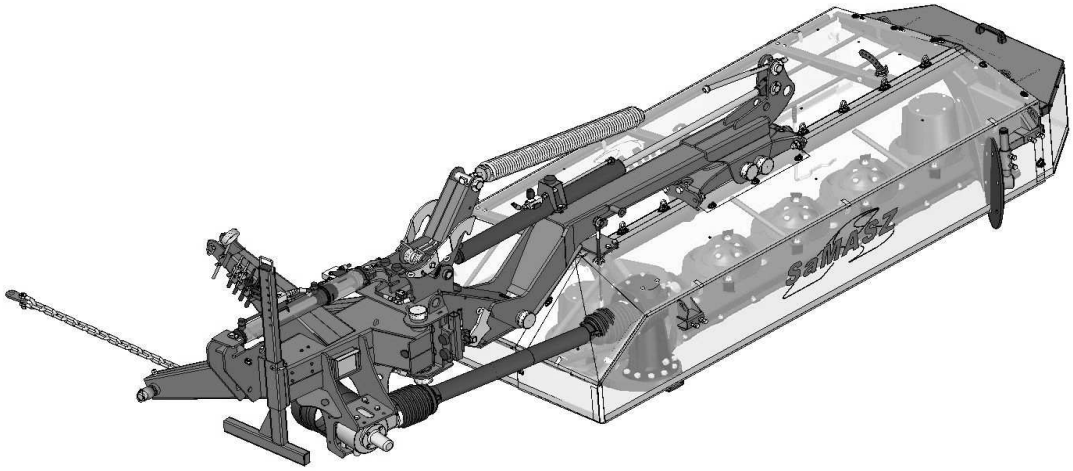
SaMASZ Sp. z o.o.
Poland, 16-060 Zabłudów, ul. Trawiasta 1
Established – 1984

NIP PL-966-159-29-76
tel. (+48) (85) 664 70 31
fax (+48) (85) 664 70 41
e-mail: samasz@samasz.pl
www.samasz.pl

OPERATOR'S MANUAL



REAR DISC MOWER WITH CENTRAL SUSPENSION

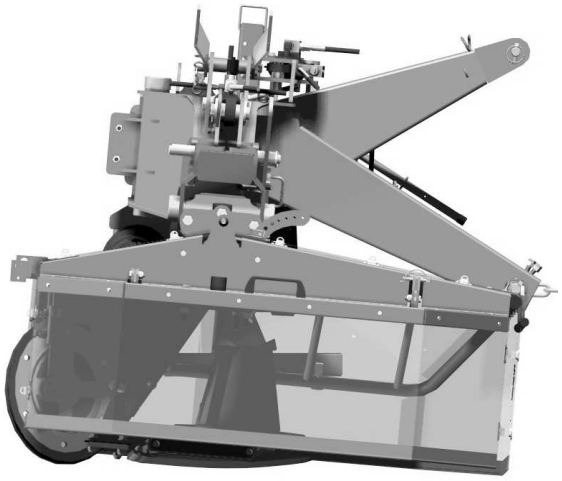
KT 261	**- 8'7''**	**KT 261 SLH**	**- 8'7''**
KT 261 H	**- 8'7''**	**KT 301 S**	**- 9'10''**
KT 301	**- 9'10''**	**KT 301 SH**	**- 9'10''**
KT 301 H	**- 9'10''**	**KT 301 SL**	**- 9'10''**
KT 341	**- 11'2''**	**KT 301 SLH**	**- 9'10''**
KT 341 H	**- 11'2''**	**KT 261 W**	**- 8'7''**
KT 261 S	**- 8'7''**	**KT 261 WH**	**- 8'7''**
KT 261 SH	**- 8'7''**	**KT 301 W**	**- 9'10''**
KT 261 SL	**- 8'7''**	**KT 301 WH**	**- 9'10''**

S / SL – Swath conditioner/ light weight swath conditioner
H – Hydro-pneumatic suspension
W – Swath rollers

Serial No.

IN541USA006
29-03-2017
EDITION № 6

Translation of original manual



Recommended mower inclination towards the travel direction is approx. 0°-5°. Mowing in the vertical position is also allowed. Inclination of the mower in the opposite direction will cause permanent damage to the cutterbar.

DO NOT
TURN ON THE MOWER IF THE MOWER IS NOT IN WORKING POSITION

DO NOT
RESTORE THE MOWER INTO TRANSPORT POSITION BEFORE THE CUTTING DISCS HAVE NOT COME TO A COMPLETE STOP

DO NOT
OPERATE THE MOWER WHEN ANY PERSON REMAINS WITHIN THE DANGER AREA OF 170' FROM THE MOWER

NOTE:
Keep this manual for future reference.

Comprehensively tested construction and proper choice of materials ensure high reliability and durability of our products.

Congratulations on your mower purchase and we know you will be satisfied from its use.

1. IDENTIFYING THE MACHINE

Data plate (**Fig. 2**) is mounted to the mower's main frame in the place shown below in **Fig. 1**.

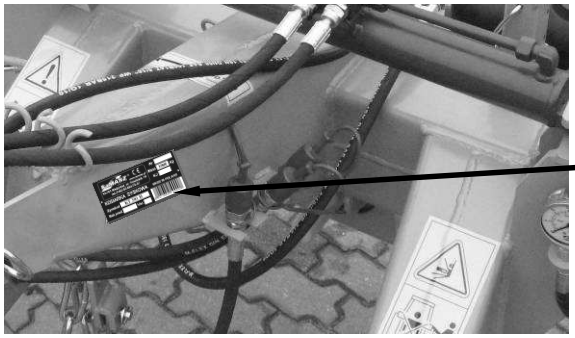


Fig. 1. Data plate location

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.

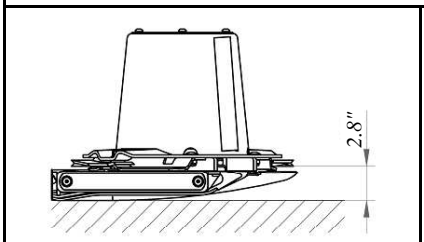
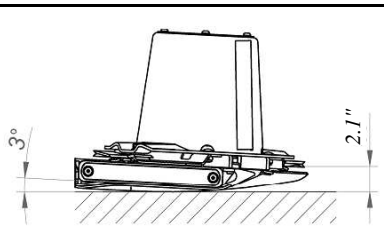
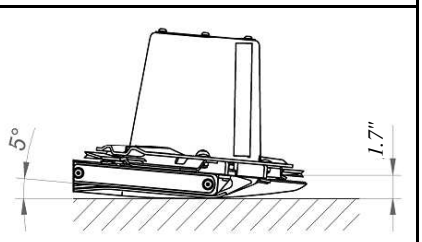
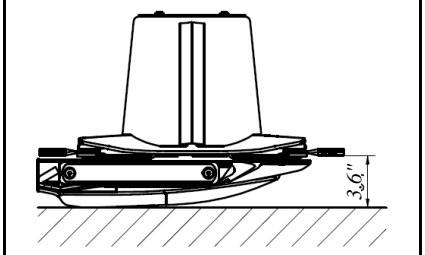
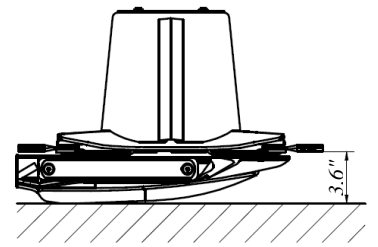
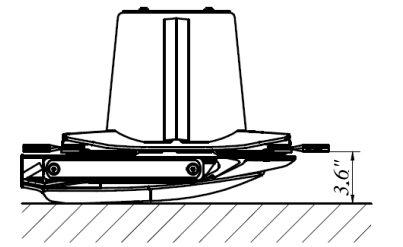
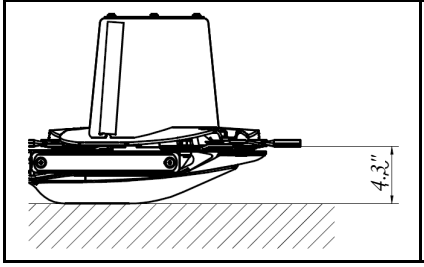
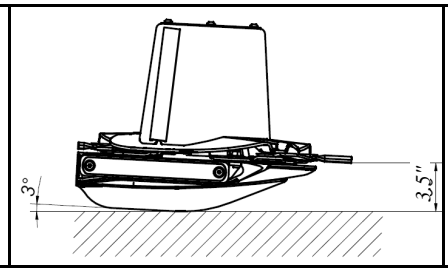
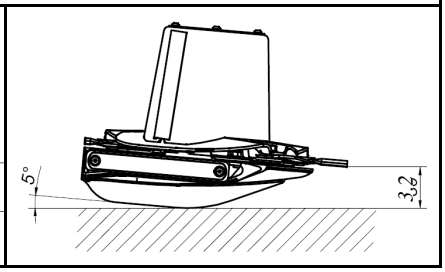
2. INTRODUCTION

- 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 another operator, it should be in working condition and include this operator's manual and all other basic equipment.
- Operator's manual is attached to every machine in order that the operator can familiarize himself with design, working principles, service 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 help to 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

Rear disc mower is equipped with the **Perfect Cut** cutterbar. Table 1 shows the mowing height differences, depending on the tilt angle of the cutterbar.

Tab. 1. Mowing height depending on the kind of the cutterbar and its tilt 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		
		

- The rear mounted disc mower is intended to mow green fodder: grass, alfalfa and such on permanent grassland (pastures), on crop fields without rocks, and to form loose rows of cut fodder. The pasture or field being mown should be even, best if prepared by rolling. In the event of 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 grasses at a height of 2". The last mowing should be done a little higher - at 2.8" - 3.1" from the ground.

- The rear mounted disc mower with crop scarifier/rollers is intended to mow green fodder: grass, alfalfa and such on permanent grassland (pastures), on crop fields without rocks, and to form loose rows of cut fodder. 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 grasses at a height of 2". The last mowing should be done a little higher - at 2.8" - 3.1" from the ground.

NOTE: Grass, which has not grown much should be mowed with zero angle inclination**.**

WARNING:
Use of the mower for purposes other than described above is forbidden. Improper use can be dangerous and may lead to voiding of the warranty. Mower should be operated and repaired only by people familiar with its detailed specifications and with all applicable safety rules and regulations and with the relative dangers. Unauthorized modifications to the mower will lead to voiding the warranty.

3.1. Technical data

Generally, KT mowers can divided into two groups:
- mowers with hydro - pneumatic suspension
- mowers with spring suspensions

The hydro-pneumatic suspension replaces the traditional springs. This significantly improves the comfort of mower operation. The operator thus can quickly set the pressure of the cutterbar on the ground with use of the tractor's hydraulics. Additionally the latter is integrated with the hydraulic safety device.

Emitted noise: up to 105 dB. Noise measured by noise meter from 3' 3" distance from the machine in motion in final test area.

The technical specifications for the above mentioned groups are presented below.

Tab. 2. Technical data – Rear disk mower with support springs (with hydro-pneumatic suspension)

Mower type:	**KT 261 (H)**	**KT 301 (H)**	**KT 341 (H)**
	Wide conditioner		
Mowing width	8' 7"	9' 10"	11' 2"
Number of blades [pcs]	12 (2 x 6)	14 (2 x 7)	16 (2 x 8)
Tractor PTO speed	540 rpm (optional: 1,000 rpm)		
Tractor power	od 50 kW (70 HP)	od 58 kW (80 HP)	od 65 kW (90 HP)
Tractor 3-point linkage category	II		
Working capacity	~ 2.8 ha/h	~ 3.5 ha/h	~ 4.0 ha/h
Transport height	10' 2"	11' 6"	13' 9"
Transport width	6' 7"	6' 7"	6' 7"
The width of the working system	15' 5"	16' 8"	18' 1"
Weight	2,205 lbs. (2,106 lbs.)	2,336 lbs. (2,237 lbs.)	2,491 lbs. (2,403 lbs.)
PTO shaft with unidirectional clutch	540 Nm		
Line cutting speed	86.2 m/s		
Disc rotational speed	3,078 rpm		
Noise level L_{pA}	76.0 ± 1.5 dB		
L_{Amax}	76.5 ± 1.5 dB		
L_{Cpeak}	98.5 ± 1.5 dB		

H – Mower with hydro-pneumatic suspension

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.

Tab. 3. Technical data – Rear disk mower with support springs with swath conditioner **/** with light weight swath conditioner (with hydro-pneumatic suspension)

Mower type:	**KT 261 S (H)**	**KT 261 SL (H)**	**KT 301 S (H)**	**KT 301 SL (H)**
	Wide conditioner			
Mowing width	8' 7"	8' 7"	9' 10"	9' 10"
Number of blades [pcs]	12 (2 x 6)	12 (2 x 6)	14 (2 x 7)	14 (2 x 7)
Tractor PTO speed	1,000 rpm			
Tractor power	od 66 kW (90 HP)	od 66 kW (90 HP)	od 66 kW (90 HP)*	od 66 kW (90 HP)
Tractor 3-point linkage category	II			
Working capacity	~ 2.8 ha/h	~ 2.8 ha/h	~ 3.5 ha/h	~ 3.5 ha/h
Transport height	10' 2"	10' 2"	11' 6"	11' 6"
Transport width	6' 7"	6' 7"	6' 7"	6' 7"
The width of the working system	15' 5"	15' 5"	16' 8"	16' 8"
Weight	2,866 lbs. (2,843 lbs.)	2,866 lbs. (2,755 lbs.)	3,120 lbs. (3,131 lbs.)	2,976 lbs. (2,888 lbs.)
PTO shaft with unidirectional clutch	1,000 rpm			
Line cutting speed	86.2 m/s			
Disc rotational speed	3,078 rpm			
Noise level L_{pA}	76.0 ± 1.5 dB			
L_{Amax}	76.5 ± 1.5 dB			
L_{Cpeak}	98.5 ± 1.5 dB			
*** Minimum tractor weight – 11,023 lbs. is required.**				

S/SL – Mower with swath conditioner**/** with light weight swath conditioner

Tab. 4. Technical data – Rear disk mower with swath rollers (with hydro-pneumatic suspension)

Mower type:	**KT 261 W (H)**	**KT 301 W (H)**
	Wide conditioner	
Mowing width	8' 7"	9' 10"
Number of blades [pcs]	12 (2 x 6)	14 (2 x 7)
Tractor PTO speed	1,000 rpm	
Tractor power	od 66 kW (90 HP)	od 66 kW (90 HP)*****
Tractor 3-point linkage category	II	
Working capacity	~ 2.8 ha/h	~ 3.5 ha/h
Transport height	10' 2"	11' 6"
Transport width	6' 7"	6' 7"
The width of the working system	15' 5"	16' 8"
Weight	3,065 lbs. (2,999 lbs.)	3,284 lbs. (3,218 lbs.)
Articulated telescopic shaft with unidirectional clutch	1,000 rpm	
Line cutting speed	86.2 m/s	
Disc rotational speed	3,078 rpm	
Noise level L_{pA}	76.0 ± 1.5 dB	
L_{Amax}	76.5 ± 1.5 dB	
L_{Cpeak}	98.5 ± 1.5 dB	
*** Minimum tractor weight – 11,023 lbs. is required.**		

W – Mower with swath rollers

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

The linkage frame (**1**) enables connecting the mower to the 3-point hitch of the tractor. The power from the PTO of the tractor is transmitted by the drive shaft, the miter gear (**3**) to the drive shaft (**7**), which through the miter gear (**8**) powers the cutterbar (**4**). On the cutterbar (**4**), there are discs with two cutting blades each. Hydraulic lifting cylinder (**2**) fed from the tractor external hydraulics is used to adjust the mower to working position. 3-point linkage frame, onto which spring-suspended cutterbar (**4**) is set. The mower is also equipped with a rotational cylinder (**10**), which has two functions. The first one is possibility to fold the mower backwards which, in many cases, significantly simplifies the transportation, while the second is the factory-calibrated hydraulic safety device (**11**). The swath guides (**5**) and safety cover (**6**) are also installed on the main frame. Support foot (**12**) is mounted to 3-point linkage frame (**1**). Optional equipment: warning plate with combined lights and reflectors (**13**).

