

Drum Mower



Operator's Manual

INTRODUCTION

Thank you for purchasing our Drum Mower. This Operator's Manual is available with every machine for the purpose of introducing the user to the design, maintenance, and adjustment of the mower. It will also warn against any possible threats. The Operator's Manual includes information regarding the adjustment and transport on the public roads.

Following the instructions carefully will ensure many years of damage-free and safe operation and will result in decreasing of the operational costs of the machine.

If you have any questions after reading this manual, please contact the Sales Representative or the Sales and Marketing Department.

To emphasize the importance of the information and the warnings of possible hazards, the following warning symbol with a description has been used:



If you see this symbol, be aware of a threat, carefully read the appropriate information and inform other operators about it.

The mower has a name plate placed on the middle frame with basic machine identification information.

The warranty proceedings rules and the rules resulting from them are written in the warranty card, which is an integral part of the Operator's Manual.

The Operator's Manual is part of the basic equipment of the machine and it should be kept for future use.

PRODUCT PURPOSE

The purpose of the Drum Mower is to be used in farming to mow the low stem green fodder (alfalfa grass, etc.) in the fields and meadows.

Operating the mower in alternate conditions will be considered a misuse. Strict compliance with the requirements for the use of the machine as well as its servicing and repairs by the manufacturer is a prerequisite for the intended use.

The machine should be used, operated and maintained only by persons who are familiarized with its specifics as well as with the work safety proceedings rules.

The provisions regarding preventing accidents and all basic work safety and hygiene rules as well as the traffic regulations must always be observed.

Any changes made to the machine without the consent of the manufacturer will exempt the manufacturer from the responsibility for any possible damages resulting from them.

SAFETY RULES

PLEASE BE CAREFUL – READ THE OPERATOR’S MANUAL CAREFULLY IN ORDER TO PROTECT YOURSELF AND OTHERS FROM DANGER.



The machine should be used with respect to the basic work safety rules and the following precautions:

- **NEVER** allow any unauthorized persons, unfamiliar with the Operator’s Manual or underage persons, especially children, to use the machine.
- **ALWAYS** check the physical condition of the machine, especially its wear and whether the operating elements of the cutting system are properly secured.
- **YOU MUST** replace the worn out or damaged parts with new ones.
- **THE MACHINE** may be operated only with the recommended tractors equipped with the required front axle load.
- **DURING** the time of aggregating the machine with the tractor, special care should be exercised, and it is prohibited for any persons to be present between the machine and the tractor while the engine is on.
- **IT IS UNACCEPTABLE** to operate the machine without the shields and a guard, it is also prohibited to operate the machine with damaged shields and lifted guard.
- **IT IS UNACCEPTABLE** to operate the hydraulic lift lever externally.
- **PRIOR TO ANY OPERATION** activities performed on the mower, it is necessary to disengage the power take-off drive and the engine of the tractor, pull out the key from the ignition, and allow the operating drums and the blades to come to a complete stop.
- **WHILE** performing necessary operation activities required for the purpose of lifting the mower on the three-point hitch, it is very important to secure it additionally to prevent from detaching by a support or a chain.
- **IT IS PROHIBITED** to lift the mower with the power drive turned on and the cylinders rotating.
- **IT IS NECESSARY** to check whether there are any persons or animals within the danger zone prior to turning the driving power on or during operating the mower.
- **IT IS PROHIBITED to operate the machine with any bystanders present within less than 50m perimeter.**
- **THE FIELDS AND MEADOWS TO BE MOWED** should be free from any foreign and hard objects.
- **IT IS PROHIBITED** to mow on the sides of the streets, public roads, public places (parks, schools, etc.) or places with stones in order to eliminate the risk of the hard objects thrown out.
- **THE MOWER SHOULD BE** turned on only when in the operating position.
- **THE MOWING** may be started only when the power take-off engine speed of 540 rev/min. is reached; it is prohibited to surpass 600 rev/min.
- **IT IS PROHIBITED** to operate the mower while driving backwards.
- **FOR TRANSPORT** the mower should be in a transport position.
- **CHANGING** the mower’s position from the transport position to the operating position should be performed on a horizontal and even surface, with the blades lifted above the ground.
- **IT IS UNACCEPTABLE** to carry on board any persons or any load while the machine is being transported or while operating it.
- **WHILE** on the public road, applicable provisions of the Traffic Regulations should be obeyed, and the mower should be equipped with required lighting and warning devices in accordance to the local laws of a particular country, where the machine is used.

