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OPERATOR'S MANUAL



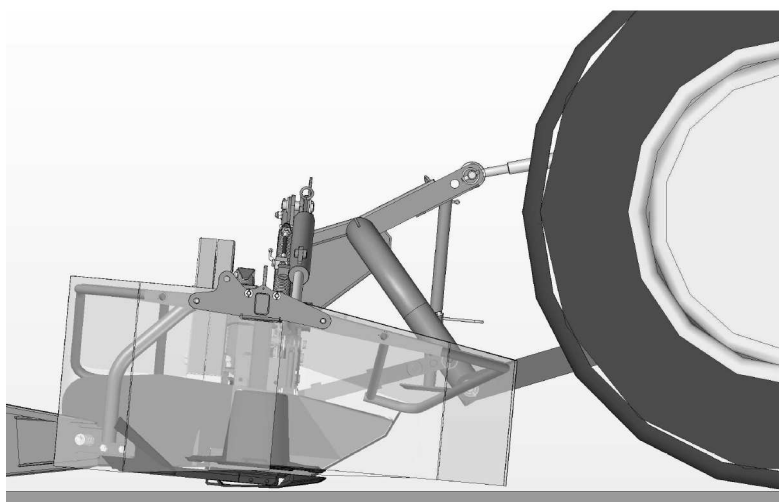
REAR DISK MOWER

SAMBA 160	– 1.6 m
SAMBA 200	– 2.0 m
SAMBA 240	– 2.4 m
SAMBA 280	– 2.8 m

Nr. Serial no.

IN0670EN001
2014.01.20
EDITION NO. 1

Original manual



It is recommended to incline cutterbar up to angle of 3° in relation to mowing direction.
Operating in horizontal position is admissible.



DO NOT
TURN THE DRIVE ON UNLESS THE
MOWER IS IN ITS WORKING
POSITION



DO NOT
OPERATE THE MOWER WITH
UNAUTHORIZED PERSONNEL
PRESENT WITHIN 50 M OR LESS



NOTE:
Keep this manual for future reference.

Table of contents	page
1. IDENTIFYING THE MACHINE	2
2. INTRODUCTION.....	2
3. DESIGNATION	3
3.1. Technical data.....	3
3.2. Design and operating principle	4
3.3. Standard equipment and spare parts	4
4. SAFETY ADVICE AND WARNING	5
4.1. Safety rules and regulations.....	5
4.2. Conditions of mounting mower on tractor.....	7
4.3. Transport.....	7
4.3.1. Relocating mower onto another vehicle for transport	8
4.4. Operating parts	9
4.5. PTO shaft.....	9
4.6. Hydraulic assembly	9
4.7. Residual risk	10
4.8. Safety decals and their meaning	11
4.9. Operation and design of safety breakaway device.....	13
5. MOWER'S OPERATION.....	14
5.1. Mounting mower on tractor	14
5.2. Preparing mower for transport.....	15
5.3. Preparing mower for transport on public roads	16
5.4. Mounting PTO shaft	16
5.5. Switching the mower from transport to working position	17
5.6. Preparing mower for operation.....	18
5.7. Operation	18
5.7.1. Basic information on mowing	18
5.7.2. Mower clogging.....	19
5.7.3. Driving with mower over windrows when taking turns	19
5.8. Dismounting mower from tractor	19
6. MOUNTING AND ADJUSTMENTS	20
6.1. Mounting knives	20
6.2. Replacing knives.....	21
6.3. Adjusting cutting height	22
6.4. Operating service.....	22
6.4.1. Controlling condition of knives and knife holders	22
6.4.2. Controlling tension of V-belts for belt gear.....	23
6.4.3. Daily maintenance	23
6.4.4. Off-season maintenance and storing.....	23
7. LUBRICATING.....	24
7.1. Cutterbar	24
7.2. Intersecting axis gear	25
8. DEFECTS AND THEIR REPAIR	26
9. REPAIR AND WITHDRAWAL FROM USE	27
9.1. Repair.....	27
9.2. Withdrawal from use	27
10. WARRANTY CARD	27
11. WARRANTY TERMS	28
11.1. Warranty claim procedure	28
11.2. Warranty repairs record	29

1. IDENTIFYING THE MACHINE

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

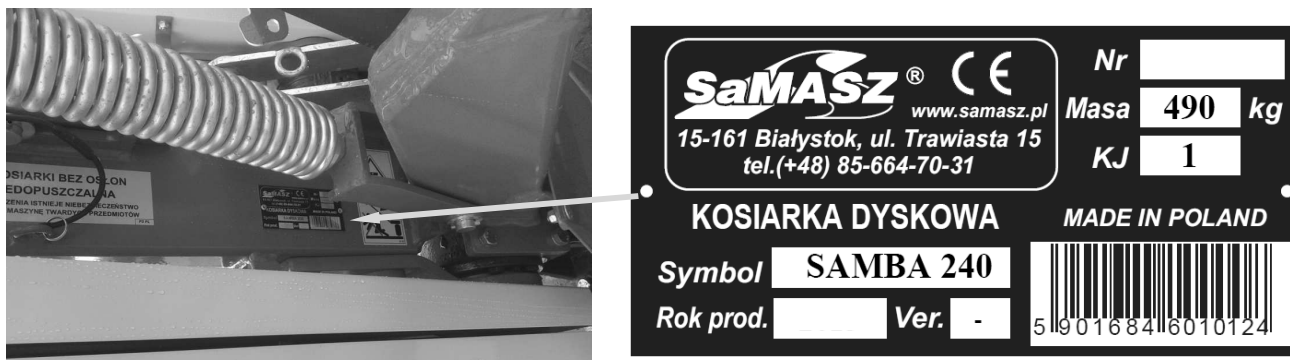


Fig. 1. Data plate placement

Data plate includes:

- name of the manufacturer,
- mower serial number,
- mower symbol,
- date of manufacture,
- weight,
- version no.,
- quality management sign,
- CE marking, means that mower is conforming with Directive 2006/42/EC and harmonized standards,
- MADE IN POLAND sign,
- barcode.



NOTE:

In case the operator's manual is unclear or illegible all necessary information can be obtained from manufacturer or the dealer.

2. INTRODUCTION

- ❑ This operator's manual should be considered the mower's basic equipment and should be kept for further reference. If the mower is handed over to another operator, it should be in working condition, along with operator's manual, declaration of conformity and its basic equipment.
- ❑ Prior to operating the mower its user must familiarize himself with contents of this manual as well as common work safety rules.
- ❑ The mower is manufactured in accordance with safety standards requirements.
- ❑ Respecting recommendations herein shall ensure full operation safety.
- ❑ If you have any questions concerning commissioning and operating the mower, please contact the manufacturer.
- ❑ Operator's manual remains an integral part of the mower equipment.



GENERAL PRECAUTION

When operating the mower warnings and safety rules marked with this sign herein should be respected.



NOTE:

Operating the mower without previous familiarizing with its contents as well as by unauthorized personnel, particularly by children, is strictly forbidden.

3. DESIGNATION

Light class rear disk mowers SAMBA are designed to operate on smaller farms, and are used for mowing standing grass: common grass, medick, etc on meadows and on stone free fields as well as forming swath out of these. They do well in mountainous as well as swamp areas, where the machine's and tractor's weight is of great importance. Application of innovative suspension assembly allows for adjusting optimal pressure of cutterbar onto the ground.

Meadows or fields to be mowed should be even, previously prepared by rolling and other processing.



NOTE:

Use of the mower for purposes other than mentioned herein is forbidden. Different use than the above mentioned shall be considered as improper and may lead to revoking of the warranty. The mower should be operated, maintained and repaired only by personnel who are familiarized with its detailed specifications and safety rules and procedures. Willful modifications to the mower may lead to revoking the warranty.



NOTE:

SAMBA mowers are not fully resistant to stones and therefore when operating on a stony field, it is highly likely, that disks might be replaced frequently or in extreme case, cutterbar might be seriously damaged, which is NOT COVERED by free warranty servicing.

3.1. Technical data

Tab. 1. Technical data

Mower type:	SAMBA 160	SAMBA 200	SAMBA 240	SAMBA 280
Working width [m]	1.60	2.00	2.40	2.80
Number of knives [pcs]	8	10	12	14
Number of disks [pcs]	4	5	6	7
Tractor's PTO rears [rpm]	540			
Cooperating tractor power [HP]	from 20	from 30	from 45	from 60
Operating capacity [ha/h]	~ 1.5	~ 2.0	~ 2.5	~ 3.0
Transport length [mm]	1782			
Transport width [mm]	1695			
Width in working assembly [mm]	3680	3956	4230	4504
Transport height [mm]	2140	2520	2900	3280
Weight [kg]	410	450	490	530
Cutting speed of knife [m/s]	83			
Rotational speed of disks [rpm]	3115			
3-point linkage category	II	II	II	II
Noise level L_{pA}	$77,0 \pm 3,0$ dB			
L_{Amax}	$76,0 \pm 3,0$ dB			
L_{Cpeak}	$98,5 \pm 3,0$ dB			

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 operating principle

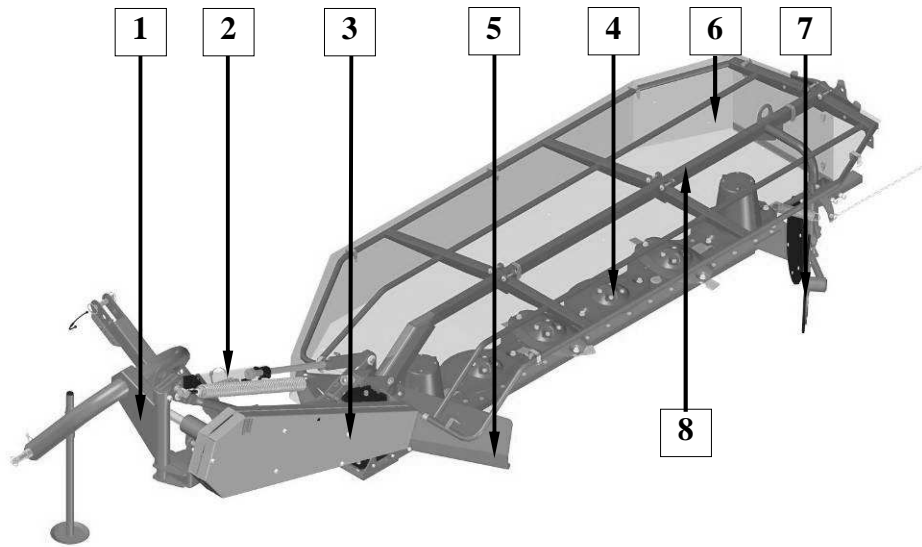


Fig. 2. Overview of rear disk mower SAMBA

- | | |
|----------------------------------|------------------------------------|
| 1 – Linkage | 5 – Swath guide |
| 2 – Cylinder with support spring | 6 – Safety guard |
| 3 – Belt gear | 7 – Disk type swath guide (option) |
| 4 – Cutterbar | 8 – 3-point linkage frame |

Linkage (1) allows mounting mower on tractor's 3-point linkage. Drive from tractor's PTO is transmitted by belt gear (3) onto *LiteCUT* cutterbar (4). Hydraulic lifting cylinder (2) fed from the tractor external hydraulics is used to adjust the mower to working position. 3-point linkage frame (8), onto which spring suspended cutterbar is set. The frame has also swath guides (5), which are standard-delivered, optional disk type guides (7) and protective guard (6).

