19-04-23

OSTRATICKÝ

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Instruction manual

Leaves remover EF2000, EF3001

READ BEFORE YOU USE THE MACHINE !

Translation of the original instruction manual, v. 19-04-23

CONTENTS:

	The machine can be operated only by a person properly trained and instructed by the manufacturer or his authorized representative to operate the machine safely. In case of any doubt about the operation of the machine, do not risk unnecessarily and do not attempt to interfere with the construction of the machine. Do not hesitate to contact your supplier. Only he is the best one to inform you about the proper use of the machine.

	This instruction manual must be considered as part of the leaves removers EF2000, EF3001. Integral part of this instruction manual is an inseparable user guide: "MPBP - A set of requirements and workflows to ensure SAFETY, HEALTH, SAFETY, LANDSCAPE OPERATION, FIRE SAFETY AND ENVIRONMENTAL PROTECTION when operating, using, maintaining, repairing and inspecting machines by applicable laws and regulations of the Czech Republic."

	It shall not be transported by road connected to the vehicle, unless the approval of the technical capability of the suspension device (carried working machine of subcategory SN) for the operation on the infrastructure is carried out. In this case, the suspension device must be transported on the means of transport.

	Equipment that is not approved as a variable equipment for the approval of technical competence must not be connected to the machine when operating on roads.

Machine identification

Serial number	
Date of delivery	

1 PURPOSE OF THE MANUAL

1.1 What this instruction manual is

This manual contains all practical information for proper and safe operation, management and maintenance of your machine.

Read it carefully and respect all instructions and advices about your safety.

1.2 Important warning

In the case of doubt about the running of the machine, do not take unnecessarily risk and do not try to take inexpert intervention. Do not hesitate to contact your supplier. Only he is the best one to inform you, because he is instructed about the use of this machine.

1.3 Storing

Ensure that the instruction manual is always available to the machine operator. If necessary, pass the instruction manual to other users, even if you sell or rent your machine to third parties. Prevent damage or destruction of the manual, contact your supplier if the instruction manual is lost or destroyed.

1.4 Warning symbols

ATTENTION DANGER!	
	**This warning symbol indicates an immediate danger that, if not avoided, can result in serious injury or even death.** **The warning symbols must be respected for your safety. When you notice these symbols, observe the danger of possible injury, read the relevant instructions carefully and inform other users of the suspension device.**
	**Indicates measures taken to protect the environment.**
	**A particularly important technical instruction.**

These warning symbols must be respected for your safety. When meeting these symbols, observe the risks of possible injury, read carefully the instructions and inform other users of the machine.

1.5 Definitions of motion

The term rotating to the left means counterclockwise rotation *(Fig. 1).*

The term rotating to the right means clockwise rotation *(Fig. 2)*.

Applies when viewing the front of the rotating part.

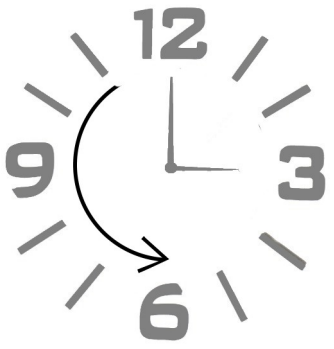


Fig. 1

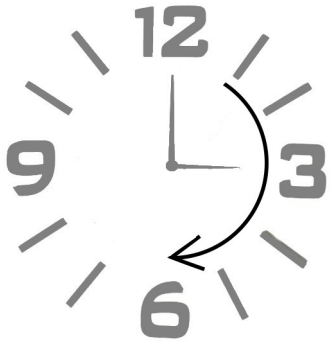


Fig. 2

The term right side and left side are considered when moving the carrier forward.

The term front, rear and side aggregation is used for the method of connecting the machine to the carrier (Fig. 3*)*.

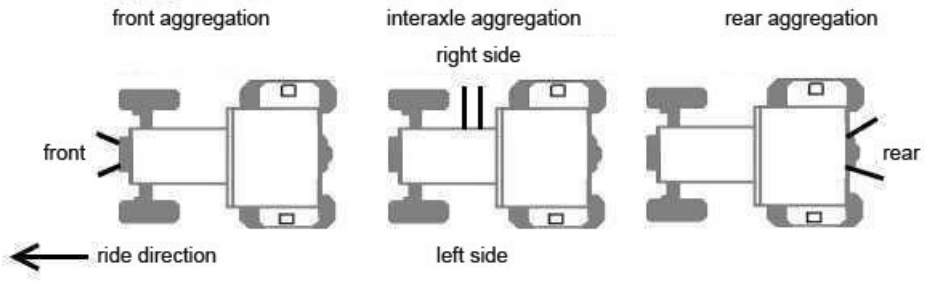


Fig. 3

2 WARRANTY TERMS

The owner of the new leaves remover (hereafter the machine) obtains a 1 year warranty on components and repair costs for every manufacturing error or material defect.

The place for application warranty demands is the OSTRATICKÝ place of business.

2.1 Warranty subject

This warranty is provided on the machine and is expanded to all accessories in condition that was delivered with the machine.

2.2 Specification

Warranty claims must be made by written for delivered to the manufacturer's address. The written submission of the complaint must contain a precise description of the subject of the claim and the course of the occurrence of the loss event.

Any interventions besides interventions of the manufacturer or its authorized representative in the machine are prohibited during the warranty period.

The warranty can only be claimed if the defective parts are returned to the manufacturer and is limited to the delivery of new components and reimbursement of labor costs according to the manufacturer's standards.

