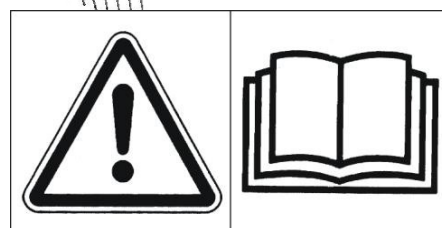
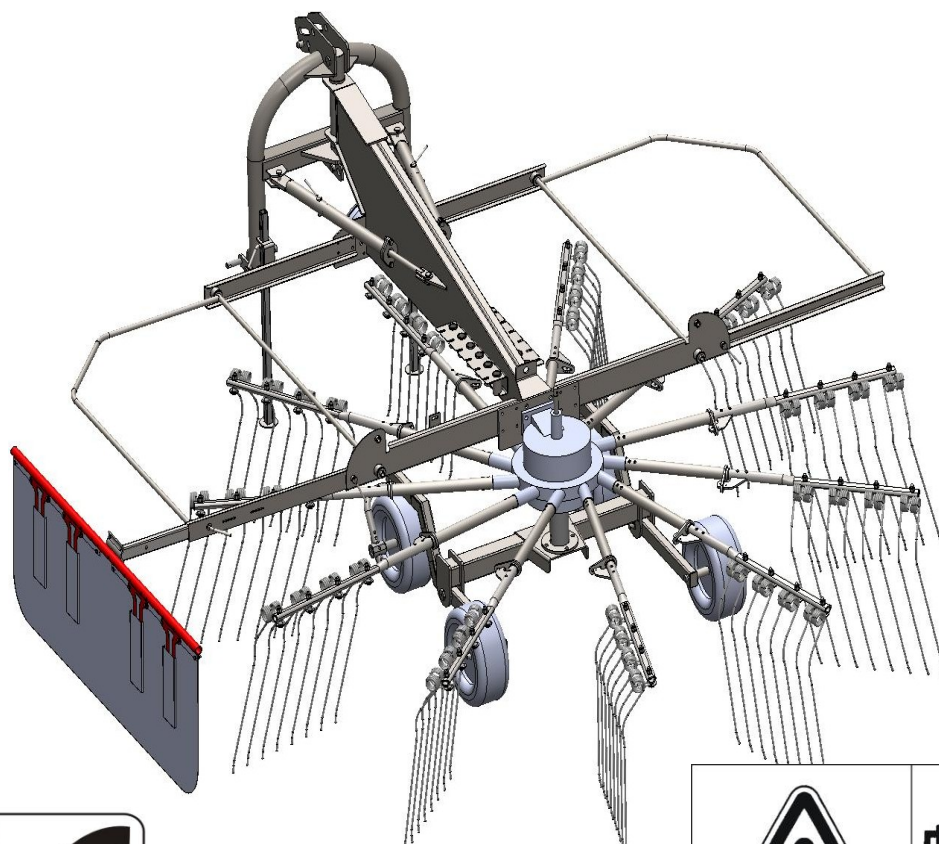


ROTARY RAKE – HAY HARVESTER WITH ADJUSTABLE PYRAMID

FPM 627 152
FPM 627 168
FPM 627 169

N° 39811



ASSEMBLY / OPERATION/ MAINTENANCE SPARE PARTS LIST

12.2016.

FPM AGROMEHANIKA D.O.O.
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SERBIA

USER WARNING

By buying this machine, you have made a wise choice. Many years of thinking, researching and perfecting have been invested in it. Like thousands of other users, you will also realise that you currently own a machine created by state-of-the-art engineering, know-how and field testing. You have purchased a reliable machine, however good performance and a long service life can only be expected if you use it properly.

This user manual contains all the necessary information for achieving optimal performance with your machine. However, this performance depends on how thoroughly you have read this manual and applied the information it contains. This is a simple machine; however, many obvious defects resulting from poor performance may be overlooked due to neglecting the natural wear and tear of wearing parts, or operating it in a poorly adjusted state. Don't assume that you know how to operate and maintain the machine before reading this manual, which you should always have to hand.

Our service representatives and sales and service centres with trained personnel offer original parts for your rotary rake. These parts are manufactured and carefully inspected at the same facility where the rakes are produced in order to ensure high quality and precision assembly upon replacement.

ROTARY RAKES MANUFACTURED BY: FPM AGROMEHANIKA D.O.O. BOLJEVAC

The rotary rakes meet the requirements of the Machine Safety Regulation (Official Gazette of the Republic of Serbia No. 13/2010) with regard to stability and the protection of parts or assemblies that may put the operator at risk due to their function or form.

IMPROVEMENT: FPM Agromehanika d.o.o. strives to continuously improve its products and therefore reserves the right of modification or improvement, without having to modify or improve previously manufactured or sold equipment.

The specifications given in this manual are correct as of the date of issue.

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FPM AGROMEHANIKA D.O.O. BOLJEVAC

THE OCCUPATIONAL HEALTH AND SAFETY CERTIFICATE AND DECLARATION OF CONFORMITY WITH THE SAFETY REGULATIONS SET OUT IN DIRECTIVE 98/37/EC ARE AN INTEGRAL PART OF THIS OPERATION AND MAINTENANCE MANUAL.



Issued by: FPM AGROMEHANIKA D.O.O.
Boljevac Print: DEVELOPMENT
DEPARTMENT
Year: 12.2016.



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№ 39811

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USER WARNING

It is extremely important that the PTO shaft connected to your rake has the right dimensions. Therefore, you must provide a PTO shaft with the following properties:

- grooves acc. to 35 JUS M.L1.601 on both shaft ends
- freewheel clutch

The PTO shaft is produced by "WALTERSCHEID" and may be procured under the PO number: EUROPEAN MARKET: W 200E SD15 910 K33B 1 $\frac{3}{8}$ " (6) – 1 $\frac{3}{8}$ " (6) RUSSIAN MARKET: W 200E SD15 910 K33B 8X32X38 - 1 $\frac{3}{8}$ " (6)



IMPORTANT: The manufacturer may not be held liable for damage to or breakage of the tractor, PTO shaft or the rotary rake in case of a failure to comply with the above warning

PLEASE READ CAREFULLY!

You will find the warning labels “ATTENTION”, “CAUTION”, and “DANGER” in this manual and on the machine. The warnings draw your attention to personal safety and the safety of others who work with you, since they need to read the warnings, too.

PERSONAL SAFETY

ATTENTION: The word “ATTENTION” is used where ensuring the operator’s and other individuals’ safety from accidents is required.

CAUTION: The word “CAUTION” is used to indicate a potential risk for the operator and other personnel of serious injury, which may occur suddenly. This word is used frequently as a warning for the operator and other individuals for the purpose of preventing a surprise when using the rotary rakes.

DANGER: The word “DANGER” is used to indicate a forbidden action that may involve risk.

ALL ADDITIONAL WARNINGS SUCH AS “NOTICE” AND “IMPORTANT” INDICATE SPECIAL SAFETY-RELATED INSTRUCTIONS REGARDING THE ROTARY RAKE.

THE SAFETY OF THE ROTARY RAKE

NOTICE: THIS WORD WARNS THE OPERATOR ABOUT A POTENTIAL RISK OF RAKE DAMAGE IN CASE OF FAILURE TO OBSERVE PARTICULAR INSTRUCTIONS.

IMPORTANT: THE READER IS INFORMED ABOUT THINGS TO KNOW FOR THE PURPOSE OF PREVENTING MINOR DEFECTS IN CASE HE/SHE MISSED THEM.

WARNING!

