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OPERATOR'S MANUAL

REAR DISC MOWER

KDT 180
KDT 220
KDT 260
KDT 300
KDT 340
KDT 341

KDT 220 S/SL/W
KDT 260 S/SL/W

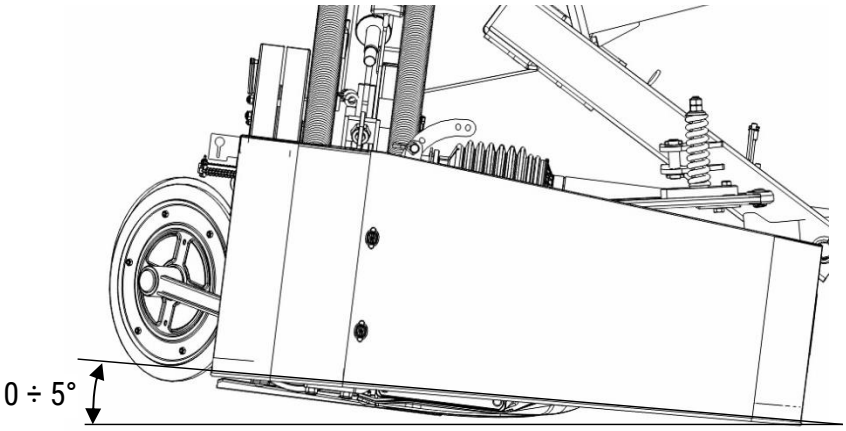
CE

The original operator's manual
U.S. ENGLISH

Serial No

IN221USA011
22.10.2019
EDITION № 11

Optimum inclination towards the ground is 0 ÷ 5° to the mowing direction. Different inclination may damage the mower.



DO NOT

TURN THE DRIVE ON IF THE MOWER IS NOT IN WORKING POSITION.

DO NOT

LIFT THE MOWER BEFORE THE MOWING DISCS HAVE COME TO COMPLETE STANDSTILL.

DO NOT

OPERATE WHEN ANY PERSON REMAINS IN THE DANGER AREA OF 170 ft.

CAUTION:

Keep this manual for future reference.

Well-proven design with thousands of machines in regular use in many countries and quality materials ensure high durability and reliability of SaMASZ mowers.

We congratulate you on the purchase of your new SaMASZ mower and wish you much pleasure and the very best work results through the years to come.

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1. IDENTIFYING THE MACHINE

Data plate is mounted to the mower's main frame in the place shown below (**Fig. 1**).

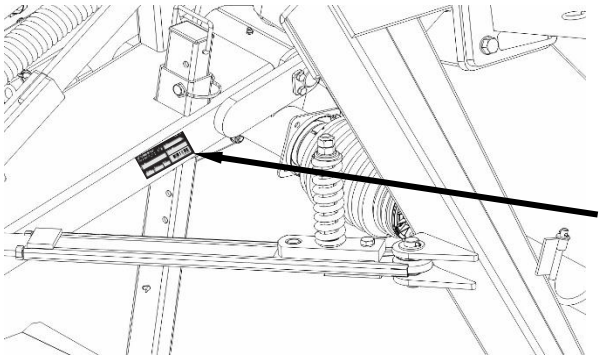


Fig. 1. Data plate location

Fig. 2. Data plate

Data plate includes:

- name and adress of the manufacturer,
- CE marking means, that the produce conforms to 2006/42/EC Directive and harmonized standards,
- machine symbol,
- date of manufacture,
- model year,
- version number,
- machine weight,
- id number,
- barcode.

NOTICE:

Should the contents of the herein manual be unclear, ask the manufacturer or your dealer for more detailed information on the machine.

2. INTRODUCTION

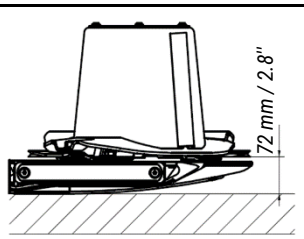
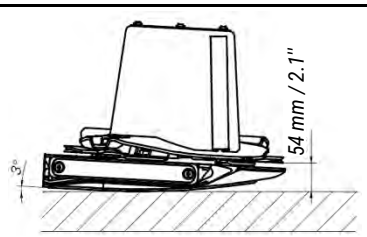
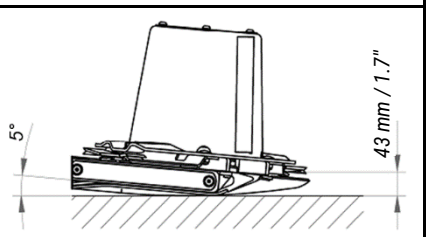
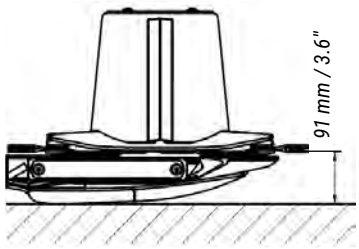
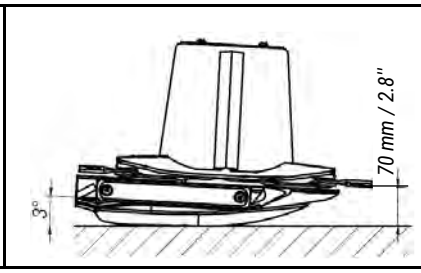
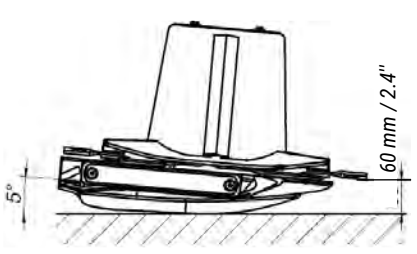
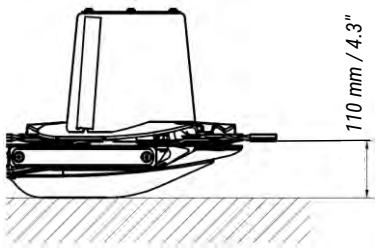
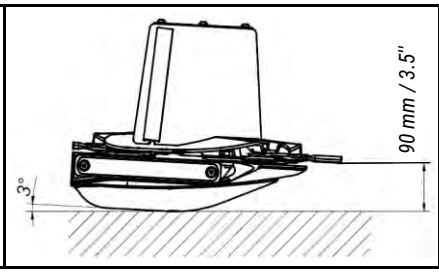
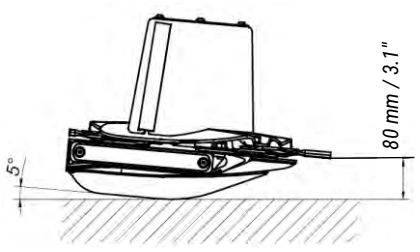
- This operator's manual is essential for safe and proper use of this mower and should be read before anyone operates this mower. It should be kept near the mower for future use. If the mower is used by other operator, it should be in working condition and include this operator's manual and all other basic equipment.
- Operator's manual is delivered with every machine so that the operator can familiarize himself with the design, working principle, servicing and adjustment of the mower. The operator should be familiar with common safety rules and procedures.
- The mower is manufactured according to international safety rules.
- Compliance with the safety precautions in this operator's manual will enable safe operation.
- Please contact your dealer if you have any queries relating to the operation and service of the mower.
- This operator's manual is an indispensable part of any machine and is intended to familiarize future user with principles of proper operation and use of the machine as well as the risks involved.

3. PROPER AND INTENDED USE

Mower KDT is equipped with the **Perfect Cut** cutterbar. The mowing height differences, depending on the inclination angle of the cutterbar are shown below

Tab. 1.

Tab. 1. Mowing height depending on cutterbar's inclination angle

„Perfect Cut" cutting bar		
No tilt	3° tilt	5° tilt
Standard mowing height		
		
Optional heights when using high mowing topping		
		
Optional heights when using high mowing double topping		
		

Note: Grass, which is very rare should be mowed with zero angle inclination.

- The front mounted disc mower is intended for mowing green fodder such as grass and alfalfa on permanent grassland (pastures), on crop fields without rocks, and forming loose rows of cut fodder. The pasture or field being mown should be even and best if prepared by rolling. In the event there is a majority of tall grass, the first and second mowing should be done at a height of 2.4" - 2.8", while with a majority of short grass, at a height of 2". The last mowing should be done a little higher - at 2.8" - 3.1" from the ground.
- The front mounted disc mower with tine/roller conditioner is intended for mowing green fodder such as grass and alfalfa on permanent grassland (pastures), on crop fields without rocks, and forming loose rows of cut forage. As a result of the passing of the layers of the green fodder through the flails or rollers, the grass stems are broken and a layer of wax is removed. This facilitates and speeds up the drying process of the fodder by approximately 30 to 40%. The use of rollers is especially recommended when mowing legumes such as alfalfa Rollers are particularly recommended for mowing grass legume such as alfalfa. The pasture or field being mown should be even, best if prepared by rolling. This is especially true of mowers with rollers as they tolerate rocks with a diameter of a few inches. If a larger stone is picked up stop and remove it as it could cause damage of the discs. With a majority of tall grasses the first and second mowing should be done at a height of 2.4" - 2.8", while with a majority of short grass it should be cut at a height of 2". The last cut should be done a little higher - at 2.8" - 3.1"from the ground.

WARNING!

Use of the mower for other purposes than the above mentioned is forbidden. Different use than the above mentioned will be considered as improper and may lead to revoking of the warranty. Mower should be used, operated and repaired only by people familiarised with its detailed specifications and with safety rules and regulations. Wilful changes of the mower will lead to revoking of the warranty.

3.1. Technical data

Tab. 2. Specification of the mower KDT

Model:	**KDT 180**	**KDT220**	**KDT260**	**KDT300**	**KDT340**	**KDT 341**
Working width	5' 11"	7' 3"	8' 6"	9' 10"	11' 2"	11' 2"
Number of knives [pcs.]	8 (2 x 4)	10 (2 x 5)	12 (2 x 6)	14 (2 x 7)	16 (2 x 8)	16 (2 x 8)
Tractor PTO rpm	540 rpm					
Tractor power required	22 kW (30 HP)	30 kW (50 HP)	50 kW (70 HP)	60 kW (80 HP)	70 kW (90 HP)	70 kW (90 HP)
3-point linkage category	II					
Working capacity	~ 2.0 ha/h	~ 2.5 ha/h	~ 3.0 ha/h	~ 3.5 ha/h	~ 4.0 ha/h	~ 4.0 ha/h
Transport length	3' 11"					
Transport width	6' 1"	7' 1"	7' 1"	7' 1"	7' 3"	7' 3"
Working width	11' 6"	13' 9"	15' 1"	16' 9"	18' 1"	18' 1"
Weight	1213 lbs.	1477 lbs.	1599 lbs.	1730 lbs.	1818 lbs.	1818 lbs.
Cutting speed of the knife	91 m/s					
Disc rpm	3250 rpm					
Noise level L_{pA}	101 ± 1 dB					
L_{Amax}	113 ± 1 dB					
L_{Cpeak}	116 ± 1 dB					

Model:	**KDT 220 S**	**KDT 260 S**	**KDT 260 SL**	**KDT 220 W**	**KDT 260 W**
Working width	7' 3"	8' 6"	8' 6"	7' 3"	8' 6"
Number of knives [pcs.]	10 (2 x 5)	12 (2 x 6)	12 (2 x 6)	10 (2 x 5)	12 (2 x 6)
Tractor PTO rpm	540 rpm				
Tractor power required	44 kW (60 HP)	66 kW (90 HP)	66 kW (90 HP)	44 kW (60 HP)	66 kW (90 HP)
3-point linkage category	II				
Working capacity	~ 2,0 ha/h	~ 2,8 ha/h	~ 2,8 ha/h	~ 2,0 ha/h	~ 2,8 ha/h
Transport length	5' 3"	4'	4'	4' 11"	4' 9"
Transport width	7'	7'	7'	7'	7' 3"
Working width	13' 9"	15' 4"	15' 4"	13' 9"	15' 5"
Weight	2073 lbs.	2194 lbs.	2194 lbs.	2095 lbs.	2215 lbs.
Cutting speed of the knives	91 m/s				
Disc rpm	3250 rpm				
Noise level L_{pA}	98 ± 1 dB			97 ± 1 dB	
L_{Amax}	109 ± 1 dB			109 ± 1 dB	
L_{Cpeak}	112 ± 1 dB			112 ± 1 dB	

S/SL/W – Mower with tine conditioner / with light-weight tine conditioner / with roller conditioner

L_{pA} – noise level related to 8 hour working time. Averaged in time acoustic pressure level corrected by frequency characteristic A.

L_{Amax} – maximum value corrected by frequency characteristic A of acoustic pressure level.

L_{Cpeak} – peak level of acoustic pressure corrected by frequency characteristic C.

3.2. Design and working principle

3.2.1. Rear disk mower

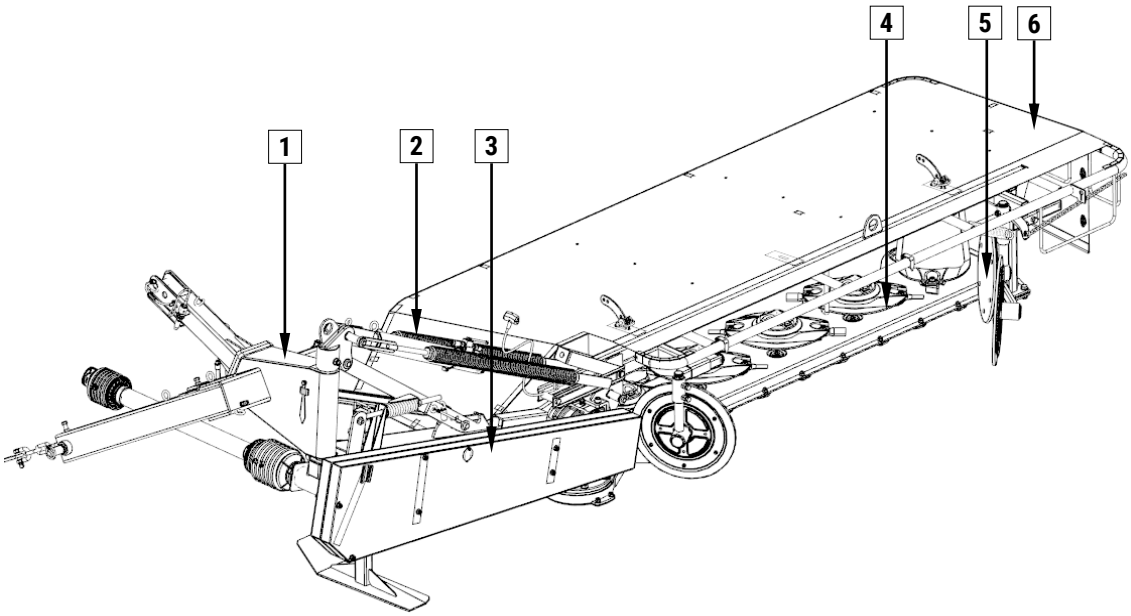


Fig. 3a. Parts of KDT rear disc mower

1 – 3-point linkage frame
2 – Hydraulic cylinder with support springs
3 – V-belt drive
4 – Cutterbar
5 – Swath discs
6 – Safety curtain

3-point linkage frame (**1)** enables attachment of the mower to tractor's 3-point linkage. Drive from tractor's rpm is transmitted through V-belt drive (**3)** on the cutterbar (**4**). Hydraulic cylinder (**2)** is used to adjust the mower to working position. It is supplied from outer hydraulics of the tractor. Main frame, on which the cutterbar (**4**) is situated, is supported by the springs (**2**). Swath discs (**5)** are mounted on the main frame.

3.3. Rear disk mower with tine condioner

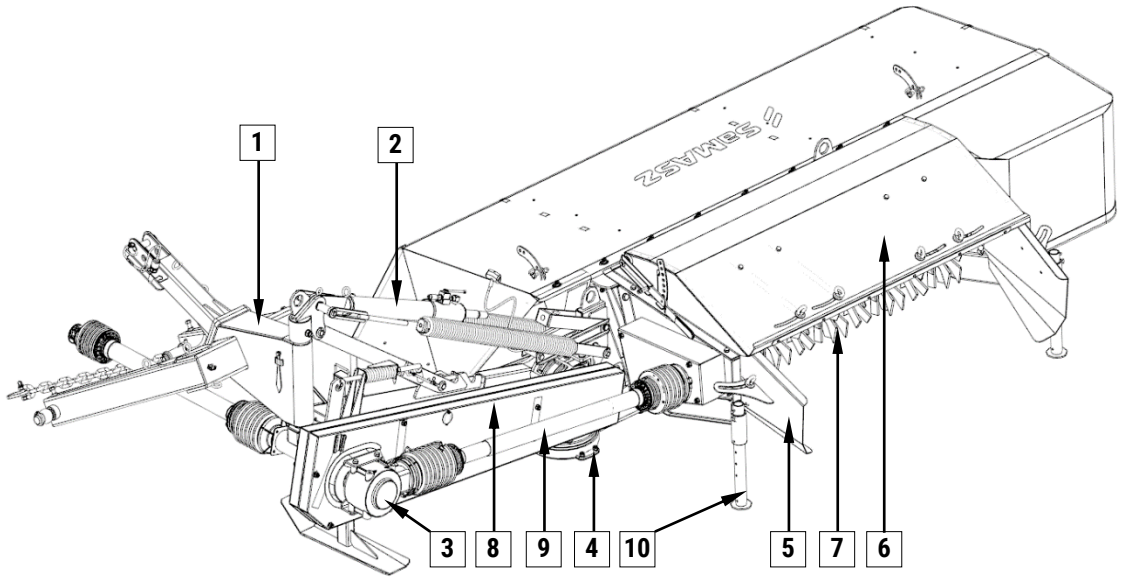


Fig. 3b. Parts of KDT rear disc mower with tine conditioner

1 – 3-point linkage frame
2 – Hydraulic cylinder with support springs
3 – Axis gear
4 – Cutterbar
5 – Swath discs
6 – Tine condioner safety curtain
7 – Tine conditioner
8 – V-belt drive
9 – Tine condioner PTO shaft
10 – Support legs

3-point linkage frame (**1**) enables attachment of the mower to tractor's 3-point linkage. Drive from tractor's rpm is transmitted through intersecting axis gear (**3**) on the cutterbar (**4**). On the cutterbar, there are discs with two knives each. Apart from that, drive from tractor's rpm through V-belt drive (**8**) and PTO shaft (**9**) is transmitted to tine conditioner (**7**). Hydraulic cylinder (**2**) is used to adjust the mower to working position. It is supplied from outer hydraulics of the tractor. Main frame, on which the cutterbar (**4**) is situated, is supported by the springs (**2**). Swath guides (**5**) are mounted on the safety curtain (**6**).