NOT APPLYING the rules mentioned above may cause hazard for the operator of the machine and bystanders, as well as it may cause damage to the machine. For the damages resulting from the failure to comply with these rules, the responsibility will be on the side of the mower’s user.



PARTIAL RISKS

The manufacturer has made every effort to ensure that the design and the intended method of operating the mower does not cause any danger to people and their environment.

Due to the nature of the mower and the lack of such opportunities to fully expose the cutter, certain elements of risk can occur.



THE DANGER caused by the presence of the sharp edges of the cutting system and the possibilities of any hard objects thrown out, e.g. stones, broken blades, etc. The danger zone resulting from the possibility of throwing out hard objects is within 150 ft. perimeter from the mower being operated.



DANGER the working cylinders and the blades are still rotating for a certain amount of time even after the power drive of the mower is turned off. Therefore, before proceeding with any work activities on the mower, it is crucial to wait until the operating drums with the blades stop rotating.

SAFETY SIGNS AND INSCRIPTIONS

There are warning labels placed on the mower with safety signs in the form of pictograms, which give clear instructions and comments informing about what should be treated with special precaution in order for the operation of the mower to be safe.

Ca ref ully rea d every warning label and get familiarized with their meaning.

The warning labels should be kept clean and readable throughout the whole life of operating the mower. In case the warning labels are not readable, the damaged labels should be replaced with new ones.

New systems and parts replaced during any repairs should have all required warning labels. The new labels may be obtained from stores or from the manufacturer, as it is done with any other spare parts.

GENERAL INFORMATION

Sales Information

The technical condition and the equipment of the mower should be checked at the time of purchase.

It should be required from the equipment dealer to carefully fill out the Warranty Registration Form. Failure to provide the date of purchase or the dealer's information might cause the buyer to suffer disapproval of any possible complaints.

Equipment and Spare Parts

The mower includes the following basic equipment:

- The Operator's Manual 1pc.
- Blade Changing Tool 1pc.
- Blades (packed) 6 pcs.

Design and Operation

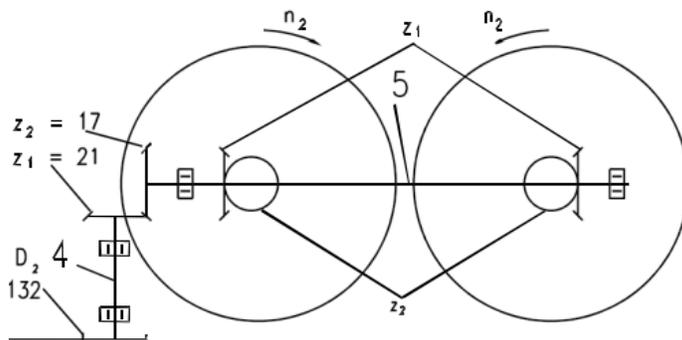
The design of the mower:

1. Pto shaft
2. Central beam
3. Push rods, hydraulic cylinders
(depending on the version)
4. Main frame
5. Shield system
6. Stump jumper
7. Operating drums
8. Protective shield
9. Lock

The 3 point hitch should be connected with the tractor. The cutting system is made of two operating drums with blades attached rotationally in their lower part. The drums rest on the stump jumpers when in the operating position, which adjust to the ground contours.

The spring fuse prevents damages of the mower when the cutting system moves onto an obstacle; the operating drums are powered by the tractor's PTO. The drums along with the blades rotate in opposite directions cutting the forage and forming it into windrows.

The slip one way clutch allows for free movement of the drums after disengaging the engine and protects the drive elements from any damage.



OPERATIONAL SERVICE

You may start operating the machine only after having carefully read the Operator's Manual.

Prior to connecting the rotary mower to the recommended tractors, they should be properly prepared.

- Check the physical condition of the machine and perform daily maintenance work in accordance to the operator's manual of the tractor.
- Tilt or disassemble the elements of the connection and attachment system of the tractor, which may interfere or cause collisions with the PTO shaft.



ATTENTION disassembling these elements will protect against any damage to the PTO shaft.

- Assemble the tractor's power take-off shaft shield
- The recommended tractors should be equipped with the front axle weights

WARNING using a different than recommended tractor for the mower (e.g. of a lower pulling power) or ones that are not equipped with the required front axle weights may cause loss of the steering control of the tractor's front wheels

Connecting the Mower with the Tractor:

The mower should be connected with the 3 point hitch of tractor. The mower should be in the transport position.