Replacement of defective parts under warranty does not affect warranty extension. Under no circumstances does the manufacturer oblige the manufacturer to replace the warranty-protected machine.

The warranty is provided to the first buyer and cannot be transferred to a third party.

2.3 Progress of the warranty

Warranty becomes effective from the date of the machine delivery.

It can be used only when the following operations such as inspection and regular maintenance have been carried out in accordance with the regulations in this instruction manual and interventions related to the guarantee or have been resulted from requests for changes or adjustments made in the workshop of the OSTRATICKÝ company or authorized representative.

2.4 Warranty exceptions

Warranty exceptions are:

Damages on the parts and components whose regular exchange is a part of normal maintenance - wearing parts.
Indirect tangible and intangible damages.
Damages caused by using parts or accessories that have not been approved by the manufacturer or by disrespecting the delivery conditions.
Damages emerged from putting into the operation the damaged machine before its final and complete repair.
Caused by the use of the machine by an incompetent operator.
Caused by machine overload, improper use.
Caused by violating the instructions in this user manual.

Warranty is not valid:

If periodic revisions were not carried out in accordance with the instruction manual provided when the machine was delivered.
If revisions or interventions have been realized out of the authorized dealers network of the OSTRATICKÝ company or its representatives.
If original parts were replaced by non-original parts.
If the damage is caused directly or indirectly during the mounting or modifications which are not conform to the standards or have been realized without the agreement of the manufacturer.
If the repeated failures are caused by intensive use of high-pressure cleaners.
If it turns out that the damages are caused by poor maintenance, error and inexperience of driver.
The machine was used for work for which was not determined.

2.5 Additional costs

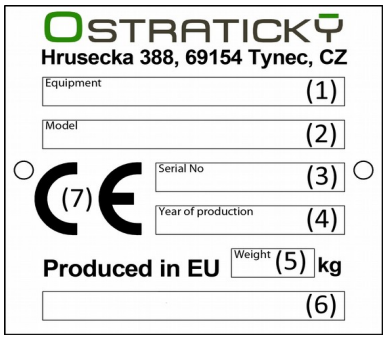
The following are not admitted in the warranty:

Transport costs related to a sending parts and their replacement.
For an intervention on a place or for a transport to manufacturer's representative workshops.
Labor costs caused by removing and re-installing components and accessories that are included in the equipment of the machine and whose removal would be proved as necessary.
Costs of consumable material during the warranty repair: oil, fuel, etc.

3 IDENTIFICATION OF THE MACHINE

The identification plate is located on the machine chassis *(Fig. 4, Fig. 5)* and includes:

(1) Machine name
(2) Machine type marking
(3) Serial number
(4) Year of production
(5) The highest technically permissible weight of the machine
(6) Approval of technical competence
(7) CE marking



Fill in the table on page 4 of this instruction manual *(serial number and date of delivery)* from the plate (use the plate attached on the machine). During the communication with your dealer tell him always the informations. He will exactly know which machine you have and will be able to inform you accurately and in the shortest time.

Do not remove the plate attached to the machine.

In the case of damage the plate, contact your dealer to replace it.

4 TERMS OF USE

4.1 Responsibility of the user

Respect all regulations for the installation, operation, driving, maintenance and repair contained in this instruction manual.

Use only spare parts recommended by the manufacturer.

Do not modify your equipment or accessories without requesting the manufacturer for a written agreement.

Ignoring these principles deprives the manufacturer of responsibility.

4.2 Operator qualification

The machine may not be operated by persons with reduced physical, motoric or intellectual ability, or by any person who does not have sufficient experience and knowledge to operate the machine without prior training or instruction from the person responsible for their safety.

The machine is operated by the driver of the tractor or carrier, which also operates the machine.

The machine operator must not be under the influence of alcohol, drugs, drugs or any other addictive substance or in case of excessive fatigue.

The operator must be trained in the use of the machine prior to commissioning and be familiar with all hazards arising from the use of the machine.

The machine may only be used and repaired by persons who are familiar with its design, function, necessary safety regulations and have been properly trained by the manufacturer or its authorized representative.

Familiarize yourself with all controls and proper use before using the machine.

The minimum required operator age is 18 years.

Do not start operating the machine if you have not fully understood the control, the risks of operating the machine and prescribed service tasks.

4.3 Working places definitions

	Since the moment when a driver has to leave the place for driving, the engine of carrier vehicle must be shut down and the assembly has to be locked against the possible movement by the parking brake and wheel chocks in the case of addition slope. Key from the ignition switch of the engine has to be removed to prevent a third party to start or manipulate the assembly without the driver.

The device is put into the operation by a driver of carrying vehicle.

Working places:
Place for a driver of carrying vehicle - a person qualified to operate the carrier vehicle and machine.

4.4 Responsibility of the manufacturer

The manufacturer can not be held responsible for any damage to health or property resulting from improper use of the machine or use of the machine in contravention of its intended use, safe operation, and instructions for use.

Any use of the machine in contravention of the information contained in this instruction manual is strictly forbidden and is the sole responsibility of the user.

5 PURPOSE OF THE MACHINE

Machine is designed for aggregation with a tractors or other tool carriers (hereinafter referred to as carrier). Specific customization to some carriers must be provided by the manufacturer of the carrier. Otherwise, the installation must be done according to the manufacturer's instructions and approved by your supplier who will secure proper installation.

The machine is designed to defoliate the vine in the grape zone. All other uses of the machine are contrary to normal use and are strictly prohibited.