3.3.1. Rear disk mower with roller condioner

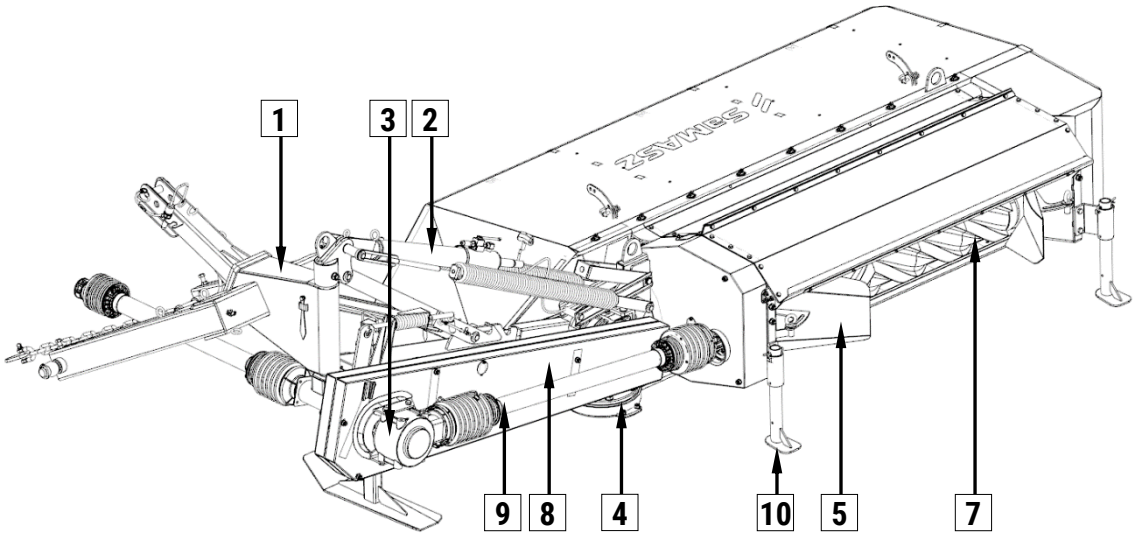


Fig. 3c. Parts of SaMASZ rear disc mower with tine conditioner

1 – 3-point linakge frame
2 – Hydraulic cylinder with support springs
3 – Axis gear
4 – Cutterbar
5 – Swath guides
6 – Roller condioner safety guard
7 – Roller conditioner
8 – V-belt drive
9 – Roller condioner PTO shaft
10 – Support legs

3-point linkage frame (**1**) enables attachment of the mower to tractor's 3-point linkage. Drive from tractor's rpm is transmitted through axis gear (**3**) on the cutterbar (**4**). On the cutterbar, there are discs with two knives each. Apart from that, drive from tractor's rpm through V-belt drive (**8**) and PTO shaft (**9**) is transmitted to roller conditioner (**7**). Hydraulic cylinder (**2**) is used to adjust the mower to working position. It is supplied from outer hydraulics of the tractor. Main frame, on which the cutterbar is situated, is supported by the springs (**2**). Swath guides (**5**) are mounted on the safety guard.

3.4. Equipment and spare parts

The mowers are sold with the following standard equipment:

- warranty card,
- operator's manual with catalogue of spare parts and declaration of conformity,
- cutting knives (additional set),
- frame mounting key,
- PTO shaft,
- spray paint (150 ml / 5.3 uk fl oz).

Optional extra equipment:

- warning triangle,
- topping plates / double topping plates,
- cutting disc with instep (set),
- double swath guide (only KDT 341),
- two swath cutterbar configuration (only KDT 341).

NOTICE:

Optional extra equipment should be ordered separately.

The mower is equipped with such elements as holders and brackets used to mount warning lights and plates. Combined lights and reflectors are mounted on the warning plates.

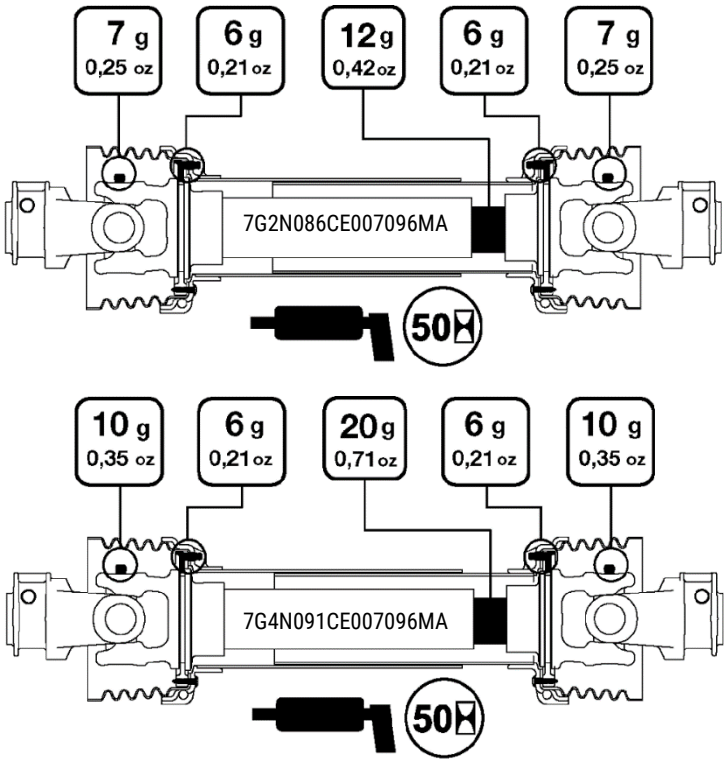
Tab. 3. PTO shaft for rear disc mower

Model	Power	Lenght	Moment	Symbol	Clutch	Using	Producent
	HP	ft. in.	Nm				
KDT 180	21	2'10" - 3'11"	270	7G2N086CE007096MA	Overrunning right	Tractor – mower	Bondioli & Pavesi
KDT 220 KDT 260 KDT 300 KDT 340 KDT 341	35	2'12" - 4'2"	460	7G4N091CE007096MA			
KDT 220 S/SL/W	35	2'12" - 4'2"	460	7G4N091CE007096MA		Tractor – mower	
	21	3'4" - 4'8"	270	8G2N101FX007001	Overload	Tine conditioner PTO	
KDT 260 S/SL/W	35	2'12" - 4'2"	460	7G4N091CE007096MA	Overrunning right	Tractor – mower	
	21	3'4" - 4'8"	270	8G2N101FX007001	Overload	Roller conditioner PTO	

NOTICE:

Lubricate the PTO shaft with high quality multi-purpose grease every 50 shaft operating hours (**Fig. 4**). If access holes are available, lubricate fittings through access holes.

PTO shaft's end without clutch – To be mounted on the tractor's side.



PTO shaft's end with overrunning clutch – To be mounted on mower's side.

Fig. 4. PTO shaft lubrication points. Mounting directions

PTO shafts of other brands with equivalent parameters could be used afer first obtaining SaMASZ permission.

4. SAFETY PRECATIONS

WARNING The following precautions are for your safety. They must be read carefully and followed by every person who operates or maintains the machine. Failure to follow these safety precautions could result in serious injury or death to the operator, maintenance person or bystanders and property damage to the machine and surrounding property.

Safety Signal Words

This manual and the safety labels attached to this equipment utilize signal words that signify safety hazards with different levels of severity. Below are the words used and the definitions for these words:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury
- **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury
- **NOTICE** is used to address practices not related to physical injury
-

4.1. General safety rules and regulations

The following descriptions are for your safety: They must therefore be read carefully and applied every time you use the machine.

- The machine has been designed for use by one single operator.
- When using, servicing, repairing, moving or storing the machine, the operator must wear safety shoes, safety gloves plus ear protection and dust mask if necessary.
- During use, the machine may give rise to dust, especially if the soil is dry. You are advised to use a tractor with a cab fitted with filters in the ventilation system. Failing this, wear a dust mask with filter to protect your respiratory tract.
- Front axis of the tractor should be weighted to keep the balance. If need be, use front wheel weights.
- In order to keep steering conditions, impact on front axis should be at least 20% of the complete tractor.
- Be extremely careful whenever using hydraulic lift lever or buttons. Any operation with hydraulic lift lever should be done from operator's seat; DO NOT move the lever from outside of a tractor.
- In case of tractors equipped with EHR, operating with hydraulic lift is done by the buttons mounted outside the tractor's cabin. When operating be extremely careful.
- When switching from mowing to transport position, remove the entire PTO shaft or at least one end of the shaft from the tractor's PTO so it cannot turn.
- When attaching the mower to a tractor, the operator should wear protective gloves.
- DO NOT operate the mower unless all safety guards are in place and operational. In addition, any damaged protective aprons should be replaced with a new one
- DO NOT exceed 600 PTO rpm.
- No person (except operator) should stand within danger area which is a minimum of 170' from any operating part, especially when operating near roads and in areas with stones and other debris. Be certain that children and animals are at a safe distance away from the machine.

IMPORTANT: Maintenance and adjustment should ONLY be done after the following has occurred:

- tractor's engine has been stopped and ignition key has been taken out,
- all rotating parts have come to complete standstill (NOTE: cutting knives will rotate for several minutes after engine is turned off),
- the cutterbar is on the ground, and

- Never tamper with or remove safety devices on the machine or make them inoperable.
- Before starting work and periodically thereafter, replace any damaged, missing and/or worn knives and knife holders.
- When driving on public roads always comply with local traffic regulations, especially those concerning warning lights.
- When the mower is lifted for repair on 3-point linkage, it should be secured against falling by mechanical support or by chain.
- The bolts and other fasteners have to be periodically checked and, if necessary, tightened or replaced. DO NOT work with damaged or worn fasteners.
- Never lift the mower on tractor linkage when the drive is operating and the cutting discs are rotating.
- When operating the mower, the tractor should always be equipped with operator protection that is required by laws and regulations.
- Never start the mower when the mower blades are off the ground.
- Before you start the tractor make sure that all drives are turned off and the levers that turn the hydraulics are in neutral position.
- Never leave tractor's engine running without supervision. Before you leave the tractor, turn off the engine and remove the key from tractor's ignition.
- DO NOT operate the mower when driving the tractor backwards.
- Permissible inclination of the mower on a slope when working and during transport is 8°. Exceeding this incline can result in mower tipover.
- Never stand between tractor and mower unless tractor and mower are secured against moving by the tractor's brake.
- If any maintenance must be done under an elevated mower, it must be blocked or otherwise secured against falling.
- When the parts of the mower need replacement, use only original spare parts as described in the spare parts list. Pay particular attention to PTO shaft's guards and mower's and tractor's spline shaft guards.
- Hydraulic hoses are potentially very dangerous. Do the following to minimize any hazards:
  - Hydraulic hoses should be periodically checked and if any damage to the hoses have occurred or if they have been used more than 5 years, replace with new ones.
  - Never use scotch tape to repair hydraulic hoses.
  - When connecting hydraulic hoses to tractor's hydraulic connectors, make sure that the tractor's or mower's hydraulic system is not under pressure.
- The mower should be stored under a roof and in a way as to not be hazardous bot people or animals.
- In the event of an accident involving this mower in a field or on a road, follow all applicable first aid procedures and contact SaMASZ technical service.
- Mower should be kept clean, so as to avoid danger of fire.
- No person and no objects must remain on the mower when driving or transporting.

- When taking turns pay particular attention and consider the machine's weight and dimensions.

4.2. Qualifications of operator

To provide safe machine operation each person being the machine operator must meet the following requirements:

- Operator should hold driving license, have ability to drive vehicles safely and know road traffic rules.
- Operator must be in proper physical condition to be able to operate the machine.
- Operator must not be under the influence of alcohol, drugs and medicines, which all have influence on vehicle driving and machine operation.
- Operator should be familiarized with this manual and follow its provisions.
- Operator should be familiar with working principles of both the tractor and the machine, and be able to recognize and avoid hazards resulting from operation of the aggregate.

4.3. Conditions of mounting mower on tractor

- Prior to the mounting operation, be sure that the tractor and mower hitches are compatible and that the tractor's hitch load is adequate for the machine which is to be mounted or attached.
- Prior to mounting the machine, examine the technical condition of the mower's hitch assembly and tractor's 3-point linkage.
- Use only genuine cotter pins to mount the mower on a tractor.

4.4. Transport

The lifting, handling and transporting operations can be very dangerous unless they are carried out with the utmost caution. Have all persons not involved in the actual work move away from the area and limit the zone where the operations are to be carried out. Also make sure that the area in which the operations take place is clear and that there is a sufficient escape route, i.e. a free, safe zone to which the operators can quickly move if the load should fall.

The safety hooks and ropes used to lift the machine must be of an adequate carrying capacity.

To minimize the risk of serious injury or death, do the following:

- When the machine is converted from the transport position to the work position and vice versa, you could be pinched or crushed by some of its parts. Take extra care when carrying out these maneuvers and have all persons keep well clear of the danger zone.
- Do not change position of the mower until there are no people or animals around (pay particular attention to children).
- While transporting the mower, put a warning plate with combined lights and reflectors and warning triangle on the mower.
- During transport, always put the mower in its proper and safe transport position. See section 5.3.
- Before putting the mower in transport position, make sure that the tractor's PTO is turned off and all rotating parts have come to a complete stop.
- Do not drive over 25 km/h (15 mph). Drive slower if road conditions are poor, especially on irregular surfaces or steep slopes.
- The behavior of the tractor on the road, such as its turning and braking capacities, are affected by the implements mounted.

- When driving on the road after work, check to make sure that the tires and soil working tools are clean to prevent the road surface from becoming dirty.
- Make sure that the machine is not damaged during transport.

4.4.1. Putting the mower onto another vehicle for transport

The driver and the carrier are responsible for the mower's transport safety. Equipment and parts must be secured during transport. To put the mower onto another vehicle in a safe way, please obey the following rules:

- Transport should be done by qualified and specifically trained personnel,
- Grab the mower by any lifting devices only in places indicated by hook sign (**Fig. 5**),

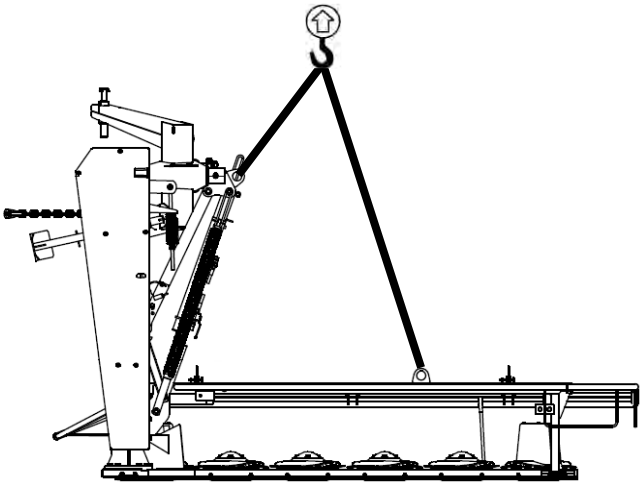


Fig. 5. Transport holders

- For mower lifting, use only lifting devices with hoisting capacity larger than mower's weight shown in data plate. This also applies to ropes and chains used for lifting,
- Do not lift if transport belts, belt suspensions, ropes are damaged. Whenever damage to these parts occurs, replace with new ones,
- When mounting slings, chains, handles etc., always set the machine's center of gravity properly,
- To safely support the machine, use ropes of adequate length so that the angle between them is no greater than 120°, and the angle between the strand and the vertical is no greater than 60°,
- Lift the machine with the utmost caution and move it slowly,
- No one should be within the range of action of the lifting equipment when any transporting operations are being carried out,
- Collapsible parts should be blocked in transport position,
- When the mower is on the vehicle's trailer, the machine should be secured against moving.