Please be careful while connecting the machine with the tractor.

IT IS UNACCEPTABLE



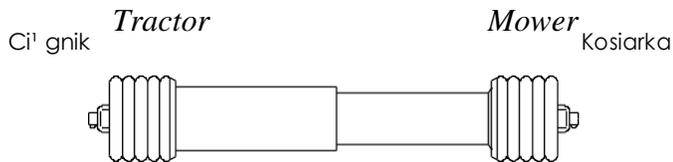
- for any persons to be present between the machine and the tractor while backing up to the machine
- to connect the machine while the tractor's engine is on and the key is in the ignition
- to use parts to secure connections other than recommended by the machine or tractor manufacturers.

Assembly of the PTO Shaft

The drum mower should be equipped with an efficient PTO shaft with a guard, safety sign or the CE marking as well as the technical specifications in accordance with the technical guidelines.

Using a PTO shaft with parameters different than those recommended by the manufacturer of the machine may overload the shaft, damage it or result in pulling both parts apart while lifting the machine and so create hazard for the operators and the environment.

While assembling the PTO shaft, you should make sure, that the external pipe of the cover is on the side of the tractor.



In order to install the shaft:

- Lower the mower down to the ground, turn off the engine and take out the key from the ignition.
- Insert the female tube end yoke to the power input of the machine and the power take-off of the tractor and secure it from sliding out with rivets.
- Check whether the rivets secure the ends of the shaft from sliding out during operation.
- Install the chains of the shaft cover; one to the cover of the tractor's power take-off, and the other to the cover of the machine's power input.

WARNING using a damaged PTO shaft, without the cover or a damaged cover, and without the additional cover on the side of the tractor's power take-off and the machine's power input creates immediate hazard of an accident.

Adjusting the Mower to the Transport Position and Transport:



Be careful while changing the mower's position from the transport position to the operating position and the other way around.

It is prohibited to reposition the mower:

- On an uneven surface and in a visible slope area.
- When it is lifted high (as in the transport position), and when the point hitch of the mower is not appropriately level.
- In the presence of bystanders within the mower's turning range.

In order to change the position of the mower to the transport position, the following must be done:

- Set the unit (the mower and the tractor) on an even and horizontal surface.
- Lower the mower so the stump jumpers rest on the ground.
- Disengage the PTO, the tractor's engine, and take out the key from the ignition and allow for the mower's elements to come to a complete stop.
- Disassemble the PTO shaft.
- In the mowers with the push rod system (Position 4 in the drawing on the previous page) move the gear to the lower position.
- Lift the mower with the tractor's hydraulic lifting unit so the stump jumpers are just above the ground.
- Lift the support (Position 2 in the drawing on the previous page) to the upper level and secure it with a cotter pin
- Move the mower by hand all the way back along the tractor making sure that the king pin of the lock (Position 1 on the previous page) goes into the king pin opening (Position 3 on the previous page) with a loose line.
- Lift the mower with the hydraulic system to the vertical position, and move the lever of the ball valve mounted on the actuator into the locked position.

During the transport:

Lift the mower with the hydraulic lifting unit to the upper position to ensure the space between the stump jumper of the cutting drum and the ground of at least 40cm, tighten the side chains of the tractor's bottom push rods so the machine doesn't swing to the sides.

Always make sure that the ball valve is locked during transport.

Furthermore:

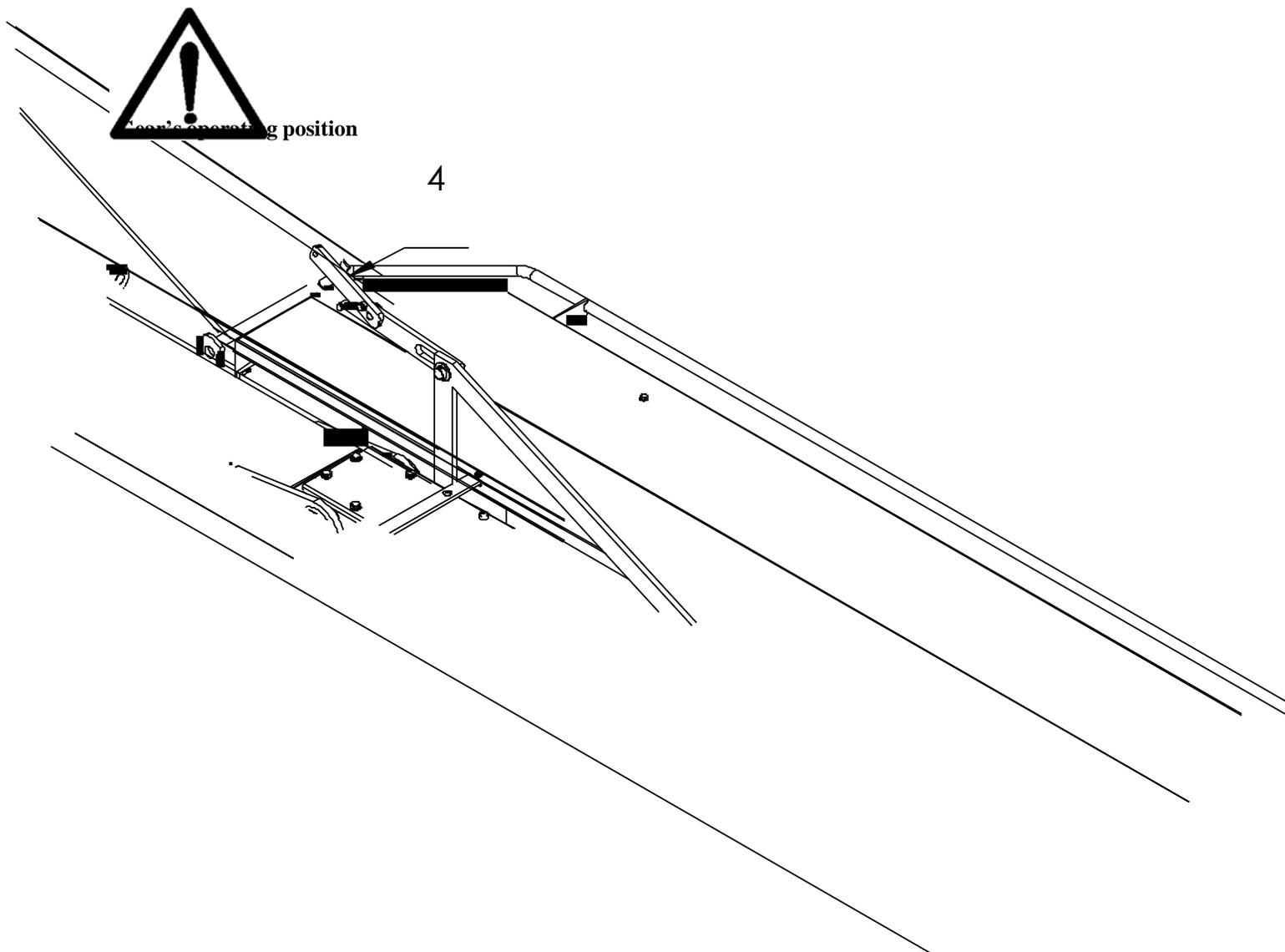
- Check the securing elements
- Install the warning plate with lights and the plate for slow-moving vehicles.
- Pay attention to the mower overlap over the tractor during the turns or relapses.

Adjusting the Mower to the Operational Position

Reposition the mower from the transport position to the operating position prior to starting the operation. In order to do that, the following must be done:

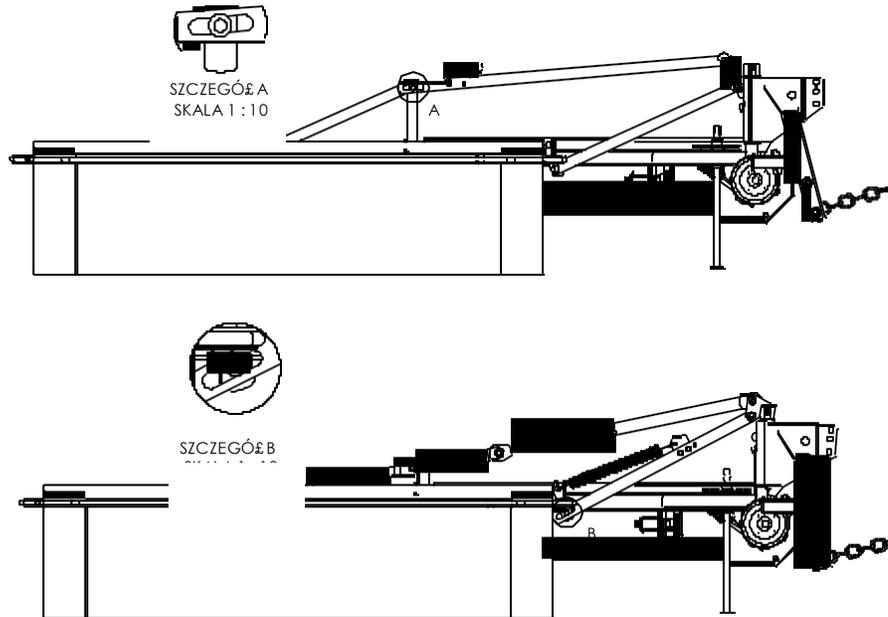
- Place the unit (the mower and the tractor) on an even, horizontal surface.
- Move the ball valve lever to the open position in the mowers with the hydraulic cylinder (it stays in that position throughout the entire time of the mowers operation), and then move the mower to the horizontal position. Be extra careful when lowering the mower from the vertical position to the horizontal position. Pay attention to the space available for the operation.
- In the mower with the push rods system, the gear should be moved to the upper position (Position 4 in the drawing below), and then lower the mower to just above the ground.
- Stand behind the machine (shown in the top drawing on the following page in the X spot) and pull the line causing the latch to slide out (Position 1 in the bottom drawing on the following page) from the opening (Position 3), take the mower by the cutting system's cover and turn it to the operating position.
- Proper positioning of the mower in the operating position ensures a safe and high quality and efficiency operation.