IN CASE OF A FAILURE TO OBSERVE ANY OF THE ABOVE WARNING LABELS “CAUTION”, “ATTENTION” AND “DANGER”, SERIOUS PHYSICAL INJURY MAY OCCUR.

LIMITED WARRANTY

For each original unit delivered to the user by the FPM Agromehanika AD Boljevac distribution network, the manufacturer issues a warranty in accordance with the Standardization Act and Machinery Safety Regulation (Official Gazette of the Republic of Serbia No. 13/2010) guaranteeing that each rotary rake part is new and free from defects in materials and workmanship for the period of one year from the date of delivery of the machinery to the end user, subject to the condition that the machinery is used and maintained in accordance with the instructions given in this operation and maintenance MANUAL.

EXCEPTIONS:

1. — Wooden parts are not covered by the warranty.
- 2.— Parts not manufactured by FPM Agromehanika AD Boljevac (rubber and plastic components, belts, PTO shaft, PTO shaft guard, etc.) are not covered by this warranty, but by the respective manufacturer's warranty.
- 3.— Parts subject to normal wear and tear during use, such as: Spring tines used for raking, tires, swath board.
- 4.— The warranty lapses in the event of misuse or abuse, improper or negligent use, or accidental damage. The warranty also expires in the event of using non-original parts, and the manufacturer may not be held liable for any transport damages.

THE MANUFACTURER MAY NOT BE HELD LIABLE FOR ANY LOST PROFITS AS A RESULT OF A ROTARY RAKE DEFECT OR INJURIES TO THIRD PARTIES, NOR FOR ADDITIONAL COSTS INCURRED FOR REMOVING AND REPLACING PARTS.

The buyer shall be liable and bear the costs for:

1. —Regular maintenance, such as lubrication, refilling oil, small adjustments, etc.
2. —Transport of the machinery to the service location and back within the warranty period.
3. —The travel time of the authorized service representative to the rake owner and back, or the transportation of the rake to and from the workshop following a repair.

This warranty does not apply to a rotary rake that has been altered or modified without our express permission, or repaired by another person outside the authorized service.

The warranty is subject to strict observance of the warnings:

- Any warnings given in this manual must be observed and all components regularly inspected and replaced as required.

A warranty for parts that are not new is excluded.

Individuals working in our production plant are not its official representatives and are therefore not authorized to assume any obligations in its name or on its behalf.

No warranty shall cover product equipment in excess of that specified, and the manufacturer may not be held liable for injuries resulting from such use.



SAFETY



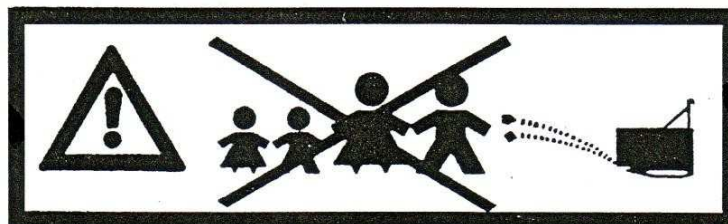
Most accidents occur during work, maintenance or transport due to the non-observance of the fundamental safety requirements. This is why you are the most important person for operating and maintaining your rake. Regardless of whether you are working alone, with your family members or other persons, always read and observe the basic method of operation. Additionally, warning labels are affixed to the rake that serve as a reminder to always observe safety practices.

-  - The indicated operation, maintenance and safety instructions must be strictly observed at all times in order to ensure safe and secure rotary rake operation.
-  - Before beginning work, the operator must be aware of the functioning principle of all of the rotary rake components. It may be too late for this during work. Above all, learn how to disconnect the rake quickly and safely in case of an emergency.
-  - The operation and maintenance manual must be kept for the entire service life of the machine.
-  - The metal nameplate must always be legible, visible and clean.
-  - When attaching or detaching the rotary rake to or from the tractor, always put the support foot in the corresponding position (safety).
-  - Be especially careful when attaching or detaching the rake to or from the tractor; the area around the lifting device is dangerous.
-  - Check the tractor's front wheels for damage prior to operation. Attach weights in the provided place.
-  - Observe the maximum permissible axle load and total weight. Due to the added weight, the load is redistributed on the wheel axles.
-  - Use a cab tractor for road safety requirements. Keep all windows closed during work to minimize the noise level.
-  - Prior to starting the rake, even for a very short distance, always put it in the transport position. Observe the permissible overall dimensions for transport.
-  - Before driving on public roads, secure the rake for safe transport and always observe road safety regulations.
-  - In special circumstances, use lights to signal danger, if not contrary to traffic regulations.
-  - Never transport others on the rake or the tractor during work or transport.
-  - Never transport an unsecured rotary rake.
-  - Never transport operating machinery.
-  - Never turn on the connection shaft when the rake is in the transport position.
-  - Never leave the driver's seat while the tractor is operating.
-  - Every time before using the rake, check whether all parts (nuts, screws, etc.) are sufficiently tightened, and in particular secure the spring tine brackets and spring tines.

- ⚠ - If worn out or damaged, rake brackets and their fasteners (nuts, screws, etc.) must be replaced with original parts from FPM AGROMEHANIKA d.o.o BOLJEVAC.
- ⚠ - For the sake of safe transport on public roads, check whether all the protective components and reflex reflectors are properly affixed and secured to the frame, and replace any damaged or broken parts using original parts manufactured by FPM AGROMEHANIKA DOO BOLJEVAC.
- ⚠ - Before adjusting, lubricating, or cleaning the rotary rake, lower it to the ground, turn off the tractor engine, remove the ignition key, turn off the PTO shaft, and apply the tractor's parking brake.
- ⚠ - Wait until all the moving parts have come to a stop before approaching the rake.
- ⚠ - Keep away from all rake parts while working.
- ⚠ - Never wear baggy clothes that may be caught in the rotating rake's components. Always wear tight-fitting clothes. Always wear personal protective equipment, safety goggles, protective gloves and footwear, especially when working on rocky soil.
- ⚠ - Fasten the PTO shaft guard with the provided chains. (the PTO shaft guard may not turn). If the guard is damaged, replace it immediately.
- ⚠ - Prior to starting the tractor and beginning work, the operator must ensure that no individuals, children or animals are located in the work area. Always keep the consequences of irresponsible and unsafe work in mind, since this may cause grave harm.
- ⚠ - Remove all foreign objects from the field prior to beginning work.
- ⚠ **IMPORTANT:** Never work near roads, pedestrian areas, public spaces (parks, schools, etc.) and on rocky soil, in order to avoid the risk of accidents resulting from ejected objects.
- ⚠ - Never work when driving in reverse.
- ⚠ - Unauthorised persons, persons without a driving licence or persons without appropriate mental and physical abilities are strictly forbidden to operate the rotary rake.
- ⚠ - Only reliable individuals are permitted to operate the rake. Children under 16 are strictly forbidden to operate the rake.
- ⚠ - Only work under optimal light and visibility conditions.
- ⚠ - After the harvesting season is over, an authorized mechanic should inspect and recondition your rake, in particular the spring tines, as well as retighten all components (nuts, screws, etc.) with the required tightening torque.



NEVER IGNORE THESE WARNINGS.





S A F E T Y



ATTACHING THE RAKE TO THE TRACTOR

-  Before coupling and decoupling the rake to or from the tractor, lock the hydraulic controls in order to prevent unintended raising or lowering.
-  When coupling your rake, observe the category of the tractor and rake linkages; they must match.
-  - The area around the attachment points is especially hazardous. There is a risk of injury when coupling linkages.
-  - Never stand between the tractor and the rake when using external hydraulic controls.
-  - Watch out for and prevent any lateral movement of the linkages when the rake is in the transport position.
-  - When driving on public roads with the rake in the transport position, the tractor's hydraulic controls must be locked in order to prevent unintentional lowering.
-  - Never use the rotary rake on sloping terrain, or transport the rake using a tractor with a narrow wheel track.