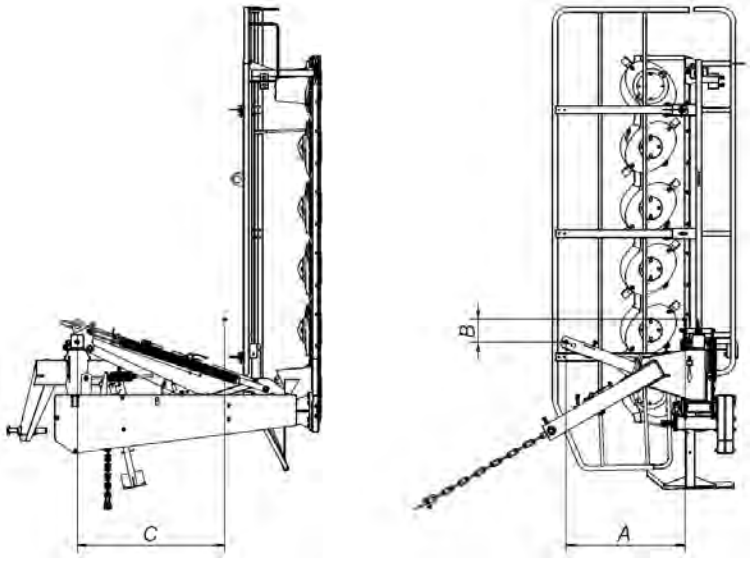


Fig. 6. Location of centre of gravity on mowers KDT

Tab. 4. Location of centre of gravity

Dimension [mm]	Model										
	KDT 180	KDT 220	KDT 220 S	KDT 220 W	KDT 260	KDT 260 S	KDT 260 SL	KDT 260 W	KDT 300	KDT 340	KDT 341
A	2' 5"	2' 4"	2' 9"	2' 9"	2' 8"	2' 8"	2' 8"	2' 9"	2' 4"	2' 4"	
B	5"	1"	4"	5.5"	6.3"	8"	8.7"	8.7"	1'	1' 7"	
C	2' 9"	3' 2"	3' 4"	3' 6"	3' 4"	3' 5"	3' 4"	3' 7"	3' 5"	3'7"	

4.5. Working parts

- Before operating the mower check knife's and knife holder's condition.
- Worn or damaged knives or knife holders should be immediately replaced with new one.
- During replacement of working parts, it should be used personal protective gloves.

4.6. PTO shaft

- Before operating, read bar manufacturer's manual placed on the bar. Follow all safety precautions in that manual.
- Use only PTO shafts recommended by mower's manufacturer with guards in good condition.
- In order to operate safely, use only undamaged PTO shafts and shields. Damaged PTO shafts and shields must be repaired or replaced with new ones before use.
- Before any operation make sure whether PTO rpm have proper rotational direction.

4.7. Hydraulic assembly

- Hydraulic assembly is under high pressure. Hydraulic oil under pressure may penetrate skin and cause serious injury or death. Skin and eyes should be protected when working around this assembly.
- In case of injury caused by a liquid under pressure, call a doctor immediately.
- Hydraulic hoses can be connected to the tractor's hydraulics provided that both the tractor's and the mower's hydraulic assemblies are not under pressure. To remove the pressure from the hoses, start the tractor's hydraulic valves several times with the tractor off.
- When looking for oil leaks, do so safely. Use a cardboard card. Do not touch any potential leaks until the entire hydraulic assembly has been relieved of pressure.

- It is recommended that the using hydraulic oil should not exceed 10 oil purity class in accordance with NAS 1638.

When using hydraulic hoses:

- Avoid stretching the hoses when operating.
- Do not allow hydraulic hoses to get deflected.
- Do not expose hydraulic hoses to contact with any sharp edges.
- If damaged or worn, replace the hoses with new ones.
- Useful life for hydraulic hoses is 5 years from their production date.

4.8. Residual risk

Despite the fact that SaMASZ, the manufacturer of the mower, has taken great care in the design and manufacturing of the mower, certain risks during mower operation and maintenance are unavoidable. A major source of risk that could result in serious injury or death can occur during the performance of these operations.

Major source of risk follows performance of these operations:

- operation of mower by minors,
- operation by individuals who have not read the operator's manual and safety labels,
- operation of mower by persons under influence of alcohol or other substances,
- not being cautious during transportation and moving mower during operation,
- transport of persons who are on the machine,
- presence of persons and animals within the mower operation range,
- performing servicing and machine adjustments with the engine on.

4.8.1. Danger of machine entanglement

This risk occurs when (1) changing position of a mower, (2) operating near rotating parts, and (3) working without safety guards. During operation, maintenance and adjustment, always wear protective gloves, shoes and clothes without loose parts, belts and so on. Always comply with safety labels placed on the mower.

4.8.2. Danger of cutting injury

This risk occurs during replacement of working parts with sharp edges, cleaning the machine and removal of any clogging and jams. During any maintenance work, always use safety gloves.

4.8.3. Danger of injury from liquid ejection out of hydraulic system

During connection of hydraulic hoses to hydraulic connectors, be sure that tractor's or mower's hydraulic system is not under pressure. Regularly check hydraulic hoses for leaks.

4.8.4. Forbidden actions

During mower's operation, do not do the following:

- never unblock the mower, make any regulations or repairs of the mower while it is in motion,
- never change order of operation and maintenance activities described in operator's manual,
- never operate the mower when it is not in working order or has damaged safety guards,
- never get your hands and legs close to rotating parts of the mower,
- during repair and maintenance of the mower, always comply with descriptions included in operator's manual. Always do these activities when the tractor's drive is off,

- never operate the mower under influence of alcohol, drugs, or strong medicine that impair your attention,
- do not wear clothes or jewelry that are too loose or too tight. Too loose clothing or jewelry may be pulled in by the rotating parts of the mower,
- the mower should not be operated by children or by handicapped people,

When describing residual risk, the mower complies with the state of the art in technology on the date it was manufactured.

4.8.5. Residual risk assessment

Residual risk occurs from not complying with the instructions and safety precautions. Such risk can be minimized by doing the following:

- thorough familiarizing yourself with operator's manual,
- allow no persons on the machine when operating,
- allow no persons within the mower operation range,
- adjust, maintain and lubricate the machine with the engine off,
- only skilled persons should perform repairs of the machine,
- children and strangers must keep away when the machine is operating,

When the risk of exposure to noise cannot be avoided or eliminated by any protective means or organization of work, the employer (farmer) must:

1) provide the operator with individual means of noise protection if the noise level in work place exceeds 80 dB.
2) provide the operator with individual means of noise protection and supervise the correctness of its usage, if the noise level in work place reaches or exceeds 85 dB.

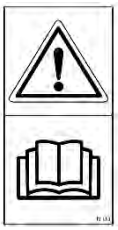
4.9. Safety labels and their meaning

Safety labels are critical to safe use of this mower. They must be read, understood and followed. Also, be sure that:

- All warning decals are clean and legible
- All lost or damaged decals are replaced by ordering new decals from your dealer or supplier
- All persons using this mower have read the section of this manual explaining the meanings of these labels
- All spare part used for repair of the mower should have all safety labels provided by the manufacturer.

N-01
Be extremely careful when PTO shaft is rotating

N-02
CAUTION: cutting knives. Approach during operation is forbidden



N-03
Read the operator's manual before putting the mower into operation

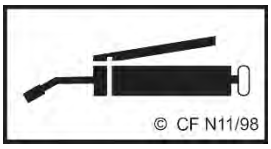
N-04
While making repairs the machine must be stopped

N-05
CAUTION: belt transmission, be extremely careful

N-06
CAUTION: pulling-in parts

N-07
Operating is forbidden when any person is within the danger area of 170'

N-09
CAUTION: rotor

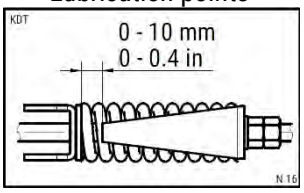


N-11
Lubrication points

N-14

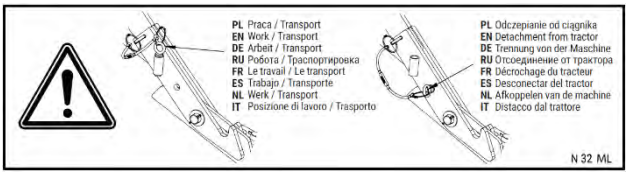
N-15

N-23
Watch out: power lines



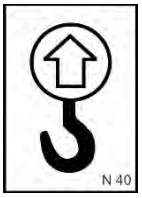
N-16

N-29



N-32

N-35
Cutting height – Cutterbar „Perfect CUT"



N-40

N-48
Stay a way from mower's inclination area

N-49
Never stand near tractor's 3-point linkage while steering tractor's lift

N-50
Do not stay in the swinging area of mower's parts

N-55

N-63

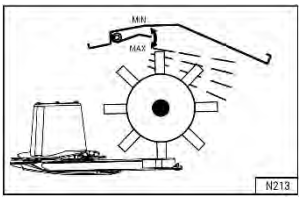
N-162

N-117
Under pressure. Consult technical manual for service procedures

N-167
Do not remain on the machine while driving

N-109

N-168
Do not touch the machine before the rotating parts have not come to a complete standstill



N-213
(for KDT S/SL)

N-224
Do not open and remove safety guards with motor operating

N-52
Hand protection must be worn

N-100
Eye protection must be worn

N-101
Protective clothing protection must be worn

N-102
Head protection must be worn

N-103
Hearing protection must be worn

N-104
Foot protection must be worn

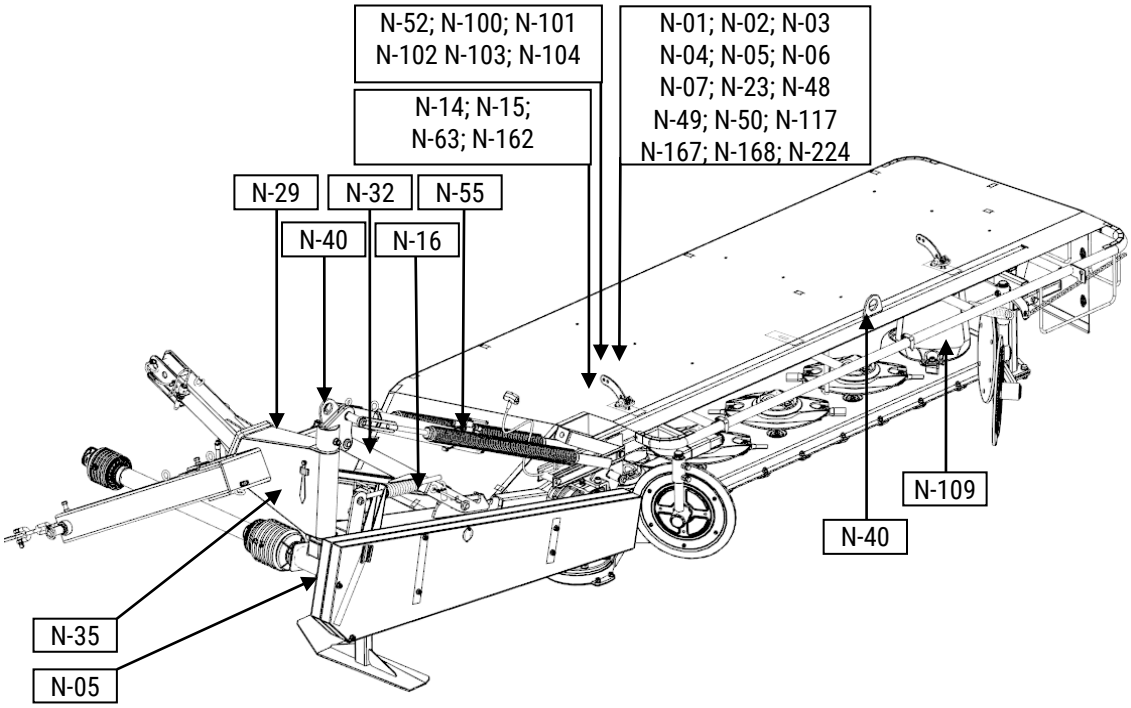


Fig. 7a. Placement points of warning signs on mower without conditioner

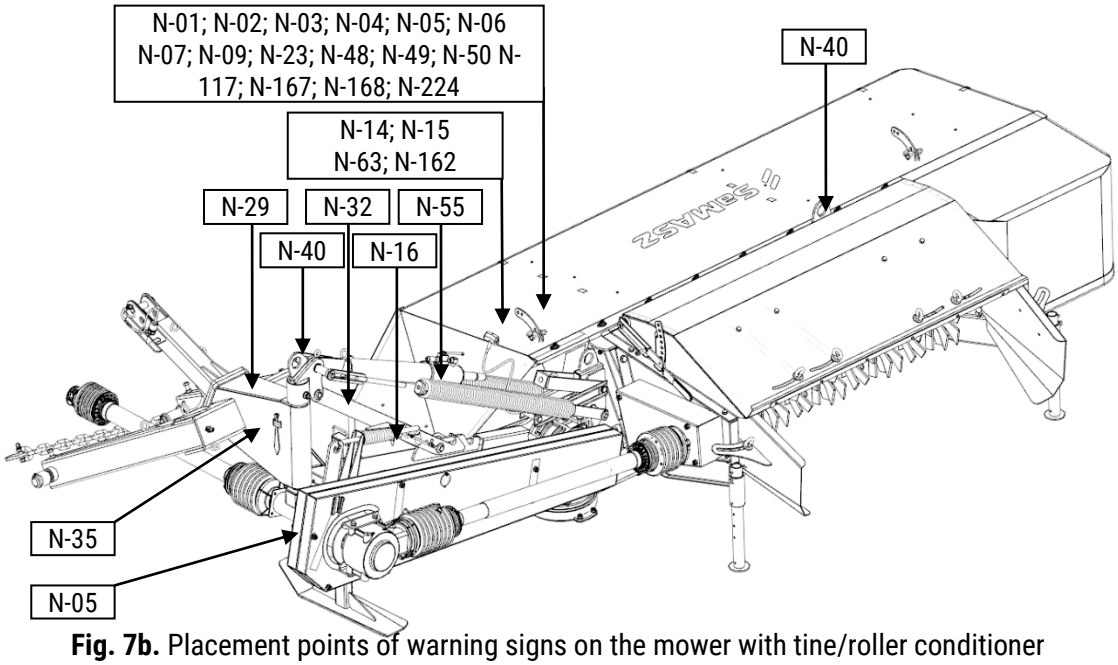


Fig. 7b. Placement points of warning signs on the mower with tine/roller conditioner

NOTICE:

Any spare part used for repair of the mower should have all warning decals provided by the manufacturer.

5. OPERATION

WARNING!

Before beginning to use this machine, do the following:

- Read manual, especially safety precautions in section 4.
- Make sure you are familiar with all controls and functions.
- Make sure all safety devices are in place and working. Fix or replace if not working or damaged.
- Replace protective cover if damaged.

5.1. Attaching the mower to the tractor

WARNING!

- Only hitch and unhitch machine on a flat surface with compact dirt.
- Keep everyone away from area between mower and tractor.
- Be careful near link road zone of tractor's rear power lift. Contains sharp parts.
- Any accidental maneuvering with the set may cause to crushing of unauthorized personnel

Mower's frame is adjusted to be attached to the tractors with 3-point-linkage (**Fig. 8**).

The mower has been attached, adjust (on the flat ground) the mower's position by means of top **S** and lower **W** links. The cutterbar should lean towards the driving direction.

Secure the adjustable pin with the bolt (**R**), next counter-screw the mounting with a nut (**N**) (**Fig. 9**).

WARNING!

Proper securing of the pins must be inspected regularly before using the mower.

Lower links **W** should be connected to 3-point linkage frame pins **A**. Support chain **L** holds up mower's linkage frame. Insert and tighten the safety pins into the pin holes and make sure that they are well locked.

Connect hydraulic hose to tractor's hydraulic connector.

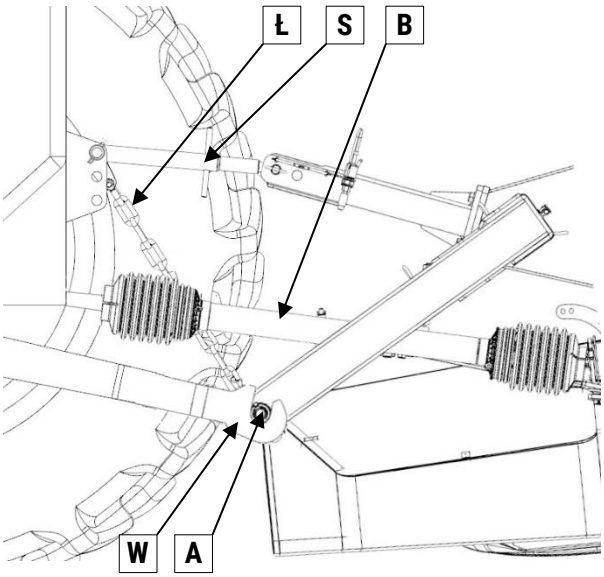


Fig. 8. Connecting the mower to the tractor

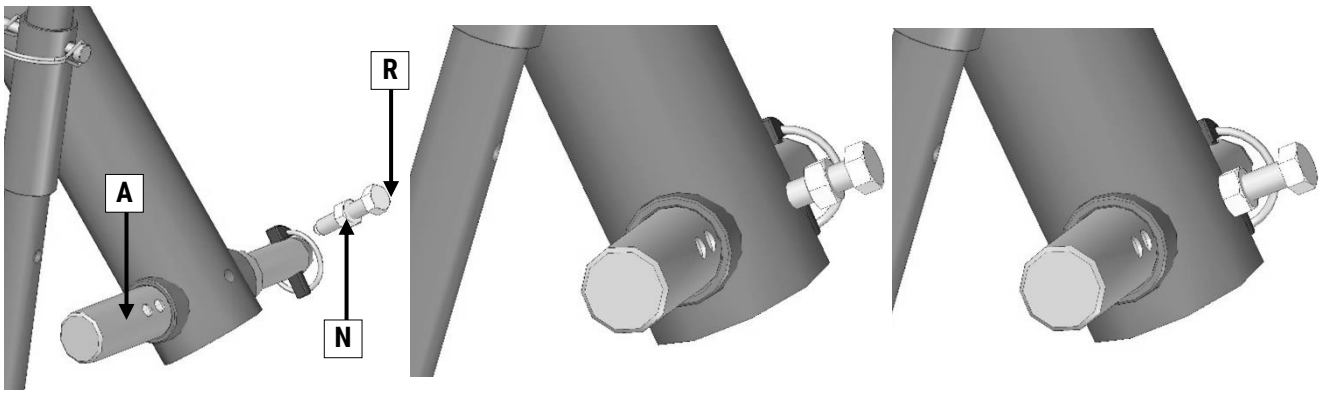


Fig. 9. Proper pin locking during the mower mounting

After the mower has been attached to tractor, check the balance and steerability of tractor-mower set. To do this, calculate to formulas given in the appendix or weigh the set, and then drive on the scales only with front axis of the tractor (the mower must be in transport position – lifted upwards). If the pressure on the front axis is at least 20 % of the whole set's pressure, it means the set is stable. If not, the front axis should be balanced.