The PTO shaft may be connected to the tractor only during the time of the mower's operation, but during transport or maintenance works it should be disassembled.



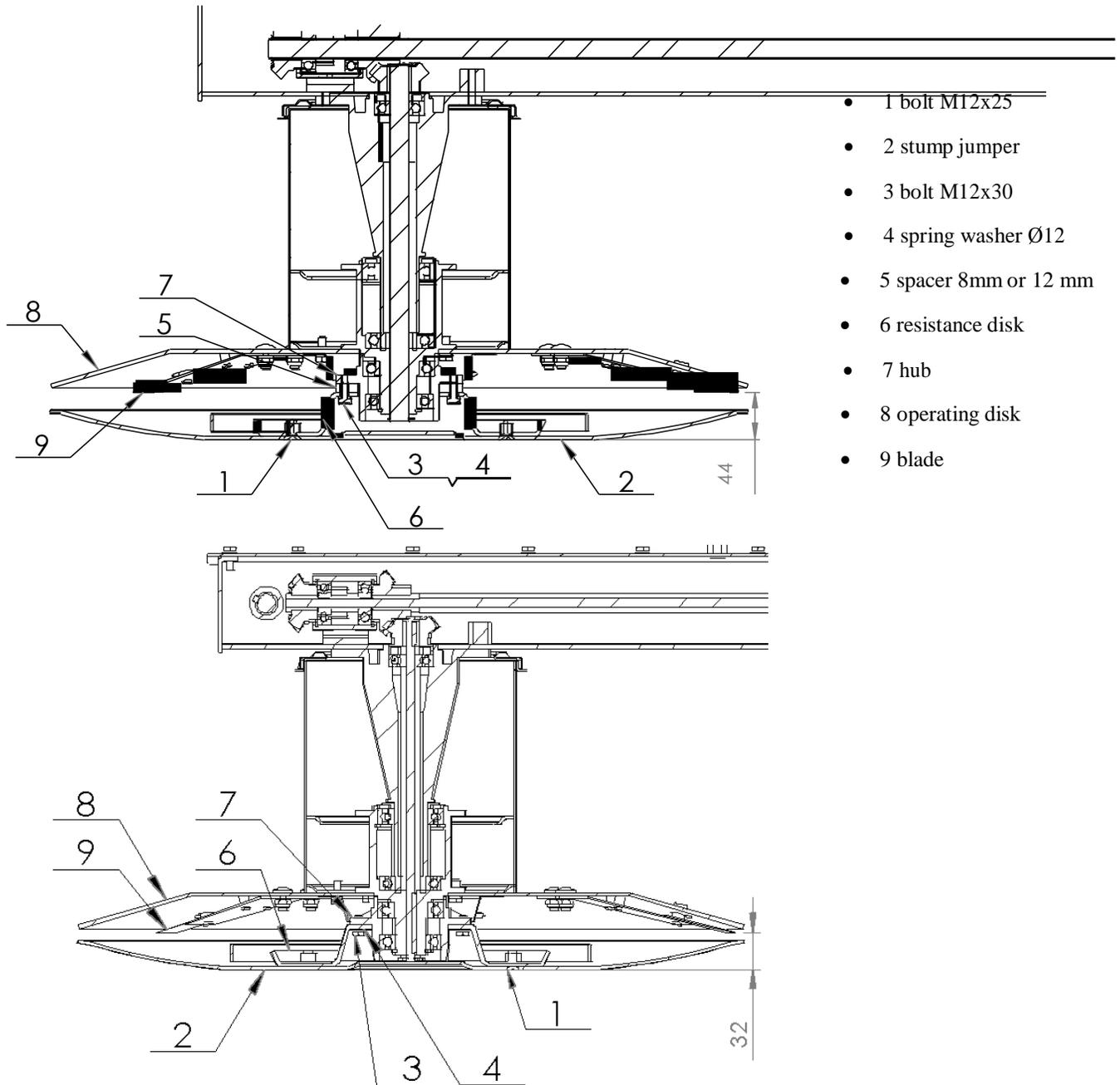
Adjusting the Mower

Drawing 1: The proper operating mode of the mower.



Drawing 2: The proper alignment of the cotter pin on the engagement rod.

The mower may be positioned at any cut height 32 mm (low), 40 mm, or 44 mm (high). The mower is set to the middle height of cut. A spacer ring (Position 3 in Drawing 3) may be used to adjust it, which is installed on the operating drums between the stump jumper's hub (Position 7 in Drawing 3) and the resistance disk (Position 6 in Drawing 3).



Drawing 3: Adjusting the height of cut.

In order to change the height of cut from 40mm to 44mm, the 8mm spacer ring should be substituted with a 12mm spacer, and in order to achieve the 32 mm height of cut, the spacer ring should be disassembled.

Therefore the following must be done:

1. Position the mower to the transport position and lift it to the upper position.
2. Set the tractor's handbrake and disengage the tractor's engine.
3. Secure the mower from falling with a chain and an additional support placed under one of the stump jumper disks.
4. Unscrew the bolts M12x25 (Position 1 in Drawing 3) and disassemble the stump jumper (Position 2 in Drawing 3).
5. Unscrew the resistance disc bolts (Position 3 in Drawing 3) M12x30 and take it off.
6. Adjust the cut height and assemble it in the reversed order.
7. Perform the adjustment in the other stump jumper disc repositioning the support.

Operating the Mower

The fields and meadows to be mowed should be free from any foreign and/or hard object or stones, which may damage the mower.

The shields of the mower must be positioned downwards during operating of the machine. The mower's drive should be turned on slowly and after reaching 540 RPM of the power take-off, the operation may be started. The speed should be adjusted to the terrain conditions and the type of grass to be mowed. For the time of idle drive, the drive of the mower should be turned off and then the mower should be lifted upwards.



