the dealer according to our instructions.
- The machine has been registered on line via extranet - www.kuhn.com or the warranty/product registration form has been completed and returned to the address indicated on the form as soon as the machine had been delivered to the retail purchaser.
- The warranty claim is completed on line via extranet - www.kuhn.com or submitted on a KUHN warranty claim form and returned to the Company within one month after the date of failure or the date of problem becoming apparent.
- The claim must be completed by the dealer and following information must be mentioned.
 - **Dealer's name and address**
 - **Name and address of retail purchaser**
 - **Exact type of machine**
 - **Machine serial number**
 - **Date of delivery to the retail purchaser**
 - **Date of failure**
 - **Number of hours of use or area (hectares, acres) worked**
 - **Power of tractor used**
 - **PTO speed (if applicable)**
 - **Detailed description and estimated cause of the failure**
 - **Quantity, reference number and name of the damaged parts**
 - **Invoice number and invoicing date for replacement parts.**
- The dealer has stored the damaged parts safely and labelled them clearly so that they can be recognised and returned to the Company if requested. They must be retained until a credit note has been issued to cover the parts. Carriage charges for the return of said parts are borne by the sender.
- The machine has been used and maintained according to the instructions in the operator's manual. The quality and quantity of lubricants used must always be in accordance with Company specifications.
- The safety measures mentioned in the Operator's manual and on the machine itself have been followed, and all the guards and protective elements, of whatever nature, have been inspected regularly and maintained in perfect working order.
- The judgment of the Company in all case of claims under this Limited Warranty shall be final and conclusive and the retail purchaser agrees to accept its decisions.
- If damaged parts have been returned to the Company and Warranty is refused, the dealer is allowed a period of 1 month from the date of receiving our letter of decision to request the return of the damaged parts to the dealer site.

■ **Further conditions: limits of application and responsibility**

- This Limited Warranty can not be assigned or transferred to anyone without the prior written consent of the Company.
- Authorized KUHN Dealers have no right or authority to assume any obligation or take any decision on the Company's behalf, whether expressly or tacitly.
- Technical assistance given by the Company or its agents for repairing or operating equipment does not lead to any responsibility on the Company's behalf and cannot under any circumstances bring novation or derogation to the conditions of the present Limited Warranty.
- The Company reserves the right to incorporate changes in its machines without prior notice and without obligation to apply these changes to machines previously manufactured.
- Moreover, because of the constant progress in technology, no guarantee is given to the descriptions of equipment published in any document by the Company.
- The present Limited Warranty excludes any other responsibility, whether legal or conventional, express or implied, and there are no warranties extending beyond those defined herein.



Specimen of the "Declaration of conformity"



AGRICULTURAL MACHINERY

EC Declaration of conformity (European directive 2006/42/CE)

The manufacturer:

Manufacturer name and address

declares that the product described hereafter:

Brand : Brand
Machine : Machine
Type / Model : Type / Model
Serial no. : Serial no.

- conforms to the requirements of the European directive 2006/42/CE
- conforms to the requirements of following European harmonized standards:

List of standards

- conforms to the requirements of following standards or technical specifications:

List of specific standards

Town, Date

Signatory 1
Name / Signatory function 1

Signatory 2
Name / Signatory function 1

Name and address of the person authorised to compile the technical file:

Name and address of the person authorised to compile the technical file

In the event of the machine being re-sold, this declaration of conformity is
to be passed on to the new owner

Customer code or order number

EC compliance certificat code



www.kuhn.com

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KUHN-AUDUREAU SAS - B.P. 19 - F - 85260 LA COPECHAGNIERE (FRANCE)

KUHN-BLANCHARD SAS - 24, route de Nantes - F - 44680 CHEMERE (FRANCE)

KUHN-HUARD SAS - B.P. 49 - F - 44142 CHATEAUBRIANT CEDEX (FRANCE)

KUHN-GELDROP B.V. - P.O. Box 9 - 5660 AA GELDROP (THE NETHERLANDS)

KUHN NORTH AMERICA INC - P.O. Box 167 - Brodhead, WI 53520 (USA)

KUHN KRAUSE, INC. - PO. Box 2707 - Hutchinson, KS 67504 (USA)

KUHN DO BRASIL S/A PASSO FUNDO - RS - 99050-130 (BRASIL)

KUHN MONTANA SÃO JOSÉ DOS PINHAIS - PR - 83025-410 (BRASIL)