NEVER IGNORE THESE WARNINGS.



S A F E T Y



USING THE PTO SHAFT

-  Only PTO shafts supplied with the rake and approved by the manufacturer may be used.
-  All PTO shaft guards must be attached and in an appropriate condition.
-  - Ensure proper tube overlap in the transport and operating position.
-  Attaching and removing the PTO shaft may only be performed when the tractor output shaft and the engine are turned off, and the ignition keys are removed.
-  Always make sure you properly install the PTO shaft by placing the star freewheel clutch towards the rake when attaching the shaft and checking for a tight fit.
-  Secure the PTO shaft guards with the chains to prevent rotating; always observe the instructions for the PTO shaft.
-  - When not using the rake, attach the PTO shaft to the frame at the provided place.

-  - If you have doubts about the PTO shaft operation, or if the shaft guard is missing, worn or broken, replace the PTO shaft with one labelled with a CE mark.
-  - Before turning on the tractor output shaft, check whether the selected rpm matches the permissible rpm of the rotary mower.
-  - Before turning on the tractor output shaft, ensure that persons and animals are removed from the danger area.
-  - Never switch the output shaft on when the tractor engine is turned off.
-  - If the PTO shaft is damaged, eliminate the defect immediately; It is recommended that you contact the service centre before using it again. Improper repairs may lead to PTO shaft imbalance, which may cause poor operation or damage to the rake or the tractor output shaft.



NEVER IGNORE THESE WARNINGS.



S A F E T Y



TIRES

-  - Prior to any work on the tires, make sure that the machine is lowered to the ground, stable and secured to prevent unintentional restart (place scotch blocks under the wheels).
-  - The tires may only be fitted, removed and repaired by a competent person using the appropriate tools.
-  - Check the tire pressure regularly and observe the tire manufacturer's recommendations.



NEVER IGNORE THESE WARNINGS.



S A F E T Y



MAINTENANCE

-  - Before performing any maintenance or repair work, switch off the tractor output shaft, turn off the engine and remove the ignition key.
-  - Before performing any rake maintenance, lower the machine to the ground and secure it to prevent unintentional restart.
-  - When working with and replacing machine parts, always wear protective gloves and use only standard and approved tools.
-  - When replacing oil, lubricating or replacing filters, dispose of the replaced components in accordance with the applicable environmental laws and regulations.
-  - De-energize the equipment prior to performing any work on the electrical installations.

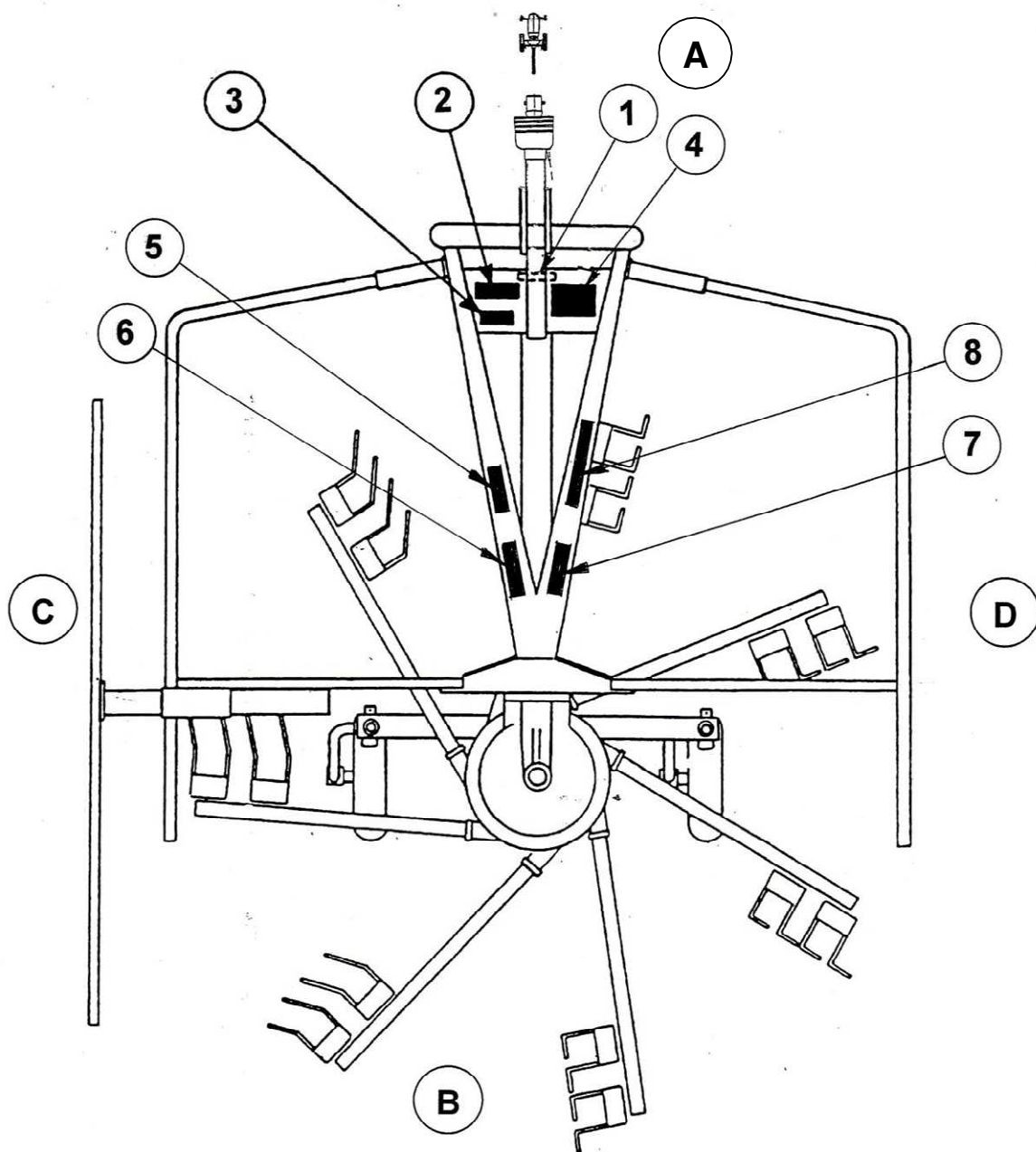


NEVER IGNORE THESE WARNINGS.

WARNING LABELS

FPM Boljevac

The following warning labels are affixed to your rotary rake for your safety and the safety of others working with you. Holding the manual in your hand, walk around the machine and check all the warning labels and instructions from the manual. The labels must be legible. If not, they must be replaced.