5.1 Specifications of the carrier

The machine is designed for mounting on a carrier equipped with a hydraulic system with external hydraulic circuits.

5.2 Prohibited use

	The manufacturer is not liable for defects or damage to property or health caused by aggregation of the machine with an unsuitable carrier.

The machine may not be used if:

The construction of the machine has been tampered without agreement of the manufacturer.
It is hitched to the carrying vehicle that does not meet the requirements of hydraulic system to drive the machine.
The machine or any its section/part is damaged by a previous operation or is incomplete.
The operator does not have the required qualifications *(see chapter 4.2).*
The permitted weight of the carrier or permitted axle weight is exceeded.
The visibility of the driver's position is significantly reduced after mounting on the carrier, when machine is in the transport position.
If the operator has not properly and fully understood the instruction manual.

If any part of the machine is damaged, broken or deformed or otherwise inoperative.
If the machine is incomplete, incorrectly assembled or if all safety and security features are not installed on it.
If there are or may be circumstances in which is the work unsafe or may endanger persons, animals or property.
It is not possible to ensure sufficient control over the operation of the machine, especially under adverse weather conditions and reduced visibility.
Contrary to theh safe operation and machine determination.

5.3 Residual risks

	The machine has been designed according to the state of the art and in accordance with applicable technical and safety standards. In spite of all the efforts of the manufacturer for the maximum safe operation of the machine, individual residual risks may occur during use.

Health threats:

Pinching limbs.
Pressing the body.
Contact or intervention of hydraulic fluid.
Mounting the machine on the carrier.

In addition, despite all precautions taken, residual risks that are not obvious can arise.

Residual risks can be minimized by observing safety regulations, intended use and instructions in the instruction manual.

To minimize residual risk:

Do not overload the machine.
Use the machine only for activities specified by the manufacturer.
Do not leave the machine unattended.
Avoid accidental start of the machine.
Avoid moving people or animals in the danger area of the machine.
Use personal protective equipment.
Do not intervene on the machine if the carrier motor is not stationary, properly secured against movement and the machine secured against falling.
Pay special attention to movement on the road.
Regularly check the machine, especially the hydraulic system, screw connections and machine positioning controls.

5.4 Mounting conditions

5.4.1 Aggregation with a carrier

After mounting on the carrier, its maximum permissible weight or maximum permissible axle weight must not be exceeded according to the technical license or technical certificate or the identification plate of the carrier. It is also necessary to check that the tires actually assembled have sufficient capacity, replace them for more durable tires if necessary. Failure to observe these conditions adversely affects the stability of the machine and may cause damage to the carrier.

	Take into account the total load of the carrier, before mounting the machine on the carrier, ie the weight of the machine and the working tool that will be aggregated with the suspension device.

5.4.2 Hydraulic system

The machine is connected to the external circuits of the carrier hydraulic system.

Movement of the machine can be controlled by the electrohydraulic remote controller, it is necessary to connect it to the wiring (12 V) of the carrier by a plug. It is necessary to equip the carrier by the plug in case of its absence.

5.4.3 Working on slope terrain

ollow the instructions in the instruction manual, when working on slope terrain.

Be careful when driving, after the machine is connected, the weight distribution of the set changes.

6 GENERAL SAFETY RULES

6.1 General information

The following chapters of the instruction manual provide instructions that must be respected.

	**Risk of injury:** Finger pinching or body pressing may occur when handling the machine. The machine is equipped with a hydraulic system that can cause hydraulic fluid splashes that may be very hot and cause burns.

Follow the principles of safe behavior, to reduce the risk:

Ensure that no person, animal, or any obstacle is in the vicinity of the machine before it is operated, during maneuvering and operation.
Never bring your hands, arms or legs to moving parts of the machine.
Never bring your hands, arms or legs to the hydraulic fluid lines.
Make sure that it cannot be accidentally started before any intervention on the machine.
Before each use, after each adjustment and maintenance, make sure that all protective devices are in place and in good condition and that their function is activated.
Have a first aid kit at hand in case of an accident.
Make sure that the work site does not contain bumps and debris (wood, iron, plastics, etc.) that could damage the machine.
Check tightness of all connections (bolts, nuts, hydraulic hoses, etc.) before each use.
You must stop when you hear noise or feel unusual vibration. Look for the cause of the fault and eliminate it before you start work again. Call your dealer if necessary.
The instruction manual identifies and describes the problems and malfunctions that may occur on the machine and can be repaired by the user with the help of a suitably trained person, other problems and faults report directly to the supplier.
Do not carry out any interventions or modifications to the machine that are not described instruction mnanual and are not permitted by the manufacturer.
The manufacturer is not liable for any damage caused to persons or the immediate vicinity caused by non-observance of the instruction manual.

Do not leave the keys in the carrier switch box when the machine is not in use and is aggregated with the carrier.
Carry out maintenance and tightening checks on screw connections at regular intervals.
Keep the machine clean, clean it after you have finished working with it.
Carry out all repairs and maintenance work only when the carrier is properly secured against movement.
Do not carry out maintenance work on a raised and unsecured machine.
In particular, keep clean the hydraulic elements of the machine.
Do not use benzine or other solvents and chemicals as a cleaning agent.
Do not use the machine unless you become accustomed to it.
Do not make repairs that are beyond your capabilities.

	**Risk of machine damage:** Damage from obstacles in the work place. Damage caused by transport.

6.2 Provoz na pozemních komunikacích

After attaching the machine, the maximum permissible weight of the carrier and the maximum permissible axle weight must not be exceeded according to the data of the certificate of roadworthiness, the technical certificate or the nameplate. The weight on the front axle must not be less than 20% of total weight of the set.