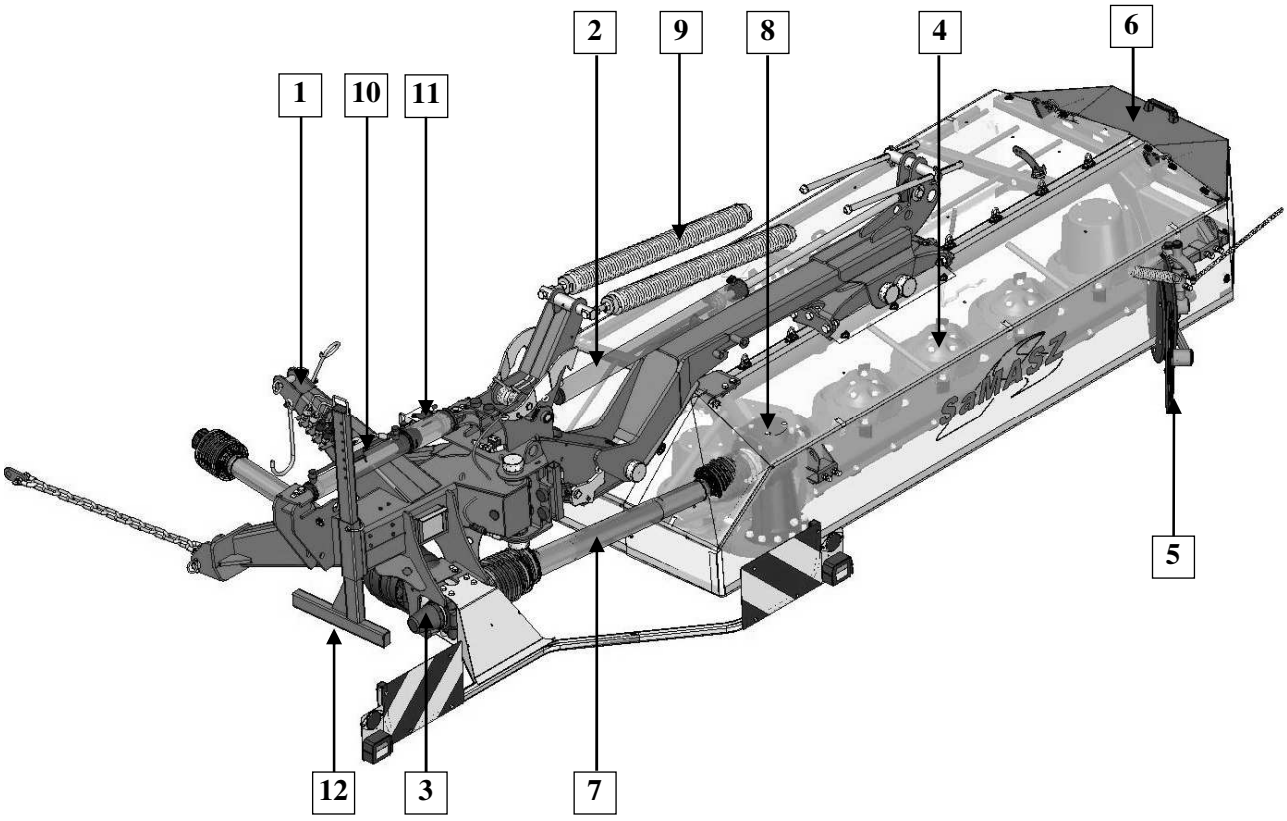


Fig. 3a. Parts of SaMASZ rear disc mower
(**KT 261 (H), KT 301 (H), KT 341 (H)**)

1 – Linkage frame
2 – Lifting cylinder
3 – Miter gear I
4 – Cutterbar
5 – Crop guides
6 – Safety guard
7 – PTO shaft I
8 – Miter gear II
9 – Spring suspension
10 – Rotational cylinder
11 – Hydraulic safety device
12 – Support foot
13 – Warning plate with combined lights and reflectors

The linkage frame (**1**) enables connecting the mower to the 3-point hitch of the tractor. Drive from tractor rpm is transmitted through PTO shaft, intersecting axis gear (**8**) onto driving shaft (**7**), which drives the cutterbar (**4**) through intersecting axis gear (**9**). Moreover drive from the tractor rpm is transmitted onto crop scarifier (**3**) through intersecting axis gear (**9**), PTO shaft (**7**), intersecting axis gear (**9**). On the cutterbar (**4**) there are discs with two cutting blades each. Hydraulic lifting cylinder (**2**) fed from the tractor external hydraulics is used to adjust the mower to working position. 3-point linkage frame, onto which spring suspended cutterbar is set (**13**). The mower is also equipped with a rotational actuator (**10**), which has two functions. The first one is the ability to fold the mower backwards which, in many cases, significantly simplifies transport, while the second is the factory calibrated hydraulic safety device (**11**). On the 3-point linkage frame there is safety guard (**6**) mounted. The crop guides (**5**) are installed on the upper cover of the scarifier. Support foot (**12**) is mounted to 3-point linkage frame (**1**). Optional equipment: warning plate with combined lights and reflectors (**14**).

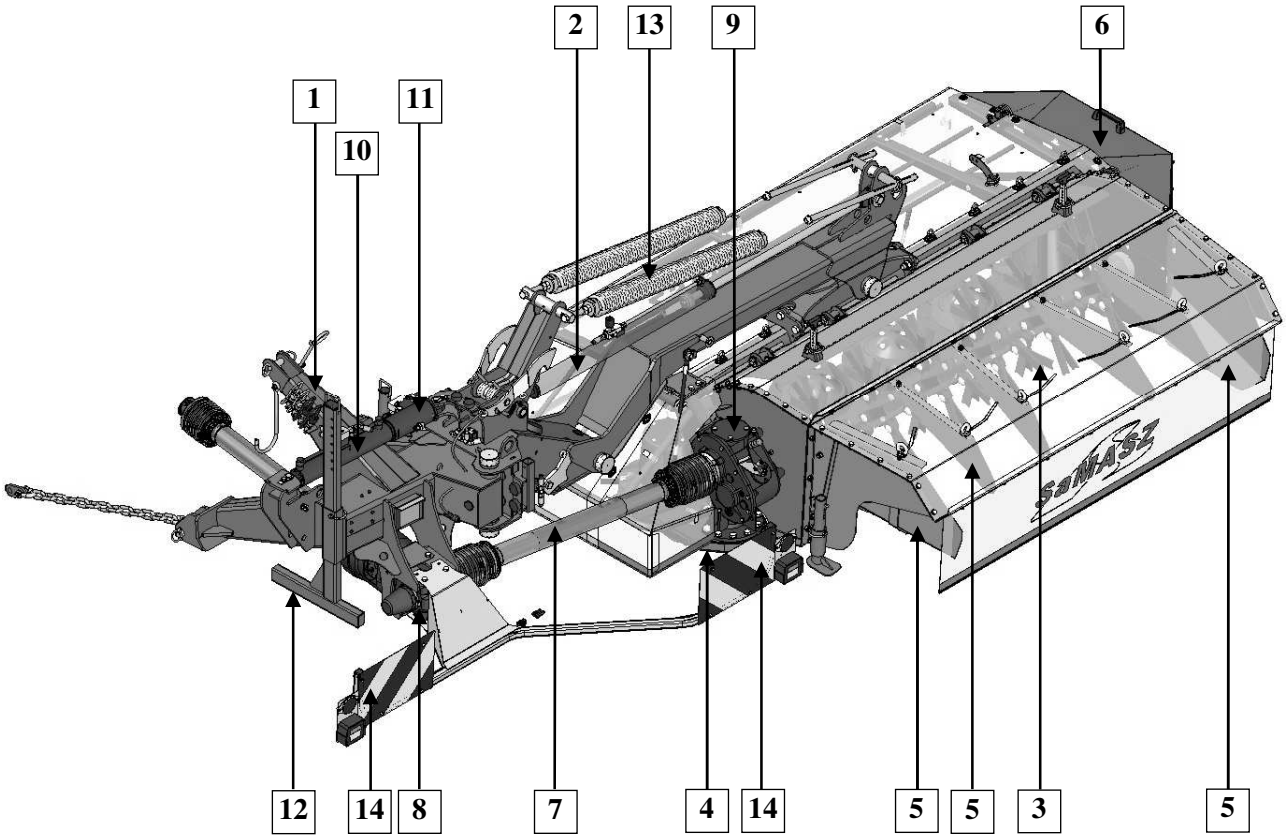


Fig. 3b. Parts of SaMASZ rear disc mower with swath conditioner (**KT S/SL (H)**)

1 – Linkage frame
2 – Lifting cylinder
3 – Swath conditioner
4 – Cutterbar
5 – Swath guides
6 – Safety guard
7 – PTO shaft I
8 – Miter gear I
9 – Miter gear II
10 – Rotational cylinder
11 – Hydraulic safety device
12 – Support foot
13 – Spring suspension
14 – Warning plate with combined lights and reflectors

The linkage frame (**1**) enables connecting the mower to the 3-point hitch of the tractor. The power from the PTO shaft on the tractor is transferred by the drive shaft, miter gear (**7**) to the drive shaft (**9**), which through the miter gear (**8**) powers the cutterbar (**4**). Additionally, power from the PTO shaft of the tractor is transferred through the miter gear (**7**), the drive shaft (**9**), miter gear (**8**) and the chain drive (**13**) to the swath rollers (**3**). On the cutterbar (**4**), there are discs with two cutting blades each. The hydraulic lifting cylinder (**2**) powered by the external hydraulic system of the tractor is used to move the mower into working position. The main frame on which the cutterbar is mounted is supported by the spring suspension (**14**). The mower is also equipped with a rotational cylinder (**10**), which has two functions. The first one is possibility to fold the mower backwards which, in many cases, significantly simplifies the transportation, while the second is the factory-calibrated hydraulic safety device (**11**). Swath guides (**5**) are installed on the upper cover of the conditioner. On the 3-point linkage frame, there is a safety guard (**6**) mounted. Support foot (**1**) is mounted to the 3-point linkage frame (**1**). Optional equipment: warning plate with combined lights and reflectors (**15**).

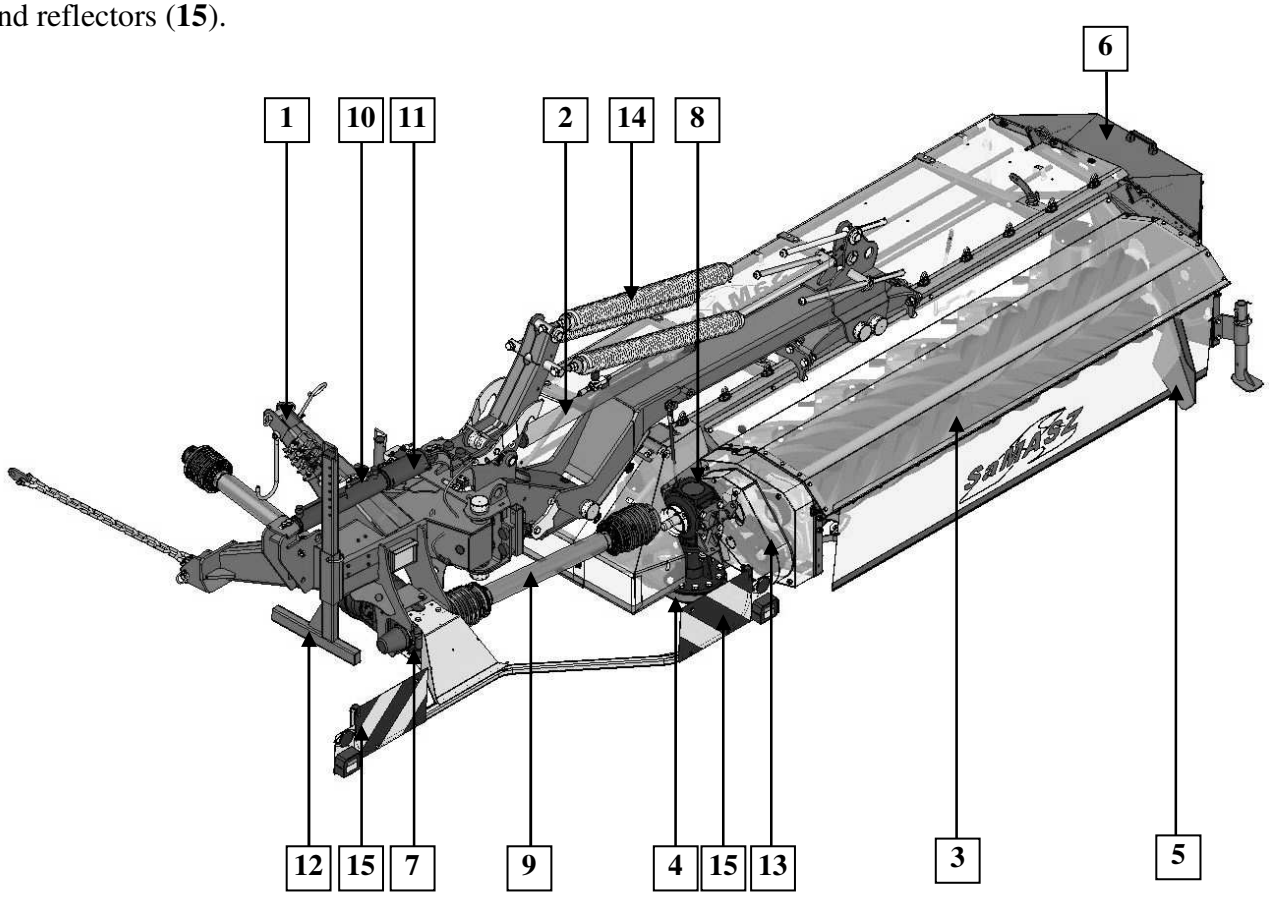


Fig. 3c. Parts of SaMASZ rear disc mower with swath rollers (**KT 260 W, KT 300 W**)

1 – Linkage frame
2 – Lifting cylinder
3 – Swath rollers
4 – Cutterbar
5 – Swath guides
6 – Safety guard
7 – Miter gear I
8 – Miter gear II
9 – PTO shaft I
10 – Rotational cylinder
11 – Hydraulic safety device
12 – Support foot
13 – Chain drive
14 – Spring suspension
15 – Warning plate with combined lights and reflectors

All KT disk mowers are also offered with hydro-pneumatic support.

Hydraulic lifting cylinder (**1**) and hydro-pneumatic suspension fed from the tractor external hydraulics and hydraulic accumulators (**3**) are used to move the mower to working position. 3-point linkage frame, onto which cutterbar is set features hydro-pneumatic support (**2**). The abovementioned suspension enables controlling the mower's pressure on the ground by adjusting the pressure in hydraulics.

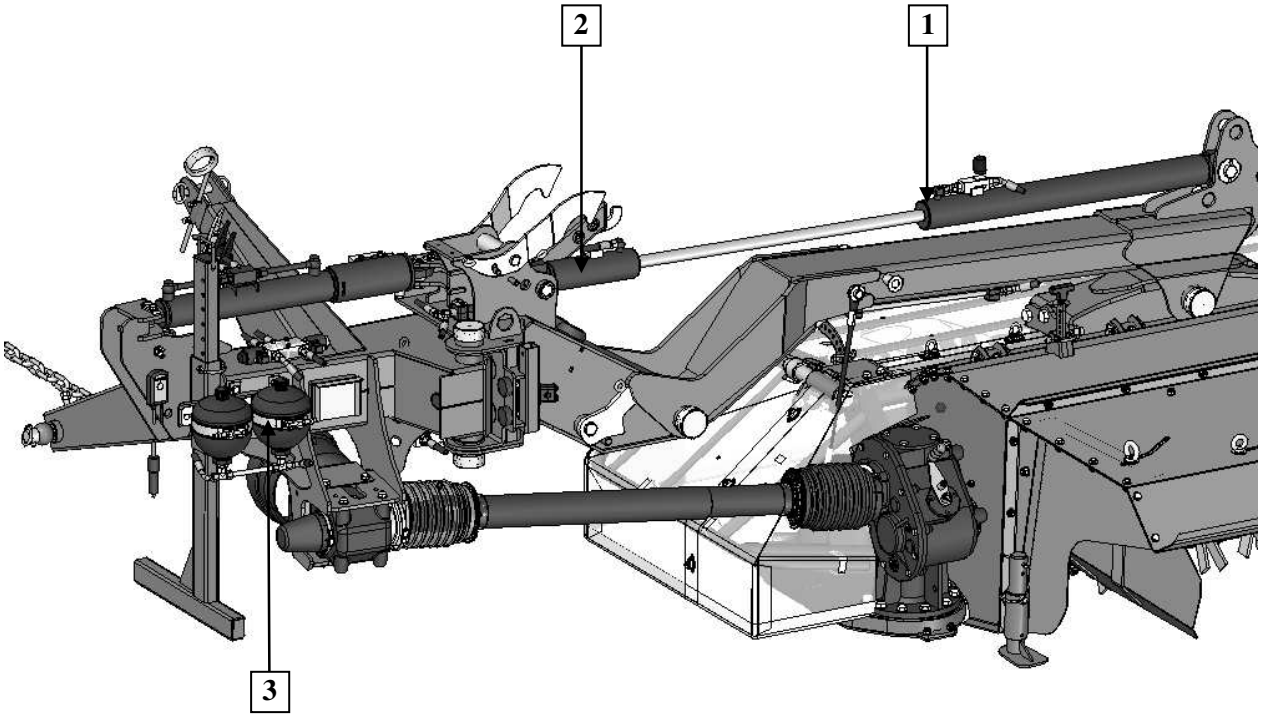


Fig. 3d. Parts of SaMASZ rear disc mower with hydro-pneumatic support (all **KT** disc mowers)
1 – Hydraulic lifting cylinder
2 – Hydro-pneumatic support
3 – Hydraulic accumulators

3.3. Standard equipment and spare parts

The mowers are sold with the following standard equipment:

- warranty card,
- operating manual and spare parts list,
- cutting blades: **KT 261 (H)** – 1 set, **KT 261 S/SL/W(H)** – 1 set, **KT 301 (H)** – 2 sets, **KT 301 S/SL/W (H)** – 2 sets, KT 261 S (H), **KT 341 (H)** – 2 sets,
- wrench for blade replacement,
- PTO shaft,
- spray paint (150 ml).

Optional extra equipment:

- hydro-pneumatic suspension,
- warning plate with combined lights and reflectors,
- working disc with instep,
- high mowing toppings / double toppings,
- double rubber swath guide (for mower: **KT 341**),
- two working discs with a drum (for mower: **KT 341**),

Tab. 5. Recommended PTO shafts for KT mowers

Mower	Power	Length	Torque	Symbol	Clutch	Manufacturer	Remarks
	kW	Ft.in.	Nm				
All models	50	3' 4"- 4' 8"	620	7G5N101CE0071A1A	Unidirectional friction clutch	Bondioli-Pavesi	Shaft connecting tractor and mower
PTO SHAFTS INSTALLED IN THE MOWER							
All models	47	2' 9"- 3' 9"	620	7G5T084FX007007RTA	-	Bondioli-Pavesi	540 rpm shaft installed
	54	2'11"- 4'	520	7G5T088FX007007PTA	-	Bondioli-Pavesi	1000 rpm shaft installed

Shaft end without clutch – Connect to tractor

Shaft end with unidirectional right clutch – Connect to the mower

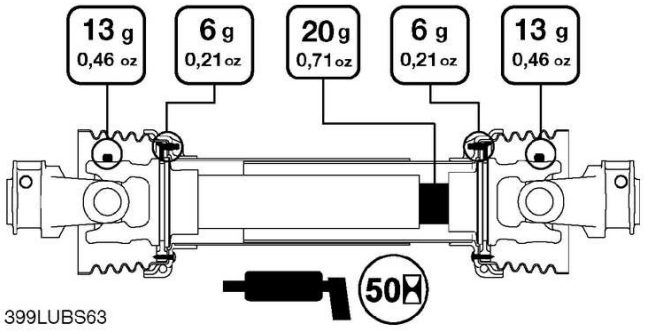


Fig. 4. PTO shaft lubrication points. Mounting directions

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

NOTE:
Optional extra equipment should be ordered separately.

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

4. SAFETY PRECAUTIONS

⚠ **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 footwear, safety gloves plus ear protection and dusk 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 moving from working 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.
- 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.

- 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 blades and bladee 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 to both 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.

