



FPM DELJANIN

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— **TRAKASTI** —

BELT RAKE



GB Instruction for work and maintenance

CE



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1.0 DECLARATION OF CONFORMITY

This device is manufactured in accordance with European standards on product safety and the Regulations on Machinery Safety (*"Sl. glasnik RS", br. 13/2010*)

DECLARATION OF CONFORMITY

Issue: 01-2014

Manufacturer:	FPM "DELJANIN" 18430 Kursumlija, Toplicka 121	
Product name:	BELT RAKE	
Model/type:	Belt	
FPM "DELJANIN" declares that the Product named above complies with the requirements of Annex I Machinery directive 2006/42EC and that the product is constructed and designed in accordance with the referenced harmonized standards.		
The product was a subject of conformity assessment procedure described in Annex VIII Machine Directive 2006/42 EC		
Harmonized standards:	<ul style="list-style-type: none"> – EN ISO 4254-1:2013 Agricultural machinery - Safety - Part 1: General requirements – EN ISO 13849-1:2010 Safety of machinery-Safety –related parts of control systems- Part 1: General requirements for design – EN ISO 13849-2:2010 Safety of machinery-Safety –related parts of control systems- Part 1: Validation – EN ISO 12100:2010 (E) Safety of machinery-General principles for design - Risk assessment and risk reduction – ISO/TR 14121-2:2012 Safety of machinery — Risk assesment Practical guidance and examples of metods – ISO 3864-1:2011 Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings – ISO 3864-2:2004 Graphical symbols - Safety colours and safety signs - Part 2: Design principles for product safety labels 	
FPM "DELJANIN" declares that the products named above have been designed to comply with the essential health and safety requirements relating to the design and construction of machinery of Annex I Machine Directive 2006/42EC and referenced harmonized standards. Signed by:		
Issue: 18430 Kursumlija , 1/2014-05-13		
Name: Nenad Deljanin		
Position: director		

2.0 GENERAL

2.1 The instructions purpose

The purpose of this guide is to enable the proper implementation of the machine, successful operation and maintenance work. A careful study of this manual will provide you with useful information for the preparation of the equipment, as well as for the work with it.

The great variety of working conditions in practice does not allow it to be covered by these guidelines, but all essential elements of the machine settings are clearly set out.

2.2. SAFETY MEASURES

2.2.1 General



Before starting any work with the rake it is necessary that the operator reads the operator's manual for operation and maintenance and to comply with the above warning and thus protect himself and others from injury. In this way, he will also provide a reliable operation of tools.



In order to protect, familiarize yourself with the symbols that warn of the danger. When you see this symbol, be careful about any injuries, follow the recommended warnings in the instructions, as well as the general safety rules.

The following warning terms are used with the symbol of danger:

DANGER – This word indicates a hazardous situation which, if not avoided, could cause serious injury or death. Safety signs containing the word "DANGER" should be used only rarely, and for those situations that are a major threat.

WARNING – This word indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death. Dangers marked with the word "WARNING" represent a lower level of risk than those marked with the word "DANGER".

ATTENTION – This word indicates a potentially hazardous situation which, if not avoided, may result in minor or medium injury. The word "ATTENTION" can also be used to warn of the actions in some operations that may lead to injury.

2.2.2 Warning signs on the machine for safe operation



Read and properly apply the operating instructions.



During machine operation, stay out of its work area.



Stay a safe distance from the machine.



Do not be in a dangerous area.



Maximum speed and direction of rotation of the tractor shaft (540 rev/min)



Turn off the engine and remove the key before you start with the maintenance and servicing



The warning label that alerts you to the regular obligatory bolt control.

3.0 INTRODUCTION

“DELJANIN” belt rake is intended for scattering, tedding and raking of fresh or dry forage. This collecting procedure is followed by a baling operation performed by means of high-pressure balers or roll balers or self-loading trailers. The belt rake is designed for normal use in agriculture. Any other use shall be treated as unintended use. The manufacturer is not liable for damages that occur due to the unintended use.