Well-proven design and quality materials ensure high reliability and durability of SaMASZ machines.

3.3. Standard equipment and spare parts

Mowers are sold with the following standard equipment:

- ☐ warranty card,
- ☐ operator's manual with spare part list,
- ☐ cutting knives: extra set,
- ☐ PTO shaft with overrunning clutch,
- ☐ spray paint (150 ml).

Optional equipment (on extra charge):

- ☐ warning plates with combined lights and reflectors,
- ☐ warning triangle,
- ☐ double rubber guide.

Tab. 2. Recommended PTO shaft

Mower	Power	Length	Moment	Ref	Clutch	Manufacturer	Remarks
	HP	mm	Nm				
SAMBA 160 SAMBA 200 SAMBA 240 SAMBA 280	35	660-900	460	7G3N066CE007096MA	Right-hand overrunning	BONDIOLI & PAVESI	

PTO shaft end without clutch
– To be mounted on the tractor

PTO shaft end with right
overrunning clutch – To be
mounted from the mower side

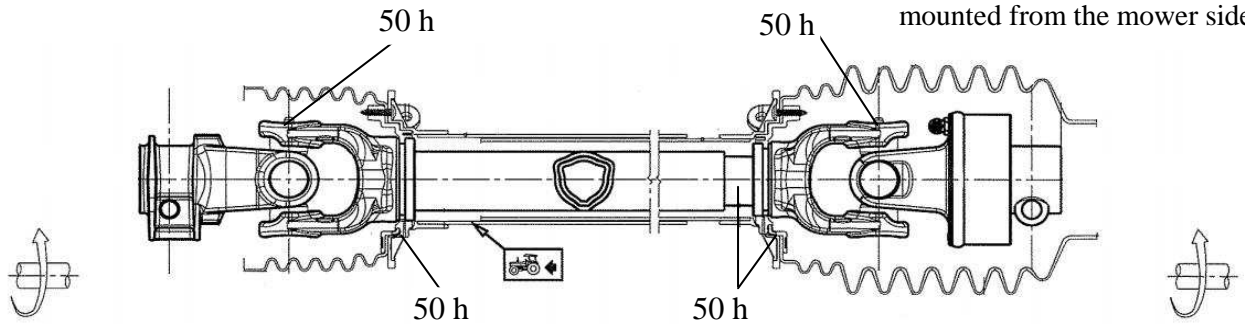


Fig. 3. Shaft lubrication instructions. Shaft connection



NOTE:

PTO shaft lubrication frequency must be respected. Points marked on **Fig. 3** shall be lubricated every 50 hours. PTO shaft should also be lubricated prior to and after longer idle period.

PTO shafts of other brands with equivalent technical parameters may be used on the SaMASZ permission.



NOTE:

Optional equipment should be ordered separately.

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

We congratulate you on the purchase of your new SaMASZ mower and wish you much pleasure and the very best experience resulting from its operation.

4. SAFETY ADVICE AND WARNING

4.1. Safety rules and regulations

- ❑ Front axis of the tractor should be loaded by a minimum of 20% of tractor's overall weight to keep the balance. If need be, use front wheel weights.
- ❑ Any operation with the hydraulic lift lever should be conducted from the operator's seat; DO NOT move the lever from outside of the tractor.
In case of tractors equipped with EHR, controlling with hydraulic lift is conducted with a button located outside the tractor's cabin. When operating, please be extremely careful.
- ❑ When switching from working to transport position the whole or at least one end (from tractor's spline shaft side) of PTO shaft should be dismantled.

- ❑ Examine condition of guards and its mounting on regular basis. Operating without safety guards is not permitted. Neither operation with damaged or raised guard is permitted (danger of stones, etc. being thrown out). Damaged protective apron should be replaced with a new one.
- ❑ Start mowing only when the tractor's spline shaft reaches its nominal value of 540 rpm.
- ❑ DO NOT exceed value of 600 rpm for spline shaft.
- ❑ No unauthorized personnel is allowed to remain within the danger area of at least 50 m. Keep particular caution when operating near roads and in stony areas.
- ❑ Any maintenance and adjustment work is allowed only with the drive disconnected and the cutting disks in complete standstill and wearing protective gloves and appropriate tools.
- ❑ Condition of knives should be examined each time before commencing any operation. Damaged or worn knife holders must be replaced.
- ❑ When driving on public roads always respect the local traffic regulations concerning warning -lights, while the mower shall be equipped with required safety devices. When transported the mower shall have remote warning light device and warning triangle mounted.



NOTE:

Any service and repair operations must be conducted with the tractor drive disconnected and ignition key out, cutterbar lifted onto the ground while all rotating parts in the complete standstill. Caution! Cutting knives keep rotating for several minutes after the engine is stopped.



NOTE:

Keep the children away from the mower both in operation and standstill.

- ❑ When the mower is lifted for repair on the 3-point linkage, it should be protected against accidental falling by a mechanical support or by chain.
- ❑ Bolts and other fasteners should be inspected on regular basis. Operating with damaged or worn fasteners is not admissible.
- ❑ Locking pawl line should be mounted with relevant tolerance in the tractor cabin.
- ❑ When operating the mower, please comply with the Resolution of the Minister of Agriculture and Food Economy of 12-01-1998 on work safety when operating tractors, machines, technical instruments and devices used in farming Dz. U. nr 12/98 poz. 51.
- ❑ When operating the mower, the tractor should always be equipped with operator's cabin.
- ❑ Mower should not be operated when the cooperating tractor is not well balanced.
- ❑ The mower shall never be started when it is lifted up.
- ❑ The mower shall never be started, with persons or animals near the machine.
- ❑ Prior to starting the mower, make sure there are no animals underneath the tarpaulin cover.
- ❑ The safety guard shall never be lifted until rotating assemblies are in complete standstill. Tractor's engine must be turned off. Caution! Cutting knives keep rotating for several minutes after the engine is stopped.
- ❑ Always comply with safety decals describing hazards, and warning signs placed on the machine.
- ❑ Before starting the tractor make sure that each drive is disconnected while the hydraulics control levers are in neutral position.
- ❑ Do not let the tractor's engine operate without any supervision. Before leaving the tractor, turn the engine off and take the ignition key out.
- ❑ It is forbidden to drive the mower backwards when operating.
- ❑ Never get onto the mower.

- ❑ Lifting the mower on the tractor 3-point linkage with the drive on and the disks rotating is not permitted.
- ❑ For operating and transport drive permissible slope shall be 8°.
- ❑ Never stand between the tractor and the mower, unless tractor-mower aggregate is protected against moving with the tractor's parking brake.
- ❑ Any maintenance checkups and regulations may be conducted only when the mower is disassembled and on the ground.
- ❑ If any maintenance or adjustment works under the lifted mower are necessary, it must be secured against falling with a support.
- ❑ If any part of the mower needs to be replaced, use only genuine spare parts according to catalogue of spare parts.
- ❑ Pay particular attention to both PTO shaft and spline shaft guards. Never operate with damaged guards.
- ❑ Hydraulic hoses should be inspected on regular basis and if any damage is found or they expire, replace these with new ones. Expiry period for hydraulic hose should be no longer than 5 years.
- ❑ Never use scotch tape to repair damaged hydraulic hoses.
- ❑ When connecting hydraulic hoses to tractor hydraulic connectors make sure, that either tractor or mower hydraulics are pressure free.
- ❑ When servicing hydraulic assembly, always wear protective gloves and eyewear. Hydraulic oil leaking under pressure (16 MPa) may permeate through the skin and cause its infection thereafter. If such is experienced, immediately visit a doctor.
- ❑ The mower should be stored under roof and in manner that effectively prevents animals and persons from being injured.
- ❑ Operating without safety guards is not permitted. Neither operation with damaged or raised guard is permitted (danger of stones, etc. being thrown out). Damaged protective apron should be replaced with a new one.
- ❑ When operating the mower, control damages to structures, protective aprons, chains, rubber elements and if need be, replace these with new ones, even not completely worn out elements.
- ❑ When mounting the mower on a tractor, danger of wounding is present. It is recommended for the operator to wear protective gloves.
- ❑ In the event of fatal failure, please call for technical service, and if an accident (in this case: road accident) occurs, respect first aid rules and contact responsible authorities.
- ❑ Mower should be kept clean, so as to avoid danger of fire.
- ❑ Do not leave agricultural machinery on slopes or other descents without providing protection against its free runaway.

4.2. Conditions of mounting mower on tractor

- ❑ Prior to the mounting operation, check whether the tractor's and the mower's hitch categories are compatible and make sure that tractor's hitch load is adequate for the machine aggregated.
- ❑ When mounting the machine, examine technical condition of the mower's hitch assembly and tractor's 3-point linkage.
- ❑ Use only genuine pins and cotters to mount the mower on a tractor.

4.3. Transport

- ❑ Any modifications in the mower's position are possible only if no unauthorized personnel is around (children in particular).

- ❑ When transported the mower shall have mobile warning light device and warning triangle mounted for a slow driving vehicle.
- ❑ When transported the mower should always be set in transport position. See item 5.2.
- ❑ Prior to shifting the mower to transport position make sure, that the tractor PTO is disconnected and all the rotating parts in complete standstill.
- ❑ Driving speed should always be adjusted to current road conditions.
- ❑ Driving speed should always be adjusted to current road conditions and local traffic rules.