4.2. 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.

4.3. 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 5.6.
- 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.

4.3.1. Placing the mower onto a transport vehicle

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**),

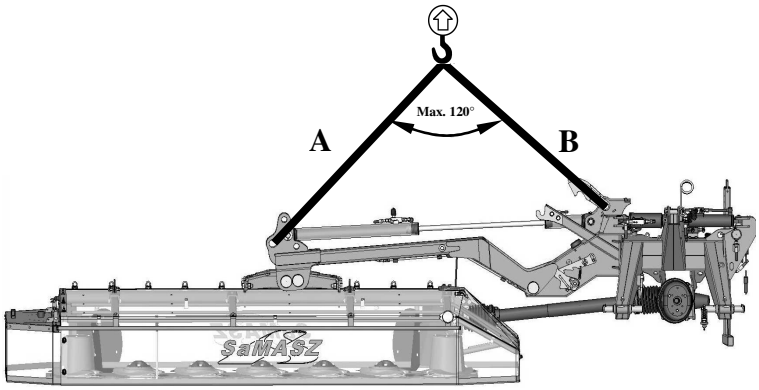


Fig. 5. Transport holders

- 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.

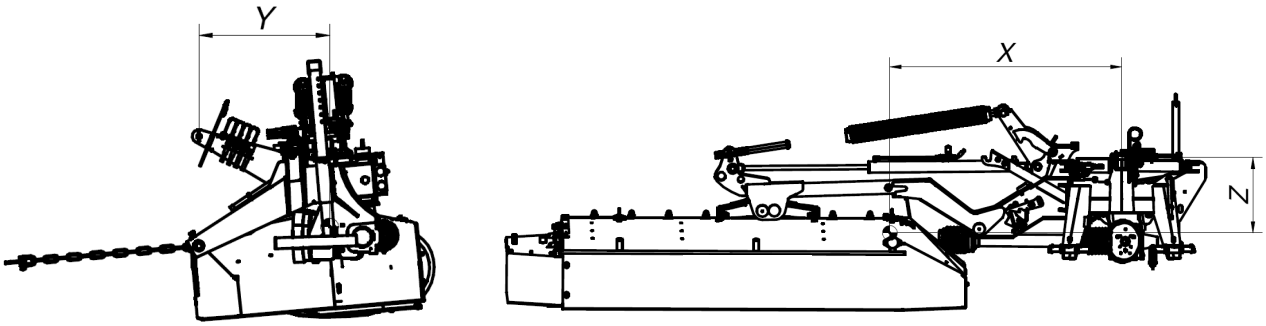


Fig. 6. Location of center of gravity

Tab. 6. Location of center of gravity **KT** mowers

Dimension [ft. in]	Model			
	KT 261/ KT 261 H	KT 261 S/ KT 261 SH	KT 261 SL/ KT 261 SLH	KT 261 W / KT 261 WH
X	4'10" / 4'8"	5'9" / 5'8"	5' 6" / 5' 5"	5' 8" / 5' 7"
Y	2'5" / 2'5"	2'7" / 2'10"	2' 8" / 2' 7"	2' 8" / 2' 9"
Z	1'8" / 1'7"	1'11" / 1'10"	1' 10" / 1' 11"	1' 9" / 1' 8"

Dimension [mm]	Mowers				
	KT 301 / KT 301 H	KT 301 S / KT 301 SH	KT 301 SL / KT 301 SLH	KT 301 W / KT 301 WH	KT 341/ KT 341 H
X	5' 8" / 5' 6"	6' 5" / 6' 4"	6' 2" / 6' 1"	6' 4" / 6' 3"	6'1" / 6' 2"
Y	2' 5" / 2' 5"	2' 10" / 2' 10"	2' 9" / 2' 9"	2' 9" / 2' 8"	2' 5" / 2' 5"
Z	1' 9" / 2'	1' 8" / 2'	1' 9" / 2'	2' / 2' 3"	2' / 1' 9"

4.4. Working parts

- Before operating the mower, check blades' and blade holders' condition.
- Worn or damaged blades or blade holders should be immediately replaced with new ones.

4.5. 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.

4.6. Safety curtains

SaMASZ mowers feature standard safety curtains (**1**) for self-mounting. In order to mount the guard properly, put it on a mower and secure with catches (**2**) and front guard (**3**), **Fig. 7**. Examine condition of guards and its mounting on a regular basis. Fix immediately if damaged and replace if missing. Do not operate mower without safety curtains.

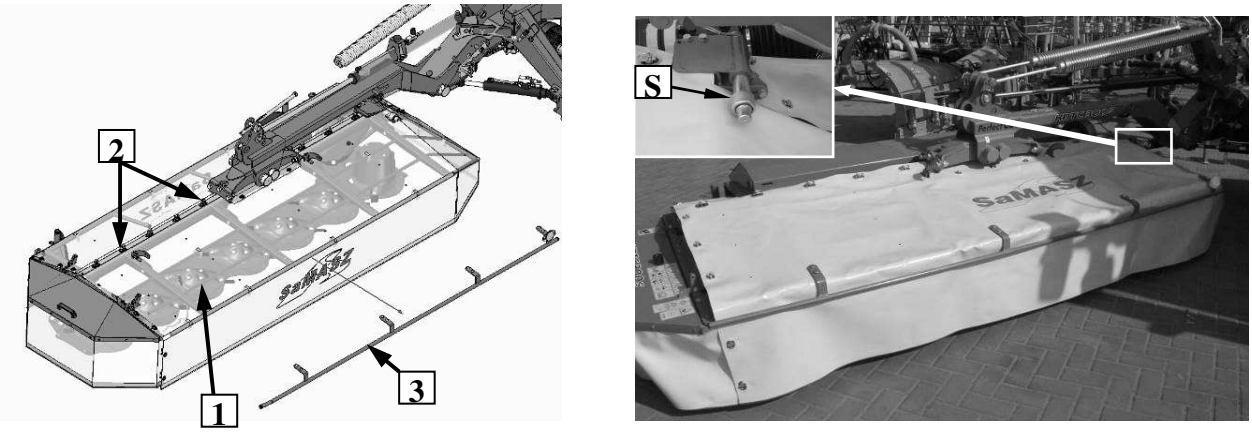


Fig. 7. Mounting safety curtain guard on the mower

4.7. 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.

4.7.1. 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.

4.7.2. Danger of cutting injury

This risk occurs during replacement of working parts with sharp edges. During any maintenance work, always use safety gloves.

4.7.3. 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.

4.7.4. 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.

4.7.5. 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,

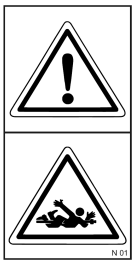
When the risk of exposure to noise cannot be avoided or eliminated by any protective means or organization of work, the employer (farmer) must:

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.

4.8. Safety labels and their meaning

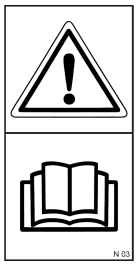
Safety labels are critical to safe use of this mower. They must be read, understood and followed. Also, be sure that:

- All warning labels are clean and legible
- All lost or damaged labels 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.

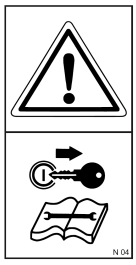


N-01
Be extremely careful when PTO shaft is rotating

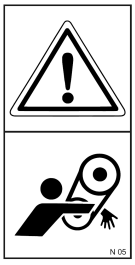
N-02
CAUTION: cutting knives. Approach during operation is forbidden



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



N-04
While making repairs the machine must be stopped

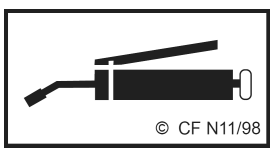


N-05
CAUTION: belt transmission, be extremely careful

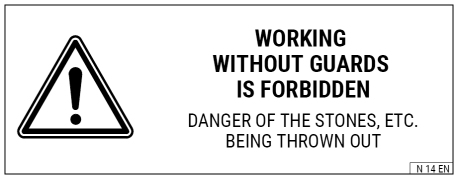
N-06
CAUTION: pulling-in parts

N-07
Operating is forbidden when any person is within the danger area of 50 m

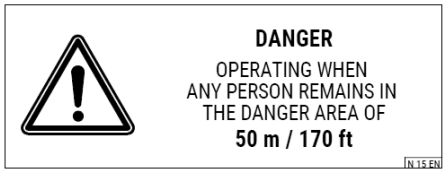
N-09
CAUTION: rotor



N-11
Lubrication point

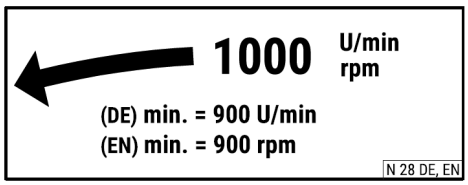


N-14

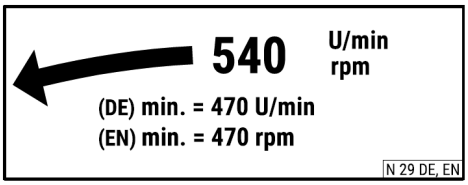


N-15

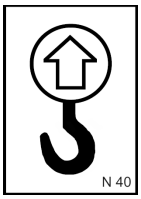
N-23
Watch out: power lines



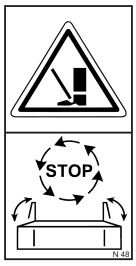
N-28



N-29



N-40
Transport hook for lifting of the mower



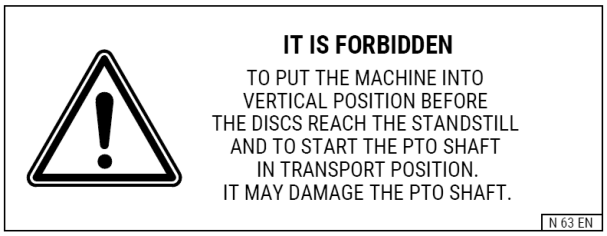
N-48
Stay away from mower's inclination area

N-49
Do not get too close to the hoist of the tractor during operation of the hoist

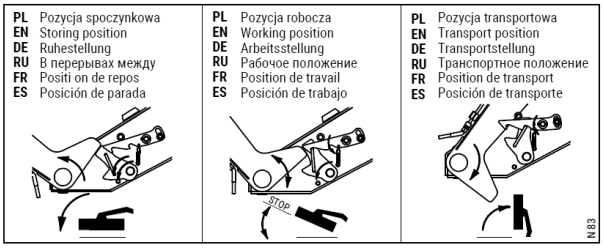
N-50
Do not get under the mower

N-52
Use protective gloves

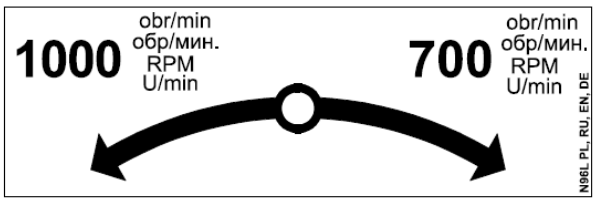
N-55

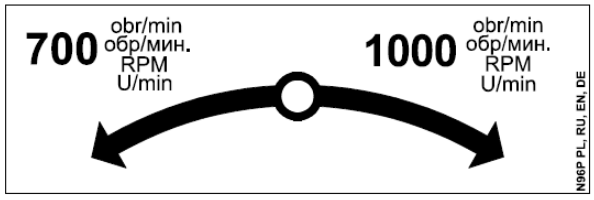


N-63

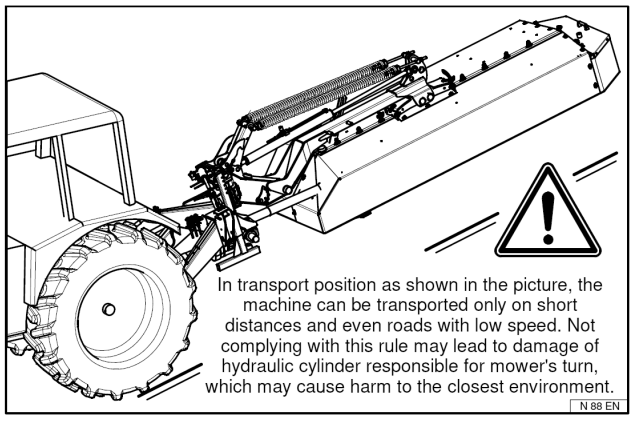


N-83

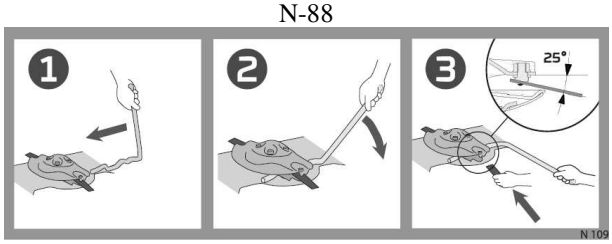




N-96
(For: **KT S/SL**)

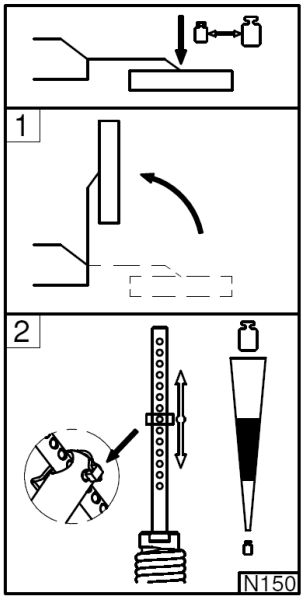


N-88



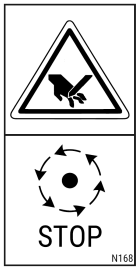
N-109

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



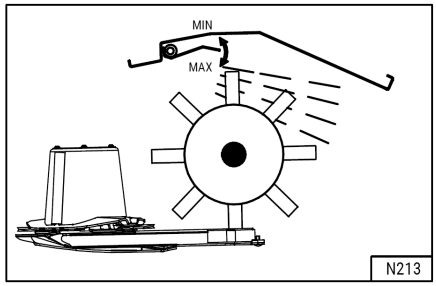
N-150

N-167
Presence of any personnel on the machine when driving is forbidden



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

N-201
Admissible transport speed

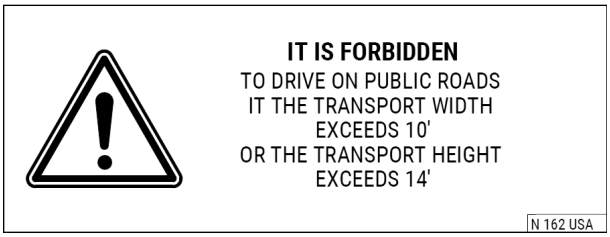


N-213 – for KT (S/SL)