1



2

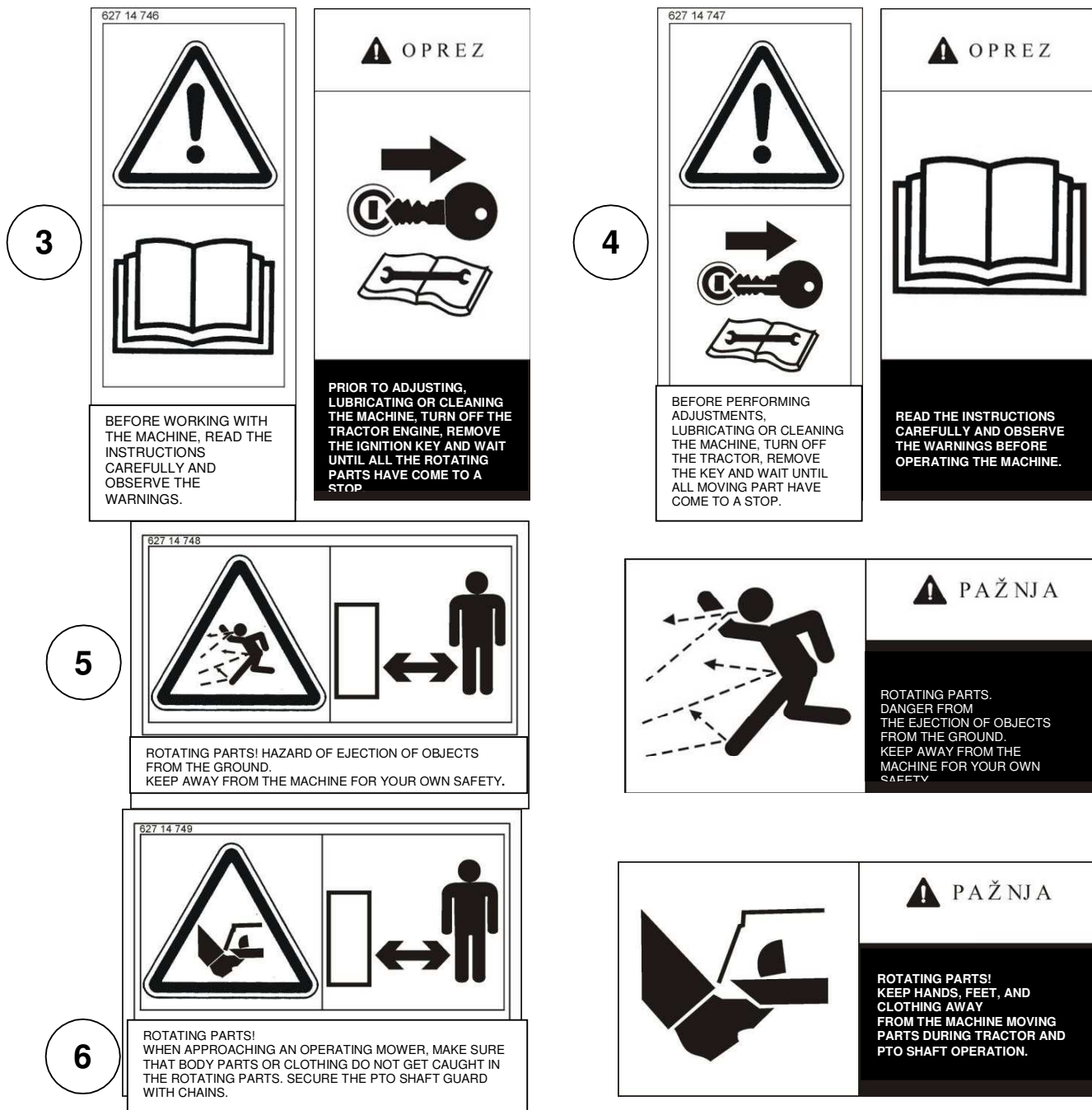


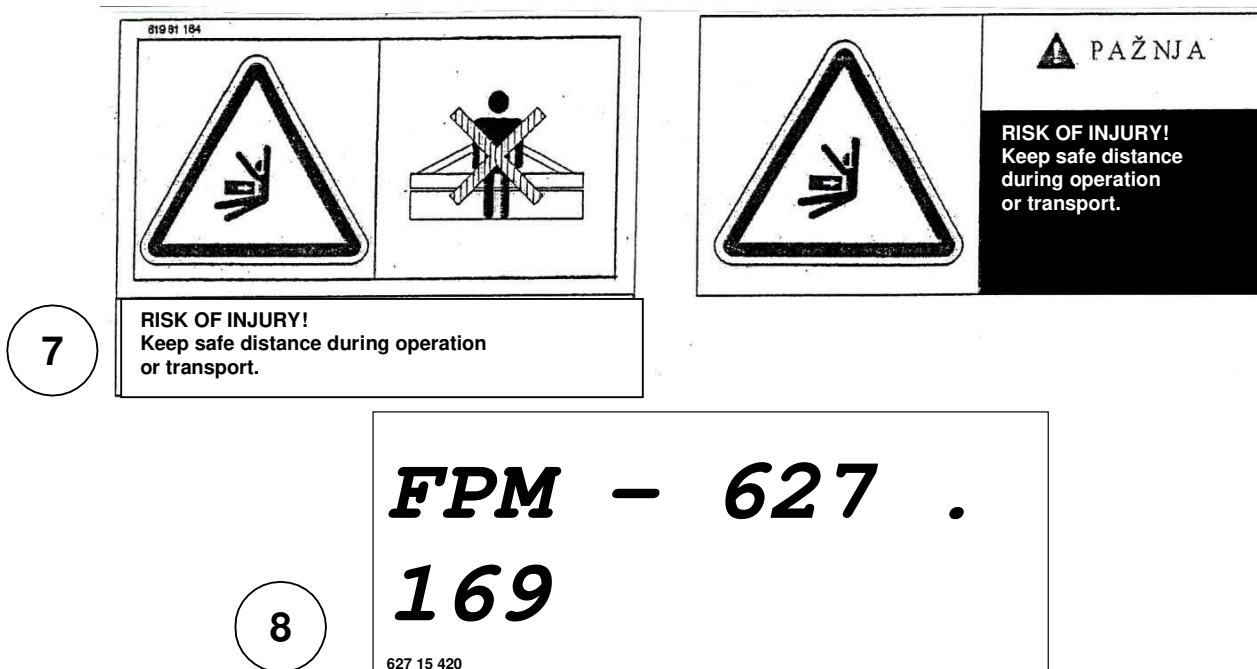
WARNING LABELS

FPM Boljevac

The rake is identified by the nameplate (label no. 2) containing the following numbers:

- The field marked »Z« contains the occupational safety certificate number.
- The field marked »MASA/WEIGHT« contains the product weight.
- The field marked »GODINA/YEAR« contains the year of manufacture (last two digits).
- The field marked »SERIJA/TYPE« -contains the series and commercial designation.
- The field marked »№« contains the mower number, comprising nine digits with the following meaning:
 - first digit – year of manufacture
 - second and third digit – manufacturer code
 - remaining six digits – product number from the day of production start.





TECHNICAL SPECIFICATION

FPM Boljevac

	Product		
Characteristics:	FPM-627.152	FPM-627.168	FPM-627.169
Working width (m)	4.6	4.3	4.1
No. of tines / harv. parts	13/4	12/4	11/4
Wire diameter (mm)	9	9	9
Tractor category	II	I/II	I/II
Min. tractor power (KW/KS)	55/75	33/45	33/45
Max. working speed (kmph)	15	15	15
Max. performance (ha/h)	6.9	6.5	6.2
Wheels	4/16x6.50-8	4/15x6.00-6	4/15x6.00-6
Weight (kg)	720	600	560

Boljevac

In this manual, “left” and “right” corresponds to the direction of motion.

A – Front part
B – Rear part
C – Left side
D – Right side
(the markings are specified on the page 10 on the label figure).