4.3.1. Relocating mower onto another vehicle for transport

Both the carrier and the driver shall be responsible for the mower's transport safety. Any equipment and parts must be secured properly for transport. In order to safely relocate the mower onto another vehicle, please follow these rules:

- ❑ seize the mower by any lifting device only in places indicated on the machine with the hook sign (Fig. 4),

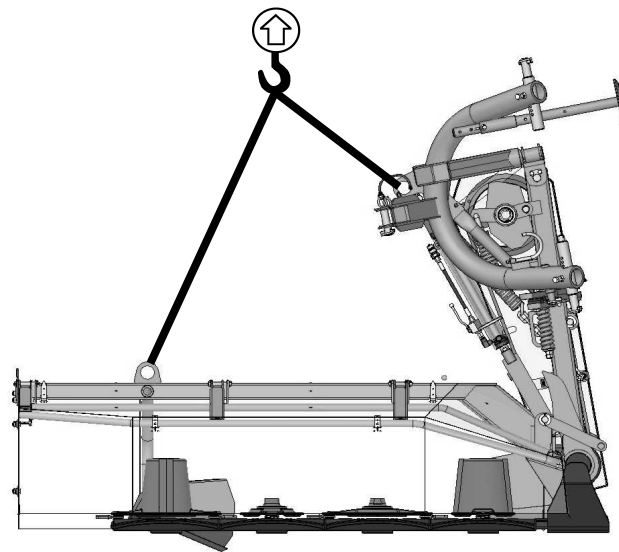


Fig. 4. Mower's catching points

- ❑ to lift the mower, use only lifting devices with hoisting capacity bigger than the mower weight provided on data plate. It also applies to ropes and chains used for lifting,
- ❑ transport belts, belt suspensions, ropes cannot be damaged. Whenever damages to these parts are spotted replace these with new ones,
- ❑ when mounting slings, chains, handles etc. always pay attention to setting the machine's center of gravity properly,
- ❑ to catch machines, pick 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°,
- ❑ collapsible elements should be locked in transport position,
- ❑ when relocating the mower onto another vehicle, there should be no unauthorized personnel permitted to remain within the danger area,
- ❑ the mower should be protected from shifting on the vehicle's trailer.



NOTE:

Securing both the danger area and activity performed shall lie under the responsibility of the person in charge of the mower transporting.

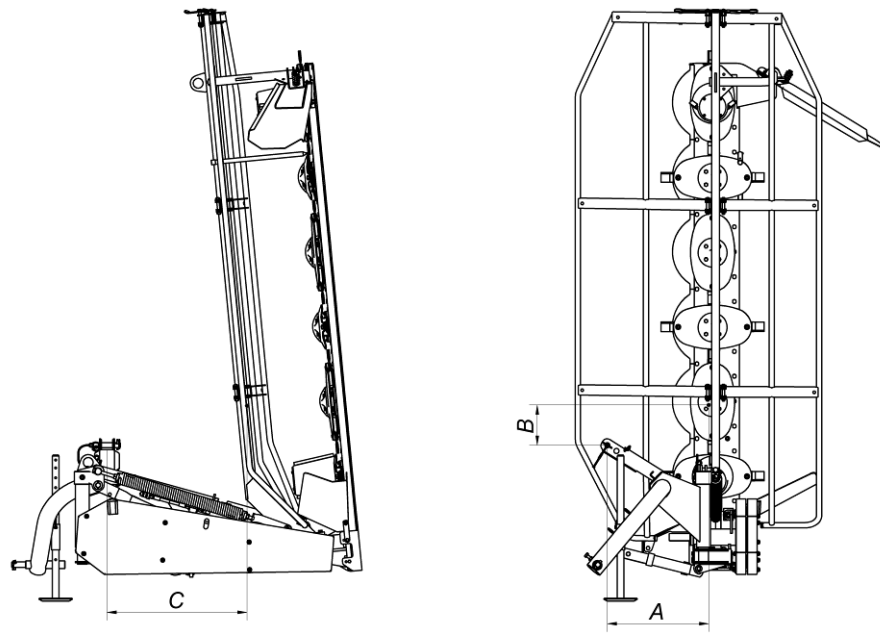


Fig. 5. Location of centre of gravity for Samba mowers

Tab. 3. Location of centre of gravity

Dimension [mm]	Mower type			
	Samba 160	Samba 200	Samba 240	Samba 280
A	506	510	515	510
B	-61	78	200	358
C	668	706	710	770

4.4. Operating parts

- ❑ Prior to operating the mower check condition of both the knife and the knife holder.
- ❑ Worn or damaged knives or knife holders should be replaced immediately with new ones.

4.5. PTO shaft

- ❑ Prior to operating learn provisions found in bar manufacturer's manual placed on the shaft.
- ❑ Use only the mower's manufacturer recommended PTO shafts featuring guards in good technical condition.
- ❑ In order to operate safely use only fully technically fit, undamaged PTO shafts. Damaged PTO shaft shall be repaired or replaced with new one.
- ❑ Prior to approaching any operation, make sure that PTO rears have proper rotational direction.

4.6. Hydraulic assembly

- ❑ Caution! Hydraulic assembly is under pressure! Hydraulic oil under pressure may permeate through skin and cause serious injury, therefore skin and eyes should be protected in particular. In case of injuries caused by liquid under pressure, call doctor immediately.
- ❑ Hydraulic hoses can be connected to tractor's hydraulics, provided that both the tractor's and the mower's hydraulic assemblies are not under pressure. To remove the pressure from the hoses just simply restart the tractor's hydraulic valves several times, once the tractor is off.
- ❑ When dismantling the machine from the tractor, set the equipment aside, deflate the pressure from hydraulics and turn tractor's engine off.

- ❑ When inspecting hydraulic assembly's malfunction and looking for oil leaks, it is forbidden to touch any potential leaks until the entire assembly is under pressure.

4.7. Residual risk

Despite the fact, that SaMASZ Białystok – the manufacturer of the mower takes the responsibility for the mower design and manufacturing, in order to eliminate hazard, certain risk when operating the mower is unavoidable.

Major source of risk follows performance of these operations:

- ❑ operation of mower by minors as well as not being learned with content of the operator's manual,
- ❑ operation of mower by persons under influence of alcohol or other abusive substances,
- ❑ not being cautious while transporting and moving the mower during operation,
- ❑ transport of persons remaining on the machine,
- ❑ presence of persons and animals within the mower's operation range,
- ❑ performing operations related to servicing and adjustment with engine on.

1. Danger of catching

This kind of risk occurs when the mower position is changed, when operating near rotating parts operating without safety guards.

When operating, maintenance and regulation works are conducted always wear protective gloves, footwear and clothing with no loose parts, belts, etc. Always comply with safety decals placed on the mower.

2. Danger of wound

This kind of risk appears when operating parts with sharp edges are being replaced. For any repair and maintenance works always wear safety gloves.

3. Danger of liquid leakage out of hydraulic assembly

When connecting hydraulic hoses to and from the tractor hydraulic connectors make sure, that either tractor or mower hydraulics are pressure free.

When servicing hydraulic assembly, always wear protective gloves and eyewear. Inspect hydraulic hoses regularly.



NOTE:

Residual risk results from incorrect behavior of the mower's operator.

4. Bans

Bear in mind the following bans when operating the mower:

- ❑ do not remove clogs from the mower, make any adjustments or repairs when the mower is operating,
- ❑ never change the sequence of operation and maintenance works specified in the operator's manual,
- ❑ never operate the mower when it is not in working condition or has safety guards damaged,
- ❑ never get your limbs close to mower's rotating parts,
- ❑ during the mower repair and maintenance works always comply with the descriptions included in the operator's manual, while conducting them with the tractor drive disconnected,
- ❑ prior to approaching any works, focus your attention solely on the tasks to do,
- ❑ never operate the mower being under influence of alcohol, drugs, or strong medicines,
- ❑ wear clothing that is not too loose, nor too tight. Too loose clothing elements may be pulled in by the mower's rotating parts,
- ❑ the mower cannot be operated by children nor handicapped people.

When describing residual risk, the mower shall be considered a machine, which until the moment of production launching had been designed and manufactured in accordance with top technology until the day of the mower manufacture.



NOTE:

There is possibility of residual risk if not complying with specified instructions and bans.



When the risk of being exposed to noise cannot be avoided or eliminated by any group protective means or organization of work, employer (operator) must:

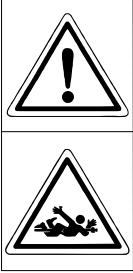

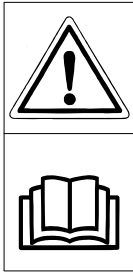
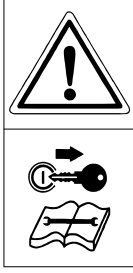



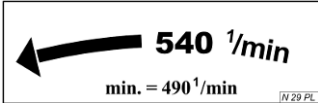
- 1) provide the operator with individual means of noise protection, if the noise level in work place exceeds 80 dB.
- 2) provide the operator with individual means of noise protection and supervise its proper use, if the noise level in work place reaches or exceeds 85 dB.

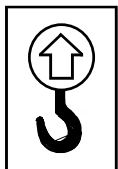
4.8. Safety decals and their meaning



NOTE:

- a) all warning decals (labels) should be clean and legible,
- b) lost or damaged decals (labels) must be replaced,
- c) new decals (labels) may be ordered at the manufacturer.

 <p>1. N-1 Be extremely careful when PTO shaft is rotating.</p>	 <p>2. N-2 Remark: cutting knives! Do not get near to the operating mower</p>	 <p>3. N-3 Prior to operation commencement read the operator's manual carefully</p>	 <p>4. N-4 Prior to approaching any maintenance or repair works, turn the machine off</p>
 <p>5. N-5 Remark: belt gear, keep particular attention</p>	 <p>6. N-6 Remark: pulling-in parts</p>	 <p>7. N-7 Operating the mower is forbidden with presence of any unauthorized personnel within the danger area of 50 m</p>	 <p>8. N-29</p>



9. N-40
Catching point when
relocating mower



10. N-49
Never stand near the
tractor 3-point linkage
when controlling the lift



11. N-50
Do not remain in the
mower swinging area



12. N-52
Wear protective gloves



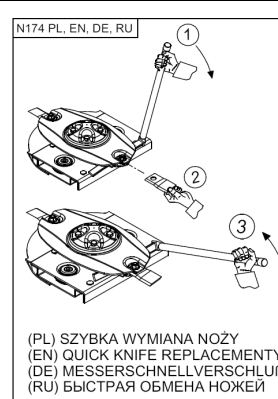
13. N-117
Avoid contact with liquid
coming out under
pressure



14. N-167
Do not get onto guardrails
or protective guards



15. N-168
Do not touch machine
parts until all of its
assemblies are stopped



16. N-174

**CLEAN THE MOWER EACH DAY
AFTER WORKING**

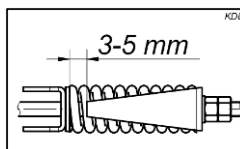
Especially between discs and
the cutterbar, because grass with mud
may damage bearings in the disc
module.