The machine must be secured in the transport position in accordance with the descriptions in chapter 10.7of this instruction manual, when transporting on roads.

If the machine in transport position covers the headlamps or turn indicators, the carrier must be equipped with alternative headlamps and turn indicators or a light ramp located on the cab of the carrier. Flashlights must be homologated.

The lights of the carrier must be in operation when transporting on road.

It is not allowed to operate the machine on the road if it significantly reduces the view from the driver's seat in the transport position.

A triangle for slow vehicles must be placed on the back of the carrier.

All filths that could dirt the road must be removed from the machine before driving.

The driver must fully engage in vehicle driving and adapt his behavior to the character of the set.

Always observe the relevant national regulations for road traffic when transporting on road.

6.3 Warnings / warning signs

Warnings and signs on the machine must be observed to avoid accidents.

Make sure that all warning signs are clean and visible. in the case of damage, contact your dealer to get a new labels. in the case of repair, make sure that replacement parts have the same label as the original parts.

Warning signs			
	Before you use the machine read carefully the instruction manual.		Before service, adjusting or maintenance, lock the machine against launching, remove the key from the ignition box and follow the instruction manual.
	Keep a safety distance.		ATTENTION! Risk of death or serious injury of fingers or hand - keep a safety distance.
	ATTENTION! Risk of death or serious injury of fingers or hand - keep a safety distance.		ATTENTION! Risk of death or serious injury of foot - keep safe distance.
	ATTENTION! Danger of hitting by flying object - keep a safe distance.		ATTENTION! Risk of death or serious injury by hydraulic fluid under pressure - keep a safe distance.
	Greasing point		Maximum slope ability of the suspension equipment is determined by the maximum slope ability of the carrying vehicle.