N-204
Use the required Personal Protective

N-205
Use the required Personal Protective

N-206
Use the required Personal Protective



N-162

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

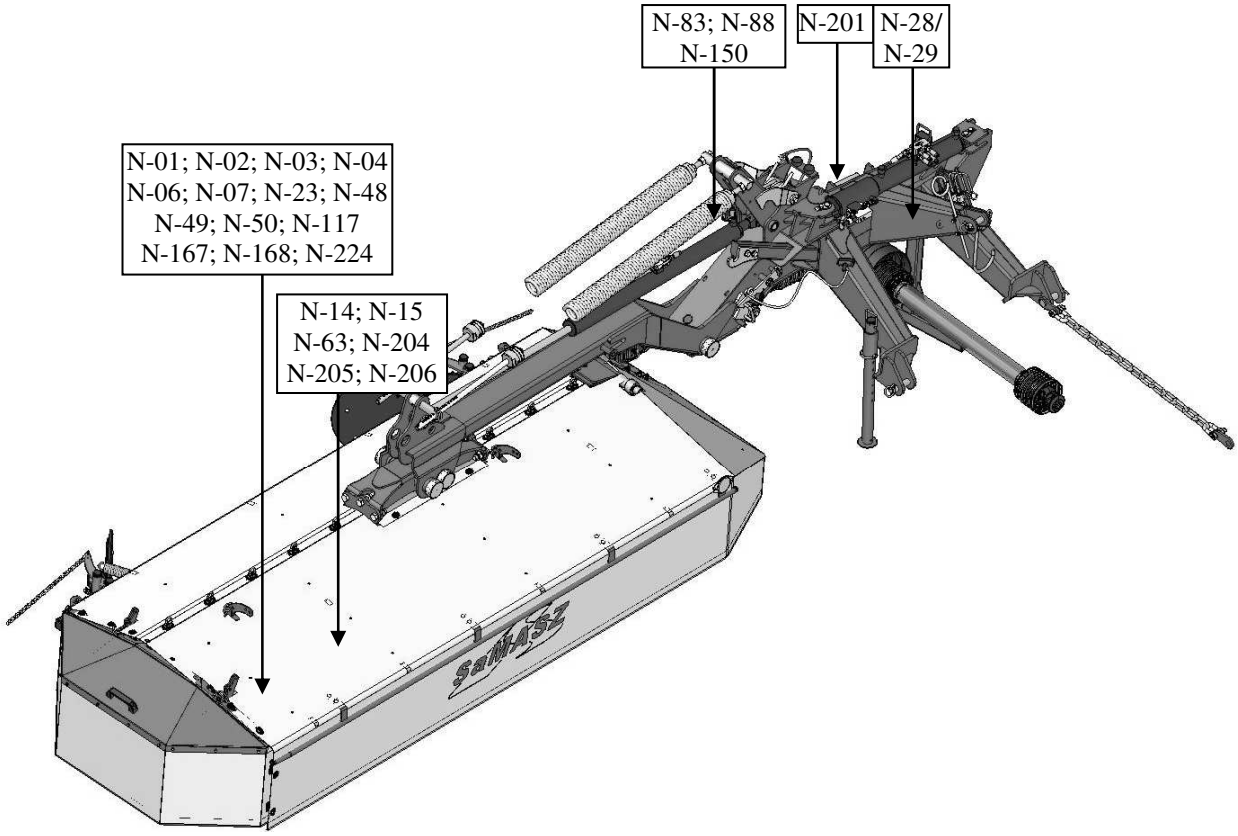


Fig. 8a. Warning decals placed on the rear disc mowers

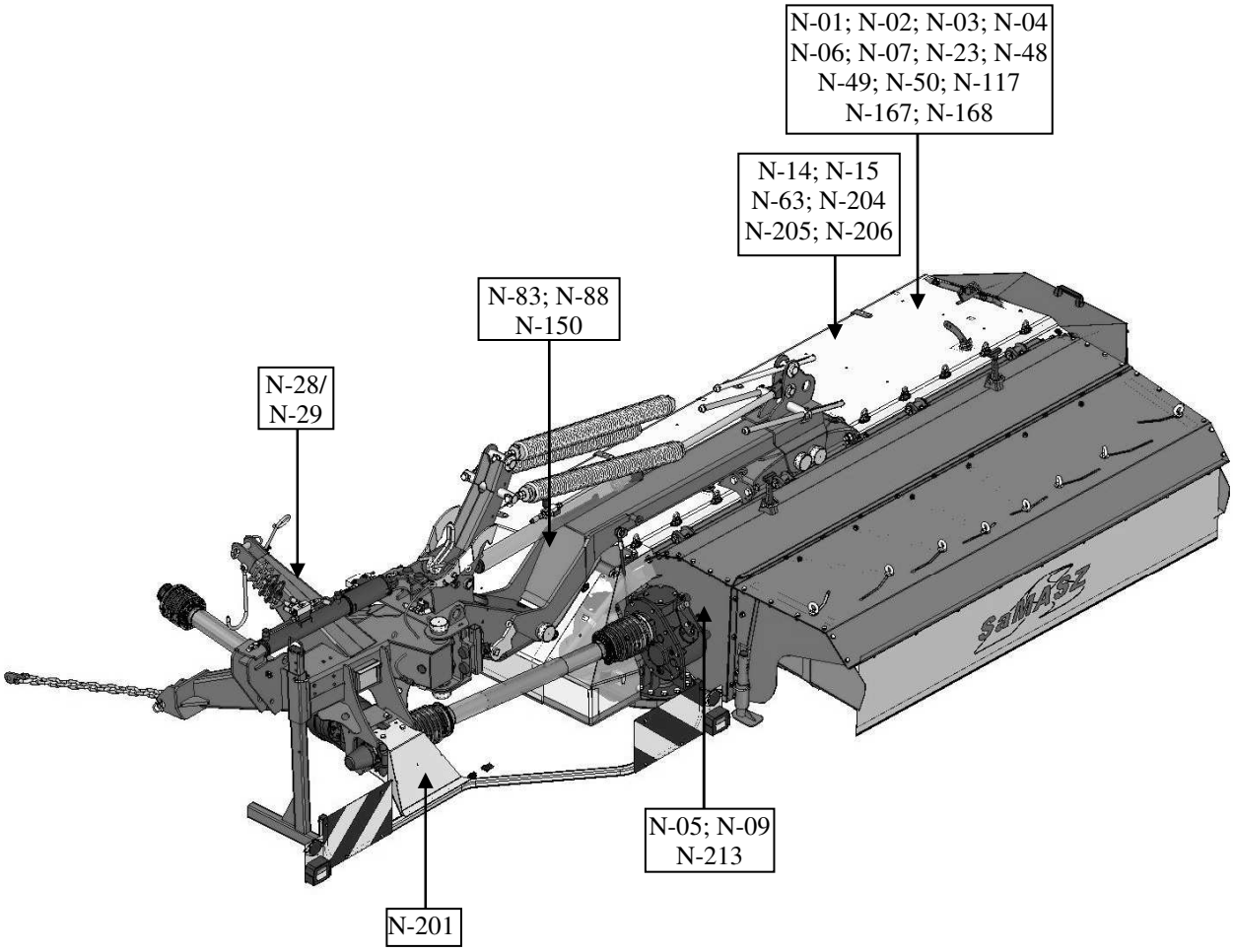


Fig. 8b. Warning decals placed on the rear disc mowers with swath conditioner

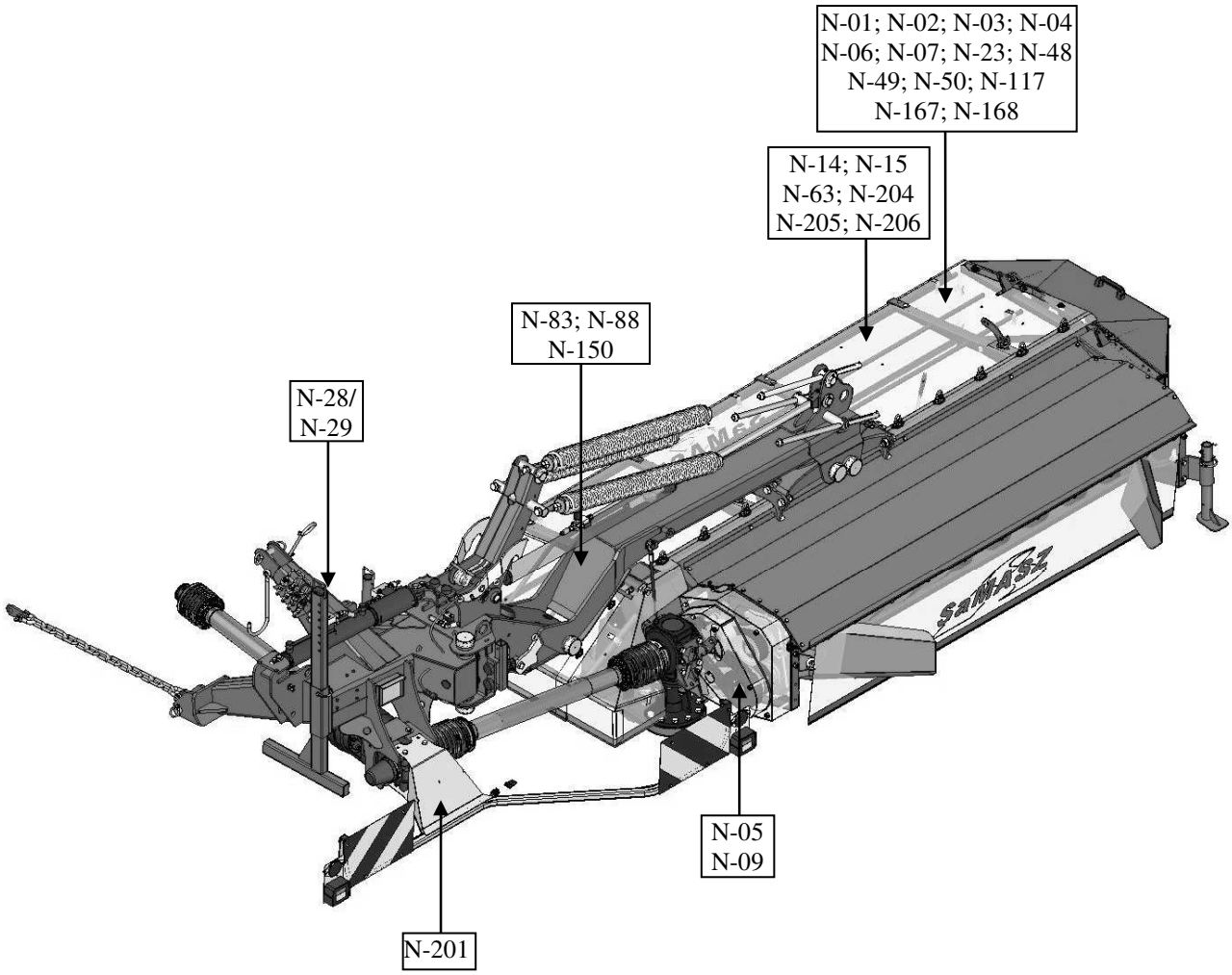


Fig. 8c. Warning decals placed on the rear disc mower with swath rollers

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

4.9. Design and operation of hydraulic safety breakaway device

Hydraulic safety breakaway device protects mower against hitting small obstacles. In the event the mower hits an immovable obstacle, the cutterbar folds back about 30° and at the same time rises about 2' 4". After that, the cutterbar automatically comes back to its working position.

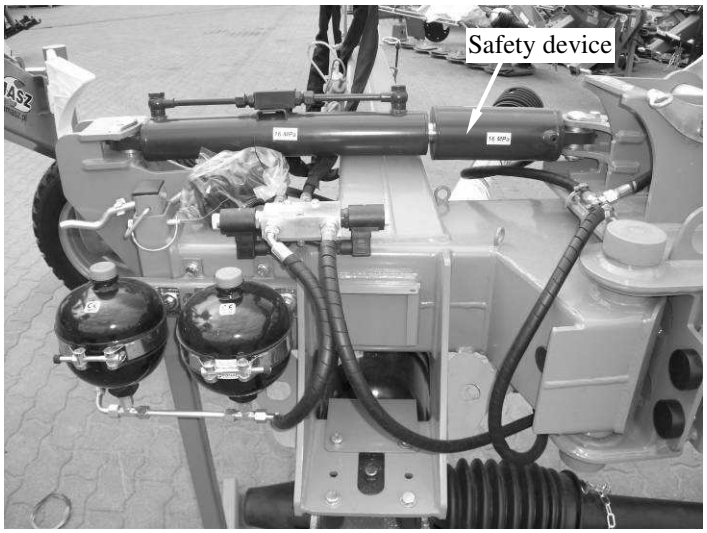


Fig. 9. Hydraulic safety breakaway device

Fig. 10. Simultaneous holding back of the mower up and backwards when safety breakaway advice is used

IMPORTANT:
Hydraulic safety breakaway device works only if the valve's pressure is adjusted to the factory setting of 500 kg.

5. OPERATION OF THE MOWER

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.

The mower is connected to the tractor's 3-point-linkage (**Fig. 11**). After the mower has been attached, adjust (on the flat ground) the mower's position by means of top (**S**) and lower links (**W**) (**Fig. 11**). The cutterbar should lean towards the driving direction. Lower links (**W**) should be connected to 3-point linkage frame pins (**A**). Support chain (**L**) holds up mower's linkage frame**.**

Connect hydraulic hose to tractor's hydraulic connector.

After the mower has been attached to tractor, check the balance and steer ability 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.

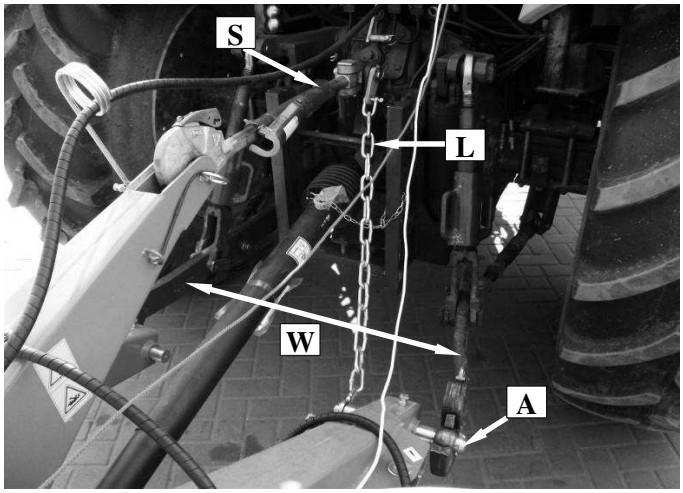


Fig. 11. Connecting the mower to the tractor

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.

CAUTION:
If need be, shorten the PTO haft according to its operator's manual given by the shaft's manufacturer (**Fig. 12**).

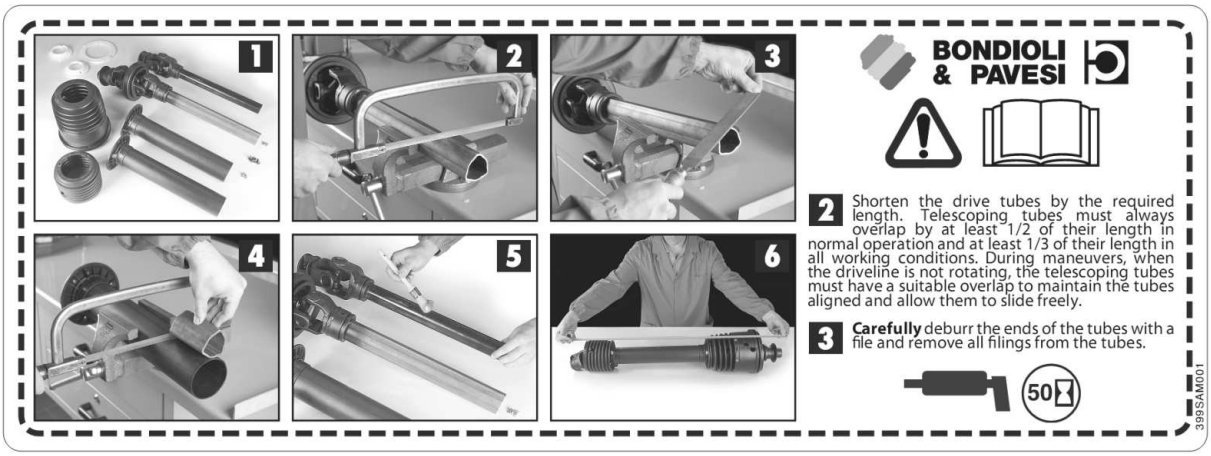


Fig. 12. Instruction of PTO shaft shortening

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

CAUTION:
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.

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

CAUTION:
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 mower for operation – mower with hydro-pneumatic suspension

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

Engaging the mower's drive should be performed once the cutterbar is placed on the ground. The following should be performed in workplace and as mower is in operating position:

- Attach the machine to tractor's 3-point linkage. Connect hydraulic hoses, control panel power cord and signal cable RS 232,
- Lower cutterbar so it touches the ground,
- Connect PTO shaft,
- Optimal angle of cutterbar in relation to the ground should be between 0° and 5°. This angle can be achieved by tightening or extending the link. The same principle applies to mowers equipped with conditioner or rollers,

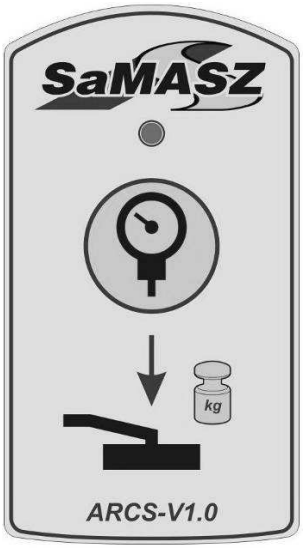


Fig. 13. Unload system control panel

- slowly engage the mower drive until cutting discs reach their nominal PTO rotating speed,
- start control panel,
- lift up mower on tractor's 3-point linkage to eject cylinder rod to maximum,
- then on the control panel, press button to set pressure in hydro-pneumatic assembly,
- using tractor's hydraulic valve lever, set the pressure until mower's cutterbar is slightly chattered,
- turn off the button on the control panel,
- set mower in working position (lower pin on the catch should be 1' 6"-1' 8" above the ground),
- slowly turn on the power to the mower bringing the cutting discs to the nominal rotational speed of the PTO of 950 - 1000 rpm. The rpm's should be as low as possible to decrease tractor fuel consumption,
- engage tractor gear and start mowing. Flat meadows can be mowed at any driving speed, however, as unevenness occurs, the speed should be reduced.

  Increasing pressure results in lower impact on the ground.
  Reducing pressure results in bigger impact on the ground.

IMPORTANT:
If the pressure supporting the assembly of the cutterbars is too high, the cutterbars will not be able to lowered.

NOTE:
Too low a pressure in suspension disables the machine to be set in transport position. If locking pawl does not catch when mower is being switched to transport position, then increase pressure in suspension.

NOTICE:
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.

5.3.1. Gas pressure in the accumulator and in the entire system for each mower model

The table below shows the optimal values of pressure in gas accumulators and in the entire system for each mower model. The system pressure can be read on the manometer.

Tab. 7. Gas pressure in the accumulators and in the entire system for each mower model

	Gas pressure in the accumulator [bar]	System pressure (manometer reading) [bar]
KT 261 H	35	65
KT 261 SH	60	80
KT 261 SLH	60	80
KT 261 WH	65	90
KT 301 H	45	80
KT 301 SH	65	90
KT 301 SLH	60	80
KT 301 WH	65	90
KT 341 H	55	85

5.4. Preparing mower for operation – mower with spring suspension

After the cutterbar has been lowered on the ground turn on the mower's power supply. As the mower is at work site and has been set in working position do the following:

- Lower the cutterbar so it touches the ground,
- Connect the PTO shaft end to the tractor's PTO rpm (if one end was disconnected) or connect both ends of the shaft,
- Make sure that the space where the mower is to be opened is unobstructed and there are no persons around,
- Pull the line enough to release the locking lever **Z** (**Fig. 14**) and engage the external hydraulic valve on the tractor and the hydraulic hoist of the tractor to set the cutterbar in a horizontal position,
- Using the lever of the tractor's external hydraulics lower the cutterbar so that when it gets closer to the ground it slows down,
- Release the coping tie (**Fig. 16**),

NOTE: The best recommended cutterbar's inclination angle to the ground is between 0° and 5°. The inclination is the result of either shortening or lengthening the adjustable tie **S** (**Fig. 11**).

- Lengthening of the tie results in increasing the mowing height, and shortening – decreasing it. The same applies to mowers equipped with a conditioner or rollers,
- Slowly engage the mower drive until the discs reach the nominal 470 - 520 rpm or 950 - 1000 rpm. Rears should be considerably lower, so as to reduce the tractor's fuel consumption,
- put the tractor into correct gear and drive into the grass to be mowed. Level pastures can be mowed at any speed, while on uneven ones the speed should be reduced to a safe speed.

5.5. Operating the mower

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.

5.5.1. Essential information concerning mowing

Optimum operating parameters

- Inclination towards the front 0-5 degrees which equates to 1.8" - 2.8" of mowing height.
- Operation speed around 10 km/h (6 mph) or more, if the conditions allow.
- PTO rpm = 470 - 520 rpm or 950 – 1,000 rpm. PTO rpm less than 540 or 1,000 may cause stripes of uncut grass between the disc.

High and inclined grass

- Heighten the cutterbar's inclination to H = about 1.8".
- If there is no inclination the grass will be wedged on the forming drums.
- Speed can be more than 12 km/h (7.5 mph) (the faster – the better).
- 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 blade).
- 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.