17. N-31

16 MPa

N 55

18. N-55



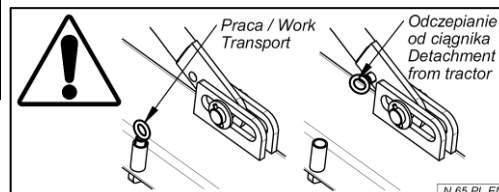
19. N-155



It is forbidden to put the machine
into vertical position before the discs
reach the standstill and to start
the PTO shaft in transport position.
It may damage the PTO shaft.

N 65 EN

20. N-63



N 65 PL EN

21. N-65

DANGER

OPERATING WHEN ANY PERSON REMAINS
IN THE DANGER AREA OF

50 m

P3 EN

22. P-3

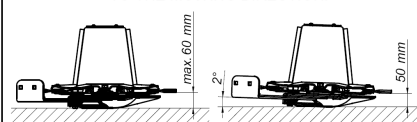
**WORKING WITHOUT GUARDS
IS FORBIDDEN**

DANGER OF THE STONES, ETC.
BEING THROWN OUT

P2 EN

23. P-2

OPTIMUM INCLINATION TOWARDS THE GROUND IS 1° - 3°
TO THE MOWING DIRECTION.



IT IS ALLOWED TO WORK IN HORIZONTAL POSITION.
DIFFERENT INCLINATION MAY DAMAGE THE MOWER.

N173 EN

24. N-173

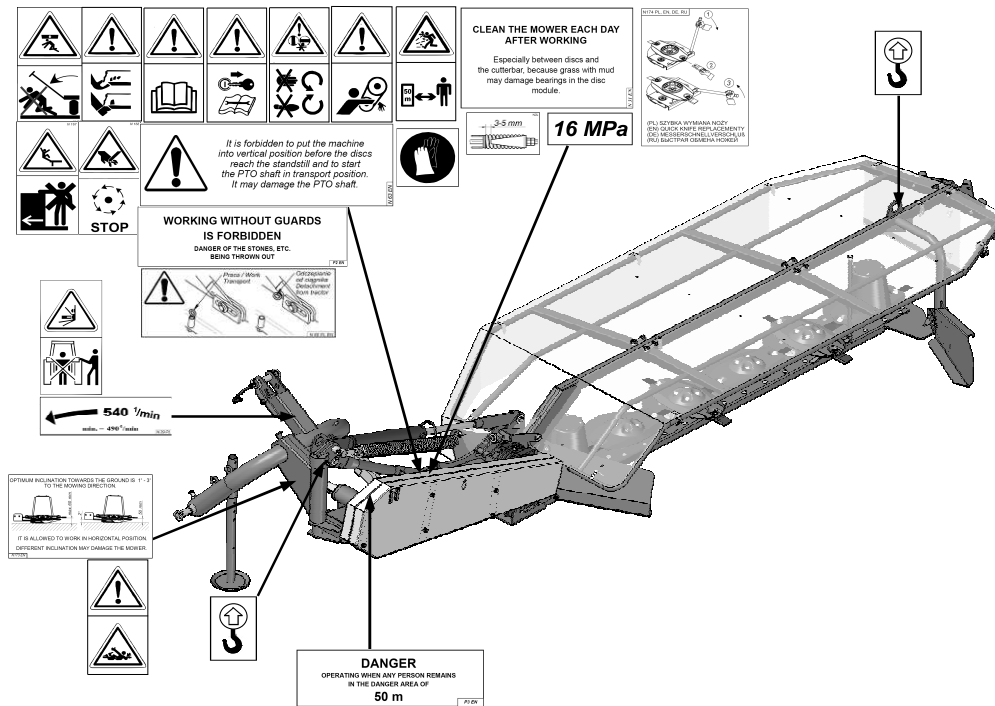


Fig. 6. Location of warning decals on mower



NOTE:

Any assembly used for the mower repair should hold all warning decals provided by the manufacturer.

4.9. Operation and design of safety breakaway device

Upon driving with mower onto an obstacle one of the safety breakaway device's arm is retracted, so as the mower's working assemblies by an angle of approx. 20° (Fig. 8). Operator is then given enough time to stop the tractor and avoid damaging the mower.

The safety breakaway device's spring (Fig. 7) with adjustable deflection allows for changing the device's momentum of activation.

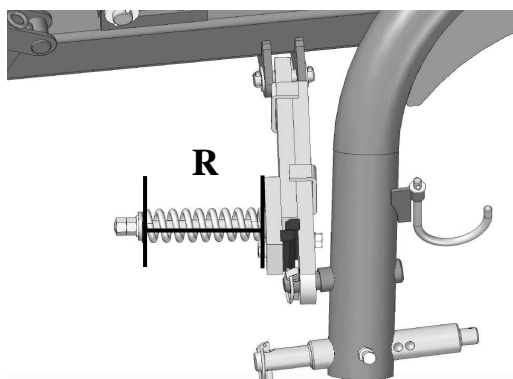


Fig. 7. Mower safety breakaway device

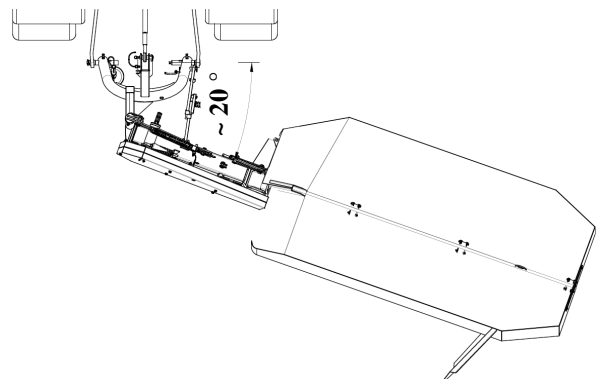


Fig. 8. Mower retracting upon use of breakaway device

Length of pressed safety breakaway device's steel spring (measurement **R** on Fig. 7) should be $R=138$ mm, ϕ 10 mm, $D = 37$ mm. In the event if breakaway device is loosed often, dimension **R** shall be reduced by 1÷2 mm. Bear in mind, that too tight the spring tension may cause the breakaway device to be locked, and therefore machine to be damaged.

5. MOWER'S OPERATION

5.1. Mounting mower on tractor



NOTE:

When mounting and dismounting the mower, there should be no persons in between the machine and the tractor. Any accidental maneuvering with the set may cause to crushing of unauthorized personnel.

Mower should be mounted on tractor with use of 3-point linkage as provided on **Fig. 9**. Upon mounting the mower adjust the machine position on even ground with use of upper link (**S**) and hangers (**W**) of tractor's lower links. Cutterbar should be inclined towards. Hangers (**W**) of tractor's lower links should be placed on pins (**A**) (**Fig. 9**) of mower's linkage.

Connect the mower hydraulic hose to the tractor one-section hydraulic connector. As the mower is mounted to the tractor, examine the longitudinal balance and steering of the tractor-mower aggregate. In order to do this, the set should be weighed and then driven on the scales with the tractor front axis only (the mower must be in transport position, so lifted upwards). If pressure on the front axis is at least 20% of the whole pressure for the aggregate, it means the aggregate is stable. If not, the tractor front axis should be balanced accordingly.

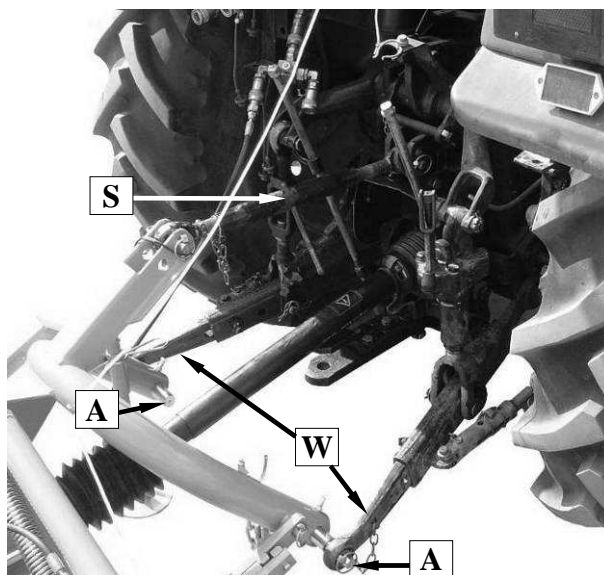


Fig. 9. Mower mounted on tractor



NOTE:

Prior to dismounting mower from tractor put safety pin (**1**) into a hole (**3**) in cutterbar to protect hitch from falling. With mower mounted on place the pin in bushing (**2**) (**Fig. 10a**) found on central beam.

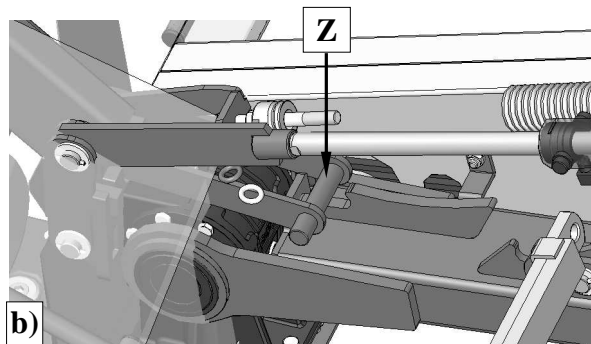
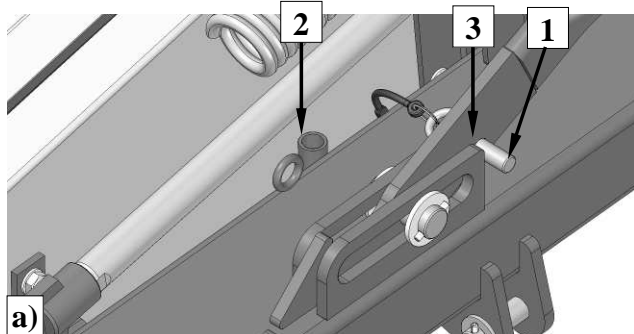


Fig. 10. a) 1 – safety pin, 2 – bushing, 3 – hole in cutterbar, b) Z – locking pawl

5.2. Preparing mower for transport



NOTE:

Prior to shifting the mower to transport position lift up mower's front guard (O) and secure it with pin (S) (**Fig. 11**) found on the guard's right side. The guard, if not lifted up and improperly protected, may cause serious damages to mower's guard or tractor's elements, e.g. rear lights.