6.3.1 Pictograms loaction

6.3.1.1 Leaves remover EF2000

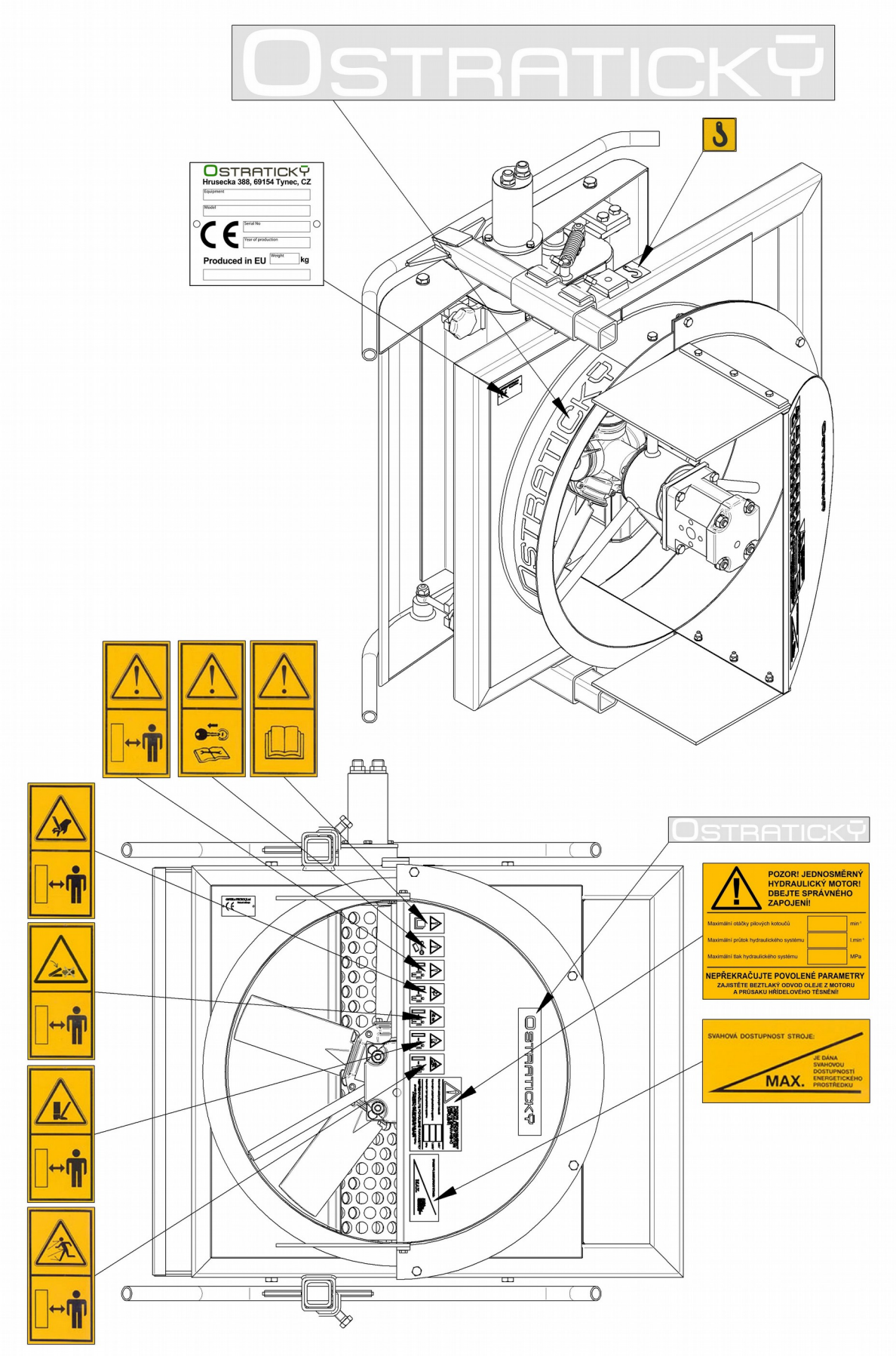


Fig. 4

6.3.1.2 Leaves remover EF3001

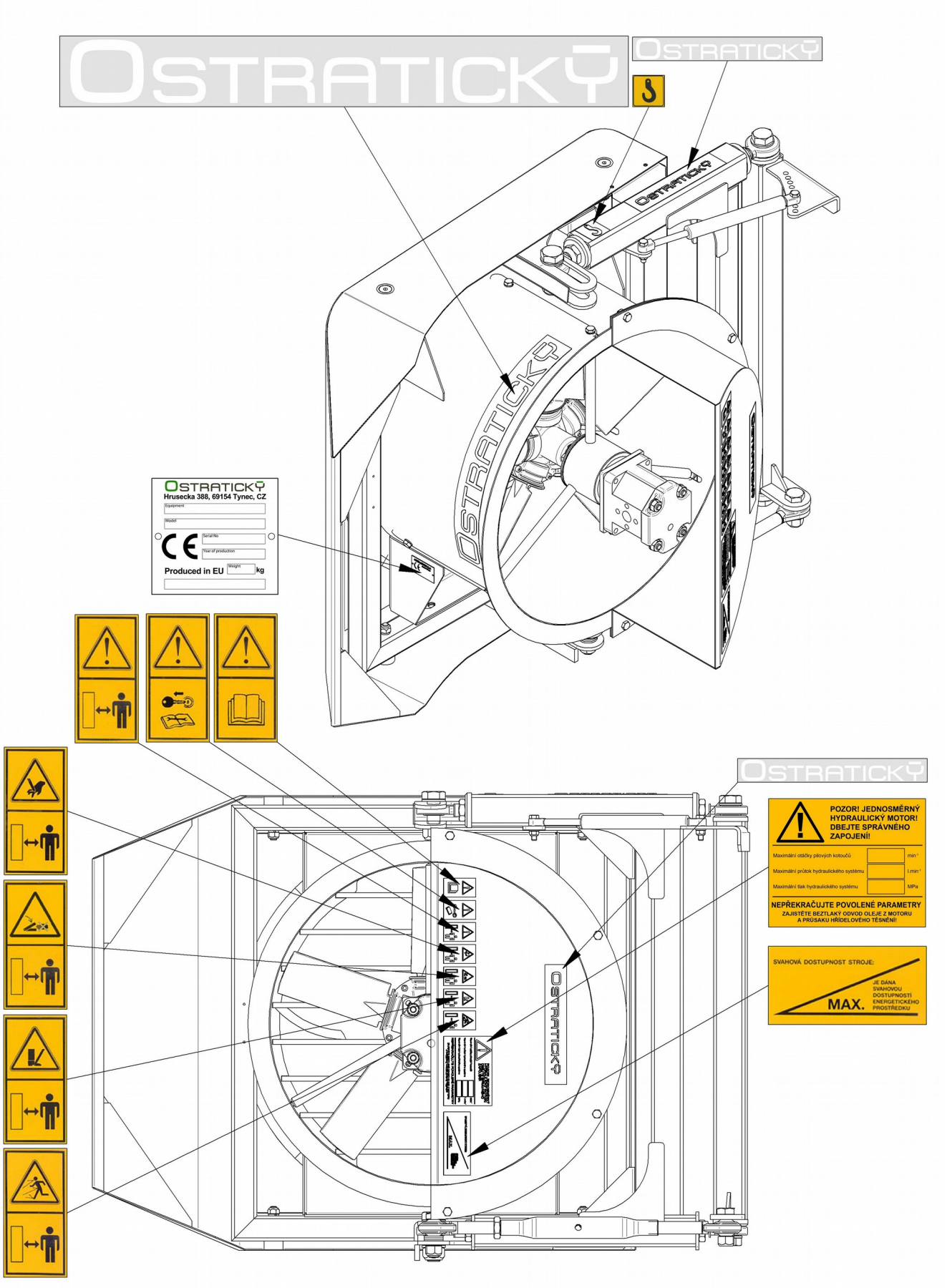


Fig. 5

6.4 Hydraulic fluid

	Leaking hydraulic fluid may have sufficient strength to penetrate the skin and cause serious injuries. Sufficient pressure to do that is 2 MPa. In case of this type of injury, contact your doctor immediately. Avoid any contact of hydraulic fluid and solvents with skin, eyes, mouth. Most of these products contain substances harmful to your health. Unconditionally observe all data on stickers of toxic products containers. In case of an accident, contact your doctor immediately and tell him/her what you have been affected.

	Carefully wash the parts of the skin that have come into contact with hydraulic fluid and lubricants used at work with water and soap. Store the hydraulic fluids and lubricants out of the reach of children. Observe the warnings on the packaging of these products.

The machine is put into operation by a hydraulic fluid under pressure which can have a maximum temperature even higher than 80 °C. in the case of a hose leak immediately disconnect the oil input from the machine. Required hydraulic fluid purity is specified in chapter 7.2.5.1.

Avoid leakage of hydraulic fluid into soil and groundwater.

Do not try to fix the hydraulic hose!	
	Use only hydraulic hoses recommended by the manufacturer, observe prescribed hydraulic hose replacement times, periodically check the hoses to prevent damage.