The user of the machine is responsible for its unintended use.

The machine must be used, handled or fixed, only by persons who are authorized to do so and informed of the possible consequences. It is necessary to follow the regulations on insurance in case of an accident, as well as the general insurance regulations, medical and traffic rules. Any damage caused by modifications of the machine is excluded from the manufacturer’s warranty.

3.1 DESCRIPTION

Belt rake is a tool of a mounting type and it is attached to the I and II category tractors which have a 3 point binding system.

The frame of a belt rake is made of lightweight steel tubing. The whole assembly is stiffened and reinforced so as to allow transport of the belt rake along the worst field roads. Attaching the belt rake is designed so as to enable quick and easy connection to the lifting system of the tractor. The lower two points of the rake are movable so you can adjust the incline of the entire machine.

In the operating position the rake relies on two wheels that rotate around a vertical axis, which enables operation of the rake in all directions, even backwards. The height and the incline of the machine are adjusted through the carrier, depending on the operation that has to be performed. The belt rake is constructed so that it represents a very reliable tool that requires minimal maintenance.

The frame, the linking mechanism and the wheels are constructed in a way which allows them to take hits and vibrations caused by rough ground. Protection metal protects the user and prevents him from reaching into the machine with his hand. Plastic bearings provide silent and even running. Spring tines are linked by steering bindings in a way which enables gentle gathering of the grass and vertical lifting of the tines from the grass. The raking system is driven by driving belt. All bearings of the drive system are ball bearings, and are closed and permanently lubricated. Height adjusting devices enable good adjustment of the rake to the ground. All parts of the machine are made of high quality materials. The drive is led from the tractor to the rake over the P.T.O. Shaft.