WARNING!

Before disconnecting the mower put the pin 1 into the hole 3 in the bar (**Fig. 10**) to secure the linkage against falling. When the mower is connected the pin should be in the bush 2 on the middle bar.

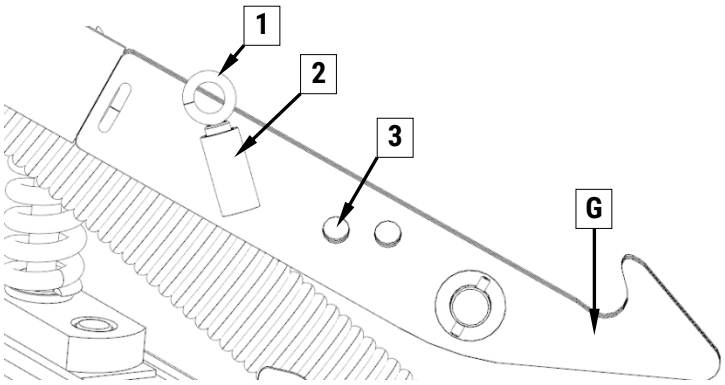


Fig. 10. 1 - pin, 2 - bush, 3 – hole in the bar, G - lock

5.2. Mounting PTO shaft

PTO shaft's end with overrunning clutch should be mounted on mower's side.

When connecting PTO shaft between tractor and mower make sure that external guard tube of the shaft is on the tractor's side. The PTO shaft plastic guards have to be secured by fastening their small chains to immovable parts of tractor and mower. The PTO shaft must operate at the lowest possible angle. This will ensure that both shaft and the machine last as long as possible.

WARNING!

If need be, shorten the PTO shaft according to its operator's manual given by the shaft's manufacturer (**Fig. 11**).

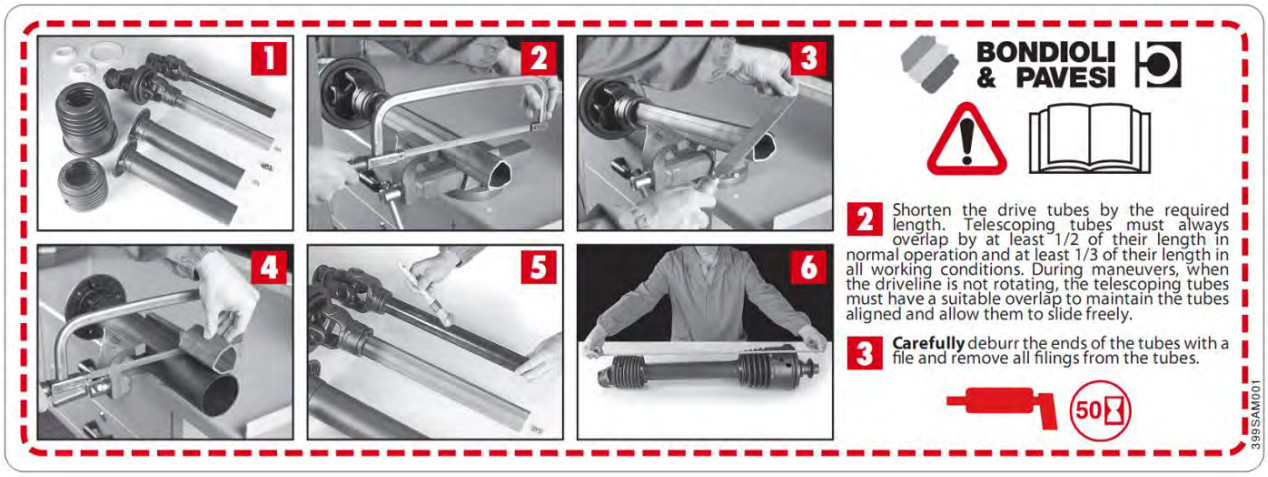


Fig. 11. Instruction of PTO shaft shortening

WARNING!

Handle all parts with utmost care. Never place your hands or fingers between one part and the other. Wear safety clothes such as gloves, protective footwear and goggles. The operation of shortening must be carried out with the utmost care as the PTO shaft will have to be replaced if the telescopic shafts are shortened to an excessive extent.

WARNING!

The PTO shaft should be mounted only during operation time and disconnected from tractor PTO for transport and service.

WARNING!

The manufacturer declines all liability for damage caused by an incorrectly fitted or used PTO shaft.

WARNING!

Use the machines with PTO shafts designed to drive them. Before the work begins, check the safety guards (in tractor, mower and PTO shaft), if they are placed correctly and are not damaged. Damaged or lost parts must be replaced with genuine ones. Make sure the PTO shaft is properly mounted. It is forbidden to approach the rotating parts, because it may lead to serious injuries or even death. All service and repair operations must be done only after the tractor engine has been stopped and ignition key off, all rotating parts have come to the complete standstill and the cutterbar is on the ground. Before the operation begins, read operator's manuals of both the machine and PTO shaft.

5.3. Preparing the mower for transport

To prepare the mower for transport and to meet safety precautions, please do the following:

- lift the mower with tractor hydraulic lift until the lower lift pins of the mower 3-point linkage frame raise about 1' 8'' above the ground (**Fig. 13**),
- lift support leg up and secure it with split cotter,
- remove the pin **1** and put it into the bush **2** (**Fig. 10**),
- lift the cutterbar by hydraulic cylinder vertically until the pawl **G** locks in (**Fig. 10**),
- secure the cutterbar against falling by the shut-off valve (**Fig. 12)** placed on the mower's hydraulic cylinder.

WARNING!

During transport the shut-off valve of mower hydraulic lift should always be closed – the valve lever in **Z** position (**Fig. 12**). It protects the mower against incidental falling in case of hydraulic failure.

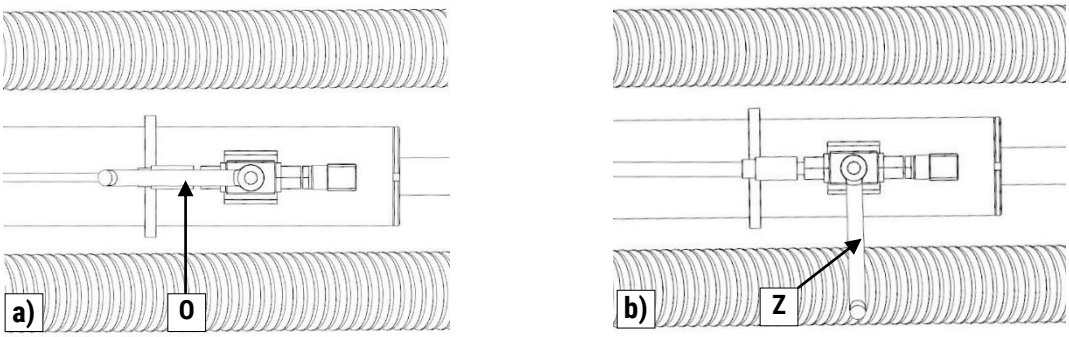


Fig. 12. Shut-off valve position: a) open(work), b) closed(transport)

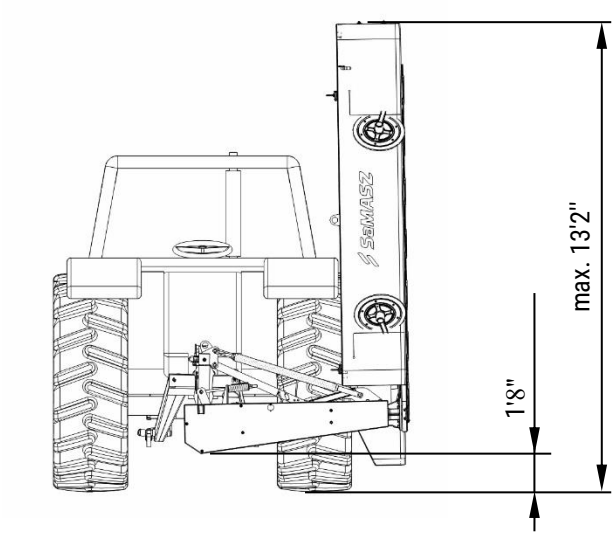


Fig. 13. Rear disc mower in its transport position

5.4. Preparing the mower for transport on public roads

WARNING!

Legal requirements for transport on public roads may differ from state to state. Check your location's requirements and comply.

To comply with safety precautions concerning transport on the public roads the mower should be equipped with the following devices:

- portable warning-light plates, to be mounted on both sides of mower top guard in their holders. The panel consists of warning plate with combined lamp mounted (parking, stop lights and driving direction) and with red reflectors facing the rear and white light on the front.

WARNING!

The warning devices can be ordered from the mower manufacturer.

WARNING!

Do not drive on public roads if the machine's transport height is more than 13' 2'' (when transported, transport height should be lowered on the tractor links).

5.5. Moving from transport to working position

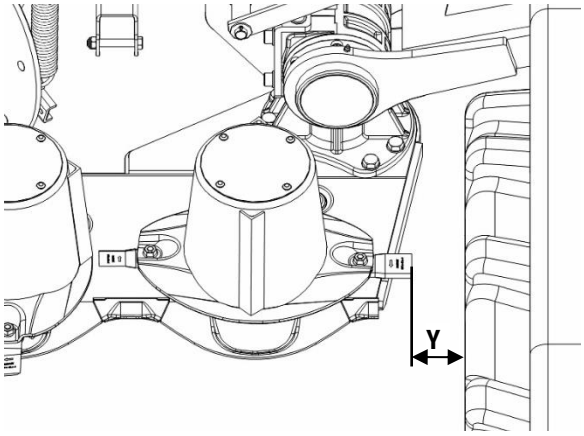
WARNING!

Moving the mower to and from operating position from the transport position should only take place on even and stable ground. Prior to making the moves make sure whether there are no unauthorized persons exposed to any hazardous moving parts.

The safely move to the operating position, do the following:

- open the shut-off valve on the hydraulic cylinder (**Fig. 12**),
- lower the mower until the cutterbar is at least 1' 4" above the ground,
- make sure there is nobody around in the place where you are going to lower the mower,
- tighten the cord until the lock **G** is released (**Fig. 10**) and by means of hydraulic cylinder put the mower into horizontal position,
- with tractor's lever lower the cutterbar to reach the horizontal position in a possibly slow way,
- lower the mower until the support chain tightens. If the 3-point linkage frame is more than
- 1' 4" above the ground, adjust the chain.
- by means of link **S** (**Fig. 8**) adjust the cutting height. Extending the link **S** increases the cutting height and shortening the link reduces it.

The proper distance between the end of cutterbar and tractor's tyre **Y** should be about 0 to 4" for **KDT 180, KDT 220, KDT 260**. For **KDT 300 Y** should be between 11.8" and 1' 4. For **KDT 340, KDT 341** between 1' 8" and 1' 12".



For **KDT 180**; **KDT 220**; **KDT 260**

Y = from 0 to 4"

For **KDT 300**

Y = from 11.8" to 1' 4"

Fig. 14. Proper distance between the cutterbar and tyre

5.5.1. Operating positions of the mower

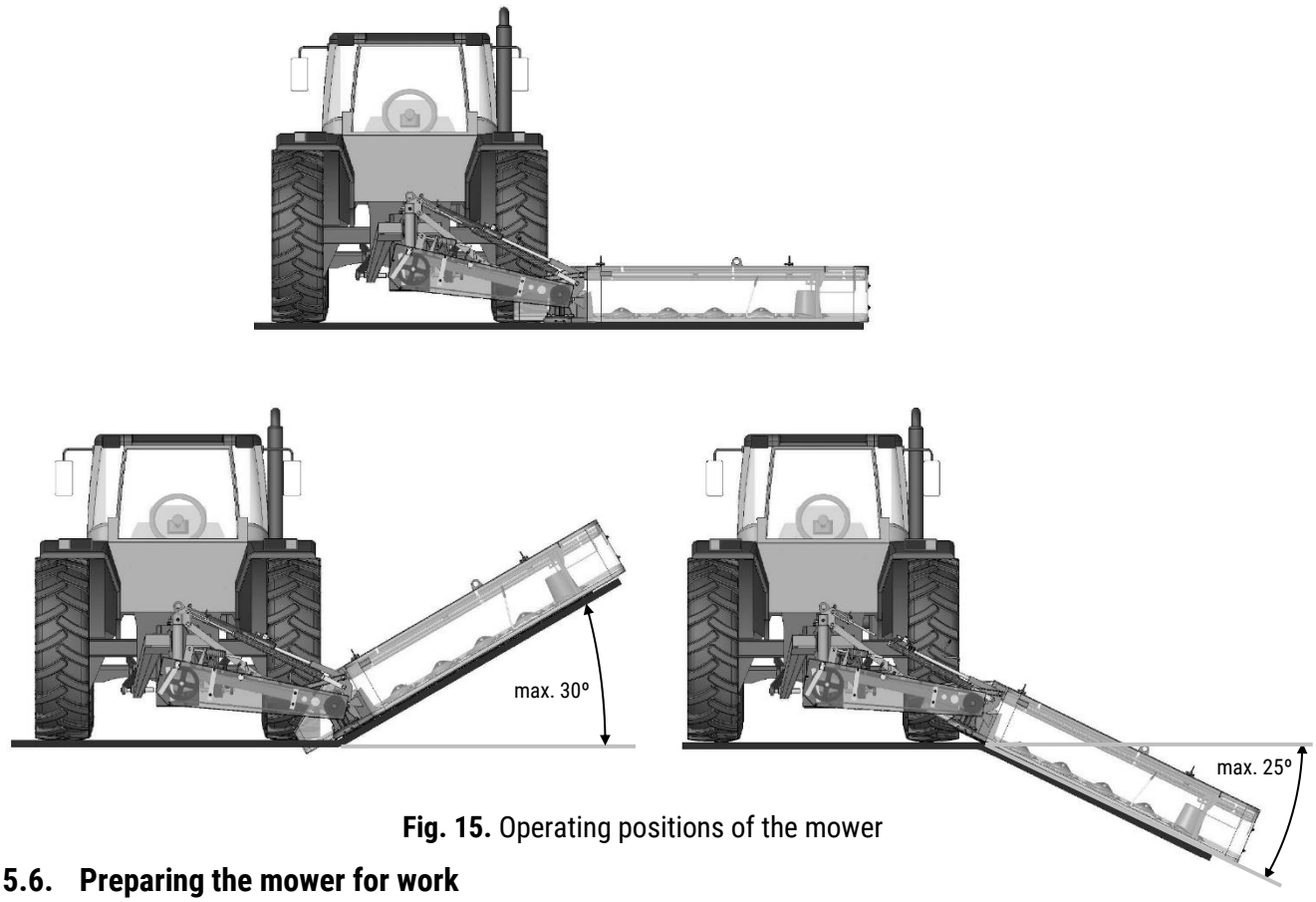


Fig. 15. Operating positions of the mower

5.6. Preparing the mower for work

WARNING!

Before sale SaMASZ protects the cylinders with special grease against weather which may cause premature wear. Before operating the mower, remove the exceess grease from the cylinders.

Put the mower into motion when the cutterbar is on the ground so that oil can fill the whole cutterbar. When the mower is in working position, please do the following:

- be sure cutterbar to the ground,
- connect PTO shaft between tractor and mower,
- by means of upper regulating bar of the mower, adjust the cutterbar's height and inclination towards the ground. Proper inclination of the cutterbar is between 0° and 5°. It is regulated by extending or shortening the bar,
- slowly engage the PTO clutch and wait until the cutting unit reaches its rated speed. Tractor's engine rpm should be considerably lower, so that the fuel consumption could be reduced,
- engage tractor gear and drive slowly into the grass-field. Flat meadows can be mowed with any speed. If the meadow in uneven, reduce speed.

WARNING!

Do not operate the conveyor when it is in vertical position.

NOTICE:

DO NOT pull the cutterbar towards the tractor, because it will lead to cutterbar's premature wear or even its damage.

WARNING!

Improperly relieved cutting unit of the mower will cause increase of cutterbar pressure on the ground which will lead to faster wear of sliding skids, overload of cutterbar, higher fuel consumption, damage to the stubble and contamination of the fodder.

5.7. Operation (mowing)

WARNING:

The operator must be seated in the tractor's driver's seat when the machine is operating since only from that position is he able safely and properly operate the mower. Before he leaves the driver's seat, the operator must stop the engine, apply the parking brake and turn off the tractor engine.

Always use appropriate protective equipment (safety footwear, gloves, ear protection and dust mask).

Before using the machine, make sure that all the safety devices are in their correct positions and in a good condition. These safety devices must be immediately replaced if they are faulty or damaged.

In particular, the protective cover must be checked regularly. It must be immediately replaced if it is missing or damaged in any way.