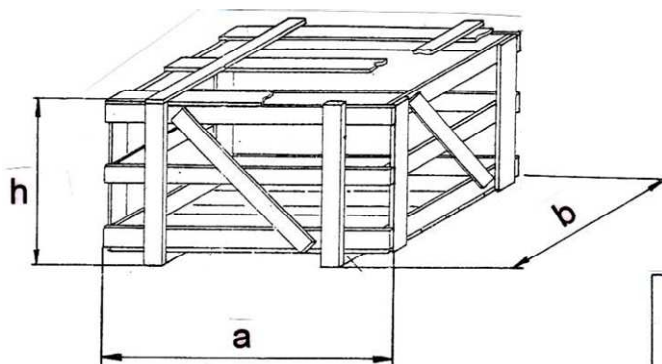
Metric thread is used for assembly.
Tighten all the screws during installation.

Each figure uses symbols showing the installation location.

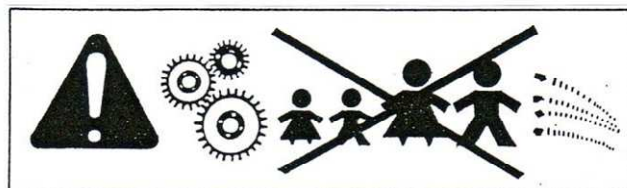
Read the content carefully in order to assemble the rotary rake properly.

ROTARY RAKE PACKAGE FPM Boljevac

For easy transport, IMT 627 169 rotary rake is packed in a wooden box.
Loose items (tine brackets, guards, tires) are not attached, but packed separately and placed in wooden boxes.



$a \times b \times h = 3300 \times 2400 \times 1500$



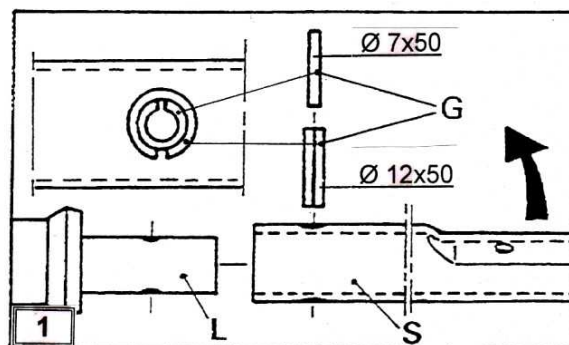
ATTENTION: THIS SYMBOL IS USED TO WARN YOU ABOUT YOUR PERSONAL SAFETY. BE CAREFUL!

For easy transport, the rotary rake is supplied with the tines, tine brackets and safety guards unattached. To assemble the unattached parts, proceed as follows:

Tine bracket assembly (Figure 1)

Insert the tine bracket (S) into the oscillating part of the rotor (L) and secure it using two spring bolts (G) ($\varnothing$ 12x50 and $\varnothing$ 7x60).

IMPORTANT: Place the spring bolts so that the slots create a 180° angle and that the direction of the slot is opposite to the direction of rotor rotation, as shown in Figure 1.

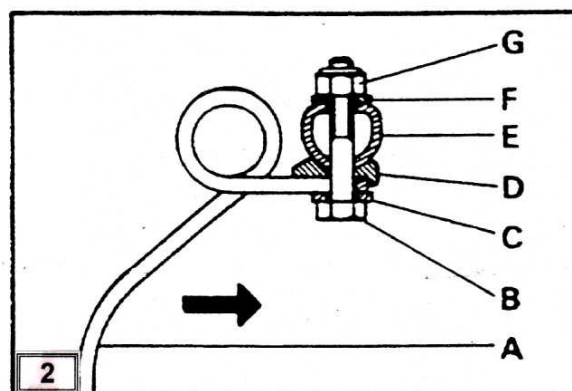


Spring tine assembly (Figure 2)

The spring tines (A) are attached under the supports (E) so that the tine arms are tilted opposite to the direction of rotation of the tine brackets (see directional arrow).

The spring tines are secured to the supports using the screw (B) (M12x65), self-locking nut (G) (M12), washer (C) ($\varnothing$ 13x35x5), spring washer (F) and tine holder (D).

Make sure that all parts are properly secured (see Figure 2).



Safety guard assembly (Figure 3)

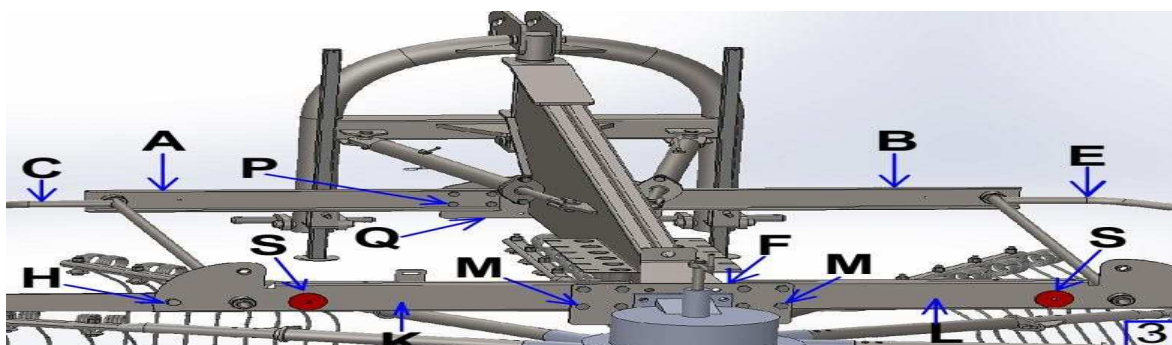
Fit the supports (K) and (L) onto the frame plate (F) using the screw (M) (M14x30), as shown in Figure 3.

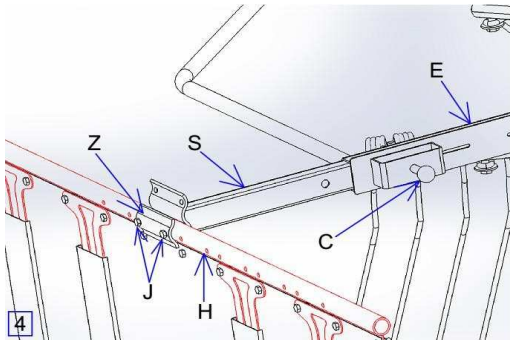
The front guard bracket (A) and (B) is attached to the front frame end using the screw (P) (M10x30). The plate (Q) is attached to the front frame side.

On the front brackets (A) and (B) and the rear brackets

(L) and (K), place bumper rods (C) and (E) in their bearings and secure them from falling out using the lock (H).

The reflex reflectors are attached to the bumper rods with a recessed-head screw (M5x25) and self-locking nut (M5) as follows: the red reflectors (S) to the rear and the white ones to the front on the brackets (A) and (B) (Figure 3).





Swath board assembly (Figure 4)

Place the swath board bracket (S) inside the profile (E) and secure it to one of the provided holes using the spline (C). Attach the board (H) to the bracket (S) in one of the provided positions and secure it using two screws (J) (M8x55) and the self-locking nut (M8).

DO NOT FORGET to attach the profile plate (Z) between the swath board (H) and the screws (J).

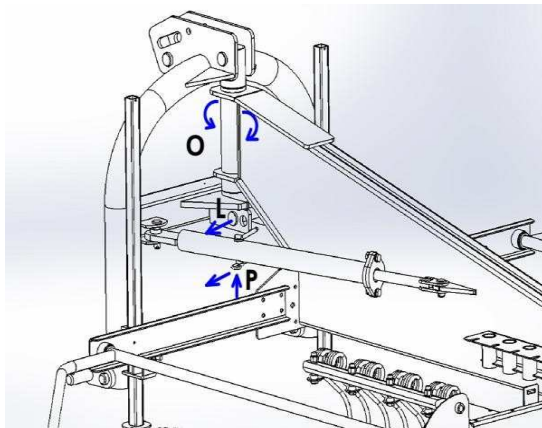
GENERAL INFORMATION

FPM Boljevac

The rotary rakes are attached to all tractors with a standard three-point linkage.