	Observe the regulations for environmental protection, when disposing used hydraulic fluids and other lubricants. Do not spill any used lubricants and hydraulic fluids on the ground and do not throw it into a waste.

6.5 Machine blocking (congestion)

	Always wear protective gloves with increased cutting resistance during any work on the machine. Secure the lifting device of the carrier against accidental movement. Since the moment the driver has to leave the driving seat, the engine of the carrier must be turned off and the set must be secured against accidental movement by the parking brake and on the slope by the chock in addition. The key must be removed from the engine ignition to prevent the third person from starting or manipulating the set without the driver's knowledge.

Congestion of the machine may occur if:

Defects in the hydraulic system.
Damage to mechanical parts of the machine.
Lifting mechanism blocked by foreign object.
Machine overload.

In that case:

1. Immediately stop the machine
2. Stop the engine, remove a key from ignition
3. Secure the carrier against movement according to the instruction manual of the carrier.
4. Search for a cause of the congestion.
5. After you discover the cause of the congestion, remove the fault.
6. After removing the congestion, check for visible deformations or cracks in jammed parts of the machine. If they have not occurred, launch the machine to its the minimum speed and check that the machine is operating normally.
7. If the machine is in a safe and operable condition, it can be used again.
8. Do not under any circumstances start working with the machine if occured cracks, deformations, non-standard sound, vibrations, machine operation is not normal or you have any doubts about the machine's operation. You can continue working with the carrier only if all faults have been rectified and if the machine is in perfect condition.

	All moving parts of the machine must always move freely and without any restriciton.

6.6 Connecting

6.6.1 General issues

Connecting the machine to a carrier may be performed only on flat and solid surface.

The suspension arm must meet the requirements for the maximum weight of the carrier and the axle load, engine power, hydraulic parameters and connection mechanism.

When mounting on a specific carrier for the first time, make sure that:

The maximum total permissible weight of the carrier and the permissible axle or wheel load were not exceeded.
The machine in the transport position does not restrict the forward view of the driver.
The machine in the transport position does not cover the headlights or direction indicator lamps.

Make sure that the maneuverability and operating performance of the carrier are not reduced when the machine is mounted.

6.7 Basic maintenance and repair

	Since the moment the driver has to leave the driving seat to adjust machine or any other reason, the engine of the carrier must be turned off and the set must be secured against accidental movement. The driver has to keep ignition key with him/her to prevent the third person from starting or manipulating the set without his/her knowledge.

Maintenance and repair must be carried out only by qualified and authorized personnel or by the manufacturer or its authorized representative.

Keep the machine and its accessories clean and in perfect condition.

Ensure the good quality and purity of the hydraulic fluid.

Observe the regular maintenance intervals.

Always proceed with extreme caution and use personal protective equipment.

Stopping the machine and its components

	Before each intervention: 1. Turn off the drive of the machine and engine of the carrier. 2. Wait until all moving parts are stopped. 3. Secure the machine against movement.

Stability of the machine and its parts

	Before every intervention: 1. Lower the machine to the appropriate working height and secure the lifting device of the carrier against fall. 2. Do not enter under the unsecured device.

Cooling hot parts of the machine

	Let the hydraulic fluid in the machine cool down.

Welding

	Protect flexible pipes, hoses, electrical cords and all plastic parts against a damage by the incandescent sparks. Do not carry out any welding works on a machine connected to the carrier.

Interventions in electrical circuits

	Do not interfere in electrical circuit without necessary experience and no wiring diagram. Before you start any electrical work, disconnect the battery.

Interventions in hydraulic system

	Do not interfere in hydraulic circuit without necessary experience and knowledge and without hydraulic diagram. Depress the hydraulic system before any interference in hydraulic circuit. Secure the machine and all moving parts of the machine against accidental movement, before you start working on the hydraulic system. Do not stop the leakage by bare hands or other body parts.

Repairs

	Remove or have one's removed any failure that could threat the safety. Repair any leaks or damage of the hydraulic circuit. Defective or damaged covers and fuses have to be replaced immediately. Do not use early used or damaged hydraulic hoses or pipes. Do not weld rigid hydraulic piping. Replace damaged flexible or rigid hydraulic pipeline. Repairs of the parts under pressure or under voltage require specific working procedures and tools. It can be performed only by qualified persons. Use only protective gloves with increased resistance to cut when repairing. Do not make any repairs to the machine without the necessary knowledge and experience.

7 TECHNICAL SPECIFICATIONS

7.1 Definitions of terms used on machines

Stated desriptions and pictures shows common used combinations. It is however possible that your machine combined differently. Then are valid the informations and descriptions are related to every single part of your machine.