IMPORTANT: If a disc mower is your first experience (you have mowed with 2-drum mower), you need a piece of essential information:

1. Main advantage of disc mowers is their small power demand – 20% less tractor power, small moment of inertia and possibility to manufacture mowers with large working width.
2. There is however a certain disadvantage - creased stubble, especially when it comes to lying grass. Straight grass may be mowed with horizontal adjustment of the mower and then the stubble will be even, but it will not look as attractive as with 2-drum or 4-drum mowers, because the knives work horizontally to the ground and inclined grass bends because of wind blasts. After the grass is mowed, it stands up, which makes an impression of inaccurate mowing.

   Every mower may leave stripes of uncut grass when it comes to the knives which cut the grass towards the grass direction.

   It is a normal phenomenon. Practically, it is not possible to achieve such attractive stubble as in

   2-drum mowers, because the knives work horizontally or at an angle of up to 8° to the ground, and when it comes to 2-drum and 4-drum mowers, slantwise through the ground (even 23°).

   Despite these 'disadvantages', disc mowers are 'winning farmers' trust' and modern technologies give an opportunity to manufacture very durable mowers.
3. The most even stubble with very low grasses is obtained with disc mowers when half of the discs rotate to the right and half to the left. A disadvantage of this system is a narrow and thick windrow which needs to be spread out.

5.7.1. Essential information concerning mowing

Optimum work parameters

1. Inclination towards the front 0-5 degrees which equates to 1.8" - 2.8" of mowing height.

2. Operation speed around 6 mph or more, if the conditions allow.

3. Keep the constant PTO rpm = 470-520 rpm. PTO rpm less than 540 may cause stripes of uncut grass between the disc.

High and inclined grass

1. Heighten the cutterbar's inclination to H = about 1.8".
2. If there is no inclination the grass will be wedged on the forming drums.
3. Speed can be more than 8 mph (the faster – the better).
4. Do not turn in the mowed grass.

- Optimum inclination of the cutterbar towards the ground is between 0° to 5°. If the inclination exceeds 5°, there might be a slight unevenness of mowed grass. It impairs slightly the quality of mowing and has an influence on the mower's operation. When the cutterbar is pulled in the other direction, it significantly impairs the quality of mowing and in some cases the mower stops mowing. Besides, it may lead to premature wear or even damage of the slides and cutterbar.
- When high grass prevails, first and second cut should be mowed at height level 2.4" - 2.8", but when the grass grows low it should be mowed at 2". The last cut should be mowed a little bit higher, 2.8" - 3" above the ground.
- Too high a PTO rpm whirls the air, which may cause inclination of the grass in front of discs, which impairs the quality of mowing.
- Too low a PTO rpm impairs the quality of mowing and in some cases the mower stops mowing (too low linear velocity of the knife).
- In contrast with 2-drum mowers, straight mounting of the mower and full speed are not always possible. Adjust inclination of the mower, PTO rpm, speed and correctness of knife-mounting to get the best results.
- In case of mowing soft meadows, the pressure of the cutterbar on the ground should be reduced by adjusting support springs.
- Always check to make sure that the ground speed suits the conditions or work and that it does not create a potential source of danger
- Do not take sharp turns anytime and do not operate in reverse.

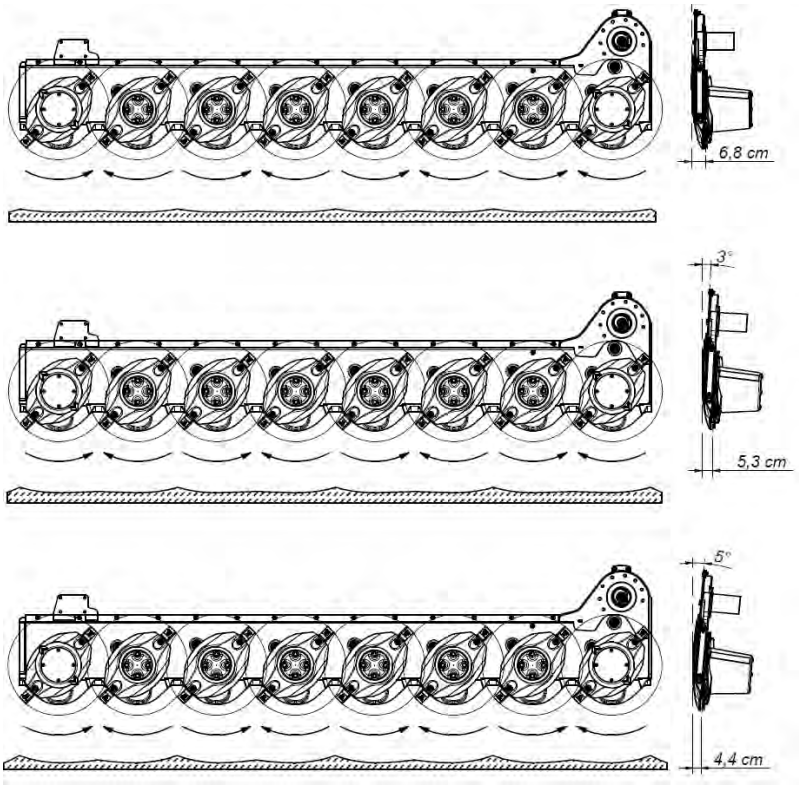


Fig. 16. Shape of the stubble with cutterbar's inclination 0°, 3° and 5°

5.7.2. Design and and operation of safety breakaway device

In the event of hitting an immovable obstacle one of the safety device flat bars slides out and disconnects the safety device. After that the mower folds back about 34 degrees (**Fig. 18**). The operator has time to shut off the tractor and protect the mower. Safety device spring is adjustable (**Fig. 17**), therefore changing the force needed to make safety device work.

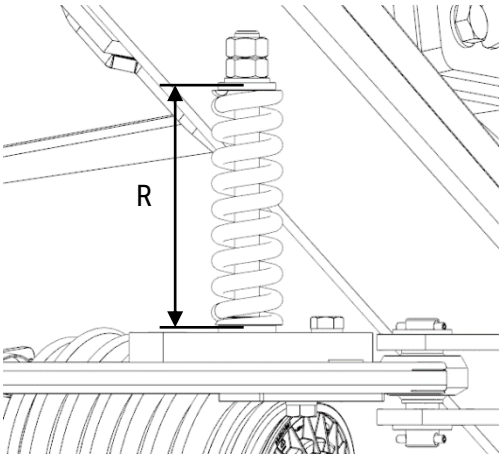


Fig. 17. Safety device

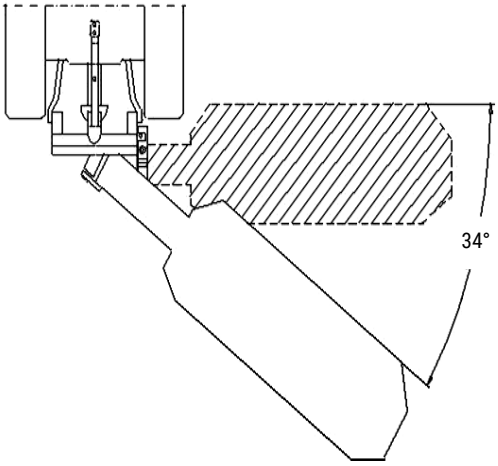


Fig. 18. The mower breaks back when the safety device operates

Recommended length of safety device spring **R** (**Fig. 17**) should be 5.6". If the safety device breaks away too easily, tighten up the spring approximately .04"-.08". DO NOT tighten up too much, because you may prevent the safety device from working and damage the mower.

5.7.3. Mower clogging and jams

When operating the mower pay attention to variable conditions on field, which may influence the mower clogging and jams, such as: terrain unevenness, height and density of grass as well as other objects in the grass (stones, branches, piles of soil). In order to avoid clogging and jams, operating speed should be adjusted to the mentioned conditions.

WARNING!
Removing clogs and jams while the machine is in operation can lead to the accident!

In case of machine blockage caused by wrapped material, set the machine on a flat surface, remove excess material using sharp tool. After clearing the machine check if nothing has been damaged.

To remove any clogging it is obligatory to disconnect the drive and the motor, take out the ignition key. When eliminating any clogging on the machine, use also safety means for operator, so protective gloves and tight wear.

5.7.4. Taking turns over swaths

Lift the mower with hydraulic cylinder and take the turn. The mower does not need to be additionaly lifted by tractor's 3-point linkage.

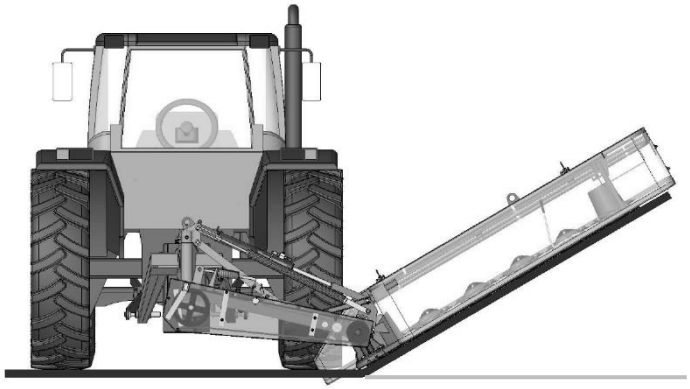


Fig. 19. KDT mower prepared to take turns

5.8. Dismounting mower from tractor

WARNING:

When dismounting, make sure there is no person in between the mower and the tractor.

To dismount the mower from the tractor:

- left the swath,
- turn cutterbar's drive off,
- place the mower on even, paved ground, lower and protect support legs, check, if the mower is properly protected against falling,
- turn the tractor's engine off and take ignition key off,
- dismount tractor's rpm and place it on a PTO shaft holder, that is standard-delivered with the mower,
- disconnect hydraulic hose,
- detach tractor's upper link and lower strands from mower's linkage.
- carefully drive the tractor away.

6. MOUNTING AND ADJUSTMENTS

6.1. Mounting and timing of the knives

The knives should be mounted as shown in **Fig. 20** and **Fig. 22.** Mount the knives so that cutting edges are directed towards ground, so that a knife lifts the grass after cutting.

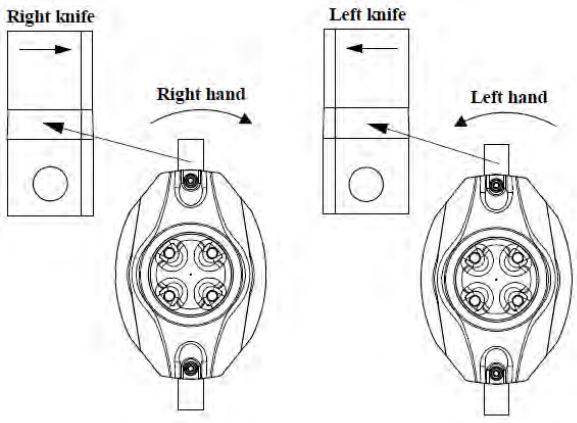


Fig. 20. Mounting of the knives on mowing discs

WARNING!

- Use only knives recommended by manufacturer.
- Check condition of knives and holders before each operation. Worn or damaged knives should be replaced immediately.

6.2. Checking the knives and knife holders

WARNING!

Condition of knives and holders should be checked each time before commencing any operation. Damaged or worn elements pose danger of throwing and are as well health and life threatening.

WARNING!

When operating pay attention whether there are no excessive vibrations of the mower which may indicate that the disc(s) operate with 1 cutting knife attached only. Long-term cutting with insufficient amount of knives will cause permanent damage to the cutterbar, not eligible for a repair under the warranty. When operating check knives for completeness.

Always check mower before starting work for damaged, missing and/or worn knives. Replace them (**Fig. 20** and **Fig. 22**), if necessary, only in sets.

If the knife holder pin is worn too much and/or the knife holder is worn or deformed, please replace it immediately (**Fig. 21**).

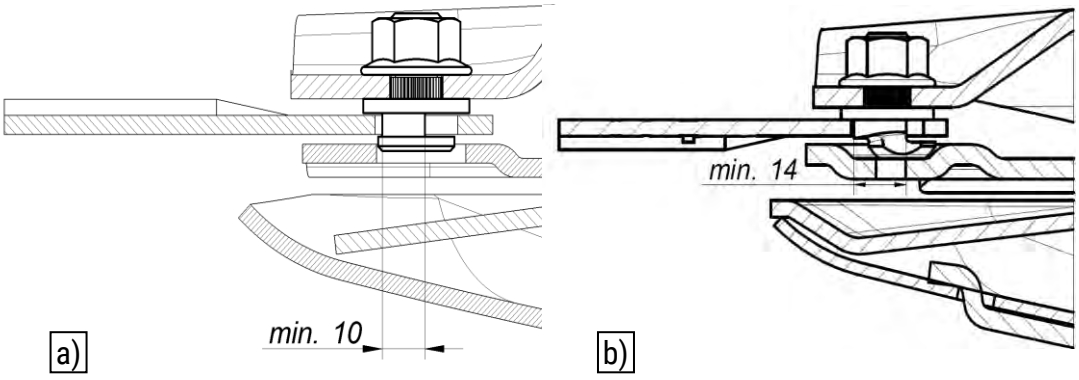


Fig. 21. Permissible wear of knife holder pin on disk a) knife base M12 b) knife base M12 with claw

6.3. Replacing the knives and knife holders

Worn and/or damaged knives should be immediately replaced like shown in **Fig. 22**. Make sure all knives in a set are of the same length and weight. The knife holders (**Fig. 21**) must not be damaged or deformed. If the knife holder pin is worn too much, please replace it immediately (tightening torque 130 Nm / 96 ft-lb (**Fig. 23**)).

WARNING:

When replacing knives, the engine must be stopped and the cutterbar must lie on the ground. PTO shaft must be disconnected. Discs should be perpendicular to cutterbar.

Fig. 22. Quick replacing of the knives with mounting lever

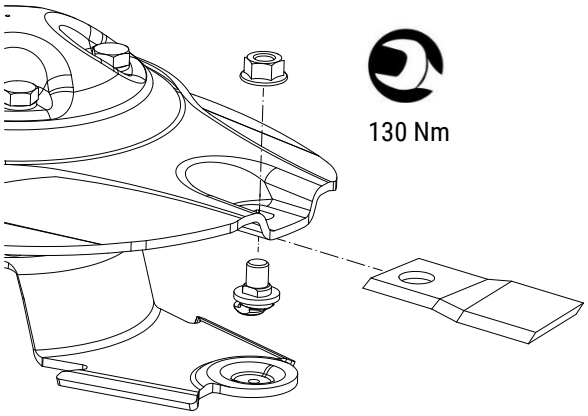


Fig. 23. Knife mounting torqueing

NOTICE:

Before you change the knife check disc turns (**Fig. 24**).

WARNING!

Different mounting of the knives will block the mower. When mounting pay particular attention to loose rotation of the knife on the knife holder pin.

NOTICE:

Due to high discs rpm speed, change knife holders in sets of the same weight. Improperly changed knife holders will damage disc bearings.

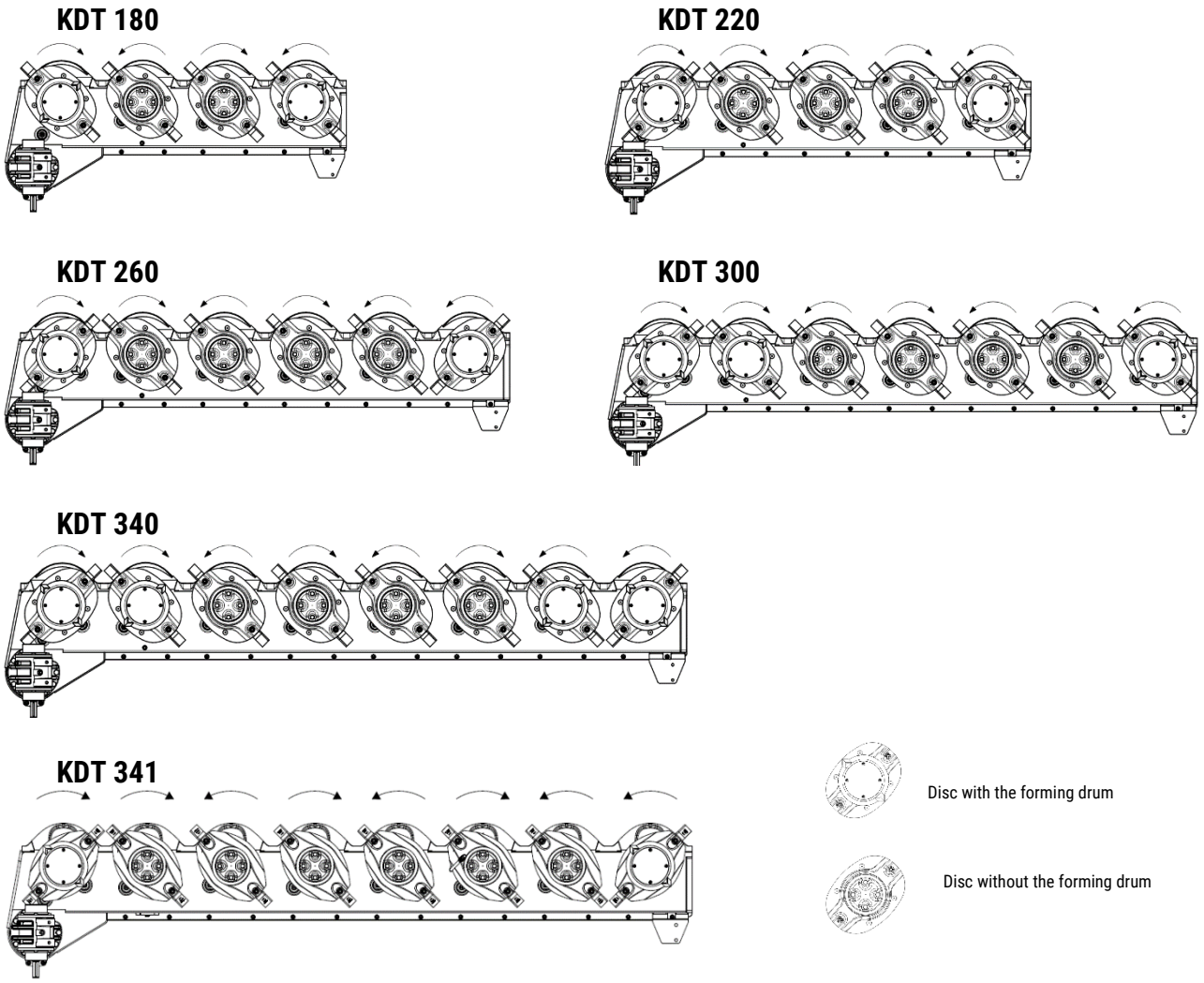


Fig. 24. Rotation directions of disks

6.4. Adjusting the swath width

Swath width is adjusted with swath guides mounted on the 3-point linkage frame of the cutterbar (**Fig. 25**).