The mower shouldn't be used on uneven and full of stones fields because of the risk of damaging the blades, holders, and other mower's elements, as well as because of the risk of the hard objects thrown out (stones, broken blades, etc.).



WARNING The operating drums and the blades still rotate for a certain amount of time even after the power take-off drive is turned off. Prior to making any adjustments on the mower, turn off the drive and the engine of the tractor, pull out the key from the ignition, and allow for the operating drums and the blades to come to a complete stop.



WARNING: It is prohibited to:

Operate the mower in the presence of bystanders within a less than 165 ft. perimeter.

In case the mower hits an obstacle, the fuse allows for the cutting system to tilt. The tractor then should be stopped and the drive should be turned off. The fuse gets back in when the tractor is moved back a bit. The length of the A fuse's tighten spring should be 65mm. If it is too tight, it may block the fuse and damage the mower when it hits an obstacle.

Securing the mower after driving into an obstacle.

ATTENTION: because of the possibility to damage the mower, never:

- exceed the tractor's PTO 600 RPM
- lift the mower while the drive is engaged and the drums are rotating
- mow while backing up (*this will cause machine failure!*)

Resting Position

The mower in the resting position is completely separated from the tractor's 3 point hitch. The mower is repositioned from the transport position to the resting position.

The following should be done for that purpose:

- Lower the mower and rest it on the stump jumper discs and the support.
- Disengage the engine and pull out the key from the ignition and set the brakes.
- Disconnect the pivotal end of the tractor's upper connector.
- Take down the tractor's push rod ball joint.