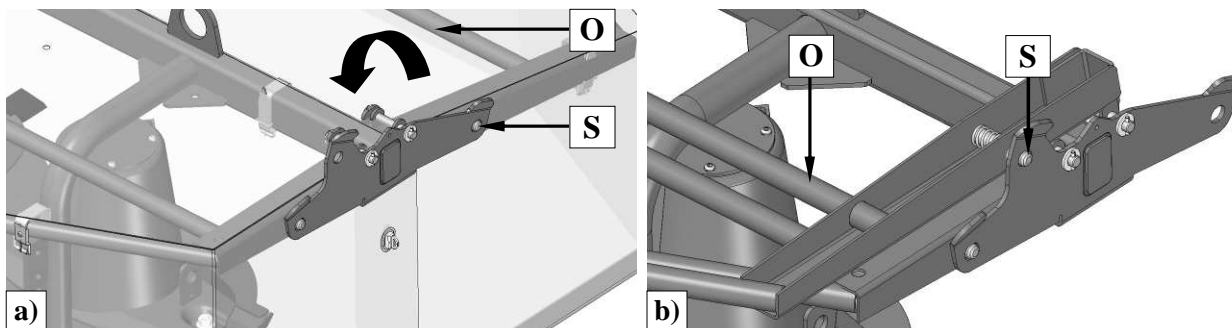


Fig. 11. Manner of setting front guard for transport

In order to prepare the mower lifted on the tractor for transport - on a - road:

- ❑ lift up mower's front guard and secure it with pin,
- ❑ lift the mower with tractor hydraulic lift onto the tractor links until the lower lift pins of the mower 3-point linkage frame are raised about 50 cm above the ground (**Fig. 13**),
- ❑ remove safety pin (1) and place it in bushing (2) (**Fig. 10a**),
- ❑ lift the cutterbar vertically with hydraulic cylinder and lock the locking pawl (Z) (**Fig. 10b**),
- ❑ protect the cutterbar from falling by disconnecting shut-off valve (Z) (**Fig. 12b**) found on mower's cylinder,
- ❑ dismount PTO shaft from tractor,
- ❑ lift up support leg and secure it with cotter.



NOTE:

When transporting the machine, shut-off valve lever must be in (Z) position – closed (**Fig. 12b**). Thanks to this, the mower is protected from accidental dismantling on unexpected motion of both the tractor and the mower – in worst case, it might cause cracks to hydraulic hose and lead to an accident.

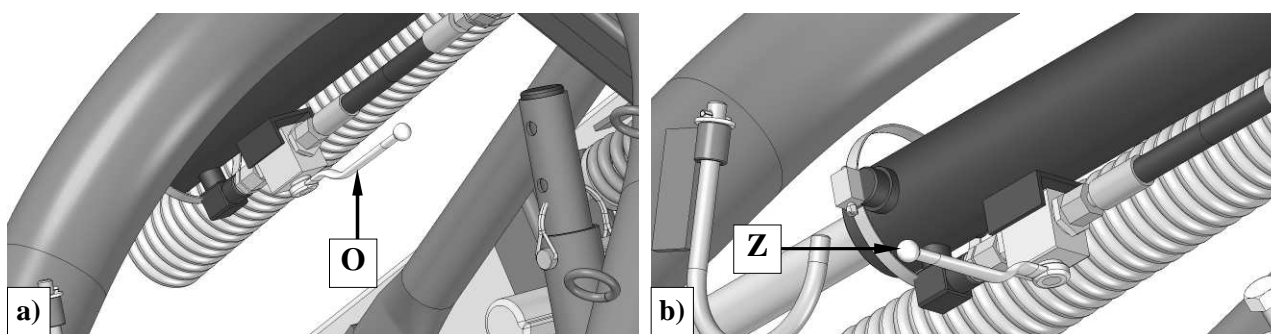


Fig. 12. Cylinder valve in position: a) opened O (work), b) closed Z (transport)

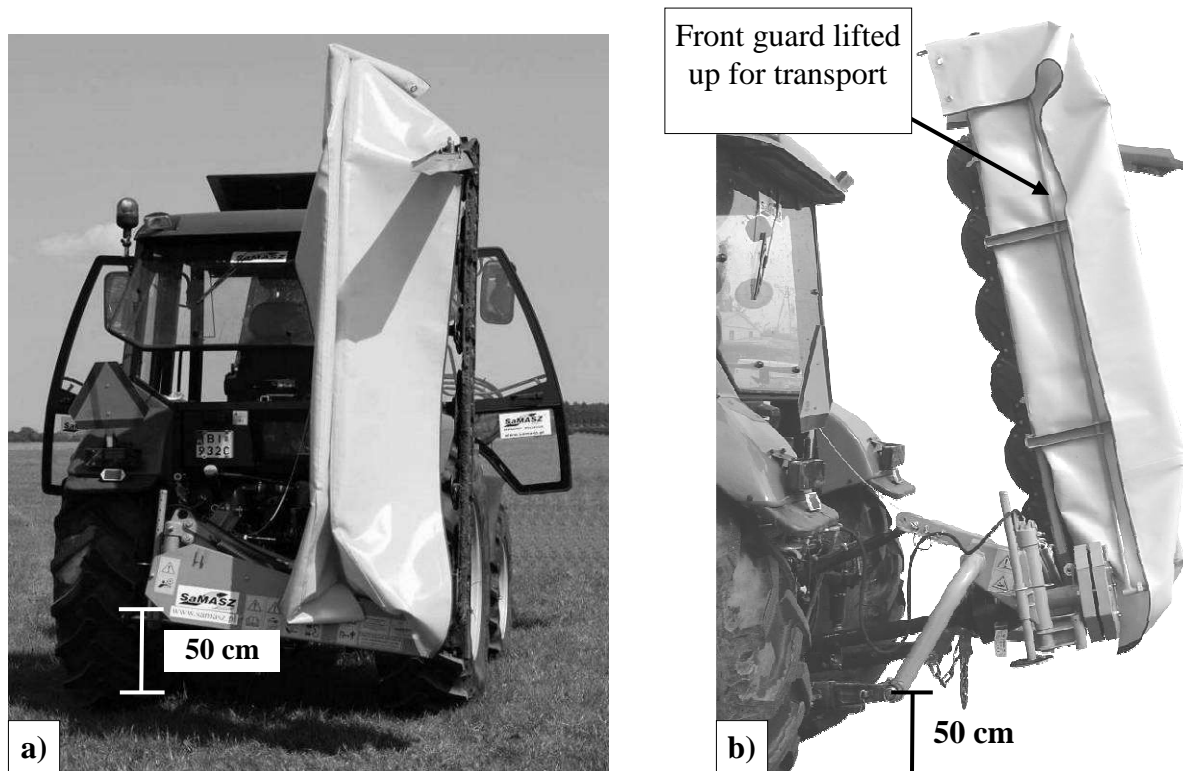


Fig. 13. Transport position

5.3. Preparing mower for transport on public roads

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

- ❑ portable warning-light plates, consisting of panel mounted in the upper guard socket (to be ordered optionally). The panel consists of warning plate with combined lamp mounted (parking, stop lights and driving direction) and with red reflectors directed to the rear and white light to the front,



NOTE:

If the mower purchaser does not own the above warning-light plates, these can be ordered at the mower's manufacturer.

- ❑ table for marking slow moving vehicles (being standard tractor equipment), which should be taken from the tractor and placed at the holder located at the belt gear guard.

5.4. Mounting PTO shaft

PTO shaft should be mounted with overrunning coupling from the mower side.

The guard should be protected against rotating by securing the shaft set chains to immovable parts of the tractor and the mower.



NOTE:

If need be shorten PTO shaft as provided in corresponding shaft operator's manual (**Fig. 14**).

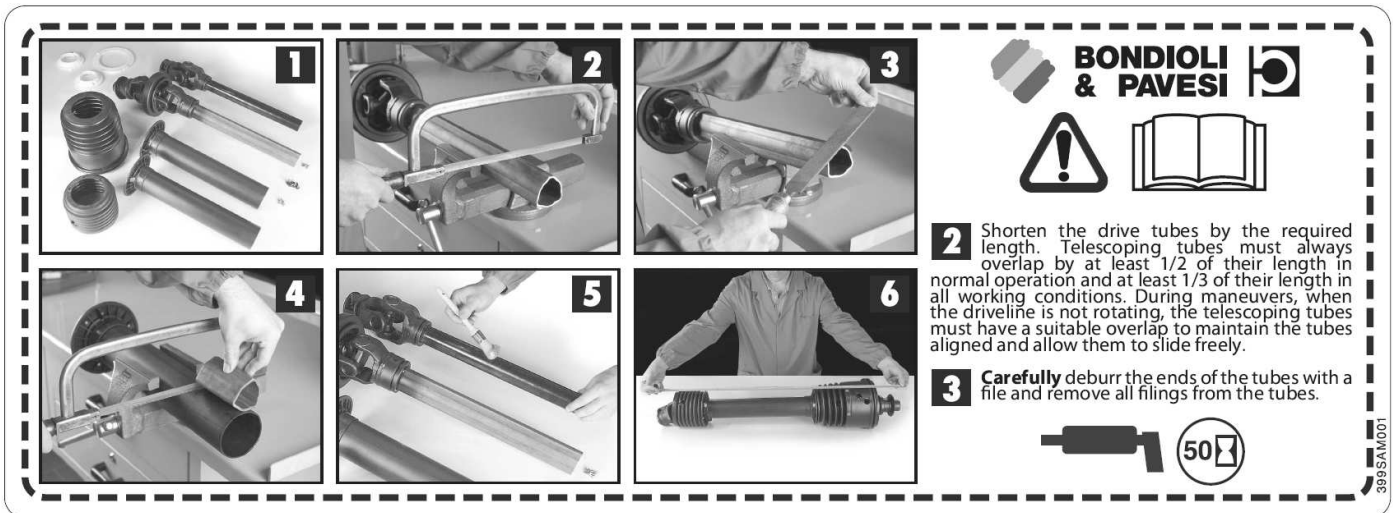


Fig. 14. Shortening PTO shaft instructions



NOTE:

PTO shafts should be mounted with right overrunning clutch on the mower side.



NOTE:

Use machines with correspondingly designed telescopic articulated drive shafts. Prior to work commencement, inspect safety guards whether they (in tractor, mower and shaft) are placed correctly and are not damaged. Damaged or missing parts must be replaced with genuine ones. Make sure that the PTO shaft is mounted properly. Approaching the rotating parts is strictly forbidden, as it may lead to serious injuries or even cause death. For any service and repair works of the shaft and the blower, the tractor engine and spline drive must be disconnected. Prior to the operation commencement, read the operator's manuals of both the shaft and the machine.

5.5. Switching the mower from transport to working position



NOTE:

Switching the mower from operating position to transport position and vice versa could only take place on even and stable ground. Prior to approaching works, make sure whether there are no unauthorized persons exposed to getting crushed.