In order to adjust the guide, the following should be performed (for: **KDT 180, KDT 220, KDT 260, KDT 300, KDT 340**):

- loosen locknuts (**2**) and screws (**3**),
- shift the guide arm (**6**),
- tighten screws (**3**) and locknuts (**2**),
- loosen locknuts (**4**) and screws (**5**),
- then adjust height and shield angle (**1**),
- tighten screws (**5**) and locknuts (**4**).

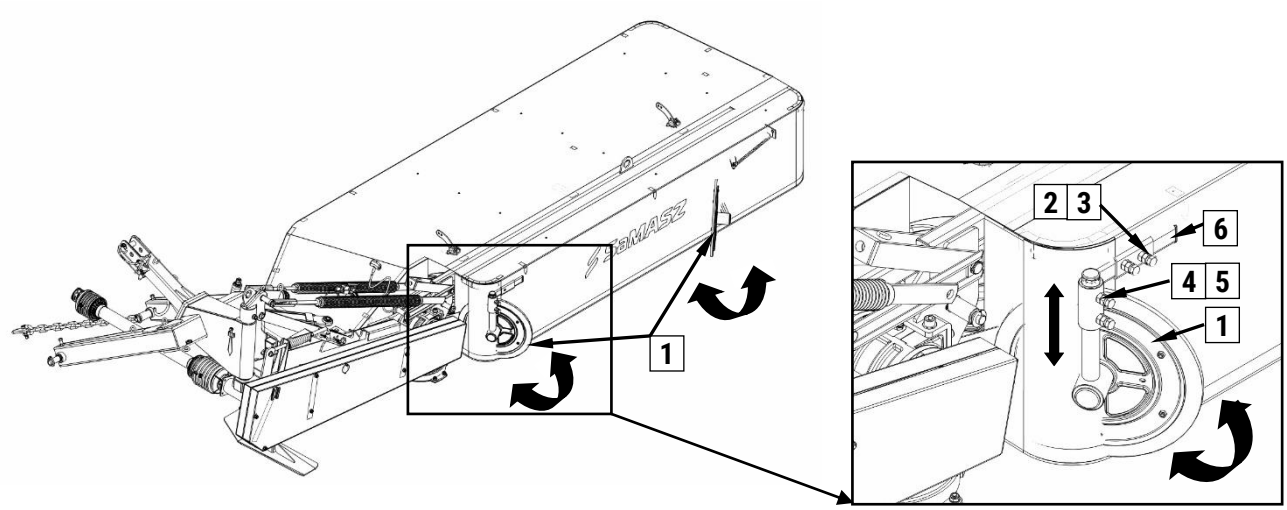


Fig. 25. Adjustment of swath guides: 1 - swath guide, 2 - locknuts, 3- arm adjustment screws, 4 - locknuts, 5- shield adjustment screws, 6- guide arm

In order to set swath width, adjustment of swath guides (**1**) should be performed (**Fig. 26**) (for: **KDT 220 S, KDT 260 S, KDT 260 SL**):

- loosen eye screw (**2**) of the swath guide,
- set the swath guide (**1**) as needed,
- tighten screw (**2**),
- even spreading of swath might be adjusted with wheels (**3**) the same as it is preformed with guides.

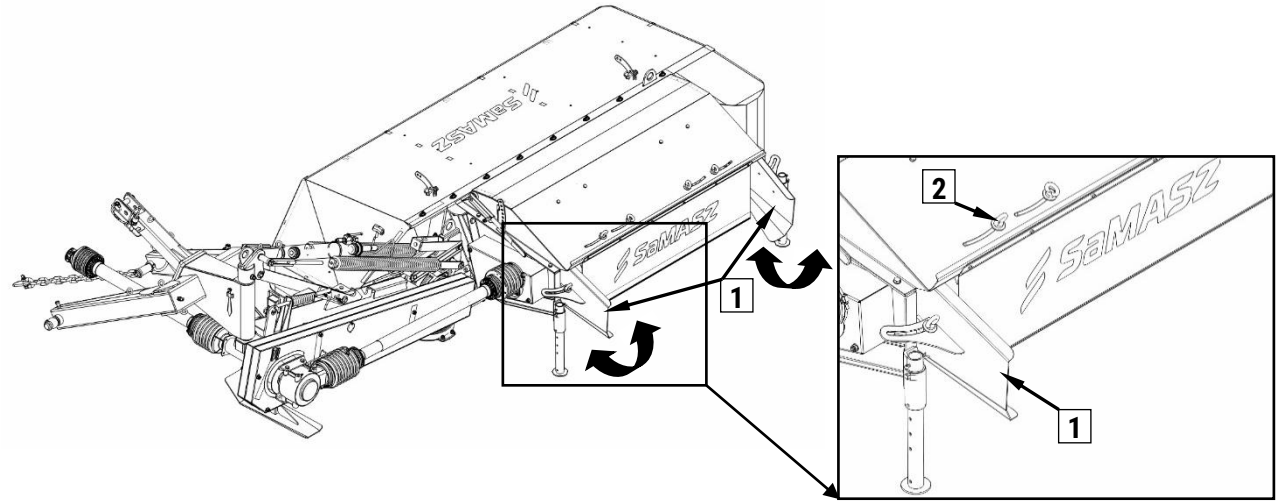


Fig. 26. Adjustment of swath guides: 1- swath guide, 2 - adjustment screw, 3 - swath wheel

In order to set swath width, adjustment of swath guides (**1**) should be performed (**Fig. 27**) (for: **KDT 220 W, KDT 260 W**):

- loosen eye screw (**2**) of the swath guide,
- set the swath guide (**1**) as needed,
- tighten screw (**2**).

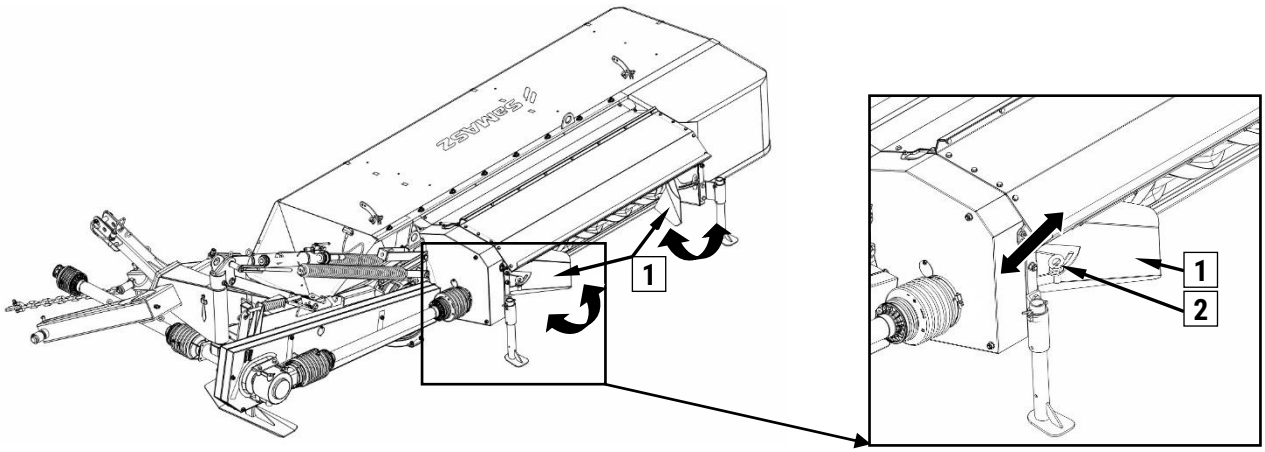


Fig. 27. Adjustment of swath guides: 1- swath guide, 2 - adjustment screw

6.5. Adjusting the cutting height

By means of upper link **S** (**Fig. 8**) adjust the cutting height. Extending the link **S** increases the cutting height and shortening the link reduces it. Cutting height is shown by the scale placed on the 3-point linkage frame (**Fig. 28**), recommended height is 1.8"÷2.8".

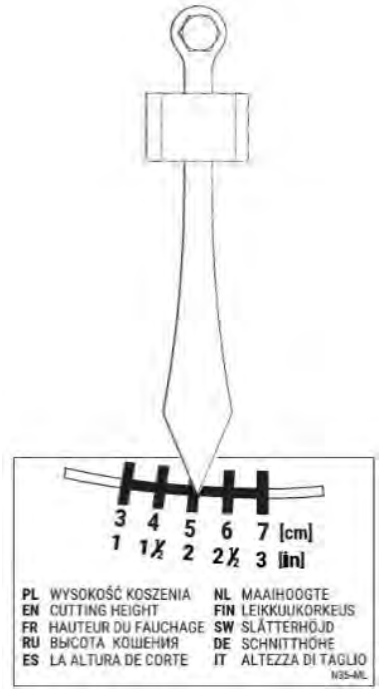


Fig. 28. Cutting height scale

6.6. 3-point linkage support chain

Support chain is used to ensure 3-point linkage frame of the mower is always at the same height, to set the mowing unit parallel to the ground and to relieve the hydraulic lift of the tractor.

When connecting mower to the tractor, the hanger plate **A** of support chain should be disconnected from chain and put on the pin **B** of upper link (**Fig. 29**). Then the mower has to be lifted with hydraulic lift about 1'4" high (**Fig. 29**). The support chain is then connected to the hanger plate **A**, so that is tensioned when the mower is in its working position. If the 3-point linkage frame is more than 1'4" above the ground, adjust the chain.

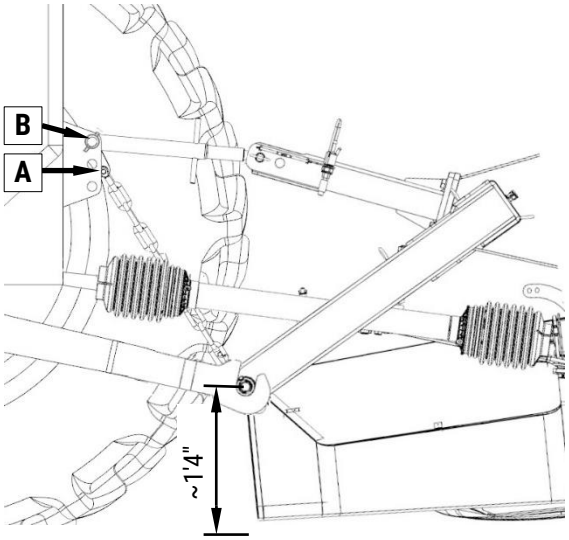


Fig. 29. Support chain

6.7. Adjusting pressure of the cutter bar using support springs

Adjusting pressure of the cutter bar comprises changing tensioning of support springs by screw.

- To reduce pressure of the cutter bar on the ground, at the same time it is required to increase tensioning of the springs by tightening the screw (reducing the distance **L** between the screw head and spring catch).
- Increase in pressure of the cutter bar on the ground is caused by reduction in tensioning of support springs, and this is done by unscrewing the screw (increasing the distance **L** between the screw head and spring catch).
- To keep the proper ground pressure of the cutter bar, please use the settings provided (**Fig. 30**).

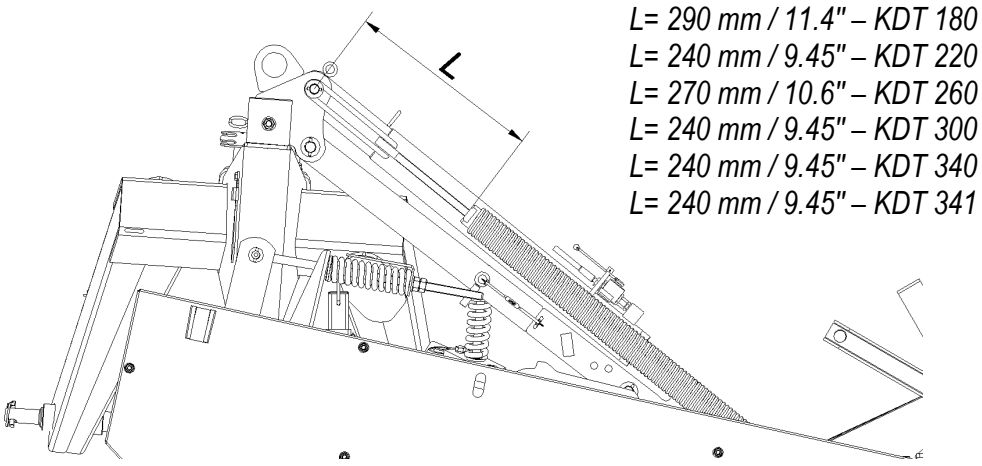


Fig. 30. Ground pressure setting

6.8. Adjusting the space between tine conditioner's mask and its shaft

(Models: **KDT 220 S** and **KDT 260 S(SL)**)

Depending on size and thickness of the mowing grass, there may be a necessity to adjust the mask of the conditioner. The higher and thicker grass, the bigger the space between conditioner's mask and its shaft should be. Proper adjustment should be based on the experience, in order not to block the conditioner and not to activate the friction clutch of PTO shaft. The way how the mask is regulated is shown in **Fig. 31**.

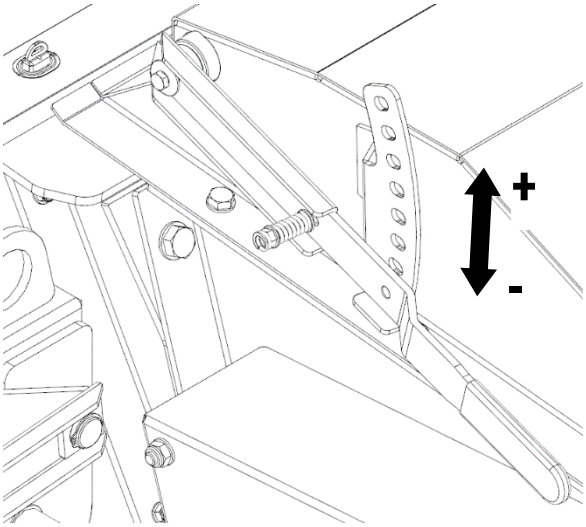


Fig. 31. Adjusting tine conditioner's mask

6.9. Replacing the conditioner's tines

(Models: **KDT 220 S and KDT 260 S(SL)**)

Prior to commencing any operation, check condition of bolts on which flails are set, as well as condition of fails themselves. If flails or bolts are worn or damaed, it is necessary to replace them.

Bear in mind, that flails should be replaced in pairs (opposite) featuring the same weight in order to keep shaft well balanced. Not keeping the shaft well balanced may lead to premature wearing of bearings as well as the shaft itself.

Replacement of flails **3** consists in unscrewing of nuts **2**, removing bolts **4** and mounting brand new flails **3** (**Fig. 32**).

NOTICE:

In order to tighten screw connection use special purpose bolt M16x60 z. Property Class 10.9 and self-protected nut M16 z. Property Class 8.8; **torque down until tight.**

1. Scarfier shaft
2. Self-locking nut M16 z. Property Class 8.8
3. Flail
4. Bolt M16x60 kl. 10.9

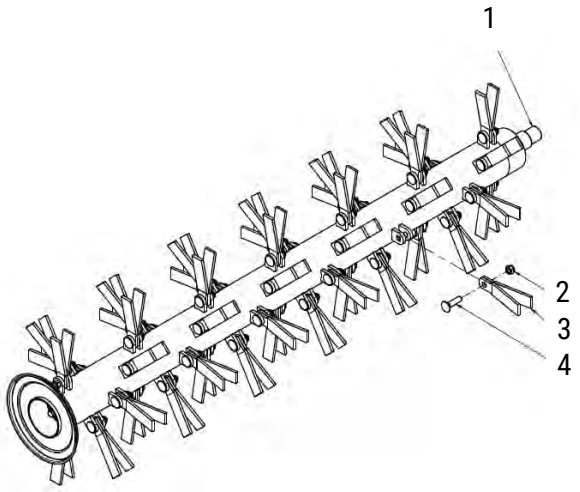


Fig. 32a. Parts of tine conditioner

1. Scarfier shaft
2. Self-locking nut M12 z. Property Class 8.8
3. Washer
4. Plastic flail
5. Bolt M12x55 z. Property Class 8.8
6. Plastic flail insert

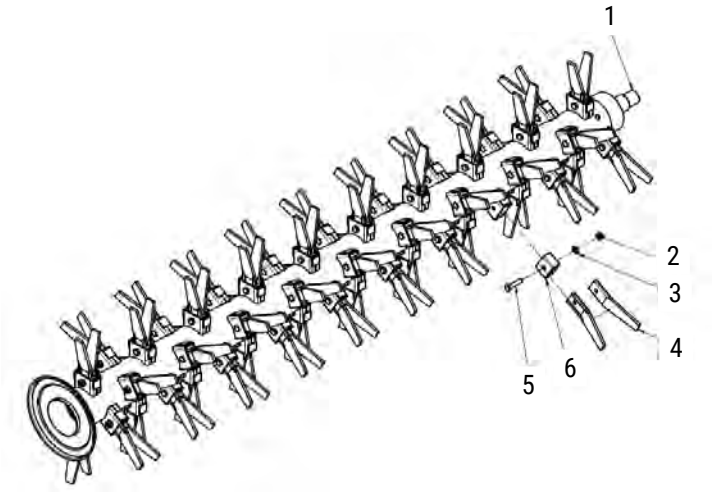
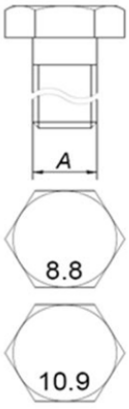


Fig. 32b. Replacement of flails in light-weight conditioner roller

Tab. 5. Torque values for bolts

A	6.8		8.8		10.9		12.9	
	Maximum torque							
	Ib-ft	Nm	Ib-ft	Nm	Ib-ft	Nm	Ib-ft	Nm
M4	1.5	2.2	2	3.0	3	4.4	4	5.1
M5	3.5	4.5	4.5	5.9	6.5	8.7	7.5	10
M6	5.5	7.6	7.5	10	11	15	13	18
M8	13	18	18	25	26	36	33	43
M10	27	37	37	49	55	72	63	84
M12	47	64	63	85	97	125	111	145
M14	74	100	103	135	151	200	177	235
M16	118	160	159	210	232	310	273	365
M18	162	220	225	300	321	430	376	500
M20	229	310	321	425	457	610	535	710
M22	314	425	435	580	620	820	726	960
M24	395	535	553	730	789	1050	926	1220



In the absence of specific torque values, the following chart can be used as a guide to the maximum safe torque for a particular size and grade of fastener. There is no torque difference for fine or coarse threads. Torque values are based on clean, dry threads. Reduce value by 10% if threads are oiled before assembly.