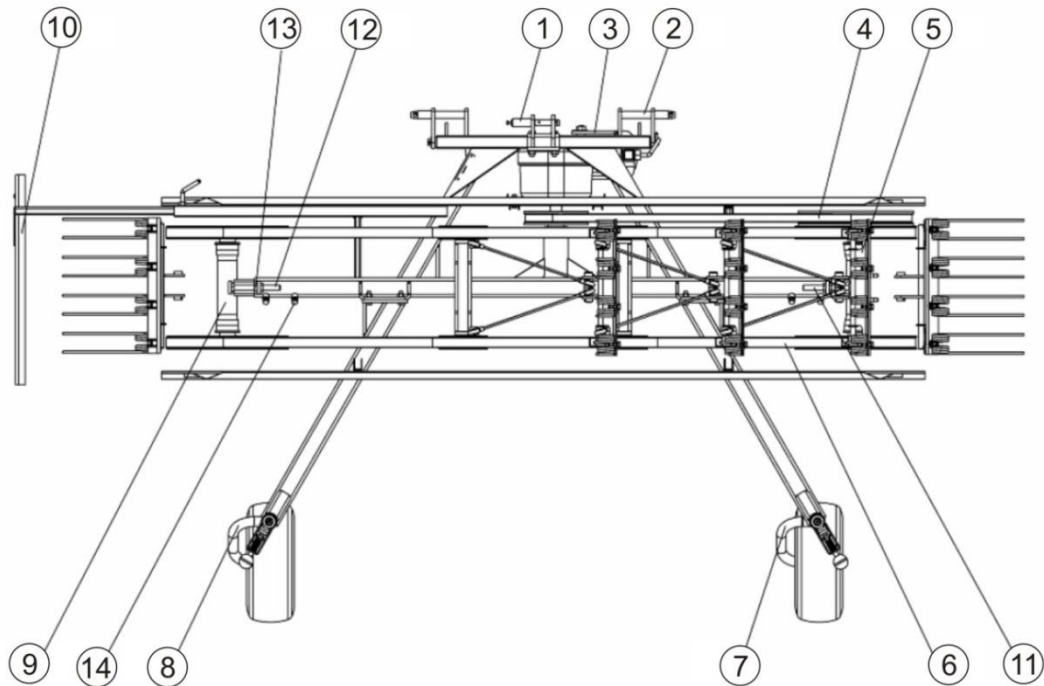
3.2 TECHNICAL DATA

Type	.....	FPM „DELJANIN“
Length	.....	1,5 m
Width	.....	2.2 m
Height	.....	0,9 m
Spring tines number on fork	.....	33; 36; 39
Working width	.....	2,0m
Effeciency	.....	up to 2 ha/h
Speed during operation	.....	4-8 km/h
Transportation speed	.....	up to 20 km/h
Power required	.....	18 kW
Weight	.....	160 kg
Tyres	.....	15x6.00-6
Tyre pressure	.....	2,0 bar

3.2.1 Connecting frame



The connecting frame is used for hitching the rake onto the tractor, adjusting of working position, and carrying of implements. Connecting points are located on the connecting frame and they enable the connecting onto 1stand 2ndcategory tractors without any additional equipment.



Picture 1

1. Bolt
2. Three-point mechanism
3. Support wheel
4. Drive belt
5. Drive spindle
6. Belt of the raking system
7. Height adjusting device - right
8. Height adjusting device - left
9. Driven spindle
10. Curtain
11. Stretching screw of the driving belt
12. Stretching screw of the raking system
13. Protection nut
14. Fastening screw

4.0 INSTRUCTIONS FOR SAFE WORK

Work with the rake is simple. Nevertheless we suggest you to read the instructions before use and to consider them at work.

This way the work will be done in a safe and qualitative way.

Take into consideration the following:

- Make sure that none is near the machine before starting it.
- During any kind of work and adjusting on the machine the tractor has to be stopped and the P.T.O. Shaft has to be switched off.
- None should keep in the working area of the rake while it is operating.
- Always secure the P.T.O. Shaft protection by chain. Use only P.T.O. Shaft with adequate protection.

Before disconnecting the rake from the tractor, lower the support leg. If you leave the rake on the inclined ground make sure to prevent the rake from rolling off.

4.1 INSTRUCTIONS FOR WORK

Connecting to the tractor

- Connect the rake to the tractor.
- Connect the P.T.O. Shaft and fix the protections.
- Adjust the height by height adjusting device.
- Once you have connected the rake to the tractor for the first time, switch it on and make sure it works properly.
- Every time you take off with the rake attached to the tractor, put the support leg of the rake to the transport position (Figure 2 b).
- Put the support leg of the rake as given in the Figure 2a if you want to put the rake into working position.

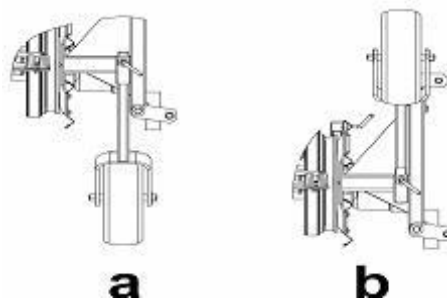


Figure 2

4.2 ADJUSTMENT OF THE WORKING HEIGHT AND WORK WITH THE RAKE

Before starting to work, set the rake to the height prescribed for specific of work (fig. 3). The easiest way to do that is following:

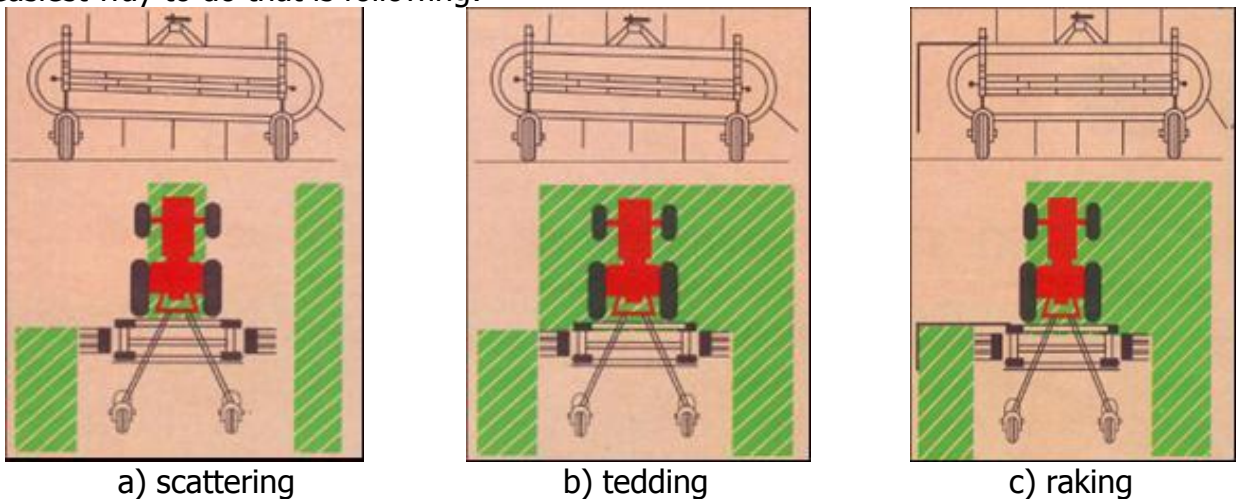


Figure 3

Scattering, tedding

Put the rake from the transport position to the working position so that you lower it to the ground when it is connected to the tractor. Lower the rake to the height where the spring fingers on the right side touch the ground, while the spring fingers on the left are lifted from the ground for approximately 8 cm. Working speed of scattering is approx.6 km/h, and working speed of tedding is approx.8 km/h.

Raking

Lower the rake to the ground. It should get lowered to the position where all the spring tines touch the ground and make clean raking. Swaths are made by the curtain, which is adjustable according to the desired size of the swath. Working speed is up to 6 km/h.

5.0 MAINTENANCE AND LUBRICATION

The belt rake is easy to maintain. In order to prolong its life period we recommend that you take into consideration the following:

5.1 Stretching and maintenance of the belts

V-belts should be properly stretched. Check the tension of the belts after first few hours of operating. Stretch them if needed. The belt is properly stretched when it does not yield more than 2-2.5 cm if pressed by a hand. The belt is to be stretched as follows:

- a) Loosen the fastening screws (fig 1, pos.14).
- b) The driving belt (fig.1, pos.4) is to be stretched with the help of stretching screw (fig.1, pos.11). If the belts of the raking system (fig. 1, pos.6) get too stretched, you have to loosen the stretching screw of the belts of the raking system (fig.1, pos.12).
- c) The belts of the raking system (fig.1, pos.6) are to be stretched with the help of stretching screw of the raking system (fig. 1,pos.12). Make sure that the drive belt (fig.1. pos.4) stays properly stretched.
- d) When the belts are properly stretched, tighten the fastening screws (fig.1, pos.14).

V-belts must be cleaned from time to time and lubricated with glycerin to keep them flexible.

5.2 STORAGE AND LUBRICATION

- ✚ The P.T.O Shaft should be lubricated every 10 working hours with grease.
- ✚ Slide bearings on wheels should be lubricated with grease once a year.
- ✚ After the season the machine should be thoroughly washed, dried and lubricated with an oily rag. The belts should be lubricated with glycerine and released.
- ✚ Slide bearings on the belts do not require any lubrication, but if the machine is left unused for a long period of time, a layer of corrosion is formed that is much harder than plastic , so prior to each season those spots should be lubricated with oil or grease. On this occasion, the rake should be put into operation for a few minutes, so that the grease could penetrate into the bearings.
- ✚ Roller bearings do not need to be lubricated because these bearings are pre-lubricated and sealed for dust and water
- ✚ The machine should not be stored near mineral fertilizers and plant protection products due to aggressive environment.