- ❑ open the shut-off valve on the cylinder (**Fig. 12a**),
- ❑ lower the mower onto the tractor's 3-point linkage until the suspension pins of the frame are at height max. of 40 cm above the ground (**Fig. 13**),
- ❑ make sure there is no person around the danger area,
- ❑ tension the line, so as the locking pawl can be released (**Z**) (**Fig. 10b**) and open tractor's external hydraulics to set cutterbar by means of hydraulic cylinder into horizontal position,
- ❑ lower the cutterbar with tractor lever to reach the horizontal position in the slowest way possible,
- ❑ by means of upper link (**S**) (**Fig. 9**) set required mowing height. By extending the link (**S**) the mowing height is increased, while shortening it is reduced.
- ❑ lower mower's front guard.

5.6. Preparing mower for operation



NOTE:

During storing of the machines in company SaMASZ the cylinders are protected by special grease in order to secure them against weather which may cause their premature wear. Before starting the operation excess grease should be removed from the cylinders.

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

- ❑ connect PTO shaft extension onto tractor's spline shaft (unless only one extension was taken out) or connect the complete PTO shaft,
- ❑ optimal angle of cutterbar in relation to the ground should be between 2° and 3°. This angle is result of tightening or extending the link,
- ❑ slowly engage the mower's PTO shaft drive up to 500 ÷ 540 rpm until cutting discs reach their nominal rotating speed,
- ❑ engage proper tractor gear and start mowing. Even meadows can be mowed at any driving speed, but more than 8 km/h, however as unevenness occurs the speed should be reduced.



NOTE:

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

5.7. Operation

5.7.1. Basic information on mowing

Dear User,

If mowing has been performed with use of a double-drum mower, then the following recommendations and remarks should be taken into consideration:

- ❑ stubble after mowing looks different than in case of double-drum mowers. If mower is inclined by approx. 2° to 3°, then the stubble line is wavy. When mowing in horizontal manner, although the line seems to be straight, but due to the fact, that cutting knives are operating horizontally (in double-drum mower always with some angle), part of standing grass, which do not grow straight up are going to be cut a bit higher. Due to this, it may seem, that mower is not keeping precision,
- ❑ disk mowers always leave some certain amount of uncut grass in disks, which when cutting grass forward are rotating in mowing direction – SAMBA 200 1 piece, while SAMBA 240 and 280 2 pieces each Their size depends on grass type (fine-hard).
- ❑ Disk mowers have their own optimal working parameters:
 - spline shaft rpm value of 500 ÷ 540 rpm, which normally corresponds to engine rears of 1700 ÷ 1900 rpm. If too low rpm value is applied, then mowers tend to stop mowing, while too high rpm value leads to generating too strong stream of air coming from disks, which results in leaning of grass and ultimately very large amount of grass.
 - driving speed – recommended of min. 8 km/h. – the faster, the better result. There is no bounds for operating on an even meadow – driving speed of even $V = 30$ km/h can be applied.



NOTE:

When driving below speed of $V = 5$ km/h flow of grass is disturbed, which will result in mower's clogging. Mowing quality is therefore impaired significantly.

- ❑ disk mower stops mowing, if there is too much of water over the meadow or after long-term precipitations, which causes the ground to become very loose and it is recommended to wait until is dry,
- ❑ laid grasses can be mowed only very low, e.g. 3 cm, as when cutting grass forward knives have to operate under some angle. In such case, stubble surface looks very wavy and not attractive at all,
- ❑ mowing laid grass with too low an incline may cause grass to get wound onto drums and in result disk clogging,
- ❑ when operating on cultivated single season meadows or after long term high precipitations, reduce pressure of the cutterbar by adjusting support spring, for the cutterbar may get clogged (pushing soil forward),
- ❑ SAMBA mowers mow well when straight line is being kept. It is recommended not to turn in grass windrow,
- ❑ in case of mowing both high straight and laid grass, in order to prevent clogging, it is useful to dismount right swath guide.

5.7.2. Mower clogging

When operating the mower pay attention to variable conditions on field, which may influence the mower 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 mentioned conditions. In order to remove the machine clogging, lower the cutterbar onto the ground, disconnect the drive, take ignition key off and pay particular attention. When eliminating the mower's clogging, use also safety means for operator, so protective gloves and tight wear.

5.7.3. Driving with mower over windrows when taking turns

Lift mower up by means of hydraulic cylinder and take a turn (**Fig. 15**). Height of lifted up mower is enough to have a drive over windrows without need of applying any lifting of mower on tractor lifting devices. This is necessary, as not taking such maneuver may cause the cutterbar to get clogged with grass.

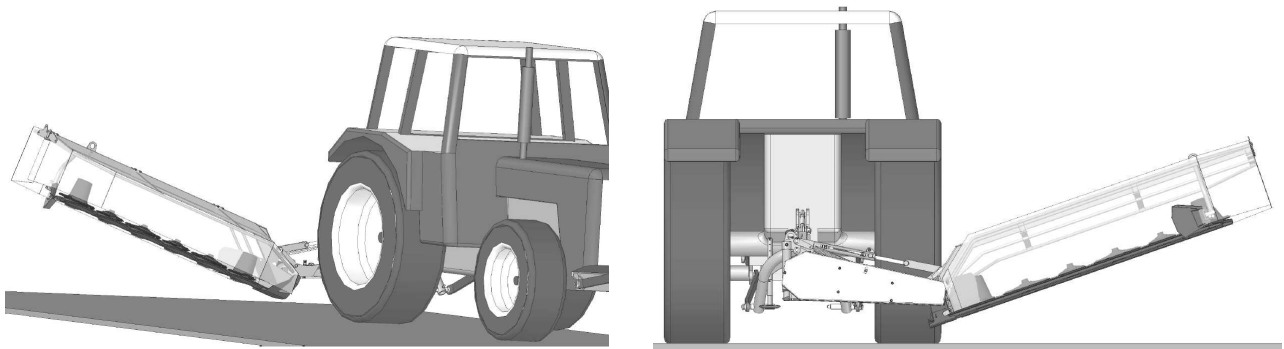


Fig. 15. Mower SAMBA ready to take turns

5.8. Dismounting mower from tractor



NOTE:

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

To dismount the mower from the tractor:

- ❑ turn cutterbar's drive off,
- ❑ place the mower on an even, paved ground, then lower and inspect, if the mower is properly secured against falling,
- ❑ turn the tractor's engine off and take ignition key off,

- ❑ dismantle the PTO shaft and place it on a PTO shaft holder, that is standard-delivered with the mower,
- ❑ disconnect hydraulic hose,
- ❑ detach tractor's upper link and lower strands from mower's linkage.

6. MOUNTING AND ADJUSTMENTS

6.1. Mounting knives



NOTE:

Use the knives recommended by the manufacturer only.



NOTE:

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

Prior to mounting cutting knives, lift the mower's rear guard **Fig. 19**. Mount knives in accordance with scheme provided on **Fig. 16**, **Fig. 17** and **Fig. 18**. Manufacturer recommended knives should have measurements of 105x49x4 conform to standard PN-EN 795:2002. Cutting knives should be mounted with principle, that the knife upon grass cutting should lift it up (cutting edge should be lower).

Tighten nuts M12 with socket wrench 18 mm (torque of 100 ÷ 110 Nm). Prior to mounting or dismantling knives, lock disks with square timber 5 x 5 cm.