5.5.2. Mower clogging

When operating the mower, pay attention to variable conditions on the field, which may cause the mower to clog, such as: terrain unevenness, height and density of grass as well as other objects in the grass. In order to avoid clogging, mowing speed should be adjusted to the conditions. In order to take care of machine clogging, lower the cutterbar onto the ground, disconnect the drive and remove the ignition key. When eliminating the mower's clogging wear all appropriate protective gear.

5.6. 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 are raised above the ground:
  - **a)** about 6" in case of **KT 341 (H)**,
  - **b)** about 1' 3¾" in case of other models of **KT** ,
- lower the transport height on the tractor links, so it does not exceed 13' 2",
- lift support legs **S** and block them with cotter pins,
- before putting the mower in transport position block transport lock.

NOTICE: Unblocking the lock may cause damage to PTO shaft,

- for mower equipped with belt conveyors, if the conveyors are lifted, lower them and block them with cotter pins,
- lift the cutterbar by hydraulic cylinder vertically until the pawl **Z** locks in (**Fig. 14**), secure the cutterbar against falling by activating the shut-off valve placed on the mower's hydraulic cylinder.

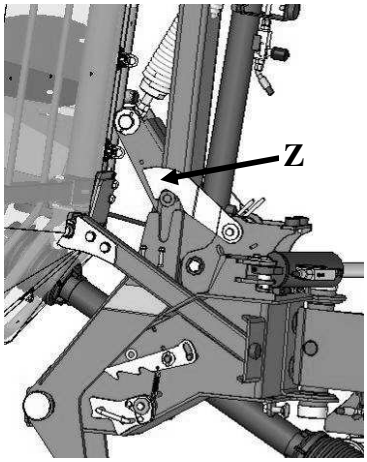


Fig. 14. Z – Locking bar

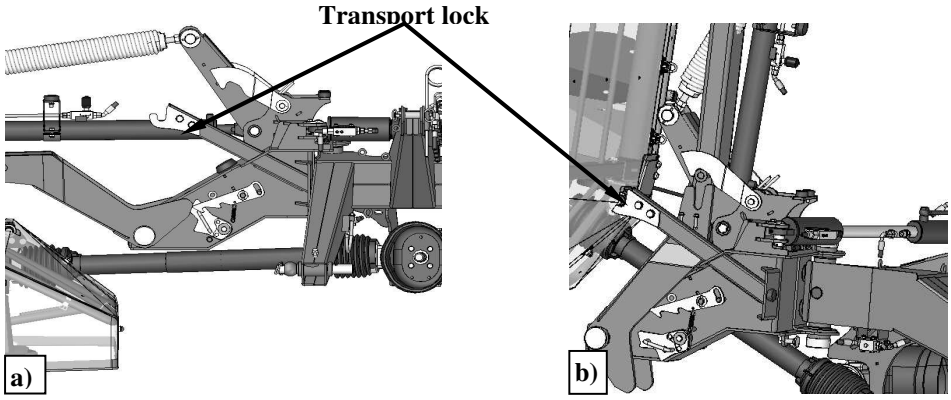


Fig. 15. Transport lock: a) Working position (mowing), b) Transport position with lifted mower

- for mowers with spring or hydro-pneumatic suspension the proper positions of the locking bar of the tie are shown in: **Fig. 16a** – setting of the locking bar of the tie in working position, **Fig. 16b**– in rest position and in **Fig. 16c** – in the transport position.

Fig. 16a. Working positon

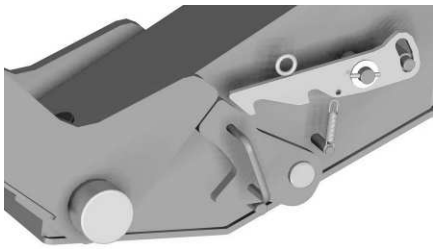


Fig. 16b. Rest positon

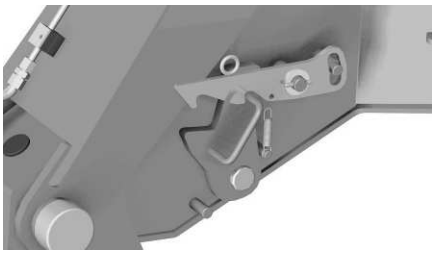


Fig. 16c. Transport position

- using the rotational cylinder causes tilting of the main frame backwards.

IMPORTANT:
For longer rest periods pressure in the system should be reduced to zero.

5.7. 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.

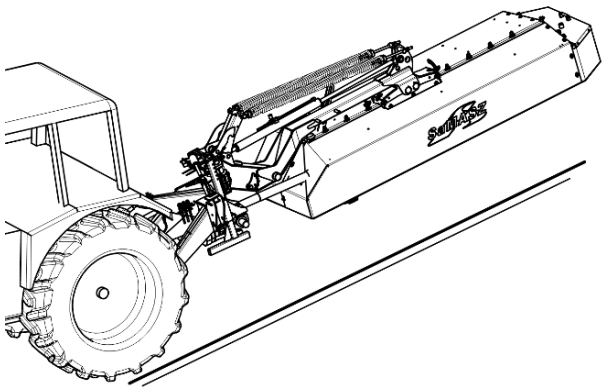


Fig. 17. Transporting mower in transport position

WARNING:
Transportation of the mower in transport position as shown in the picture above can only take place for short time periods, on even roads and at very low speed. Failure to observe this warning can cause damage to the mower rotating cylinder and thus become dangerous during operation.

WARNING:
During the horizontal transport position, there is a risk of loss of steerage. The tractor must be equipped with front weights.

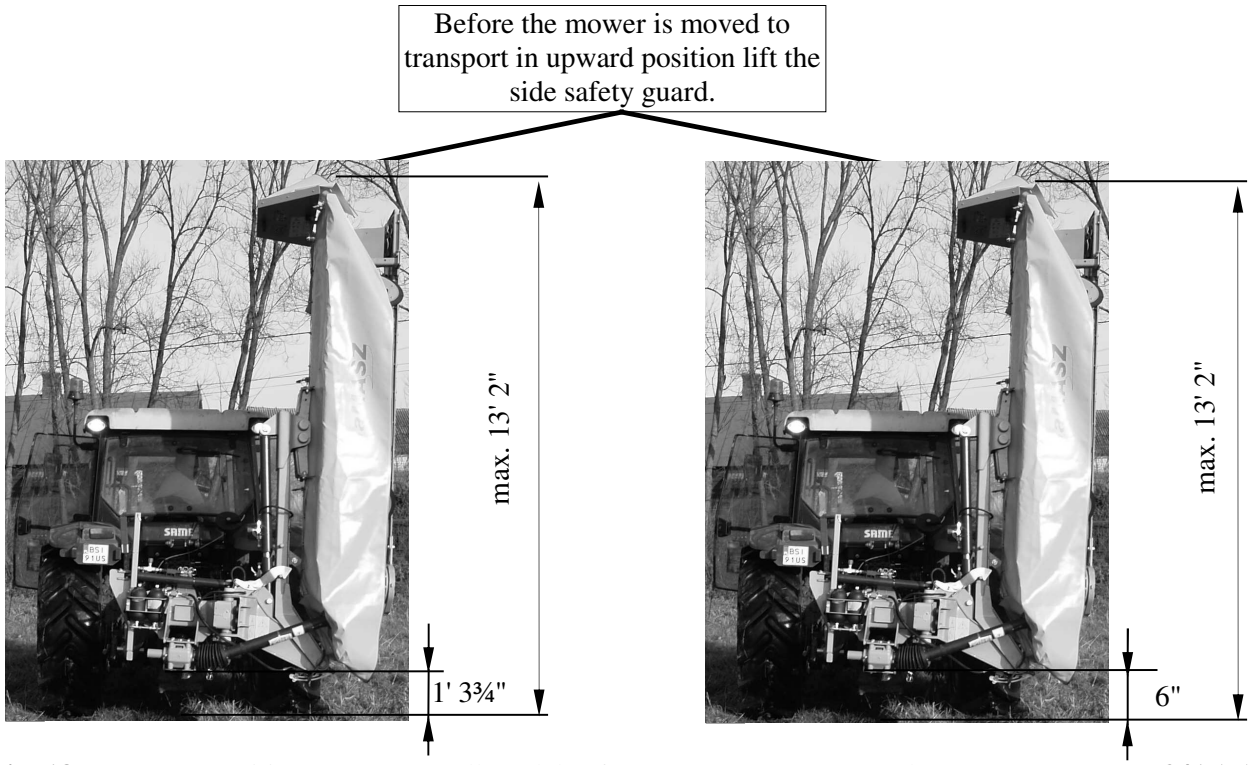


Fig. 18. Transport position a) concerns all models of **KT** except KT 341 (H), b) concerns **only KT 341 (H)**

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 – **Fig. 18**.

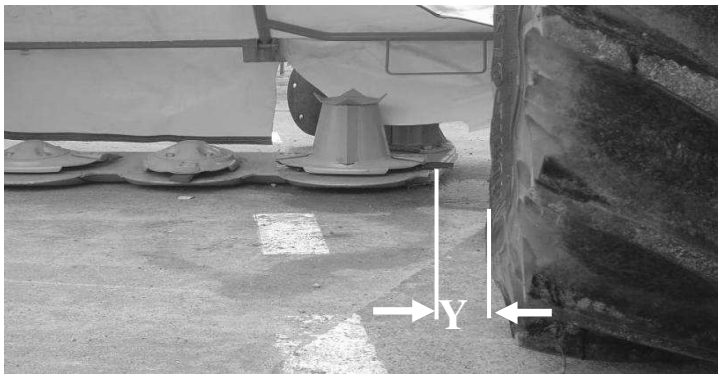
WARNING:
Pay attention to efficiency and tightness of the hydraulic system of the machine during the mower transport.

5.8. 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.

To safely move to the working position, do the following:
- open the shut-off valve on the hydraulic cylinder,
- lower the mower on the tractor's 3-point linkage until the cutterbar is at least 1' 8" above the ground,
- make sure there is nobody in the place where you are going to lower the mower,
- tighten the cord until the lock **Z** is released (**Fig. 14**) and using the hydraulic cylinder put the mower into a horizontal position,

- using the tractor's lever, slowly lower the cutterbar to the horizontal position,
- unblock the coping tie (**Fig. 16**) and lower the mower until the cutterbar touches the ground,
- using the upper adjustable tie **S** (**Fig. 11**) adjust to the required cutting height. Extend the tie **S** to increase the cutting height and shorten – to decrease it.
- depending on the tractor used the mower should be connected to the 3-point hitch so that the distance **Y,** the distance between the interior cutting disc and the tires of the tractor, is between 0 and 4" for **KT 261 (H).** For **KT 301 (H)** the distance **Y** should be between 1' and 1' 3¾" and for **KT 341 (H)** between 1' 8" and 2'.



With **KT 261 (H)**
Y = between 0 and 4"

With **KT 301 (H)**
Y = between 1' and 1' 3¾"

With **KT 341 (H)**
Y = between 1' 8" and 2'

Fig. 19. Side positioning of the mower in relation to the tractor

5.9. Disconnecting mower from tractor

WARNING:
When disconnecting, make sure there is no person in between the machine and the tractor.

To disconnect the machine from the tractor:

- Set the machine on an even, stable ground,
- Turn off the tractor's power and remove the key,
- Secure the machine against moving by placing wedges at wheels,
- Fold out the support leg and secure it with safety pin,
- Disconnect the machine's hydraulics and electrics from the tractor,
- Disconnect the PTO shaft and place it on the shaft holder, delivered as standard with the machine,
- Detach the machine from the tractor.

6. MOUNTING AND ADJUSTMENTS

6.1. Assembling / disassembling main frames

When assembling and disassembling main frames from the mower's linkage, in order to unscrew nuts M20 use a special key (**Fig. 20**) delivered with the mower.

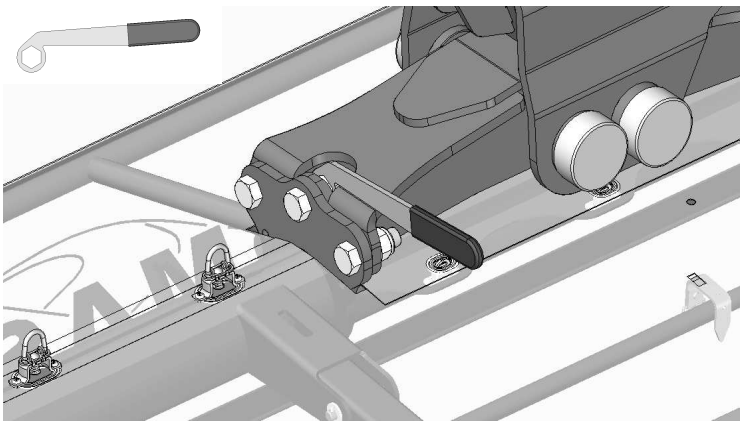


Fig. 20. Key for assembling / disassembling main frames

6.2. Mounting and timing of cutting blades

The cutting blades should be mounted as shown in **Fig. 21**. The blades recommended by the manufacturer have dimensions of 105x49x4 and comply with the PN-EN 795:2002 standard. Mount the blades so that cutting edges are directed towards the ground, and a blade lifts the grass after cutting.

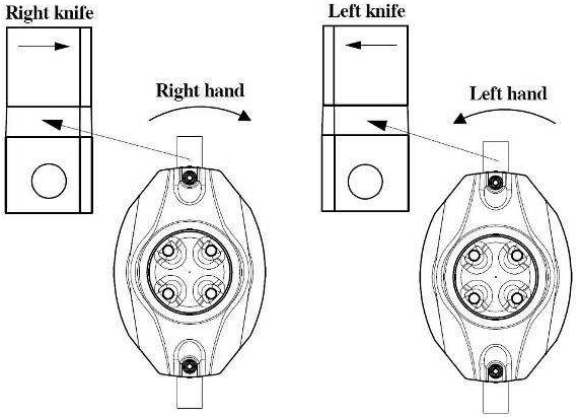


Fig. 21. Mounting of the blades on mowing discs

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

6.3. Blade replacement

Replace blades, if necessary, only in pairs. Make sure both blades in a pair are of the same length and weight. The blade holders (**Fig. 22**) must not be damaged or deformed. If the blade holder pin is worn too much, please replace it immediately (**Fig. 33**).

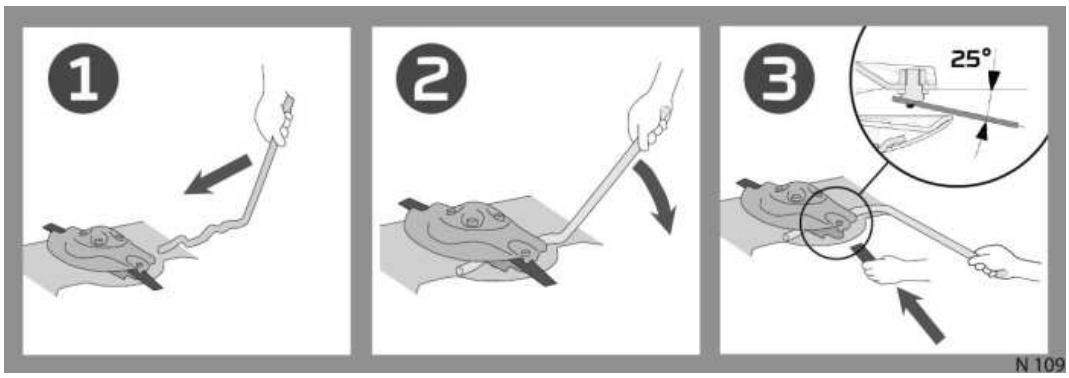


Fig. 22. Quick blade replacement

NOTICE:
During work, if mower begins to shake, it means that the disc (discs) are operating only with one knife. In that case, using the mower in this condition for a long time could cause serious damage to the cutterbar.

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.

6.4. Adjusting the cutterbar

Swath width is adjusted with swath guides mounted on the 3-point linkage frame of the cutterbar (**Fig. 23**). In order to adjust the guide, the following should be performed (for: **KT 261 (H), KT 301 (H), KT 341 (H)**):

- 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 (**7**),
- tighten screws (**5**) and locknuts (**4**).

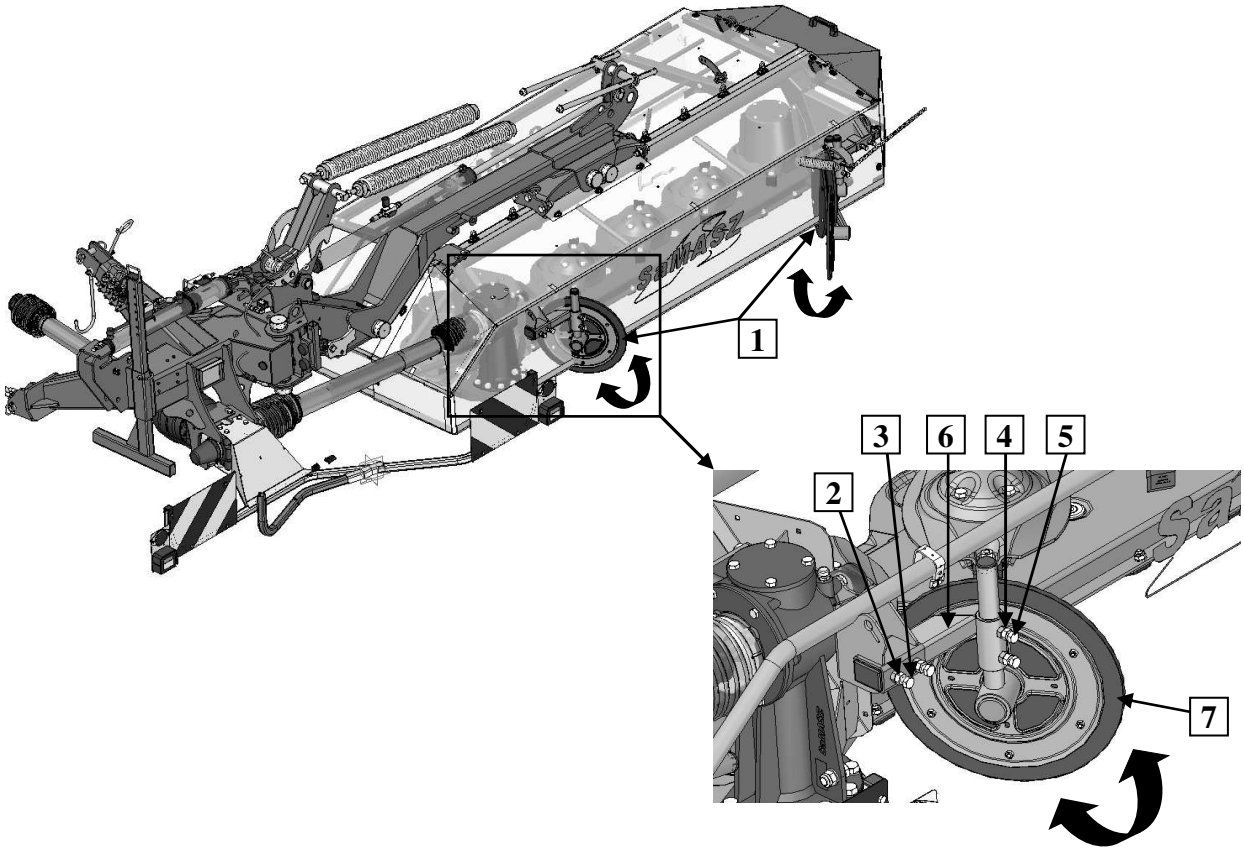


Fig. 23. Adjustment of swath guides: 1 - swath guide, 2 - locknuts, 3- arm adjustment screws, 4 - locknuts, 5- shield adjustment screws, 6- guide arm, 7- shield

In order to set swath width, adjustment of swath guides (**1**) should be performed (**Fig.23**) (for: **KT 261 S/SL (H), KT 301 S/SL (H)**):

- 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 performed with guides.