6.10. Adjusting force of the prssure of roller conditioner

(Models: **KDT 220 W** and **KDT 260 W**)

With factory set rollers, a ridge on one roller should enter a groove on the other. Clearance between a ridge and a groove on rollers should be within 2-5mm.

If need be, the force of the roller conditioner's pressure can be regulated by changing the tension of springs **S** (**Fig. 33**) by means of the nut **N**. Adjustment should be done on both sides of the conditioner

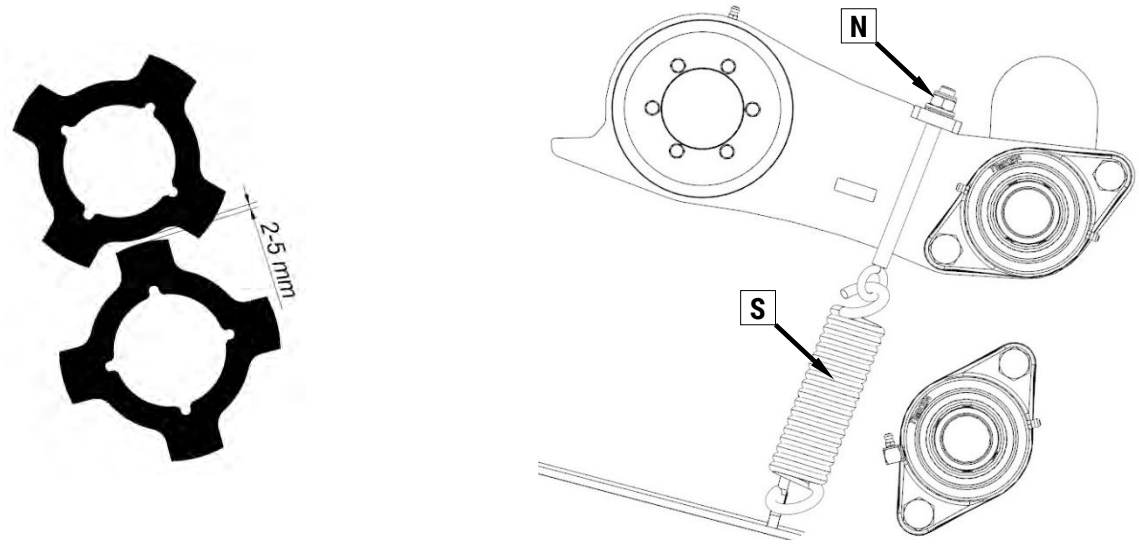


Fig. 33. Adjusting the force of the pressure of roller conditioner

6.11. Maintenance and service

6.11.1. Checking the tension of the V-belts

Check the V-belt tension. V-belts are tensioned with spring tensioner (**Fig. 34**) equipped with checking plate. Distance **S** between plate tip and holder should be 0.4". If the gap is wider the V-belts will be looser. Tensioning is done by nuts **N.** When any of the belts are damaged, the complete set must be replaced.

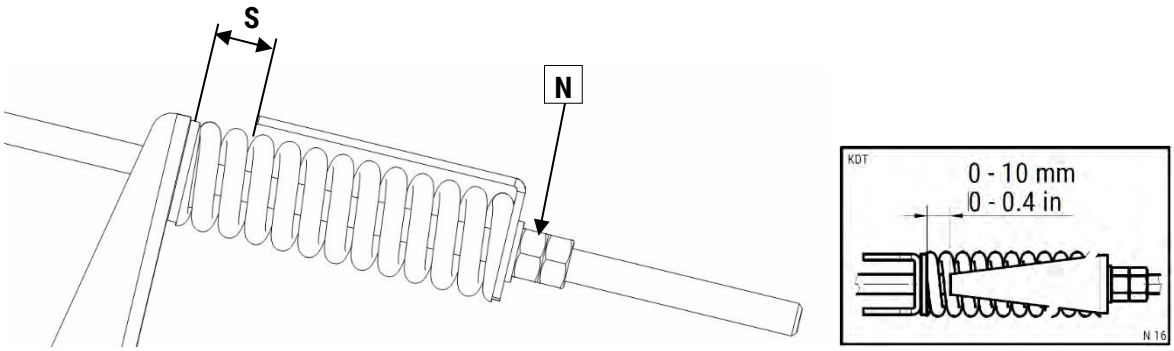


Fig. 34. Spring V-belts tensioner

6.11.2. Inspection of tension of toothed belt for gears of rollers and conditioner

Drive from cog gear shaft is transmitted on rollers/conditioner roller axles through toothed belts. Constant belt tension is provided by tensioner adjustable with tensioning nut **N** (**Fig. 35b** and **d**)

Belt tightening can be checked through eye **O** (**Fig. 35a** and **c**). In order to tension the belt remove safety guard (**Fig. 35a** and **c**) having unscrewed four nuts **S.** Then**,** tension the toothed belt using tensioning screw and nut **N** (**Fig. 35b** and **d**)**.** Properly tensioned belt, when pressed with thumb in the middle should deflect by approx. 0.2".

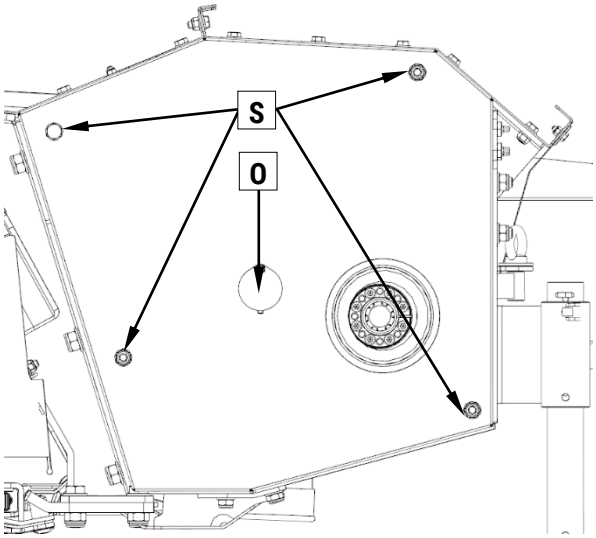


Fig. 35a. Rollers transmission guard

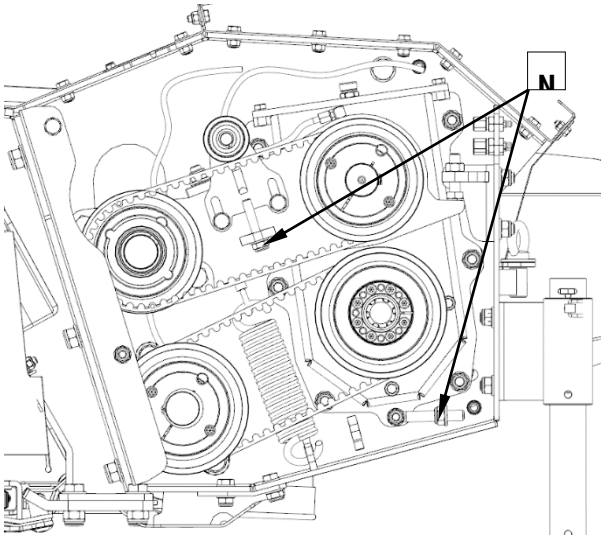


Fig. 35b. Adjusting tension of transmission toothed belt

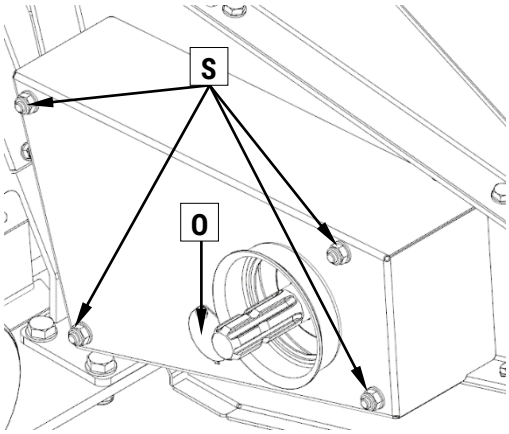


Fig. 35c. Conditioner roller transmission guard

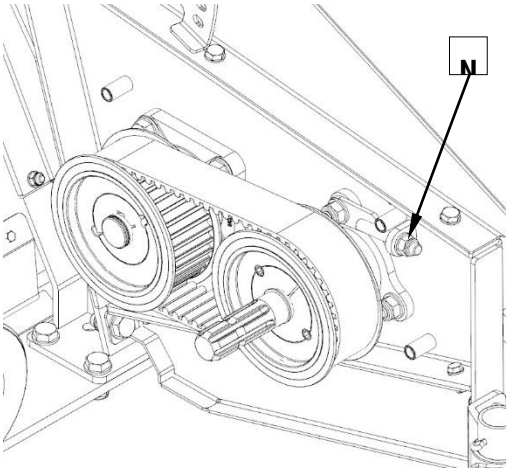


Fig. 35d. Adjusting tension of toothed belt for conditioner roller transmission

6.11.3. Daily maintenance

When you finish each day of operation carry out the following maintenance:

- check all visible parts and components and their connections; tighten all loose bolts and nuts and replace all damaged and/or worn parts with new genuine ones,
- clean the mower, especially between discs and cutterbar, because grass with mud may damage bearings in disc module,
- remove grass and mud, also from under the covers of the belt transmission of the conditioner / rollers,
- check the cutterbar,
- grease PTO shaft tubes with STP grease,
- if necessary, lubricate the parts and components according to lubrication instructions (chapter7).

Parts which may cause risk to operator's health and safety are as follows: damaged discs, missing or damaged safety covers, worn or damaged hydraulic hoses, PTO shaft guides, worn knives and knife holder pins.

6.11.4. After-season maintenance and storing of machine

At the end of mowing season the following shall be performed:

- lower the mower's cutterbar onto the ground,
- take the PTO shaft extension out of the tractor rpm or dismount the complete PTO shaft and install it into corresponding holder at the 3-point linkage frame,
- unmount hydraulic and electrical hoses from the tractor and hang them onto corresponding holders on the 3-point linkage frame,
- unmount the mower from the tractor (reverse procedure as in case of attaching the mower to the tractor item 5.1), and then drive the tractor away.

Mower should be stored in standstill position, so it is supported onto supporting leg and the cutterbar. It is recommended to store the set on paved ground, preferably in roofed places, inaccessible to unauthorized personnel or animals.

If the machine is stored for a long period of time before first operation, its technical condition should be examined and special attention should be paid to the hydraulics and the drive. Paint the area where the paint is missing, hydraulic hoses checked and lubricated.

Mower should be stored in paved, dry places, protected against precipitation. In order to minimize the space necessary for storage the mower may be stored in a vertical position but always on paved surface. Storing the mower on an unpaved surface may cause the mower to lose stability and turnover.

NOTICE:

When stored for long time (e.g. in winter season), the machine should be in an upright position on paved surface (with closed cylinders). Storing the mowe in a horizontal position may cause faster wearing (rusting) of the cylinder from the inside (through vent valve) by being penetrated by moisture from the air.

Additionally:

- remove any traces of rust and paint the area,
- check the oil level in the angle drives and the cutterbar (Section 7). If leaks are discovered, they should be repaired immediately and lost oil replaced. If water in oil is discovered, immediately change the oil as it could cause corrosion of internal mechanisms such as gear wheels, bearings, or shafts, and cause breakdowns,
- periodically inspect the mower and lubricate moving parts in order to protect them from corrosion which adversely affects the proper operation of the mower,
- check hydraulic hoses regularly. Replace any damaged or old hoses. In any case, you should replace hoses that have been in use more than 5 years from the date of their manufacture printed on the hose.

7. LUBRICATION

7.1. Cutterbar

Refilling the oil of the cutterbar is done through the inlet **A** (**Fig. 36**). Proper oil level is 0.2" - 0.3" from the cutterbar bottom. Oil capacities are given in table below.

In order to drain oil out of the cutterbar, firstly lift the mower up onto tractor's links and then dismount the cutterbar closure as shown in **Fig. 36** and tilt the cutterbar so, as to enable the old oil to drain. Oil drained out of the cutterbar should be disposed in a proper manner.

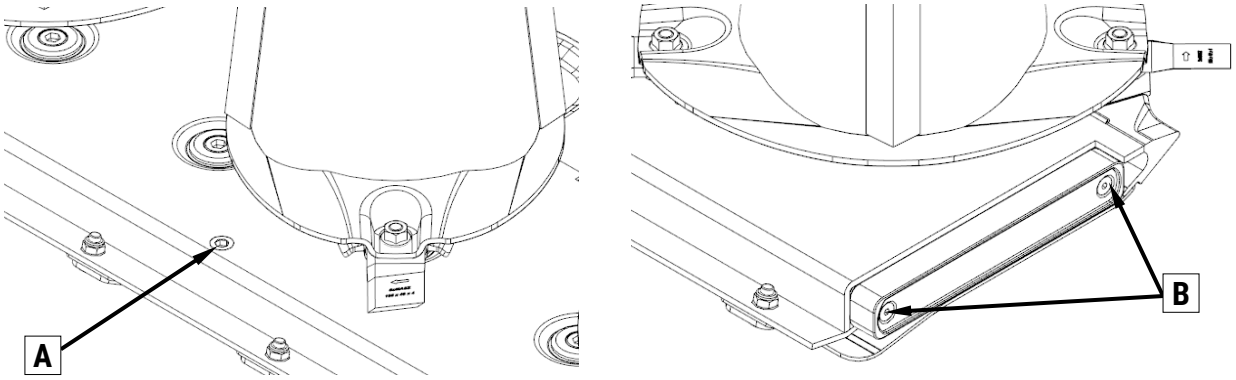


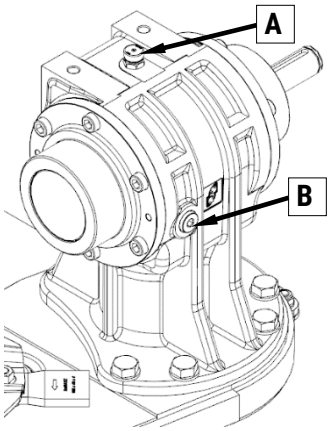
Fig. 36. Point of oil inspection a) and manner of oil replacement in cutterbar b)

Tab. 6. Oil capacities

Model	Oil capacity [US gal lqd]	Oil type	Lubrication frequency
KDT 180	0.92	80W90	After first 50 h of operation and then after next 500 h (or at least once a year)
KDT 220 S/W	1.19		
KDT 260 S (SL)/W	1.32		
KDT 300	1.59		
KDT 340	1.72		
KDT 341			

7.2. Axis gear

Everyday before starting work please check the oil level and, if needed, please refill after having removed the vent **A** on the top of the gear (**Fig. 37**). The oil level can be checked through the check opening **B** on the side of the gear. Please refill the oil until it is visible in the check opening **B**. The oil capacity: about 0.26 US gal lqd.



Tab. 7. Oil capacities in axis gear

Model	Oil capacity [US gal lqd]	Oil type	Lubrication frequency
All types	0.26	Transol 680÷1000 (acc. to ISO 3448 oil viscosity grade: VG-680 – 1000)	After first 50 h of operation and then after next 500 h (or at least once a year)

Fig. 37. Control points and oil change method in axis gear

CAUTION:

The above instructions should be strictly followed. If the discs in the cutterbar rotate loosely, do not worry about the high intersecting axis gear temperature; after long working time it may reach even 100°C.

7.3. Roller conditioner's gearbox

Before you check the lubrication of the gearbox, please remove the safety guard. Everyday before starting work please check the oil level and, if needed, please refill after having removed the vent **A** on the top of the gearbox (**Fig. 38**) The oil level can be checked through the check opening **B** on the side of the gear. Please refill the oil until it is visible in the check opening **B**. The oil level: about 0.13 US gal lqd. Check oil level when the cutterbar is on the ground. Removing the worked oil from the gearbox is done through the outlet **C**.