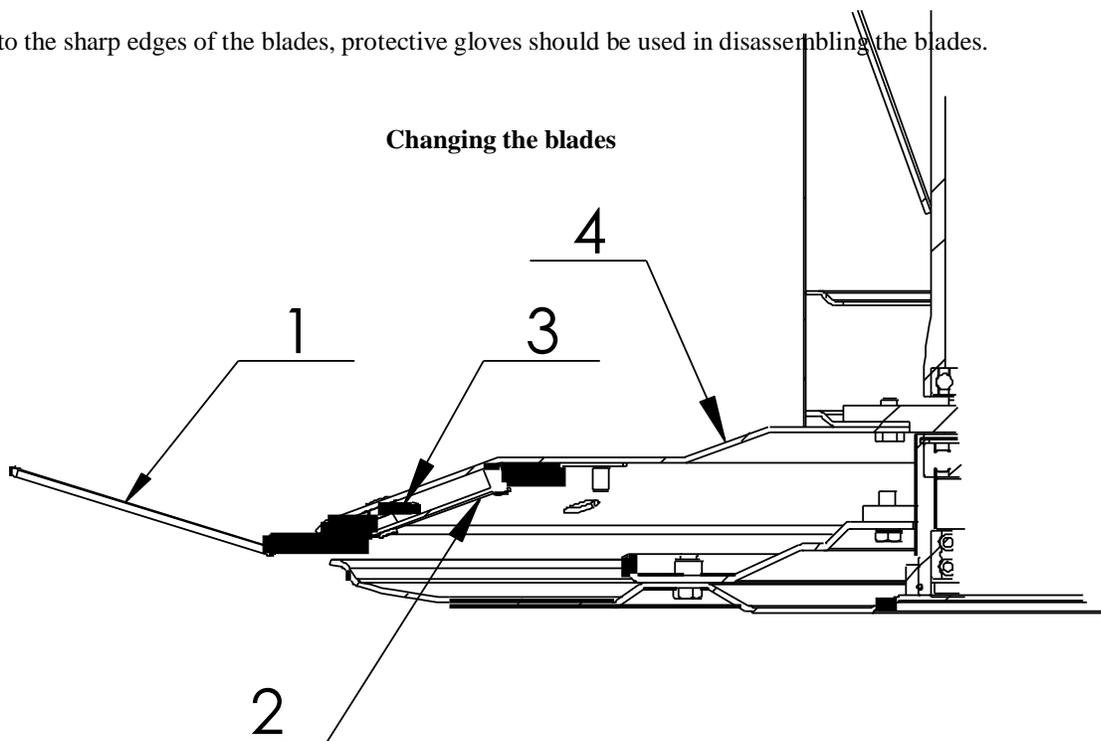
TECHNICAL MAINTENANCE OF THE MOWER

Changing the Blades

In order to install or disassemble the blades on the operating disc, a special wrench key should be used, which is included in the basic equipment of the mower.



Due to the sharp edges of the blades, protective gloves should be used in disassembling the blades.



Installing the blades:

- The blade should be lifted (Position 3 in the drawing above)
- The wrench key (Position 1 in the drawing above) should be inserted in the space between the operating disc the holder of the blade (Position 2 in the drawing above).
- Tilt the blade holder down so its pin slides out of the disc's socket lifting the wrench key up.
- Put the blade onto the pin of the holder, making sure that the pin of the holder is in the disc's opening.



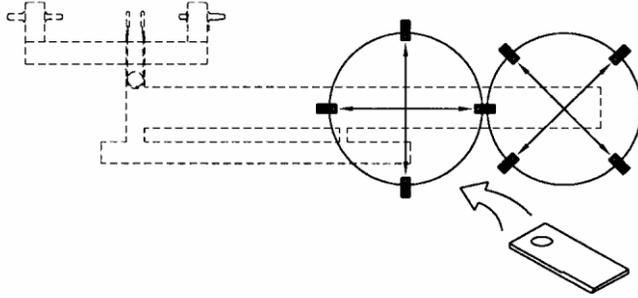
IMPORTANT The holder's pin should be in the middle of the disc's opening in order to properly install the blades. Failure to properly install the blades may result in serious hazard to the operator and the bystanders.



WARNING In case any blade becomes damaged or worn out, it is indispensable to change the whole set of blades to new ones. The blades worn out on one side (only one side is dull) may be reinstalled on the neighboring disc (rotating in the opposite direction), provided they are not damaged.

When changing the blades holders, special attention should be paid to their positional relationship between the individual discs.

Arrangement of the Blades:



NOTE: *Only certified blades should be used.*

V-Belt Tension

Check the condition of the V-belt of the transmission; the flexibility under the finger pressure shouldn't exceed 1 ¼". The V-belts are stretched with a spring tensioner (Position 1 in the drawing below). The adjustment should be made by rotating the bolt of the tensioner. The rotating should be done with a flat wrench key, turning it on the counter-nuts M16 which are on the bottom of the bolt. In case of damaging one V-belt, a whole set of V-belts should be re-placed.