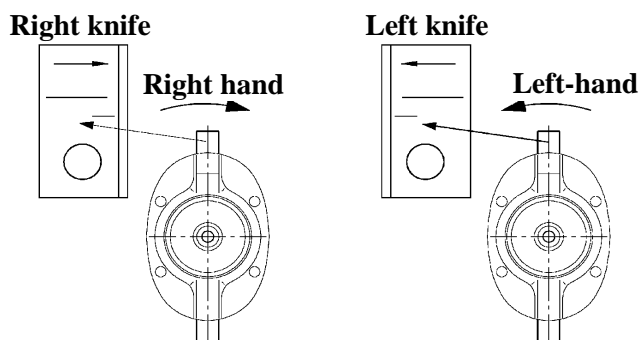


Fig. 16. Scheme of mounting cutting knives

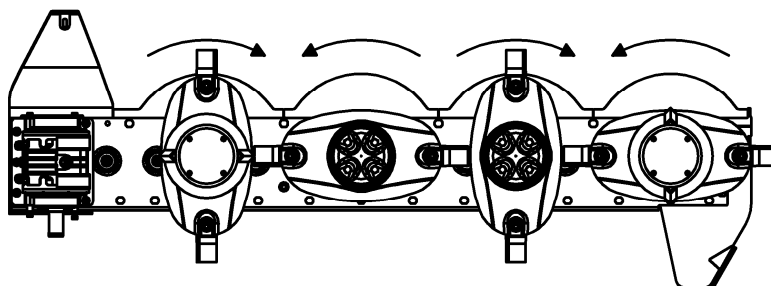


Fig. 17a. Direction of disk rears for mower SAMBA 160

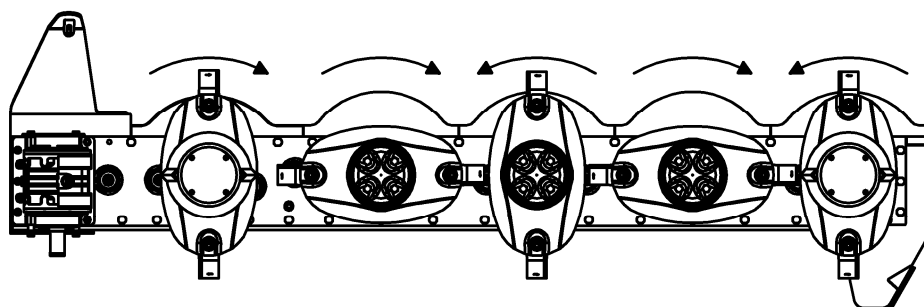


Fig. 17b. Direction of disk rears for mower SAMBA 200

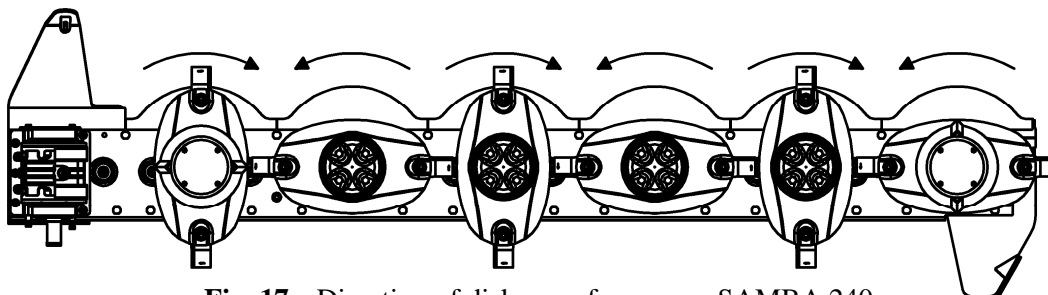


Fig. 17c. Direction of disk rears for mower SAMBA 240

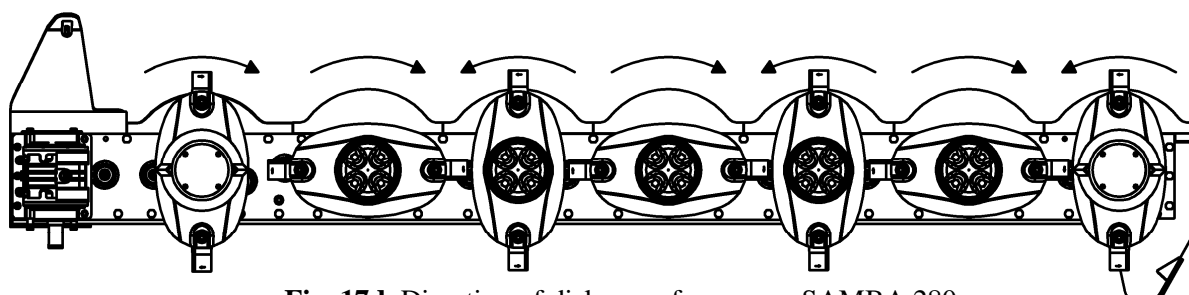


Fig. 17d. Direction of disk rears for mower SAMBA 280

6.2. Replacing knives

Worn and/or damaged knives must be replaced immediately as shown on **Fig. 18**. Knives should be replaced in pairs to keep proper disk balance. When replacing knives, knife holder's pin shall be examined carefully. In case if holder's pin (**Fig. 20**) is worn, replace holder pins with new ones (unscrew nut M12 and remount).

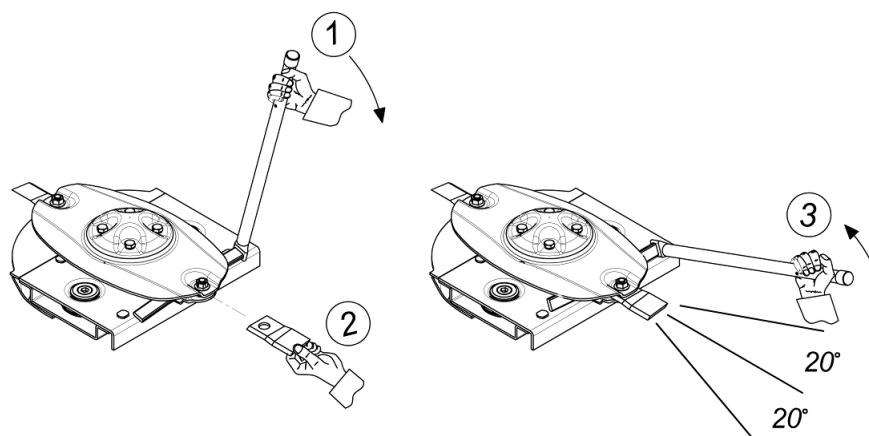


Fig. 18. Quick replacement of cutting knives



NOTE:

Pay attention, whether the mower is not vibrating when operating for this proves, that disk (disks) operates only for 1 knife. Long-term operation will lead to serious damaging of the cutterbar. Have breaks while operating and check whether the knife set is complete.



NOTE:

When replacing knives the engine must be off and the cutterbar must lie on the ground. The spline shaft connecting the mower to the tractor must be disconnected.

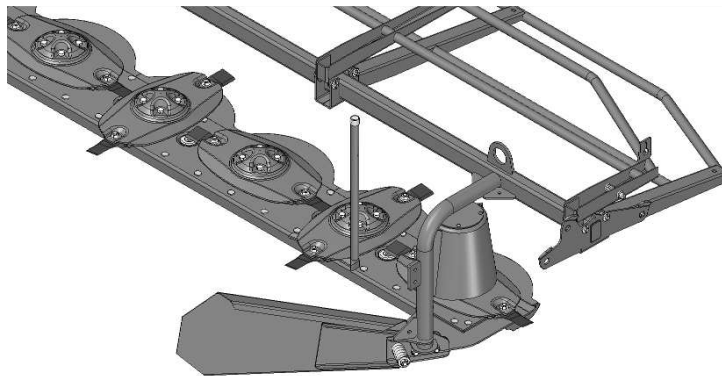


Fig. 19. Rear guard lifted up for replacement of cutting knives



NOTE:

Due to various disk rotation directions, prior to mounting knives, check rotation directions of each disk (**Fig. 17**).



NOTE:

Improper mounting of knives will lead the mower to choke. When mounting, pay special attention to knife holder.

6.3. Adjusting cutting height

To get the required mowing height, change length of upper link for suspension assembly (**S**) (**Fig. 9**). Extending the link increases the mowing height, and shortening the link reduces the height.

6.4. Operating service

6.4.1. Controlling condition of knives and knife holders

All knives should be of the same length and weight. Replace them, if necessary, only in sets of the same length and weight.

Knife holder cannot be worn more than provided on (**Fig. 20**). If knife holder is worn too much, it should be replaced.

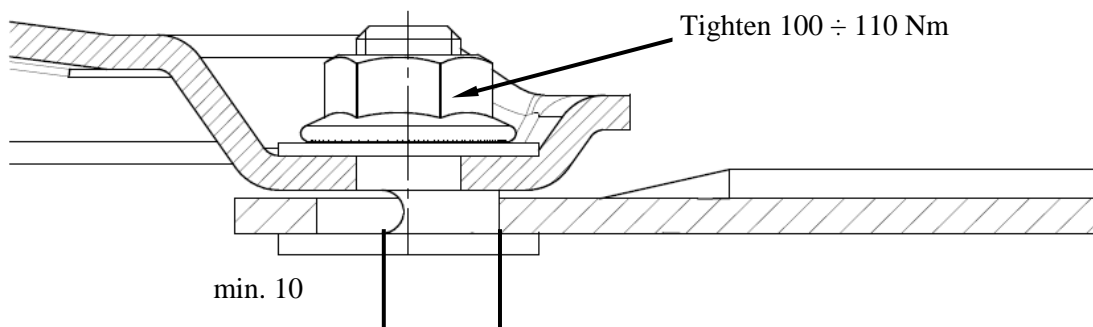


Fig. 20. Permissible wear of knife holder

6.4.2. Controlling tension of V-belts for belt gear

Tensioning of V-belts for belt gear is controlled by means of tensioner index (**Fig. 21**). Distance (**S**) should be up to 5 mm. If belts are too loose, tighten tensioner nuts (**N**). In the event of damaging one of belts, the entire set must be replaced.

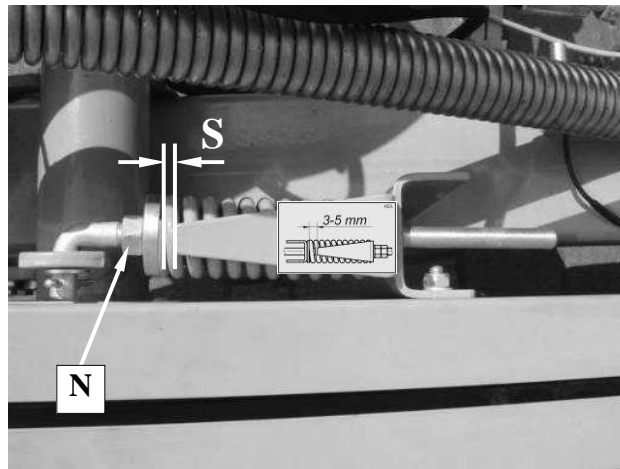


Fig. 21. Controlling tension of V-belts

6.4.3. Daily maintenance

Upon daily completion of operation the following should be performed:

- ❑ remove grass, dirt and mud from the mower,
- ❑ inspect all visible external parts and assemblies and their connection; all loosen screws shall be tightened while worn or damaged parts replaced,
- ❑ inspect condition of the cutterbar,
- ❑ lubricate the PTO shaft telescopic tubes with STP grease,
- ❑ if necessary, lubricate the other parts and assemblies in accordance with the lubrication instructions (item 7).

6.4.4. Off-season maintenance and storing

It is recommended for the operator to wear protective gloves when performing maintenance works.

Upon completion of operation:

- ❑ lower the mower's cutterbar onto the ground,
- ❑ take the PTO shaft extension out of the tractor's spline shaft or dismount the complete PTO shaft and install it into corresponding holder at the 3-point linkage frame,
- ❑ detach hydraulic and electrical hoses out of the tractor and hang them onto corresponding holders on the 3-point linkage frame,
- ❑ dismount mower from tractor (see item 5.8), and then drive away with tractor.

Detached mower should be stored in standstill position, so it is supported by supporting leg and the cutterbar. It is recommended to store the set on paved ground, preferably in roofed places, inaccessible to unauthorized personnel. Machine should be stored in dry place, in the event if it is exposed to precipitations, apply lubrication regularly.



NOTE:

When storing SAMBA mowers with hitch set in vertical position protect the cutterbar by means of wedge (**K**) (**Fig. 22**) against possible loss in stability and in consequence mower's overturning.

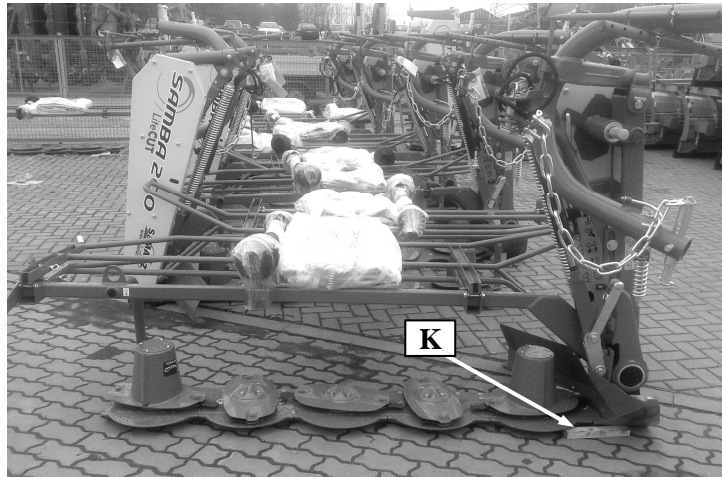


Fig. 22. Samba mower in vertical standstill position

If stored for adequate period, prior to operating the machine, its technical condition should be examined and special attention should be paid to the hydraulics and the drive. Paintwork should be complemented, hydraulic hoses checked and lubricated.