5.3 Tyre maintenance

You should regularly control the tyre pressure and keep it at 2.0 bar.

5.4 PERIODICAL OVERHAULS

The rake should thoroughly be overhauled every year. Occasional overhauls are recommended before use.

The overhaul consists of:

- The examination of the tension of the raking system;
- The examination of the spring tines fastening;
- Pressure examination;
- Lubrication according to the instructions for lubricating and maintenance.

6.0 MACHINE IDENTIFICATION

Machine identification could be made by using a plate which is located on....side of the belt rake.

The plate contains the following data:

- Name and address of the manufacturer;
- In the field "Machine name" – its actual name;
- In the field "Type" – a commercial product name;
- In the field "Serial number" – machine serial number;
- In the field "Weight" – machine weight expressed in kg.

When ordering spare parts don't forget to write down the exact type of the machine and a serial number.

FPM "DELJANIN" 18430 Kursumlija Toplicka 121, www.fpmdeljanin.com		
Machine name:	RAKE	
Type	BELT RAKE	
Serial number:		
The year of manufacturing:		
Mass :	165 kg	

7.0 ORDERING SPARE PARTS

When ordering spare parts don't forget to write down the exact type of the machine, serial number of the machine and year of production. All these data are to be found on the factory plate which is fixed on the machine. Spare parts can be ordered at your authorized service provider and sales representative for "DELJANIN" machines.

Original spare parts guarantee the smooth operation of the machine. Possible usage of other parts reduces the quality of operation, exploitation and safety of the machine.



Use only FPM "DELJANIN" spare parts!

8.0 WARRANTY STATEMENT:

All devices are tested for technical and safety reasons at every stage of the manufacturing process. Nonetheless, there may be a malfunction of the device. That's why you should read the warranty terms:

1. We declare that during the warranty period, the product will operate flawlessly, if you use it in accordance with its purpose and the enclosed instructions. We will remove all defects and product failures which occur as a result of manufacturing defects and if they occur within the warranty period, under normal use of the product and compliance with all technical manuals.
2. The warranty period is 24 months and it takes effect from the date of purchase of the product, evident from the certified warranty certificate and the receipt. The warranty is valid only on submission of duly and fully completed and certified, on the date of purchase, warranty from the seller. Unreadable and faded receipt will not be accepted.
3. Repairs and shortcomings claims within the warranty period shall be dealt with by the manufacturer through the authorised distributor.
4. That upon your request, we will repair any defect of the machine if you inform us of it during the warranty period. We will fix the defect for free within 45 days from the date of failure application. Machine that is not repaired within 45 days, at your request, we will replace it with a new one. The time of repairing will extend your warranty period.

The warranty becomes invalid due to:

1. Failure to comply with the enclosed instructions
2. Usage of an unsuitable PTO shaft
3. Negligent handling of the product, overloading which leads to the fracture of all types of knives, spring legs, rubber blades
4. Interference with the product by an unauthorised person.
5. Damage caused by mechanical shock due to the fault of the buyer or a third person
6. Damage caused by flooding, fire, lightning

When reporting a defect by phone or in writing, please inform our representative of:

1. The name, type and serial number of the product
2. The nature of the defect
3. Your full address

The servicing guarantee period:

is the period during which we guarantee servicing and service parts, commences from the date of purchase of the product and terminates at the end of **10 years**.

Kursumlija, 13.05.2014.

Director : Nenad Deljanin

WARRANTY CERTIFICATE

PRODUCT NAME:		PRODUCT TYPE		SERIAL NUMBER:	
BELT RAKE		TSP "TRAKASTI"			
YEAR OF MANUFACTURING		Controler's signature:			
DATE OF DELIVERY					
DAY		MONTH (IN WORDS):		YEAR:	
_____		_____		_____	
BUYER DATA:					
BUYER'S NAME:		_____			
PLACE:		_____			
ADDRESS:		_____			

stamp

SALESMAN:

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