Everyday Maintenance

Following operation, clean the mower from any plant residues or dirt and check its technical condition every day.

- Inspect the components and their connections.
- All loosened bolt connections should be tightened, and the worn out or damaged parts should be replaced with new original spare parts.
- Pay attention to the cutting system; the worn or damaged blades, holders should be replaced as whole sets to new ones.
- Check the tension of the V-belts
- Lubricate the mower and the PTO shaft in accordance with the lubricating instructions.

Post-Season Maintenance

When the operating season is over, the following must be done:

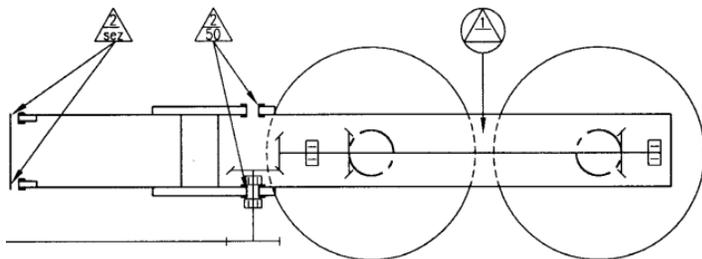
- Thoroughly wash the mower.
- Perform a detailed technical inspection of particular parts and components.
- The worn out or damaged parts should be replaced with new ones.
- Loosen up the V-belts.
- Perform post seasonal servicing on the mower
- Places with a damaged paint layer should be repainted.
- Secure the operational surfaces with worn paint layer with a corrosion protection product.
- Change the transmission oil (main frame), lubricate the machine in accordance with the lubricating instructions.

Lubrication Instructions

Perform the following maintenance activities:

Gear Box:

- Check the oil levels every 10 hours with the help of a clean rod inserted in the vent opening. The level of the oil should be 20-30mm from the bottom of the gear box. In case the oil level is low, the cause of the leakage should be removed first, and then the oil should be refilled to the required level. There should be 5 liters of oil in the gear box.



The instructions for lubricating the mower.

The greasing points indicated by triangles should be greased with a machine oil with the help of a lubricator.

The PTO shaft should be lubricated in accordance with the shaft manufacturer's requirements.



REMEMBER: The higher quality and viscosity 90 Wt. gear oil should be used or alternately 140 Wt. gear oil.

Storing

The mower should be stored in a dry, hardened surface and roofed place that is of limited accessibility to people and animals.

In case the mower is exposed to adverse weather conditions, it is necessary to perform maintenance and lubricating on the machine.

Check the stability of the mower after placing it in the storage place. Positioning the mower on a soft and uneven surface may be hazardous.

Dismantling, Utilization, and the Methods of Utilization.



Protect your hands (body) from injuries and harmful effects of lubricants and oils. Use protective gloves and tools in good technical condition. The elements of the machine which may reposition or turn during the disassembling should be appropriately secured.

The worn out or damaged parts obtained during repairs (dismantling) should be stored in a segregated place of limited accessibility to people and animals. The worn out elements should be delivered to the scrap collection center. The worn out elements made of plastic material should be delivered to the storage (disposal) of waste chemicals.

Do not spill oil during the time of refilling or changing it. The used oil should be stored in tight containers and periodically deliver it to the oil utilization centers.



The abandoned parts or elements of the machine or spilled oil may result in accidents and cause environmental pollution and violate the rules.

Possible Damages and Troubleshooting

PROBLEMS	REASONS	SOLUTIONS
Increased vibrations of the mower	Unevenly worn out or damaged elements of the cutting system	The worn out elements replace with whole new sets
Bad cut and clogging of the cutting system	Dull or damaged blades	Dull or damaged blades replace with New sets of blades Blades dull on one side should be installed on the disc with the opposite direction of rotations
Sliding belts	The belts not tightened good enough Wet belts Worn out belts Belts with different lengths	Check and adjust the tension of the belts Avoid mowing in rain Replace the belts with new sets of belts Use one brand belts in a set with the same dimensions
During a normal operation, the cutting system tilts to the back caused by the fuse.	The fuse spring lightly tightened or damaged	Check and adjust the tension of the spring, replace if damaged
	Uneven surface, e.g. hardened molehills	Decrease the speed of driving, tilt the cutting system to the back