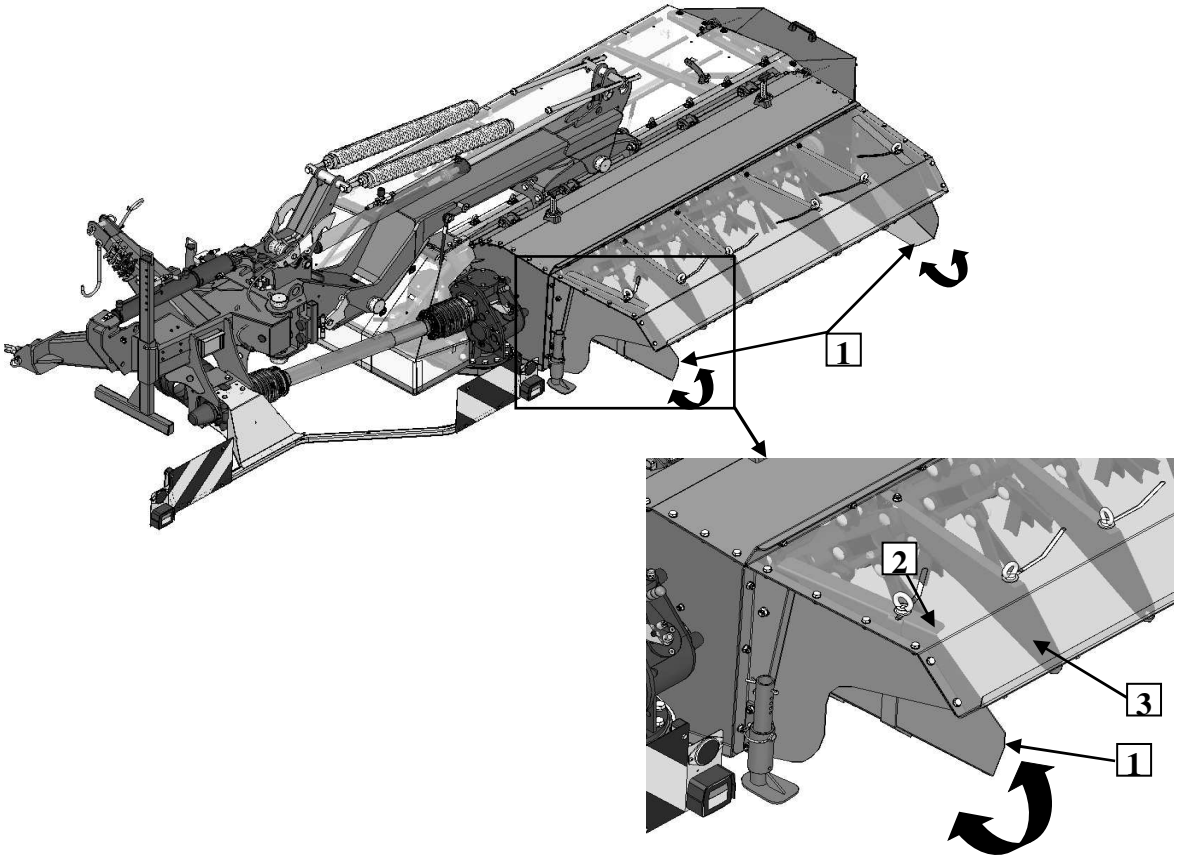


Fig. 24. Adjustment of swath guides: 1- swath guide, 2 - adjustment screw, 3 - swath wheel

In order to set swath width, adjustment of swath guides (**1**) should be performed (**Fig. 25**) (for: **KT 261 W (H) and KT 301 W (H)**):

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

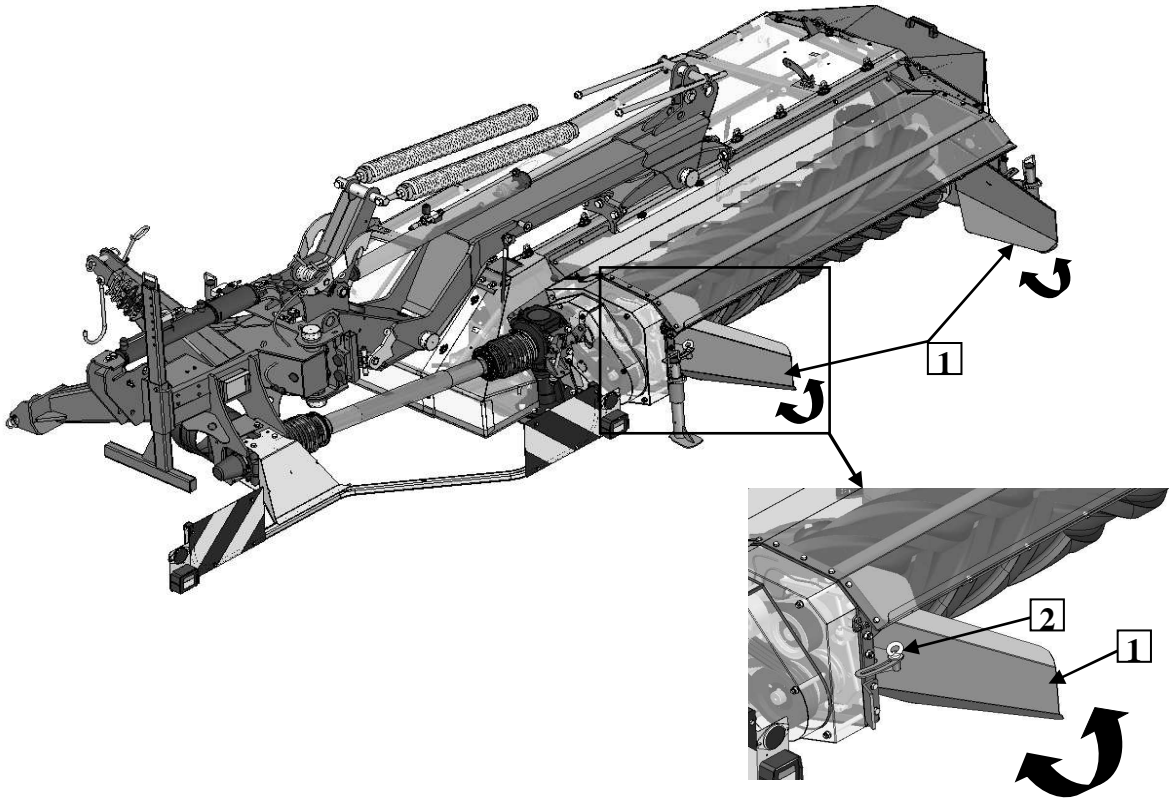
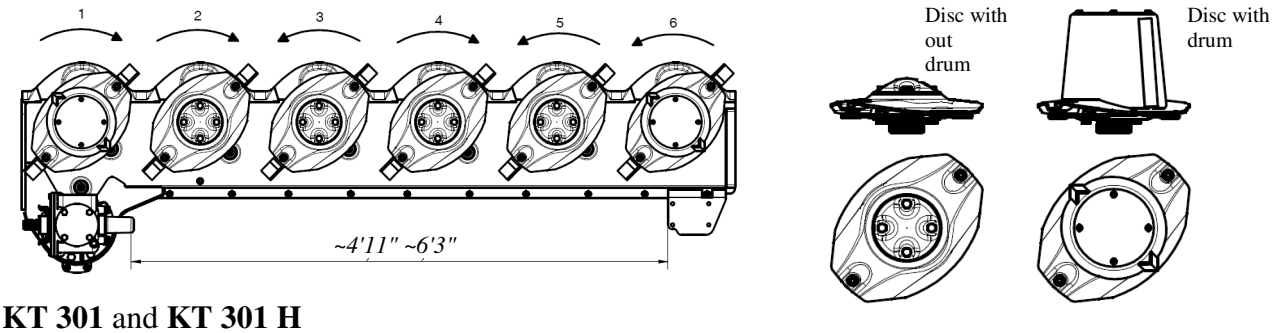


Fig. 25. Adjustment of swath guides: 1- swath guide, 2 - adjustment screw

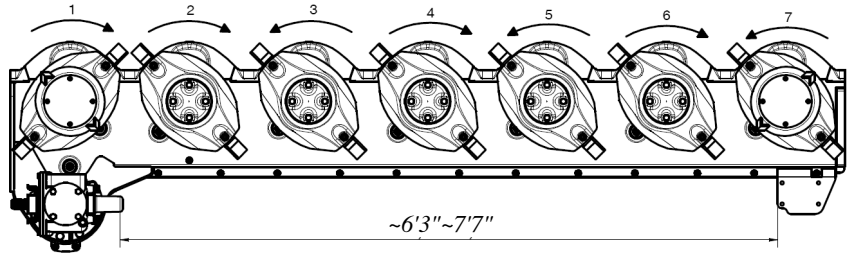
NOTICE:
Before you change the blade, check disc turns (**Fig. 26**).

CAUTION:
Improper mounting of the blades will block the mower. When mounting pay particular attention to the direction of disc's rotation shown below.

KT 261 and **KT 261 H**



KT 301 and **KT 301 H**



KT 341 and **KT 341 H**

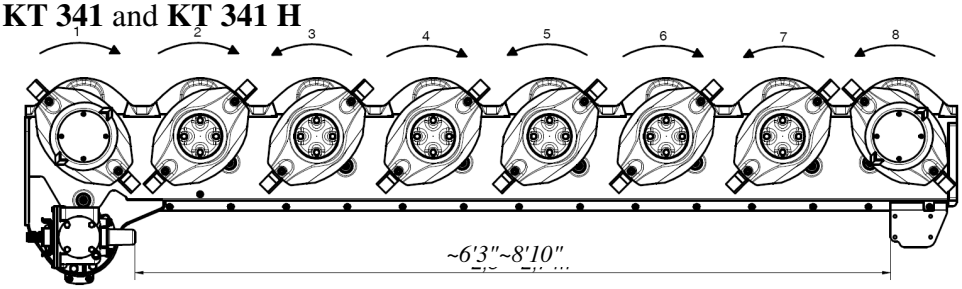


Fig. 26. Swath widths of SaMASZ rear disc mowers

NOTE: The operator can set the width of the windfall by replacing discs without drums with discs with drums

6.5. Setting mowing height

The desired mowing height is set by changing the length of the upper regulated tie **S** (**Fig. 11**) of the suspension. Extending the tie results in increasing the mowing height and shortening – in decreasing the mowing height. The current mowing height is indicated by the indicator located on the linkage frame (**Fig. 27**).

Recommended mowing height is 2.5" - 2.75".

Fig. 27. Mowing height indicator

6.6. Use and adjustment of load reducing chain

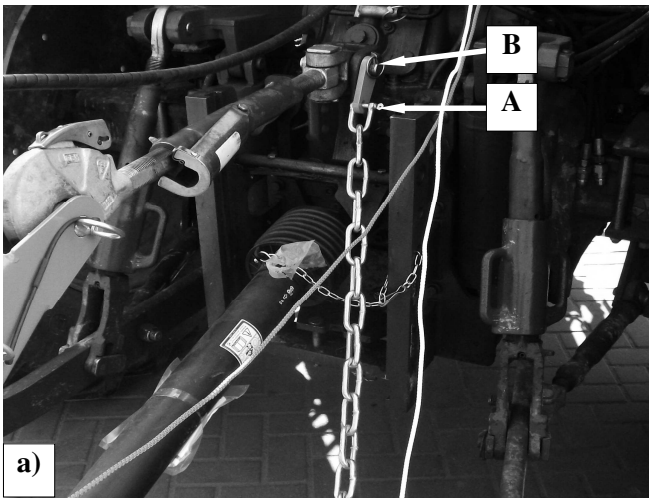


Fig. 28a. Load reducing chain

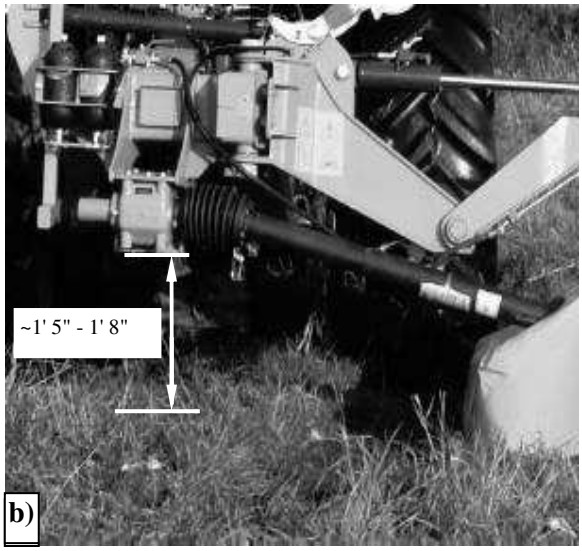


Fig. 28b. Mower height in working position

The load reducing chain is used to set a permanent height of the mower during operation. It facilitates the correct positioning of the mower for operation and reduces the load on the tractor's hydraulic cylinder.

When connecting the mower to the tractor insert fitting **A** (**Fig. 28a**) of the chain onto the pin **B** of the upper tie. Adjust the length of the chain for the mower in its working position at a height as shown in **Fig. 28b** and also the tilt of the mower.

6.7. Adjusting cutterbar's pressure on the ground by means of support springs

Pressure on the ground is adjusted by changing the tension force of support springs.

Decreasing the pressure of the cutterbar on the ground is done at the same time as increasing the tension of the support springs by moving the lock in the next hole on the rod towards the springs (**Fig. 29**). Increasing the cutterbar's pressure on the ground is caused by decreasing the tension of support springs by moving the lock towards the rod's end.

Adjustment may only be performed when the machine is in vertical position (**Fig. 30**).

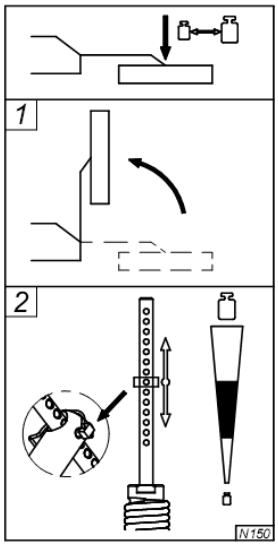


Fig. 29. Adjustment of support springs

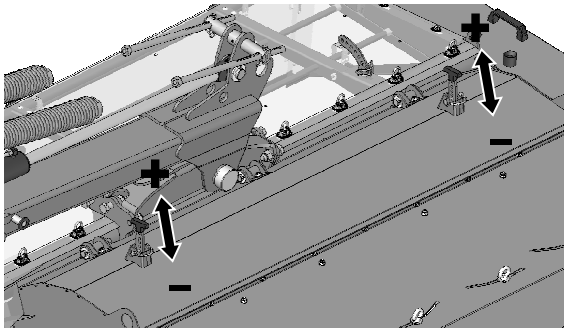
Fig. 30. Mower in vertical position

WARNING:
Improperly relieved cutterbar will cause increase of its pressure on the ground and thus lead to faster wear of sliding skids, overloading the cutterbar, higher fuel consumption, damage to the stubble and contamination of the fodder.

6.8. Adjustment of the clearance between the cover and the roller of the conditioner

(For mowers: **KT 261 S/SL (H), KT 301 S/SL (H)**)

Depending on the height and thickness of the grass being mowed, it may become necessary to change the setting of the conditioner cover. The higher and thicker grass the larger the clearance between the guard and the conditioner. The correct setting should be selected through trial and error, so that the conditioner does not clog up and so that the overload clutch of the PTO shaft will not activate. Adjustment of the conditioner guard is shown in **Fig. 31.**



„**+**" - increasing plate - conditioner clearance width
„**-**" - reducing plate – conditioner clearance width

Fig. 31. Adjustment of conditioner plate (for: **KT 261 S/SL (H), KT 301 S/SL (H)**)

6.9. Replacing conditioner tines

(For: **KT 261 S/SL (H), KT 301 S/SL (H)**)

Before any operation, on each occasion check condition of bolts, on which tines are set, as well as condition of tines themselves. If either is worn or damaged, replace them. **Bear in mind, that tines should be replaced in pairs (opposite) of the same weight in order to keep the shaft well balanced.** Otherwise bearings and the shaft itself may be exposed to premature wearing.

In order to dismount the tine release the nut with a wrench, remove the bolt, and the tine – in case of mowers equipped with a light-weight conditioner remove the tine rubber pad too. Mount the new tine in the reverse order (**Fig. 32**). Installation of a new flail is performed in the reverse order, when tightening the nut apply an adequate torque (**Tab. 8**).