At the end of the season the mower should be cleaned, washed and dried. Carefully grease unpainted surfaces and 3-point linkage pins.

Moreover:

- ❑ perform any necessary paintwork repair,
- ❑ examine oil level in axis gears and cutterbar (item 7). If leaks are found remove them immediately and refill the oil. If water is found in the oil, it must be replaced, otherwise the gears, bearings and shafts could be exposed to corrosion: what in result could lead to further failures,
- ❑ perform periodic checkups of the mower and protect all operating parts with grease in order to prevent their baking and creating any sources of corrosion, which significantly influences mower's proper operation,
- ❑ control hydraulic hoses on regular basis. If damaged or worn, replace the hoses with new ones. Expiry period for hydraulic hose should be no longer than 5 years from the date of manufactured marked on a hose.

7. LUBRICATING

7.1. Cutterbar

Cutterbar is filled with oil through plug closed hole (A) (**Fig. 23a**). Adequate oil level with horizontal position of the cutterbar is 5÷7 mm from the cutterbar's bottom. To drain the oil use plug (B) (**Fig. 23b**), found in lower section of the cutterbar. The best time to drain oil is immediately after operation, if still warm.

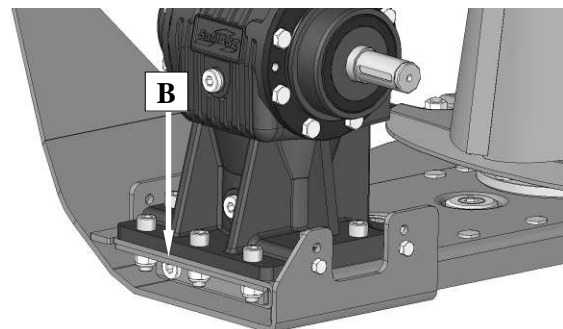
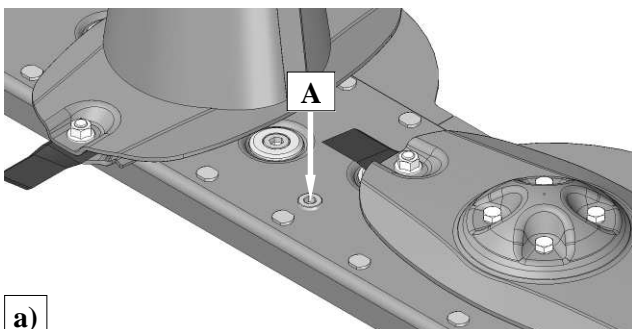


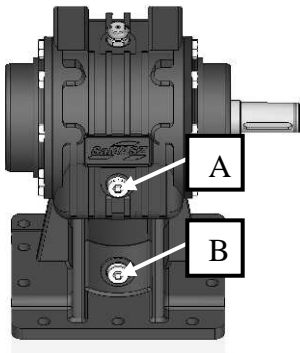
Fig. 23. Points of oil inspection and replacement in cutterbar

Tab. 4. Amount of oil to be filled in cutterbar

Mower type	Oil volume [l]	Oil type	Replacement frequency
SAMBA 160	1.2	SAE 90 EP (ISO VG 320)	After first 50 h of operation, then after next 500 h (or at least once a year)
SAMBA 200	1.5		
SAMBA 240	1.8		
SAMBA 280	2.1		

7.2. Intersecting axis gear

On daily basis prior to work commencement check the oil level and, if needed, refill once removing the vent (A) (Fig. 24) in upper section of the gear. Oil level is inspected by opening check plug (B). If the oil level is too low refill the oil until it is visible in the check opening (B). Oil level in gear: approx. 0.7 l. Oil level is checked after the cutterbar is set horizontally on the ground.



Mower type	Oil volume [l]	Oil type	Replacement frequency
All types	0.7	SAE 90 EP (ISO VG 320)	After first 50 h of operation Then after next 500 h (or at least once a year)

Tab. 5. Oil to be filled in gear

Fig. 24. Points of oil inspection and replacement in intersecting axis gear



NOTE:

The above provisions should be strictly kept. If disks found on the cutterbar are able to move freely, then high temperature of axis gear should not be a point of concern, as in result of a long-term operation it may reach 60-80°C.

8. DEFECTS AND THEIR REPAIR

Tab. 6. Possible defects and their repairs

Defect type	Cause	Recommendations
Mower fails to mow or leaves strip of uncut grass between disks Small strips of uncut grass SAMBA 160 – 1 piece SAMBA 200 – 1 piece SAMBA 240 – 2 pieces SAMBA 280 – 2 pieces	Some of knives (or their parts) are missing	Mount, complement
	Worn knives	Replace knives with new ones
	Improperly mounted knives	Mount knives strictly as per manual
	Too high tractor's engine rpm	Reduce rpm (recommended 1600-1900 rpm)
	Too low working speed	Increase driving speed up to min. $V \geq 10$ km/h
	Transmission belts sliding	Springs not tightened enough - adjust these as per manual
		Worn v-belts - replace
	Damaged tractor's PTO shaft, drive not transmitted	Visit service workshop
	Laid grass	Low mowing on each occasion
Normal with very short grass or right after long-term rainfall		
Safety device is disintegrated too often with no distinct reason	Spring found in the device is not enough tensioned	Adjust spring as per manual
	Poor condition of lock's tensioning surface	Replace elements of safety breakaway device
V-belt are on fire	Mower is clogged with grass	Clear cutterbar
Mower is not mowing even though drive is transmitted from tractor	Damaged overrunning coupling of spline shaft	Examine condition of spline shaft
Mower is blocked	Damaged cutterbar with gear	Call factory service or replace with new one
Mower is not hydraulically compacted	Damaged or dirty fastening elements of hydraulic assembly	Replace or clean fastening elements of hydraulic assembly
	Damaged tractor's hydraulic assembly	Examine condition of tractor's hydraulic assembly
Mower is blocked with grass – no flow of grass or flow is uneven	Too low mowing speed	Increase speed up to min. of approx. 10 km/h
	Swath guides are spaced too tight	Space swath guides to their maximum
Leaking cylinder	Contaminated oil in tractor's hydraulic assembly	Replace oil in tractor's hydraulic assembly (recommended oil purity class acc. to NAS 1638 is 9-10). Order brand new cylinder repair kit and replace worn gaskets
Excess vibrations when operating	Deflected PTO shaft	Examine condition of PTO shaft and if need be, replace with new one
Oil leak in gear	Assembly not tight enough	Examine tightness and check oil level

9. REPAIR AND WITHDRAWAL FROM USE

9.1. Repair

Prior to any repair or service works the mower should be cleaned thoroughly and any grass, dirt or mud removed.

Carefully check nuts and bolts for adequate torque and the pins for wear. Replace screws, pegs, v-belts, pins, bushings, disks, knives, knife holders, bearings etc. with new ones if necessary.



NOTE:

Prior to commencing repair works the mower should be disconnected from the tractor.

9.2. Disassembly and withdrawal from use

When unhitching the machine pay particular attention to additional threat such as crush or cut. Special protective equipment must be used: gloves, protective clothing, glasses etc. Pay attention not to allow the machine lose its stability and therefore protect it with supports.

If the mower cannot be repaired anymore, it should be withdrawn from use. For this purpose oil from intersecting axis gear and the 3-point linkage frame should be drained and thoroughly clean any excess oil with cleaning agent, take v-belts and any elements made of plastic. These should be delivered to a proper waste treatment company.

Remaining metal parts should be sold to breaker's yard.

10. WARRANTY CARD

LIGHT REAR DISK MOWER

--

Serial number
Date of manufacture
Manufacturer stamp
QC signature

--

Date of purchase
Dealer stamp

Dealer signature

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



NOTE:

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

11. WARRANTY TERMS

11.1. Warranty claim procedure

1. The manufacturer guarantees its products against faults in materials or production.
2. Faults or damages to the mower found within 24 month period from the date of purchase shall be removed free of charge at the purchaser.
3. Faults or damages should be submitted personally, on letter or by telephone. Repairs shall be carried out within 14 days. Any repair which is subject to warranty should be carried out by an authorized SaMASZ dealer.
4. Warranty claims regarding replacing of the product or repayment are considered within 14 days by the Manufacturer.
5. The following cases are not covered by the warranty:
 - a) **normal wearing of parts such as: disks, slides, gears and parts within, bushings and sliding bushes, joints, knife holders, cutting knives, v-belts, bearings, canvas covers, tires, fastening elements, etc. These repairs may be carried out only at the purchaser cost.**
 - b) **use of the mower for any purpose other than described in the operator's manual,**
 - c) **working on stony fields and consequences,**
 - d) **running into any obstacle,**
 - e) **too fast lowering of the cutterbar onto the ground,**
 - f) **force majeure or other occurrence, for which the manufacturer does not bear any responsibility.**
6. The costs of technical assessment are borne by the Purchaser - if the Manufacturer determines that the product being subject to claim is defect free and what is confirmed by a further expertise.
7. The Manufacturer has the right to cancel the warranty in the following cases:
 - a) **interference to the interior of the mower, modifications to its mechanical design or intentional damages, bending parts of the mower,**
 - b) **vast damage caused by fortuitous events or others, for which the Manufacturer does not bear any responsibility,**
 - c) **lack of required records in the warranty card or filling in the warranty card independently,**
 - d) **use of the mower for any purpose other than described in the operator's manual.**
8. Manufacturer can break the service agreement with immediate effect when the user does not pay receivables under the agreement in a timely manner and the delay in payment is longer than 30 days from maturity date. Breaking the service agreement by the Contractor for causes lying on the user side makes simultaneous termination of the extended warranty given for the particular machine.
9. Manufacturer does not bear any compensation responsibility for the loss caused by the machine breakdown during its operation.

**NOTE:**

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

**NOTE:**

The warranty claim shall be considered if the following required data is complete: address, date and place of purchase, mower type and invoice number.



NOTE:

Mower's parts, which have been bent after collision with obstacles or stones are repaired on charge by SaMASZ.



NOTE:

When the warranty expires, repairs can be carried out for charge by the entitled repair shops suggested by the dealer. The dealer is obliged to inform the Purchaser on these.



NOTE:

The Manufacturer have right to introduce design modifications.



NOTE:

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

11.2. Warranty repairs record

Repairs scope and spare parts replaced:

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Date, stamp and signature of repair shop.

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Date, stamp and signature of repair shop.

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Date, stamp and signature of repair shop.