7.1.1 Leaves remover EF2000

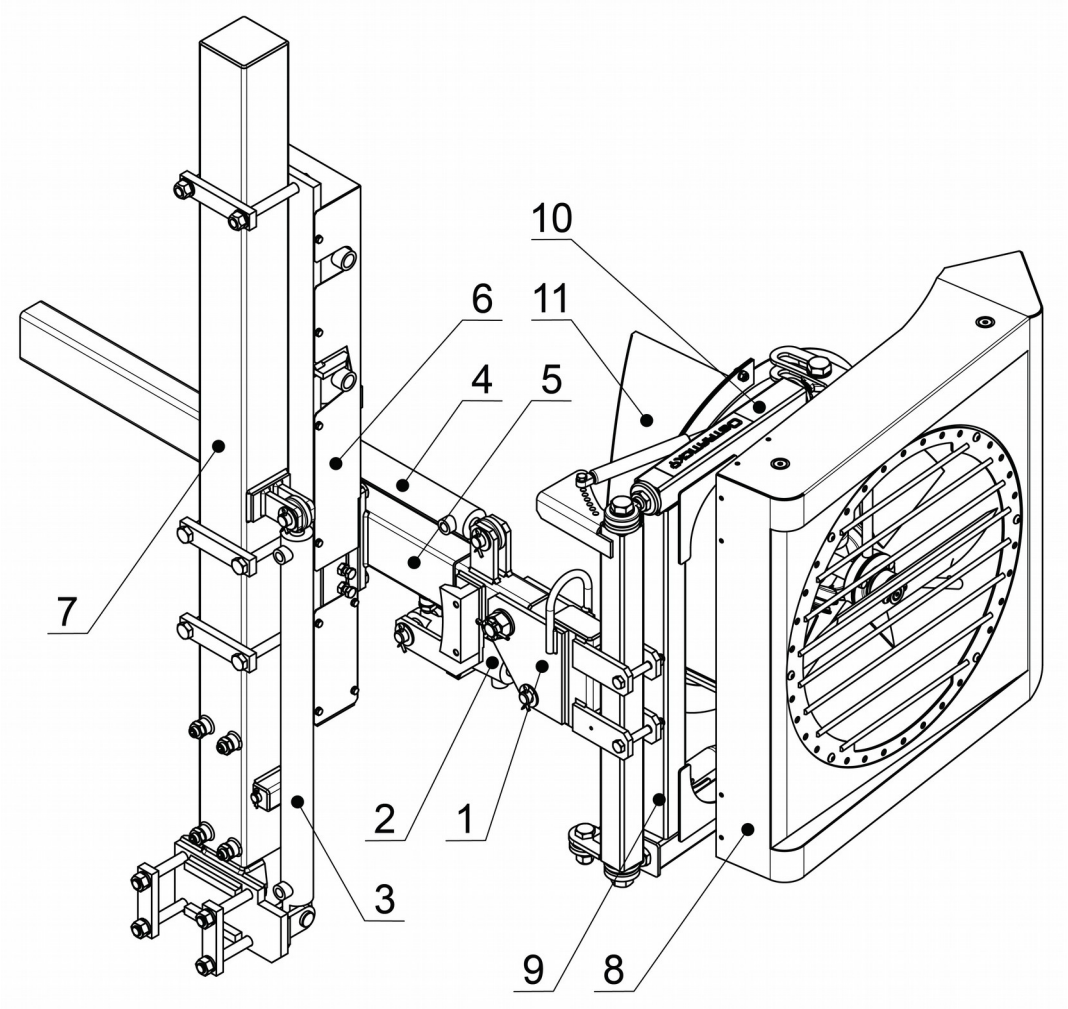


Fig. 6

1. Tilting head
2. Hydraulic cylinder of tilting
3. Hydraulic cylinder of lifting
4. Hydraulic cylinder of extending
5. Carrying arm
6. Hydraulic vertical tilting
7. Lifting post
8. Stainless steel cover
9. Main frame
10. Parallelogram of the swinging
11. Directional cover