1. Conditioner's shaft
2. Self-locking nut gal. cl. 8.8
3. Tine
4. Special truss head bolt M16x16 gal. cl. 12.9 with neck

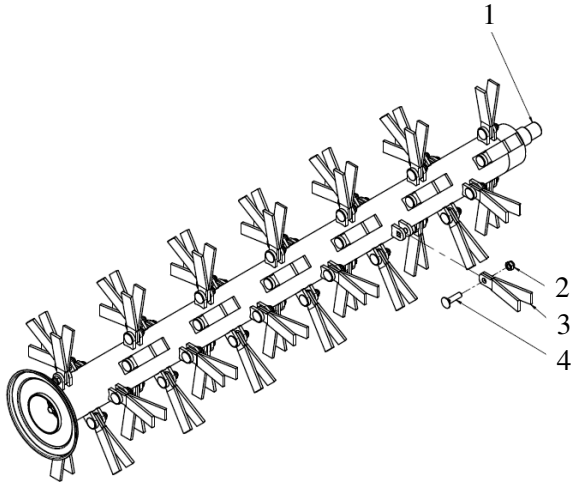


Fig. 32a. Replacing conditioner tines

1. Conditioner roller
2 Hex nut - M16 self-protecting gal. cl. 8.8
3. Washer
4. Welded tine
5. Bolt M12x 55 gal. cl. 8.8
6. Tine's insert

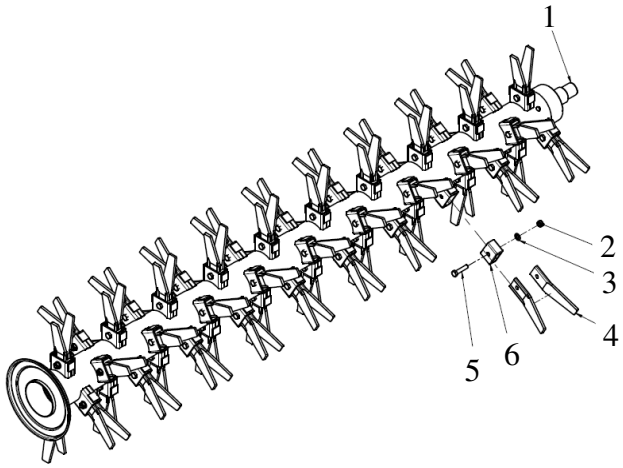
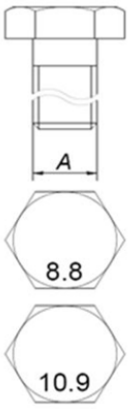


Fig. 32b. Replacing conditioner flails (light-weight swath conditioner)

Tab. 8. 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

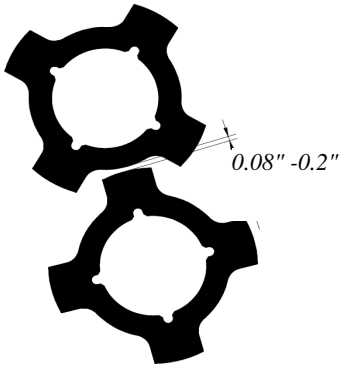


In the absence of specific torque values, the following chart can be used as a guide to the maximum safe torque for a particular size and grade of fastener. There is no torque difference for fine or coarse threads. Torque values are based on clean, dry threads. Reduce value by 10% if threads are oiled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

6.10. Adjusting force of the pressure of roller conditioner

(For mowers: **KT 260 W (H), KT 300 W (H)**)

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



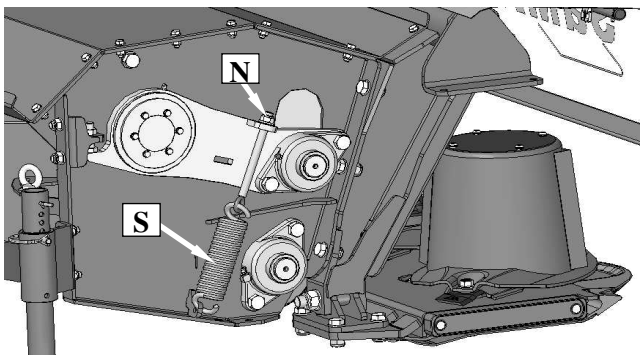


Fig. 33. Adjustment of the pressure between rollers

6.11. Maintenance and service

6.11.1. Checking the blades and blade holders

All blades should have the same lengths and weights. Always check mower before starting work for damaged, missing and/or worn blades. Replace them, if necessary, only in pairs.

If the blade holder pin is worn too much (**Fig. 34**) and/or the blade holder is worn or deformed, replace it immediately

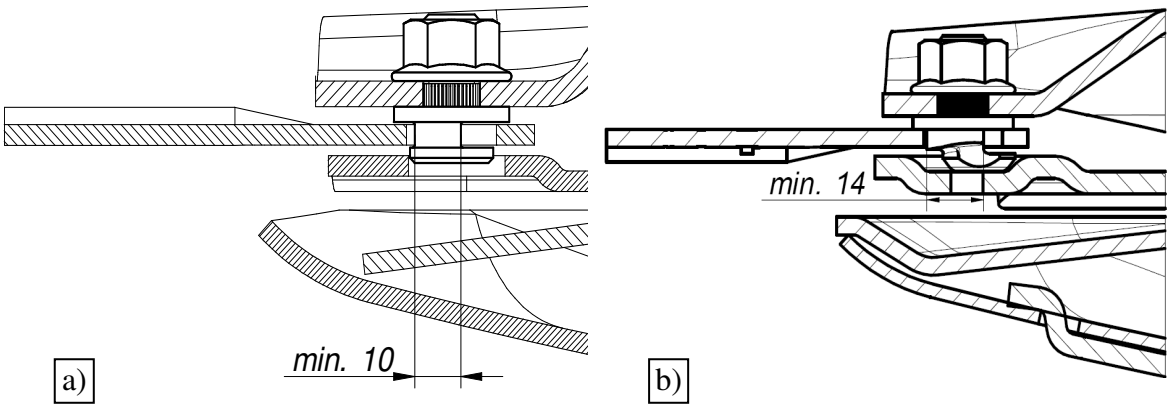


Fig. 34. Permissible wear of knife holder pin on disk a) knife base M12 b) knife base M12 with claw

NOTICE:

If the blade is missing or disc cover plate is damaged the vibrations may occur, which can cause cutterbar damage. In that case, warranty claim will be rejected. If the disc or disc cover plate is damaged, the whole set must be immediately replaced (2 blades) with new genuine ones.

6.11.2. Checking the tension of tine and roller conditioners' driving chain

Drive from conditioner and rollers driving shaft is transmitted by chain onto conditioner's or rollers' axis. Constant chain tension is provided by tensioner, adjusted with tensioning bolt **N** (**Fig. 35**). Properly tensioned chain, after being pressed with finger on tensioner end (**K**) should deflect by approx. 2".

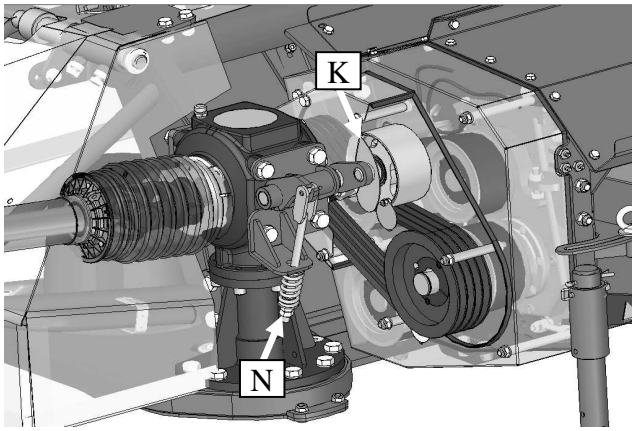


Fig. 35. Adjusting the chain tension on the chain gear (view with guard removed) of the swath rollers (for: **KT 261 W (H), KT 301 W (H)**)

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,
- 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, section 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.

Additionally:

- remove any traces of rust and paint the area,
- check the oil level in the angle drives and the cutterbar (Chapter 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 oil in the cutterbar is done through the inlet **A** (**Fig. 36**). Proper oil level is 0.2" - 0.3" from the cutterbar bottom.

The required oil capacity is shown in the following table. In order to drain oil from the cutterbar dismount the cutterbar enclosure by releasing bolts (**B**) (**Fig. 36**). The best time to drain the oil is immediately after the operation, if the oil is still warm.

Tab. 9. Oil capacities

Model	Oil capacity [Gal US-lqd]	Oil type	Lubrication frequency
KT 261 S/SL (H) - 2,60 m KT 261 W (H) - 2,60 m	1.3	80W90	Once every 3 seasons (if working intensively, more frequently)
KT 301 S/SL (H) - 3,00 m KT 301 W (H) - 3,00 m	1.6		
KT 341 (H) - 3,40 m	1.7		

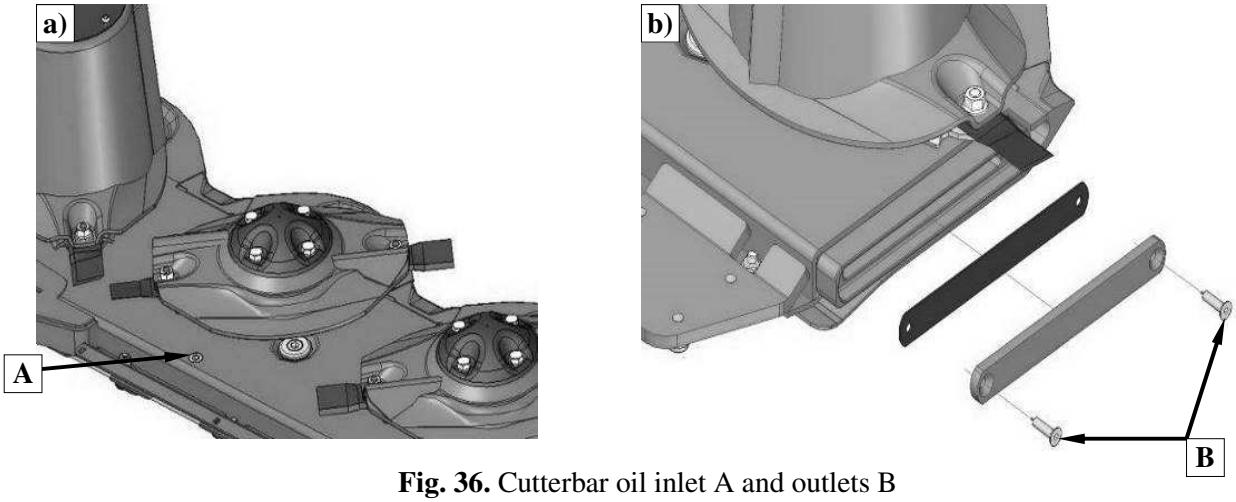


Fig. 36. Cutterbar oil inlet A and outlets B

7.2. Intersecting axis gears

Every 100 working hours and for less intensive machine operation 2-3 times a season check the oil level and if necessary top up after having removed the vent **A** (**Fig. 37**) on the top of the gear. The oil level can be checked through 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 in 090-02.111.LS, 110-01.111.L, 054-02.10CB.R, 095-07.1FL.RS gears is about 1L (**Fig. 37a,c**), and in 052-02.0100AB.L gear about 2.5L (**Fig. 37b**). Check oil level when the cutterbar is on the ground. Removing the old oil from the gearbox is done through the outlet **C**.

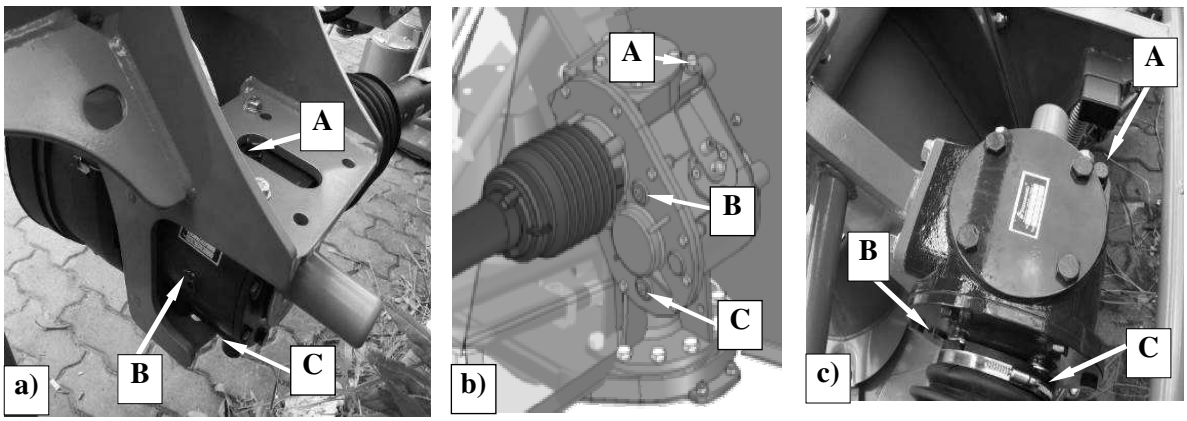


Fig. 37. Intersecting axis gear lubrication points

Tab. 10. Oil capacities in intersecting axis gears

Model	Oil capacity [l]	Oil type	Lubrication frequency
All types	1	SAE 80W/90, API GL-4	Once every 3 seasons (if working intensively, more frequently)
Gear box: 052-02.0100AB.L (For: 261 S/SL(H), 301 S/SL(H))	2,5	SAE 80W/90, API GL-4	once every 3 seasons (with intensive use)

IMPORTANT:

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

7.3. Roller conditioner's gearbox

(For: **KT 261 W(H), KT 301 W(H)**)

Before you check the lubrication of the gearbox, remove the safety guard. Every day before starting work, check the oil level and, if needed, refill after having removed the vent **A** (**Fig. 39**) on the top of the gearbox. The oil level can be checked through the check opening **B** on the side of the gear. Refill the oil until it is visible in the check opening **B**. The oil capacity is about 0.5 L. Check oil level when the cutterbar is on the ground. Removing the old oil from the gearbox is done through the outlet **C**.

Tab. 11. Oil capacities in roller conditioner's gearbox

Model	Oil capacity [L]	Oil type – for gearboxes	Lubrication frequency
All types	0.5	SAE 80W/90, API GL-4	Once every 3 seasons (if working intensively)

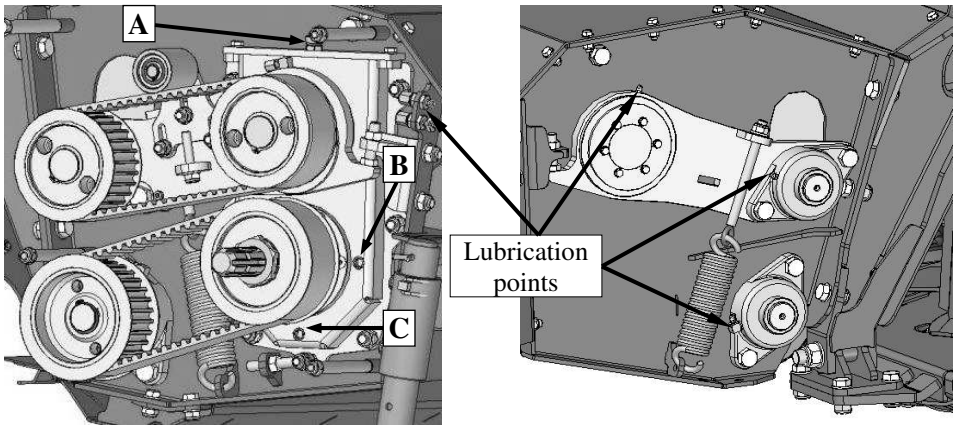


Fig. 39. Roller conditioner's gearbox lubrication points

7.4. Bearings

Every 50 hours of the mower's operation, lubricate bearing beds of swath conditioner/rollers shaft (**Fig. 37**, **Fig. 38**). Manufacturer recommended lubricant is **LT43** grease or other equivalent lubricant for rolling and sliding bearings which operate in temperature range of -30° and +130°C and main joints of the mower (**Fig. 40, Fig. 41**) with **STP** grease.

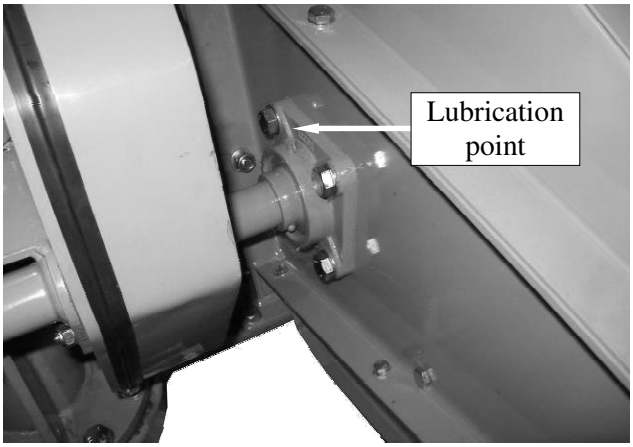


Fig. 38. Bearing lubrication point with LT43 grease

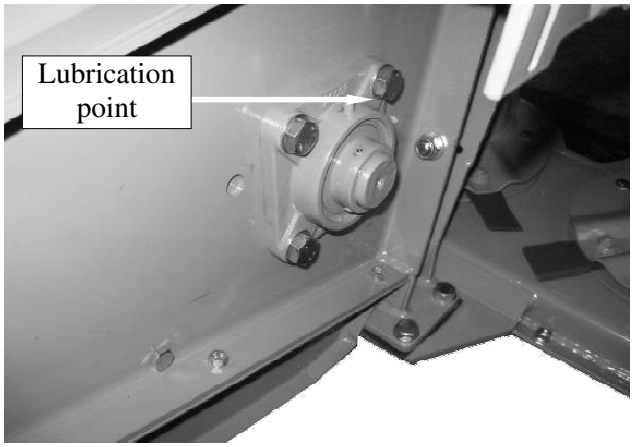


Fig. 39. Bearing lubrication point with LTT43 grease

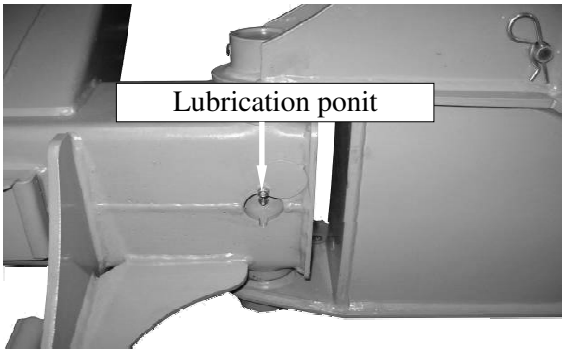


Fig. 40. Lubrication point of the suspension with STP grease

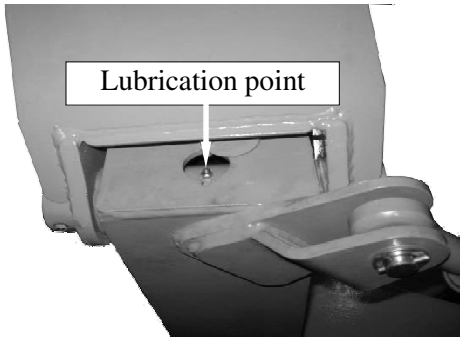


Fig. 41. Lubrication point of the suspension with STP grease

7.5. Risks present when lubricating

- If risk of splashing is present, make sure to wear protective eyewear with side guards.
- When lubricating protect eyes and skin against contact with the substance. Therefore use adequate protective gear with long sleeves and protective footwear. Also use protective gloves. In case of a contact with skin, immediately wash the infected area with plenty of water with soap.
- Do not allow the product to contaminate water outlets, water courses and soils.
- In case of an unintentional release to the environment plug the leak, limit the spillage, and then collect the oil with non-flammable absorbent material (e.g. sand).
- The product is flammable. In case of fire, use adequate fire-extinguishing means (e.g. foam, water mist, extinguishing powders). Do not use direct water jets.
- Disposal of the used product must be made according to official regulations. Improper disposal of the used oil poses danger to the environment.