They are attached to category I and II tractors (according to ISO 730/I and II) with a 34.9 mm in diameter output shaft with six grooves and no. of revolutions $n = 540 \text{ min}^{-1}$.

Each rotary mower has a frame with a three-point linkage system and a lower link point diameter of 22 mm and 28 mm.



WARNING!

In the unlocked (operating) position of the floating mechanism, the support frame follows a pivoting angle of about 60 degrees from the direction of driving (30 degrees on both the left and right sides). The centre of rotation is the axle (O). When bringing the machine from the TRANSPORT position, the locking pin (L) is pulled in the direction of the arrow and placed in the second opening (OPERATING) position. The shock absorbers are released using the locking pin (P), by pulling the R-pin horizontally and the locking pin upwards in the direction of the arrows. When driving in the unlocked position of the support frame, do not drive the tractor above 10 kmph.

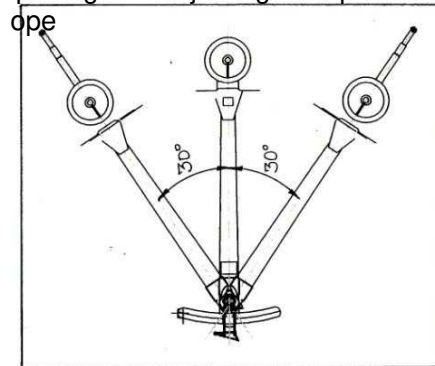
When bringing the machine to the transport position after harvesting, perform these actions in the reverse order. The machine is carried during transport. Keep the floating mechanism and the shock absorbers locked when in the transport position.

For category I tractors, the lower link point ($\varnothing 22 \text{ mm}$) must be attached on the inside (in relation to the third point) and for category II tractors, the lower link point ($\varnothing 28 \text{ mm}$) must be attached to the outside (in relation to the third point).

For category II tractors, the diameter of the third point pin must be $\varnothing 25 \text{ mm}$.

Using stabiliser chains, secure the rake to prevent it swinging sideways.

The plate of the third link point has four openings for adjusting the optimal



It is extremely important to properly adjust the PTO shaft when attaching the rake to the tractor. Never allow the universal joints to get jammed when the machine is raised to its highest or lowered to its lowest position.

The PTO shaft has a freewheel clutch; make sure that the clutch side is facing the rake. If you determine that the PTO shaft is longer and impossible to attach to the tractor, check the following points:

1.- When the PTO shaft is fully extended, the minimum overlap of the PTO shaft tubes must be kept within 200 mm.

2.- When the PTO shaft is fully retracted, the end of one tube may not touch the end of the other tube and the minimum clearance distance of 20 mm must be provided.

If not provided, both PTO shaft tubes and both PTO shaft guards must be shortened equally (see Figures 5 and 6).

Round off any sharp edges (Figure 7) and clean and lubricate the outer PTO shaft tube (Figure 8).

Connect the PTO shaft to complete the operation.

3.- The maximum permissible angle of deflection of the PTO shaft may not exceed 30 degrees (Figure 9).



NOTICE: Failure to observe the fundamental requirements for PTO shaft operation may lead to the breakage of the PTO shaft or damage to the rotary rake.



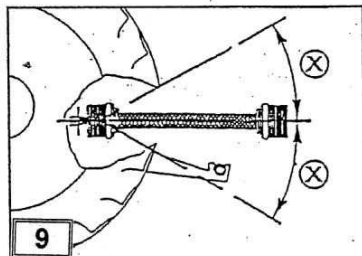
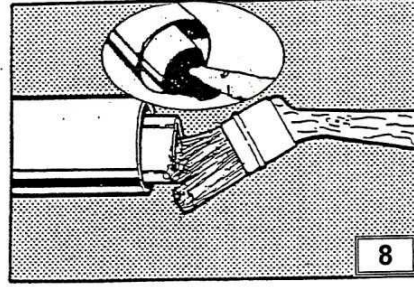
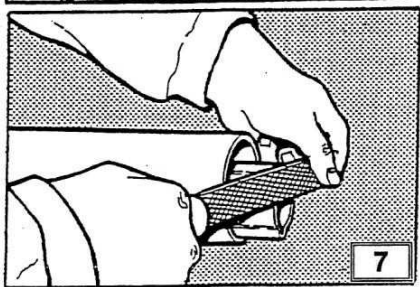
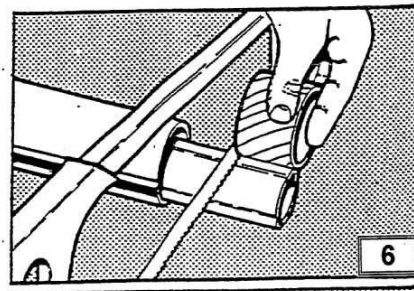
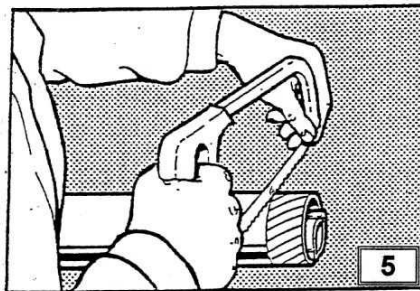
ATTENTION: ALWAYS EXERCISE CAUTION WHEN HANDLING THE RAKE PTO SHAFT.



CAUTION: Never attach the PTO shaft to tractors with output shafts rotating at 1000 min⁻¹ or 750 min⁻¹.



DANGER: Never remove or allow the PTO shaft guard to rotate during operation. Attach the chain for the PTO shaft guard in the provided place. Replace damaged or broken guards with new guards immediately.

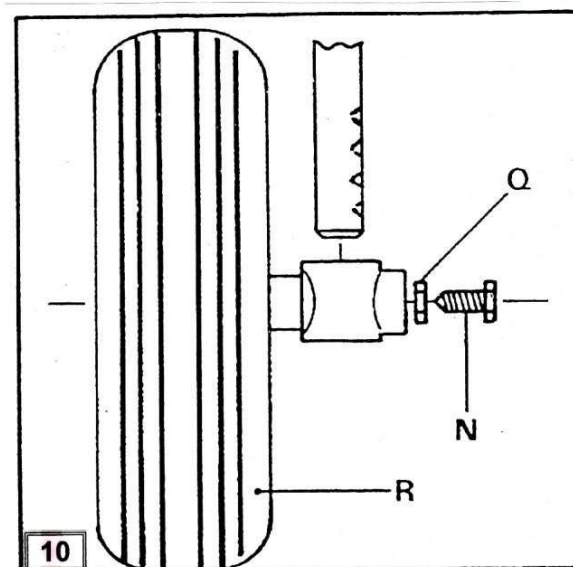


During the harvesting process, the upper linkage point on the tedder frame must be in the free-floating position.

Properly adjusted tines for rake operation touch the ground (soil) on the front side of the rake when looking in the driving direction. In this position, the rotor must be perfectly horizontal in relation to the ground.