Tab. 8. Oil capacities

Model	Oil capacity [US gal lqd]	Oil type – for gearboxes	Lubrication frequency
All models	0.13	80W90	After first 50 h of operation and then after next 500 h (or at least once a year)

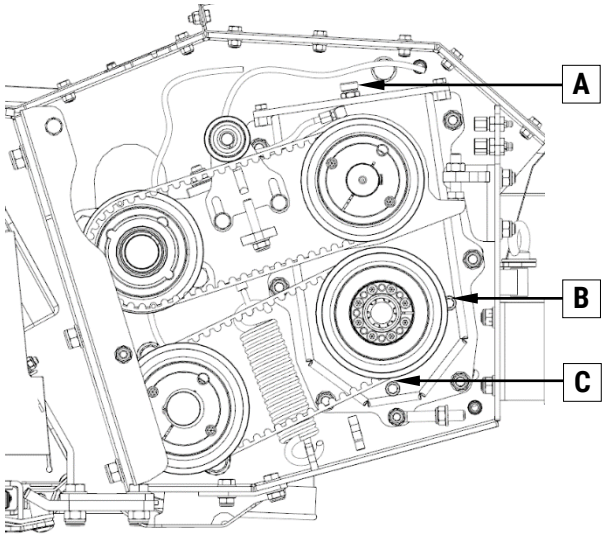


Fig. 38. Roller conditioner's gearbox lubrication points

7.4. Lubrication points

Every 50 mower working hours lubricate tine/roller conditioner's bearings (**Fig. 39, Fig. 40**) with **LT43** grease (or other designed to lubricate rolling and slide bearings, that work in -30ºC do+130ºC) and main joints of the mower (**Fig. 41**, **Fig. 42**) with **STP** grease.

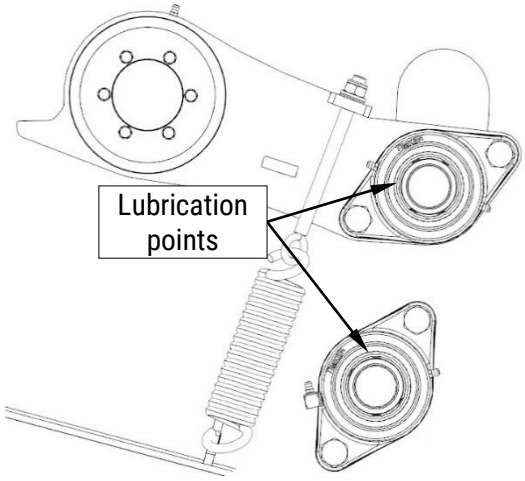


Fig. 39. Bearing lubrication point with LT43 grease in roller conditioner

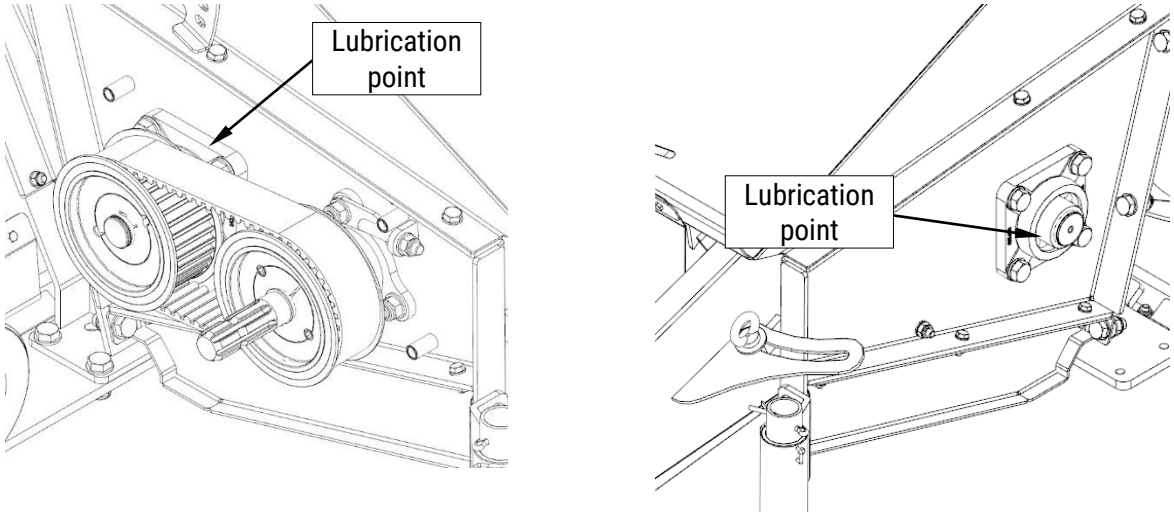


Fig. 40. Bearing lubrication point with LT43 grease in tine conditioner

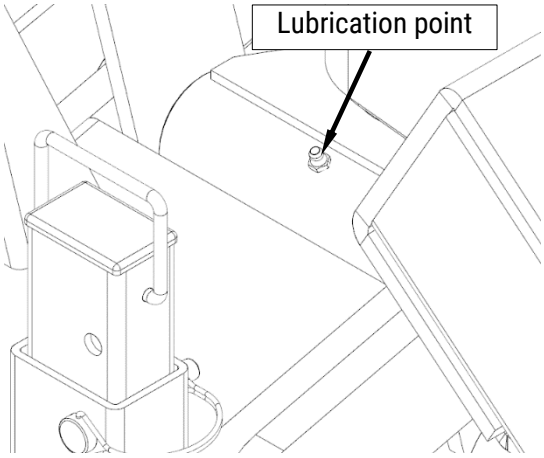


Fig. 41. Lubrication point of the suspension with STP grease

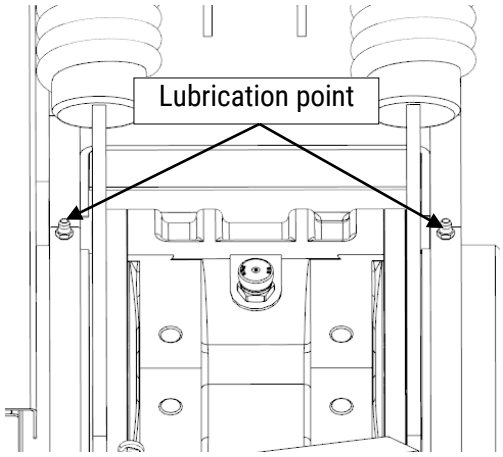


Fig. 42. Lubrication point of the suspension with STP grease

8. MALFUNCTION AND THEIR REPAIRS

Tab. 9. Defects and their repair

Defect	Reason	Repair
Mower stops working (partly)– leaves stripes of uncut grass between the discs	Lack of knives	Put on knives
	Worn knives	Replace knives
	Improperly mounted knives (left – right)	Put on knives strictly acc. to instructions
	Improper front inclination	Adjust inclination strictly acc. to instructions
	Too high PTO rpm (The most frequent mistake)	Reduce PTO rpm
	Too low work speed	Speed up to V≥10 km/h
	Slidind V-belts	Too low spring tension – regulate spring tension acc. to instructions
		Worn V-belts – Replace V-belts
	Damaged tractor's PTO	Repair
	Check tractor's PTO if it has 540 E. E stands for economical rpm – around 380 rpm	In that case operate with 1000 PTO rpm but low tractor's rpm – around 1200 rpm
	Mower with either tine or roller conditioner may mow improperly in case of very small grass or after the rain	
The grass is wound on the forming drums	Mowing lying grass without inclination towards the front	Always mow low and fast – inclination towards the front – 4 cm
Grass blocks the mower – lack of grass flow or the flow is uneven	Too low work speed	Speed up to 10 km/h or more
	Swath guides are set too narrow	Widen swath guides to the maximum
Safety device is working often incorectlly without clear reason	Insufficient spring tension	Adjust spring tension acc. to instructions
	Worn elements of safety device	Replace the safety device
Mower does not work, even though the drive is transmitted from the tractor	Torn off shaft of intersecting axis gear	Replace intersecting axis gear 023.01.COER
Mower is blocked	Damaged gears in the cutterbar. Damaged bearings in the disc hub	This repair must be done by SaMASZ service
Mower's hydraulics does not work	Damaged or dirty hydraulic cylinder and check valve	Replace or clean hydraulic connector and check valve
	Tractor's hydraulic system is damaged	Check tractor's hydraulic system
Leaking cylinder	Dirty oil in hydraulic unit of the tractor	Replace oil in hydraulic unit of the tractor. Purchase repair kit of the cylinder and replace damaged sealings
Excesive vibration during work	Damaged PTO shaft	Check the condition of PTO shaft and if need be replace
Oil leak in gear	Not tight assembly	Examine tightness and check oil level.

9. DISASSEMBLY AND WITHDRAWAL FROM USE

9.1. Disassembly

WARNING!

Before disassembly the mower should be disconnected from the tractor.

Before starting any repair or service the mower should be cleaned and any grass or dirt removed.

Carefully check nuts and bolts for adequate torque and the pins for wear. Replace screws, v-belts, pins, bushings, discs, knives, holders, mountings, etc. if necessary.

Once the machine is repaired perform the following:

- Make sure that all elements are installed properly,
- Install the removed guards,
- Check that all screws and nuts are tightened,
- Check for proper clearance on pins and gears,
- Once all the guards are installed, perform a warm-up start to make sure the repaired machine operates properly.

9.2. Scrapping

If the mower cannot be repaired anymore, it should be withdrawn from use.

For this purpose oil from intersecting axis gear and cutterbar should be drained and delivered to a proper waste treatment company. Clean the mower parts, dismantle and dispose properly of all plastic parts. After that, the mower could be sold to breaker's yard.

WARNING!

When disassembling the machine pay particular attention to additional dangers as crushing, cutting, wounding, concussion. Use proper tools and personal protective equipment: protective gloves, clothing and shoes, goggles, etc. Pay attention so that the machine works efficiently, and therefore it is required to secure the machine with supports.

10. WARRANTY CARD

REAR DISC MOWER

	Serial number Date of manufacture Manufacturer's stamp
	Date of purchase Dealer's stamp Dealer's signature

The product quality has been checked and meets the required standards and regulations and is permitted for use.

WARNING!

A warranty card without the required information or with corrected or illegible information – **is invalid**.

11. WARRANTY TERMS

11.1. Warranty claims procedures

1. The manufacturer guarantees its products against faults in materials or production.
2. The warranty period is for two years from the date of sale to the purchaser, stated above.
3. Any repair which is subject to warranty should be carried out by an authorised SaMASZ dealer. Upon completion of the repair the dealer must submit a warranty claim within 14 days.
4. Warranty claims regarding replacing of the product or repayment are considered within 14 days by the manufacturer.
5. The following cases are not covered by warranty:
   a) **wearing parts: mowing discs, sliding skids, intersecting axis gears and parts inside the gearboxes, bushings and sliding elements, joints, knife** mounting**, cutting knives, V-belts, silide bushings Pcw, V-belt gears, drive belt, conditioner's tines and rollers, roller cinditioner's rubbers, bearings, safety curtains, conveyor's belts, swath guide's rubbers, connective elements, etc.**

      These repairs may be done only at purchaserer's cost.
   b) **use for any other purpose than those described in the operator's manual,**
   c) **operation on stoney fields and its results: damage of tine conditioner's shaft, discs, bending of cutterbar (stone with its diameter of 140 mm will not move between the discs and conditioner's shaft),**
   d) **running into any obstacle,**
   e) **too fast lowering of the cutterbar to the ground,**
   f) **transport and accidental damage,**
   g) **breaking, damage of tine conditioner's shaft.**
6. The Purchaser bears the costs of technical estimation - when the manufacturer finds that a claimed product is free of defects and a technical report will confirm that.
7. The manufacturer has the right to cancel a warranty in the following cases:
   a) **interference of the interior of the mower, changes of its mechanical design or intentional damages, bending parts of the mower and so on.**
   b) **operating with only 1 knife on the disc or without disc cover plates.**
   c) **damage caused by accidents, running into obstacles or other events, for which the warrantor is not responsible,**
   d) **use of knives, knife** mounting **and mountings other than originally delivered by SaMASZ,**
   e) **regulating safety breakaway device spring (Fig. 14) not in accordance with the instructions described in this operator's manual,**
   f) **lack of needed records in the warranty card or filling in the warranty card independently,**
   g) **use of the mower not in accordance with operator's manual or for incorrect purpose.**
8. Manufacturer can break the service agreement with immediate effect when the user do not pay receivables according to that agreement in a timely manner and the delay in payment is longer than 30 days from maturity date. Breaking the service agreement caused by the user makes simultaneous breaching of the warranty.
9. Manufacturer does not take compensation responsibility for the loss caused by breakdown of the machine during work.

NOTICE:
Upon purchasing the machine, request your dealer to carefully complete the warranty card with date and location of the purchase as well as the dealer stamp and signature. Otherwise the warranty is invalid.

NOTICE:
The warranty card is valid only when there are the following information: address, date and place of purchase, mower type and invoice number.

NOTICE:
When the warranty expires, repairs can be done for a payment by the entitled repair shops pointed by the dealer. The dealer is obliged to indicate them.

NOTICE:
The Manufacturer have right to introduce design modifications.

NOTICE:
The SaMASZ company constantly works on development of all of ist machines types and models. Therefore, there is always a possibility in change of form, equipment and technology of the delivered machines. No claims can arise from data, drawings and descriptions included herein as well as in the spare part list.

The SaMASZ is not responsible for printing errors.

11.2. Warranty repairs record

Repairs description and changed spare parts:

Date, stamp and signature of repair shop.

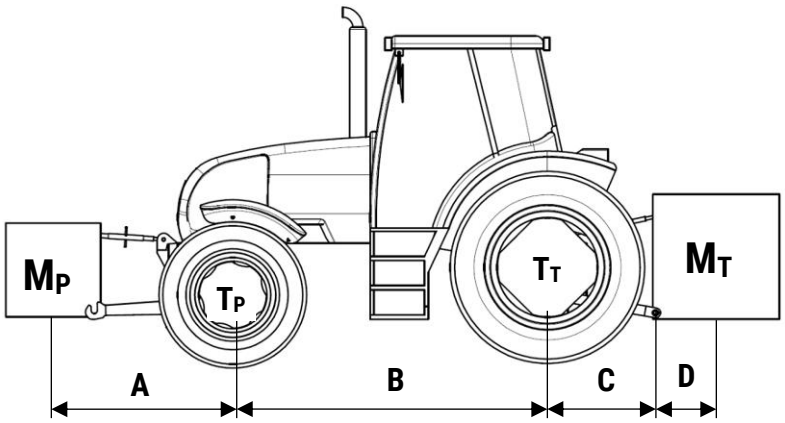
Date, stamp and signature of repair shop.

Date, stamp and signature of repair shop.

APPENDIX. DEFINING THE TOTAL WEIGHT, AXIS LOAD, TYRE LOAD CAPACITY AND MINIMUM LOAD

CAUTION:

When mounting the machine on a tractor using front and/or rear 3-point linkage, a maximum value of permissible load cannot be exceeded – tractor's front axis load must be 20% of the tractor's overall weight.
Before using the tractor-machine assembly, check whether these conditions are met, while calculating and weighing the assembly.



For calculations the following data is necessary:

T	[kg]	Tractor's overall weight	(1) (3)
T_P	[kg]	Front axis load on unloaded tractor	(1) (3)
T_T	[kg]	Rear axis load on unloaded tractor	(1) (3)
M_P	[kg]	Total weight of machine mounted on front 3-point linkage or weight of front ballast	(2) (3)
M_T	[kg]	Total weight of machine mounted on rear 3-point linkage or weight of rear ballast	(2) (3)
A	[m]	Distance between tractor's front axis centre and centre of gravity of machine mounted on front 3-point linkage / front ballast	(2) (3)
B	[m]	Distance between tractor's axes	(1) (3)
C	[m]	Distance between tractor's rear axis centre and centres of ball joints on tractor's lower links	(1) (3)
D	[m]	Distance between centres of ball joints on tractor's lower links and centre of gravity of machine mounted on rear 3-point linkage / rear ballast	(2)

(1) Refer to tractor's operation manual

(2) Refer to technical data for machine in operation manual or price list

(3) Dimensions / measurement

- Calculating minimum weight of front balast **$M_{P\ min.}$** – machine mounted at tractor's rear:

$$M_{Pmin.} = \frac{M_T \times (C + D) - T_P \times B + 0{,}2 \times T \times B}{A + B}$$

- Calculating real axis load at tractor's front axis **$T_{P\ rzecz.}$**:

$$T_{P\ rzecz.} = \frac{M_P \times (A + B) + T_P \times B - M_T \times (C + D)}{B}$$

If the value of front axis load ($T_{P\ rzecz}$**) is less than 20 % of tractor's overall weight (**T**), apply additional load on the front axis.*

- Calculating total weight of tractor-machine assembly **M_C**:

$$M_C = M_P + T + M_T$$

- Calculating real axis load at tractor's rear axis **$T_{T\ rzecz.}$**:

$$T_{T\ rzecz.} = M_C - T_{P\ rzecz.}$$

- Tyre load capacity – apply double the load indicated by the tyres' manufacturer.

Enter the above calculation data and technical data provided by the manufacturer in the below table.

	Real value from calculations		**Value to technical specification**		**Double value of tyre capacity load**
Minimum weight of front ballast **M_{Pmin}**					
Total weight **M_C**		≤			
Front axis load **$T_{P\ rzecz.}$**		≤		≤	
Rear axis load **$T_{T\ rzecz.}$**		≤		≤	

Minimum ballast must be reached by mounting the machine or additional weights provided on the tractor.
Values resulting from calculations should be lower than or even to values given in technical specification.

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