8. MALFUNCTIONS AND THEIR REPAIRS

Tab. 12. Malfunctions and their repairs

Defect		Reason	Repair
Mower stops working (partly)– leaves stripes of uncut grass between the discs	1	Lack of blades	Install or replace blades
	2	Worn blades	Replace worn blades
	3	Improperly mounted blades (left – right)	Mount blades according to the instructions
	4	Improper front inclination	Adjust inclination strictly according to instructions
	5	Too high PTO rpm (The most frequent mistake)	Reduce PTO rpm
	6	Too low work speed	Speed up to 10 km/h (6 mph) or more
	7	Damaged tractor's PTO	Repair
	Mower with either tine or roller conditioner may mow improperly in case of very short grass or after 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 – 1.5"
Grass blocks the mower – lack of grass flow or the flow is uneven	Too low work speed		Speed up to 10 km/h (6 mph) or more
	Swath guides are set too narrow		Widen swath guides to the maximum
Safety device is working often without clear reason	Worn elements of safety device or improper adjustment		This repair must be done by SaMASZ service
Mower does not work, even though the drive is transmitted from the tractor	Damaged intersecting axis gear		Replace intersecting axis gear
	Relay shafts - incorrect rotation direction of the unidirectional clutch		Check rotation direction
Mower's hydraulics do 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	Contaminated oil in the tractor hydraulics		Replace oil in the tractor hydraulics. Provide brand new cylinder repair kit and replace worn gaskets
Excessive vibration during work	Damaged PTO shaft		Check the condition of PTO shaft and if necessary replace
Oil leak in gear	Not tight assembly		Examine tightness and check oil level

9. DISASSEMBLY AND WITHDRAWAL FROM USE

9.1. Scrapping

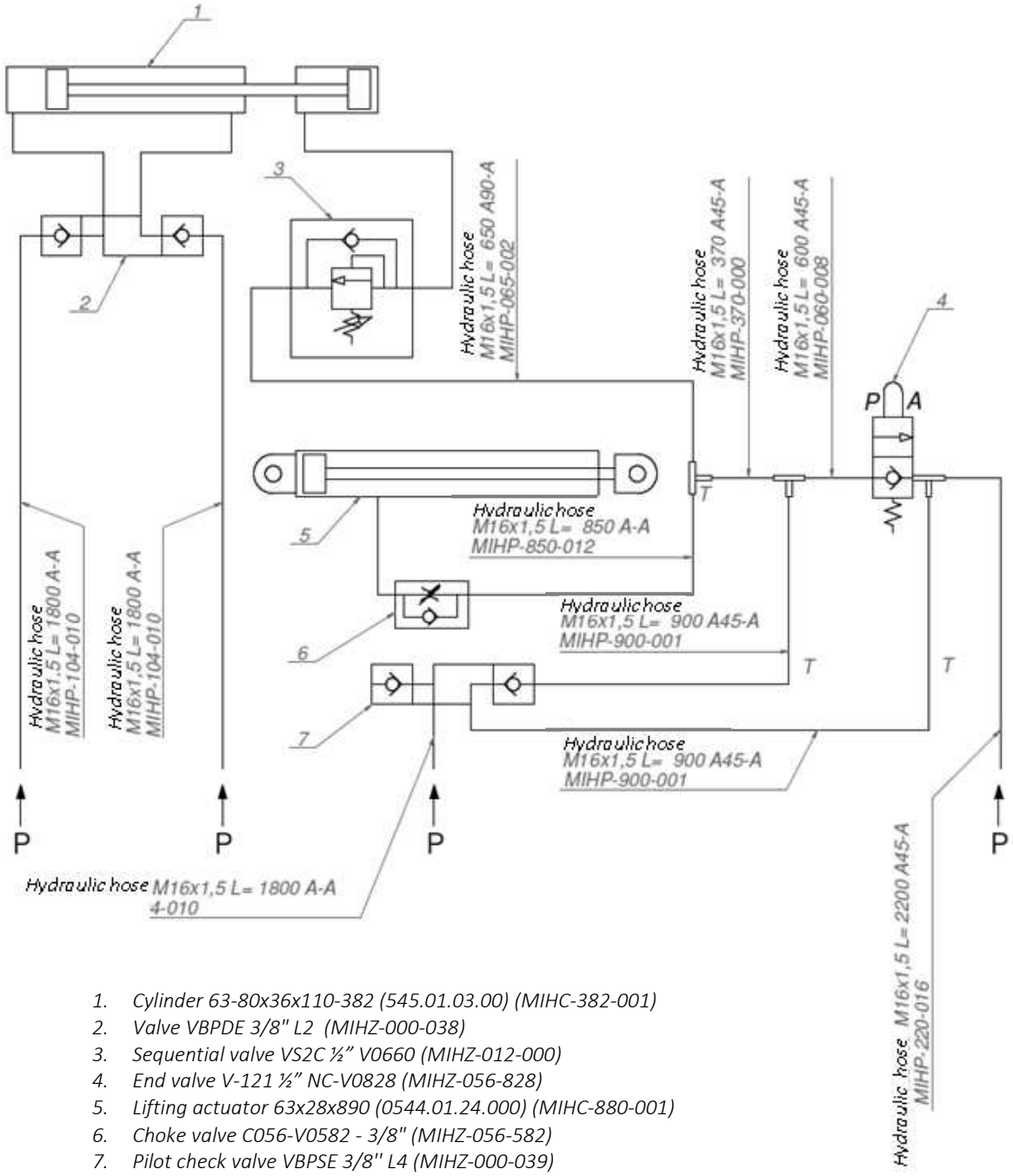
If the mower cannot be repaired anymore, it should be withdrawn from use.

To do so, 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 can be scrapped.

10. HYDRAULIC SCHEME

10.1. Hydraulic scheme of rear disk mower with swath conditioner

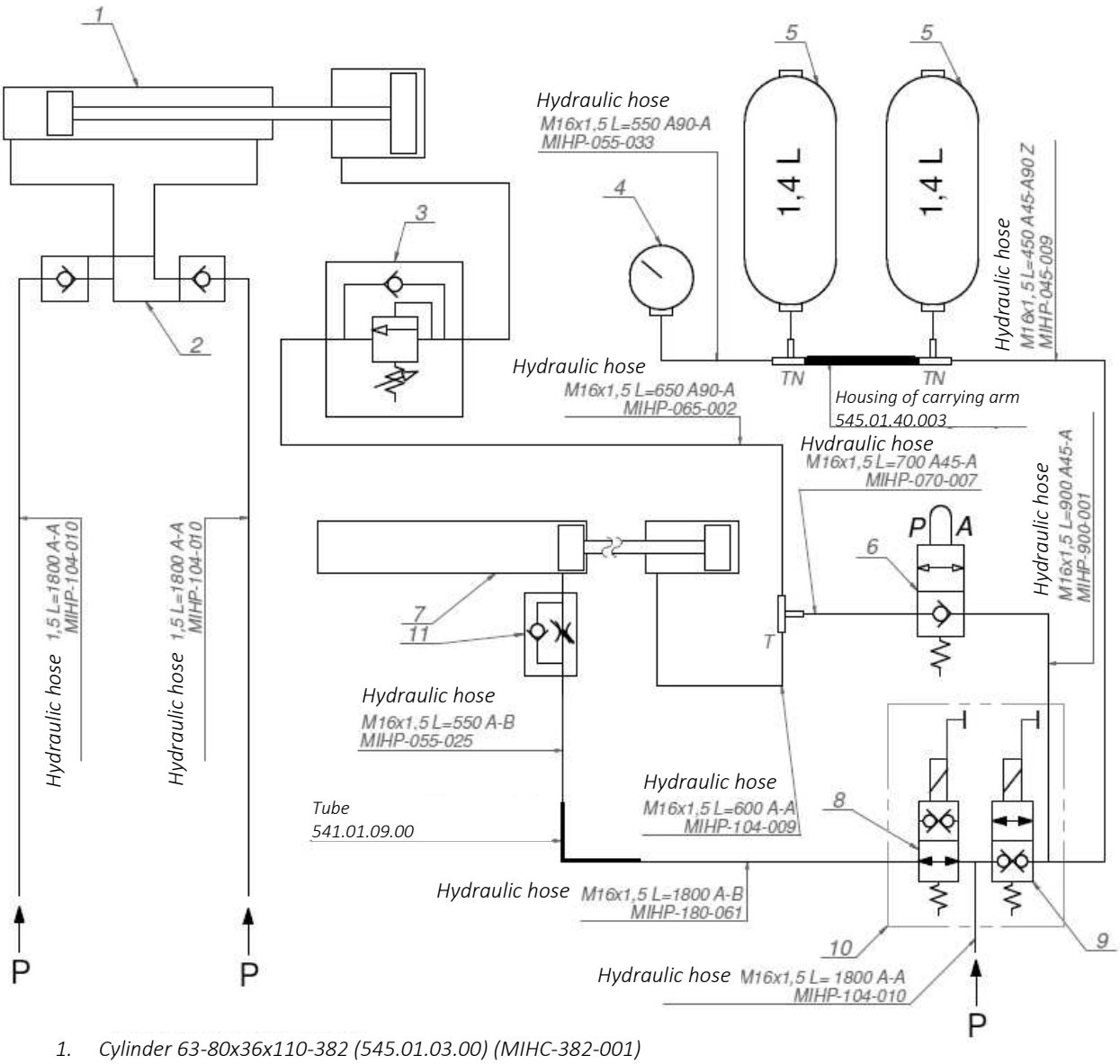
(For: **261 S/SL/W, 301 S/SL/W, 341**)



1. *Cylinder 63-80x36x110-382 (545.01.03.00) (MIHC-382-001)*
2. *Valve VBPDE 3/8" L2 (MIHZ-000-038)*
3. *Sequential valve VS2C ½" V0660 (MIHZ-012-000)*
4. *End valve V-121 ½" NC-V0828 (MIHZ-056-828)*
5. *Lifting actuator 63x28x890 (0544.01.24.000) (MIHC-880-001)*
6. *Choke valve C056-V0582 - 3/8" (MIHZ-056-582)*
7. *Pilot check valve VBPSE 3/8'' L4 (MIHZ-000-039)*

10.2. Hydraulic scheme of rear disk mower with hydro-pneumatic suspension

(For: **261 SH/SLH/WH, 301 SH/SLH/WH, 341H**)



1. *Cylinder 63-80x36x110-382 (545.01.03.00) (MIHC-382-001)*
2. *Valve VBPDE 3/8" L2 (MIHZ-000-038)*
3. *Sequential valve VS2C ½" V0660 (MIHZ-012-000)*
4. *Manometer 315 1/4" (MIHM-315-000)*
5. *Hydraulic accumulator H1400 D1-1.4l (60 bar) (MIHA-000-141-007)*
6. *End valve V-121 ½" NC-V0828 (MIHZ-056-828)*
7. *Cylinder (545.01.02.00) (MHC-511-063)*
8. *Hydraulic divider 2URED-6-C1-16/2-M1-G12Z4 (MIHR-000-012)*
9. *Hydraulic divider 2URED-6-C5-12/2-M1-G12Z4 (MIHR-000-013)*
10. *Hydraulic block (0619.01.53.004) 2 UL 06/1 G2*
11. *Choke valve C056-V0582 - 3/8" (MIHZ-056-582)*

11. WARRANTY CARD

REAR DISC MOWER WITH CENTRAL SUSPENSION

	Serial number Date of manufacture Manufacturer's stamp QC signature
	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.

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

12. WARRANTY TERMS

12.1. Warranty claims procedures

1. The manufacturer guarantees its products against faults in materials or production.
2. 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 authorized 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 are considered if received within 14 days after it is completed by the manufacturer.
5. The following parts and situations are not covered by warranty:
   a) **wearing parts: cutting plates, sliding skids, intersecting axis gears and parts inside the gearboxes, bushings and sliding elements, clutches, joints, knife holder, cutting knives, V-belts, sprockets, drive chain, conditioner's tines and rollers, roller conditioner's rubbers, bearings, rubber-metal fenders, safety curtains, conveyor's belts, swath guides rubbers, connective elements, etc.**
      These repairs may be done only at purchaser's cost.
   b) **use for any other purpose than those described in the operator's manual,**
   c) **operation on rocky fields and results such as: damage of tine conditioner's shaft, discs, bending of cutterbar (stone with its diameter of 5.5" 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.**

6. The Purchaser bears the costs of technical evaluation - when the manufacturer finds that a claimed product is free of defects and a technical report confirms 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) using of knives, knife holders and mountings other than originally delivered by SaMASZ,
   e) negligent maintenance,
   f) use of non-genuine spare or replacement parts that are not specifically designed for the model in question,
   g) lack of needed records in the warranty card or filling in the warranty card independently,
   h) use of the mower not in accordance with operator's manual or for incorrect purpose, or use of the machine by untrained persons.

8. Manufacturer can break the service agreement with immediate effect when the user does not pay the invoice 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 also invalidates the warranty.

NOTE:
Please ask your dealer to complete and return the warranty card, otherwise you may lose your warranty rights.
The warranty card is valid only when it contains the following information: address, date and place of purchase, mower type and invoice number.

12.2. Warranty repairs record

Repairs description and changed spare parts:

Date, stamp and signature of repair shop.

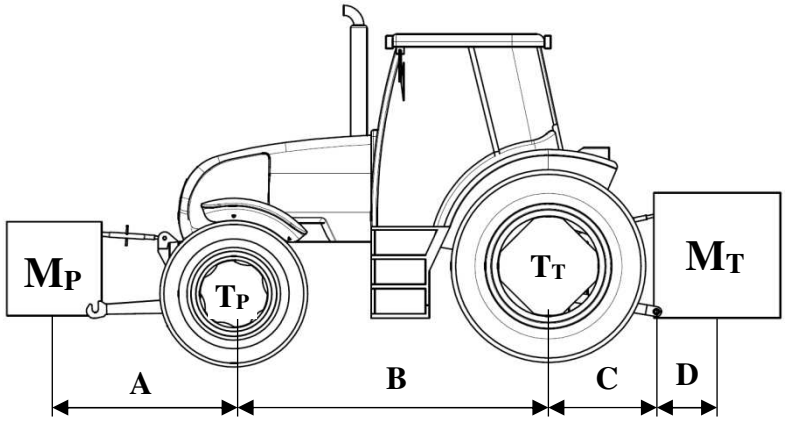
Date, stamp and signature of repair shop.

Date, stamp and signature of repair shop.

APPENDIX
CALCULATING AXIS LOAD

ATTENTION!
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.

1. Defining the total weight, axis load, tire load capacity and minimum load.



For calculations the following data is necessary:

T	[lbs.]	Tractor's overall weight	(1) (3)
T_P	[lbs.]	Front axis load on unloaded tractor	(1) (3)
T_T	[lbs.]	Rear axis load on unloaded tractor	(1) (3)
M_P	[lbs.]	Total weight of machine mounted on front 3-point linkage or weight of front ballast	(2) (3)
M_T	[lbs.]	Total weight of machine mounted on rear 3-point linkage or weight of rear ballast	(2) (3)
A	[ft.]	Distance between center of gravity of machine mounted on front 3-point linkage / front ballast and tractor's front axis center	(2) (3)
B	[ft.]	Distance between tractor's axes	(1) (3)
C	[ft.]	Distance between tractor's rear axis center and centers of ball joints on tractor's lower links	(1) (3)
D	[ft.]	Distance between centers of ball joints on tractor's lower links and center 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 ballast $\mathbf{M_{P\ min.}}$ – machine mounted at tractor's rear or at rear and front:

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

- Calculating minimum weight of rear ballast $\mathbf{M_{T\ min.}}$ – machine mounted at tractor's front:

$$M_{T\,min.} = \frac{M_P \times A - T_P \times B + 0{,}45 \times T \times B}{B + C + D}$$

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

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

** If machine is mounted on tractor's front 3-point linkage (M_P) it is lighter than minimum required load at the front, so increase the weight of this machine to the required minimum load*

- Calculating total weight of tractor-machine assembly $\mathbf{M_C}$:

$$M_C = M_P + T + M_T$$

** If machine is mounted on tractor's rear 3-point linkage (M_T) it is lighter than minimum required load at the rear, so increase the weight of this machine to the required minimum load*

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

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

- Tire load capacity – apply double the load indicated by the tires' 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 tire capacity load
Minimum weight of front or rear ballast $\mathbf{M_{Pmin.}}$ or $\mathbf{M_{Tmin.}}$					
Total weight $\mathbf{M_C}$		≤			
Front axis load $\mathbf{T_{P\ rzecz.}}$		≤		≤	
Rear axis load $\mathbf{T_{T\ rzecz.}}$		≤		≤	

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.