To achieve this, follow the directions below:

- If the tine tips are too far off the ground, raise the machine using the tractor hydraulics and unlock the wheels (R) by unscrewing the screws (N), making sure you loosen the nut (Q) as shown in Figure 10. Raise the wheel up by one or two positions to achieve the required tine setting. Retighten the screw (N). Do not forget to tighten the locknut (Q) (Figure 10).
- If the tine tips are too low, lower the wheels (R) by one or two positions to achieve optimal harvesting of the hay and clean the track after raking. Retighten the screw and the nut as described above.
- To finely adjust the working height for hay harvesting, use of the upper linkage is necessary. This is performed by shortening or extending the upper linkage.
- This adjustment operation must be performed extremely carefully in order to achieve optimal harvesting (raking).



Never operate the rotary rake with a PTO shaft rpm higher than 540 min^{-1} .

Depending on the thickness of the hay harvested, you can make single or double swaths with your rotary rake.

To make a double swath, rotate the swath board into the upper, neutral position, meaning that the hay harvesting is done without using the board (Figure 11 and 12).

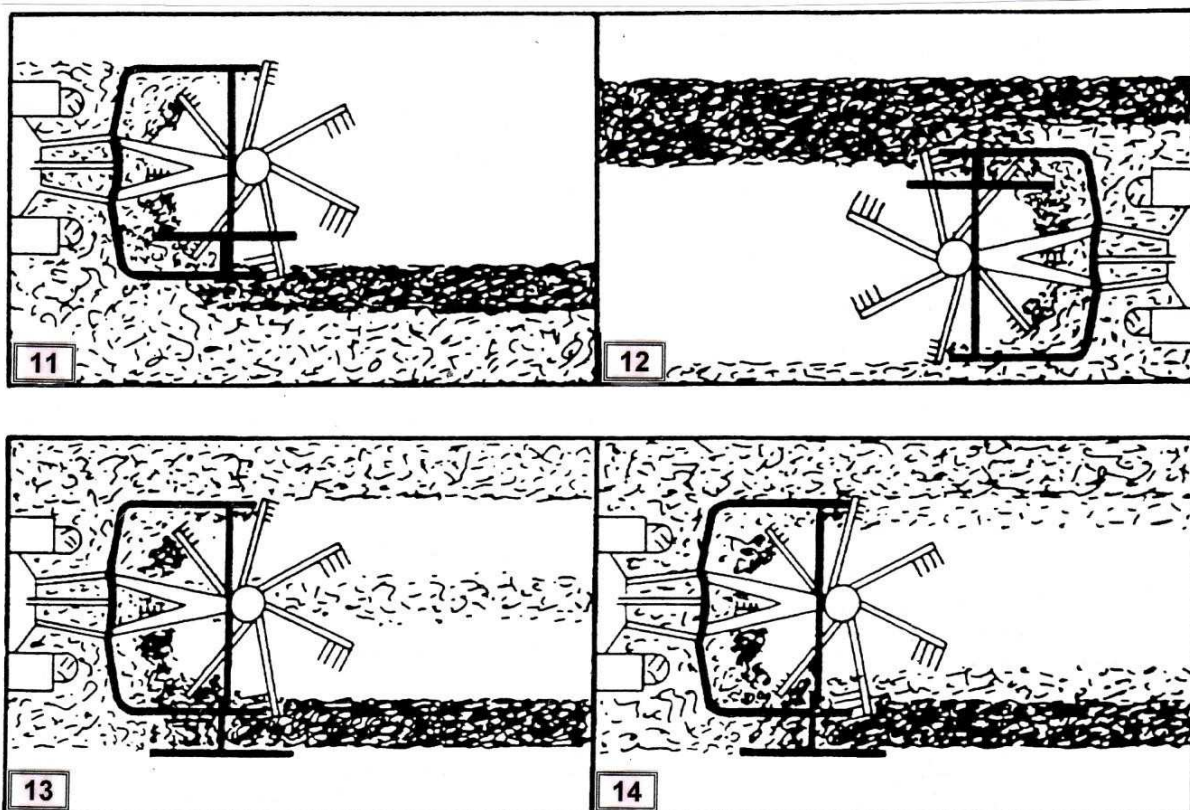
If the harvesting is unsatisfactory, this can manifest in two ways as follows:

1.- Poor harvesting with hay remaining in the middle of the swath (Figure 13).

This is eliminated by shortening the upper linkage.

2.- Poor harvesting on one side of the rotary rake (Figure 14).

This is eliminated by extending the upper linkage. To adjusting the harvesting height, adjust the wheel height.



HARVESTING SPEED

Choose the rotary rake speed according to the quality and thickness of the harvested crop, the configuration of the soil, and so on.

Reduce the harvesting speed under heavy-duty conditions; however, the actual speed is estimated by the operator in accordance with the conditions of use.

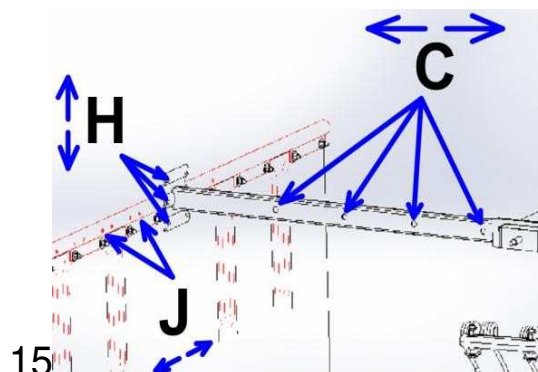
Side adjustment: 4 positions (C)(15)

Depending on the hay thickness, extend or retract the board support.

Height adjustment: 3 positions (H) (15) The swath board is factory-supplied in the middle position. Use the other two positions as necessary.

For example:

- Upper position: for harvesting extremely thick hay or on uneven ground.
- Lower position: for harvesting thin hay, in order to prevent the hay passing under the swath board.

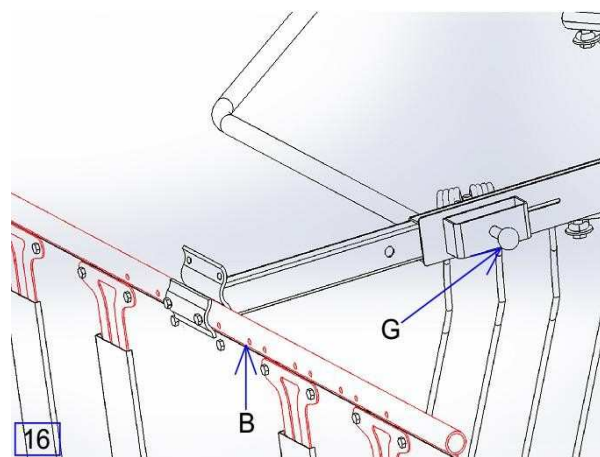


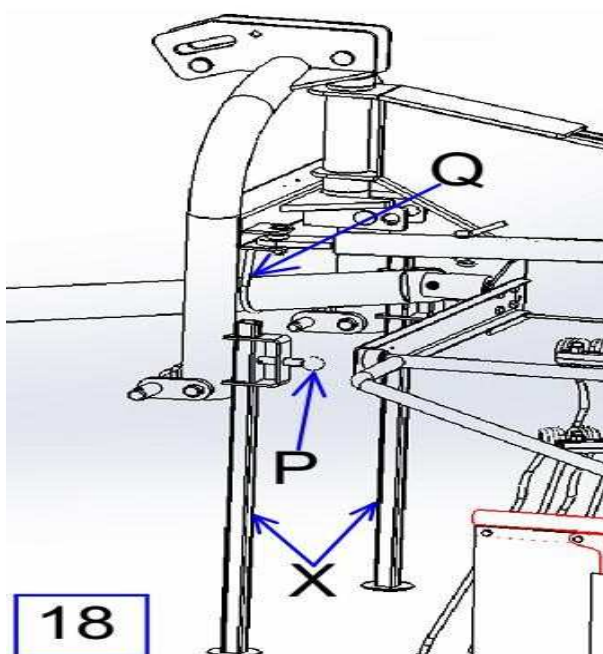
Front and rear adjustment (J)(15) Depending on the hay thickness, move the board to the front or back in order to harvest the hay coming from the side.

ROTARY RAKE TRANSPORT

Prepare the rotary rake for the transport position as follows:

- Unlock the swath board (B) (Figure 16)
- Fully retract the board bracket towards the rotor to fully reduce the rake width to the transport position.
- Lock the swath board (B) (Figure 16) in the new position and secure it using the locking pin (G) (Figure 16).
- Raise the left and right bumper flanks into the upper, vertical position and secure them using the provided locks.
- Remove the tine brackets together with the tines from their bearings and put them in the provided place on the rake frame.
- Bring the connecting frame, the support frame and the shock absorbers into the transport position.
- If all of the above actions are correctly performed, the rake is ready for transport on public roads.





18 LUBRICATION

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To park the rotary rake after operation, use the scotch block (X) to prevent the machine resting on the operating components (tines). The block is secured with a lock (P). To protect the PTO shaft grooves from impurities and debris, put the PTO shaft in its bearing (Q) on the rake frame, preventing the PTO shaft from resting against the ground.

NOTE:

To properly park the rotary rake upon detaching from the tractor, wooden supports must be placed under the wheels to prevent movement. This is particularly important when parking the machine on a slope.

Lubricate all rotating and sliding parts using good-quality grease to improve adhesion to the metal surfaces. Below, grease types from domestic and foreign manufacturers are specified that comply with the JUS B.H3.634 VM-2 specifications NLGI-2.

Manufacturer name	GREASE TYPE
"FAM" Kruševac	FOR2
Rafinerija Beograd	LUMA – 2
"MODRIČA" Modriča	LITMA – 2
"INA" Zagreb	LIS – 2
"SHELL"	ALVANIJA R – 2
"MOBIL"	MOBILUX 2
"VALVOLINE"	GREASE LB1 – 2



NOTICE: ALWAYS MAKE SURE YOU USE GREASE OF THE REQUIRED QUALITY IN ORDER TO PREVENT UNINTENTIONAL DAMAGE. PROPER AND REGULAR LUBRICATION ENSURES UNINTERRUPTED AND SAFE MOWER OPERATION.

Mandatory lubrication:

- daily: bearings, rotating and sliding PTO shaft parts
- every 50 hours of operation: horizontal rotating rotor assembly carrying the tines
- as required: swath board support, all rotating, sliding and articulating joints on the rotary rake frame structure.
- Comer drive heads are usually supplied without oil. Recommended oil: SAE 90 EP.
- To prevent sediment build-up, replace the oil after the head stops and when it is still warm. Clean all the nipples and plugs.
- Check the oil level occasionally and replace the oil in the kinematic head (bottom housing) with the type SAE 90EP and quantity $5.7 \text{ l} \div 6.2 \text{ l}$, if necessary. It is recommended that you change the oil after the first 50 hours of operation, and after every $500 \div 800$ hours of operation.
- In the top housing, refill the grease at least once a year.

IMPORTANT NOTES

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- Before adjusting or maintaining the machine, turn off the tractor engine and remove the ignition key.
- Check the tension of all the screws and nuts after the first few hours of operation.
- Check the tire pressure regularly. It should be approx. 2 bar.
- Check all sliding and rotating parts and nipples for proper lubrication.
- Prevent the PTO shaft guard from rotating using the provided chains.
- Do not allow the friction clutch to slip for more than a few seconds.
- Always use scotch blocks for parking the machine. Do not forget to raise the machine into the transport position during operation or transport.
- During operation or transport, secure the machine to prevent it moving (swinging) sideways using the stabiliser chains.

ROTARY RAKE STORAGE

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- If the rake is going to be out of operation for a longer period of time, remove all dirt and grass accumulated on the rake parts that come into contact with them. Pay particular attention to the inside of the swath board.
- Wash the machine thoroughly after cleaning.
- Lubricate all the sliding and rotating parts and nipples.
- Carefully remove excess grease with a cloth.
- Replace all damaged or broken tines.
- Tighten all screws and nuts on the machine.
- Clean rusty spots and apply protective paint to all exposed surfaces.
- Raise the machine onto a wooden platform under a roof or in a separate room.
- If the above operations are performed with due care, the machine is mobile and ready for operation.



ATTENTION: THIS SYMBOL IS USED IN THIS MANUAL WHENEVER YOUR PERSONAL SAFETY IS CONCERNED. BE CAREFUL!



FPM AGROMECHANIKA DOO
Đorđa Simeonovića 25
19370 Boljevac – Srbija

IZJAVA O USAGLAŠENOSTI 2006/42/EC

Mi,

FPM Agromehanika DOO,
Đorđa Simeonovića 25, 19370, Boljevac, Srbija

ovim izjavljujemo, kao proizvođači, u okviru naše odgovornosti, da je proizvod

Tip: Rotacioni sakupljač sena
Model: FPM 627 032 – 9 vila
FPM 627 033 – 9 vila
FPM 627 034 – 11 vila
FPM 627 035 – 9 vila
FPM 627 152 – 13 vila
FPM 627 168 – 12 vila
FPM 627 169 – 11 vila

Godina proizvodnje: 2014

u saglasnosti sa zahtevima utvrđenim po **Evropskoj direktivi 2006/42/EC (za mašine).**

Proizvod je u saglasnosti sa sledećim standardima:

- SRPS EN ISO 12100:2014
- SRPS EN ISO 13857:2010
- SRPS EN ISO 4254-1:2013
- SRPS EN ISO 4254-10:2011
- EN 1553:2000
- SRPS ISO 11684:1999

U Boljevcu,
24.12.2014.

Potpis odgovorne osobe;
GENERALNI DIREKTOR
Branislav Rajić, maš.ing

SPARE PARTS LIST

- Instructions for ordering spare parts -

- To order spare parts or components, please contact our spare parts sales department.
- Accessories and equipment whose ID number starts with 1, as well as the assembly and operation manual, should be ordered from the machinery sales department.

The pictures below show the numbered machine parts.

The captions specify: the number of the machine part, its ID number, the quantity in the rotary rake assembly and, if necessary, the size, the applicable standard and the required tightening torque. This spare parts list is prepared for two rotary rake ranges. Make sure you order parts for the mower you own. Please also observe additional descriptions.

In order to avoid misunderstandings and wrong delivery, always specify the following information when ordering parts:

- machine name and number (series, №)
- name and number of the spare part (as per this list)
- quantity of the required spare parts
- desired delivery method (by mail, express post, etc.)
- customer's full address (including zip or postal code)



The series and factory number are imprinted on your machine's nameplate, as shown in this picture.

In order to resolve a warranty claim, we need the series and factory number information. Please enter these numbers in the original manual immediately upon machine delivery.

ABBREVIATED DESIGNATIONS

DNO	Additional non-essential equipment	Q	Number of items (quantity), if required
:	For	*	See note
<>	Except		Direction of movement
>	From to ...		Direction of rotation
Rep (Zam)	Replaces		Parts and components package
Ø	Diameter	ZA	Replaceable with one or multiple parts
> I <	Thickness	D.P	Washer thickness
T1N	For vineyard tractors	DPS	Washer thickness for reducing clearance
T1	For tractors of category I		
T2	For tractors of category 2		
T3	For tractors of category 3		