7.1.2 Leaves remover EF3001

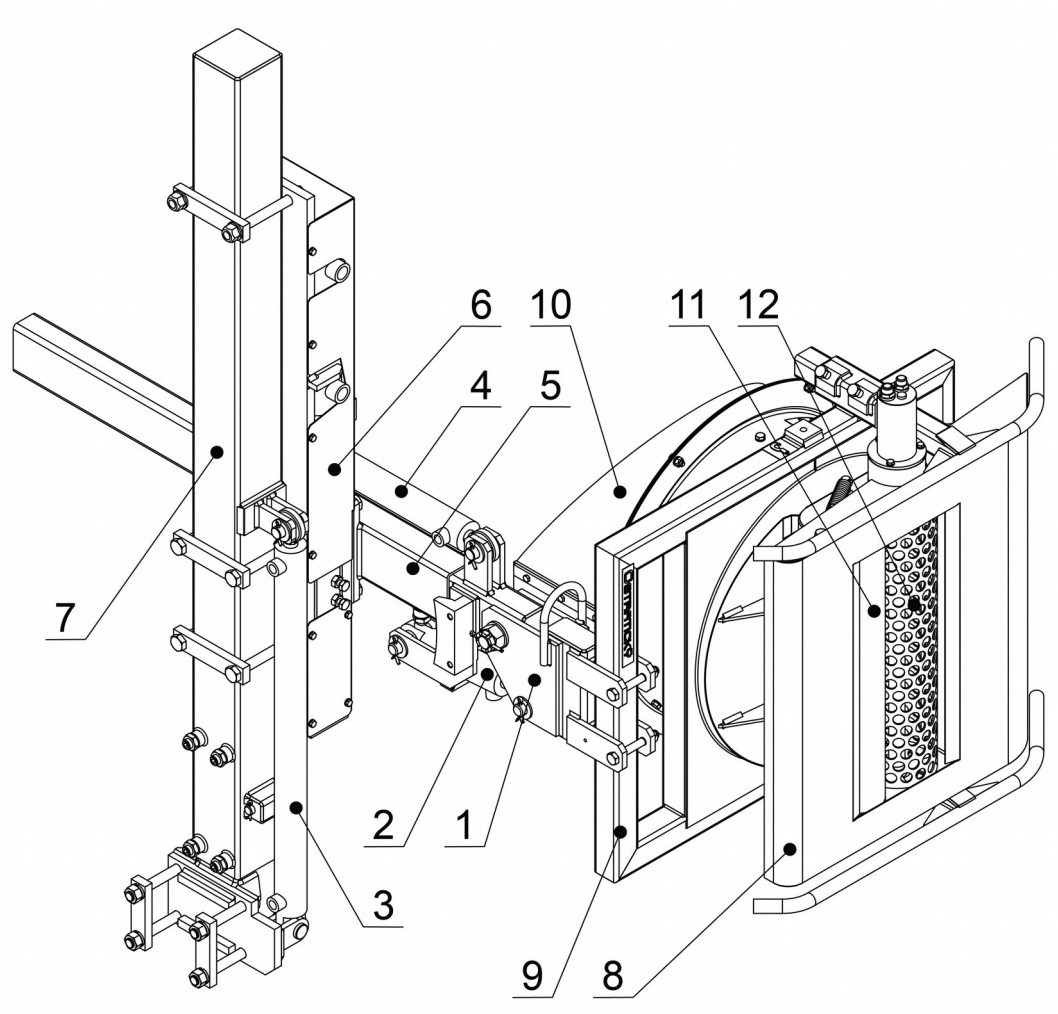


Fig. 7

1. Tilting head
2. Hydraulic cylinder of tilting
3. Hydraulic cylinder of lifting
4. Hydraulic cylinder of extending
5. Carrying arm
6. Hydraulic vertical tilting
7. Lifting post
8. Stainless steel cover
9. Main frame
10. Directional cover
11. Pressure cylinder of leaves removing head
12. Suction cylinder of leaves removing head

7.1.3 Hydraulic generator HAN

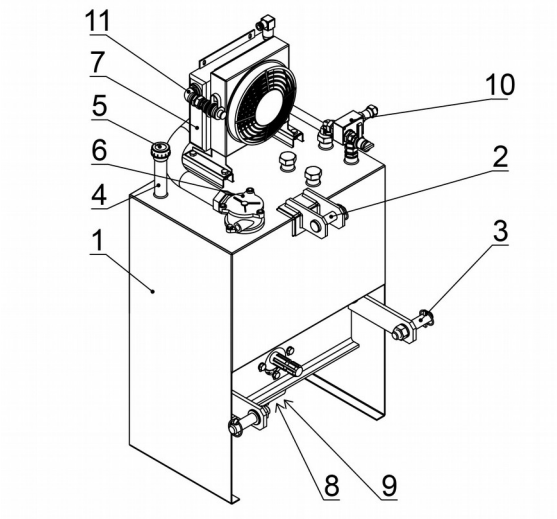


Fig. 8

1. Oil tank
2. Upper pin of the suspension
3. Lower pins of the suspension
4. Filling hole
5. Oil dipstick
6. Oil filter
7. Oil cooler
8. Pump
9. Transmission
10. Pressure outlet
11. Back flow outlets

7.1.4 Revolution counter

Revolution counter is optional equipment of the machine used for measuring the saw blades revolutions. Its indicator shows on the display number of the saw blades revolutions per minute.

1. Display
2. Revolutions sensor
3. Power supply connector

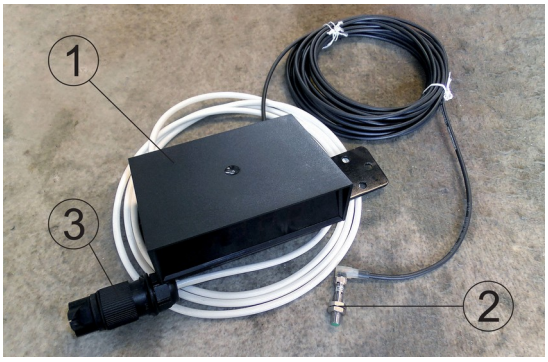


Fig. 9

7.2 Operation parameters

Model	**Leaves remover**	
Type	EF2000	
Suspension	Lifting post 1S-US	Lifting post 1S-STS-US
Tilting	hydraulically / mechanically	
Length [mm]	1400	1330
Width [mm]	1465	1465
Height [mm]	1645	2040
Working range [mm]	510	510
Machine weight [kg]	236	267
- working tool	72	72

Model	**Leaves remover**	
Type	EF3001	
Suspension	Lifting post 1S-US	Lifting post 1S-STS-US
Tilting	hydraulically / mechanically	
Length [mm]	1320	1250
Width [mm]	1475	1475
Height [mm]	1645	2040
Working range [mm]	500	500
Machine weight [kg]	227	258
- working tool	62	62

7.2.1 Carrying arm

Hydraulic quick couplings: ISO DN12,5
ISO DN20
Machine linkage: connecting farme
Wiring: 12 V

7.2.2 Leaves removing head EF2000

Fan propeller speed: 2500 min^{-1}
Oil flow (for continuous work): min. 30 $l.min^{-1}$
Maximum pressure in the hydraulic circuit: 20 MPa
Maximum back pressure: 3 MPa
Maximum pressure of the return line (drain pipe): 0,25 MPa
Oil purity: min. class 9, (25 µm)

7.2.3 Leaves removing head EF3001

Fan propeller peed: 2500 min^{-1}
Tearing rollers speed: 100-150 min^{-1}
Oil flow (for continuous work): min. 40 $l.min^{-1}$
Maximum pressure in the hydraulic circuit: 20 MPa

Maximum back pressure:	3 MPa
Maximum pressure of the return line (drain pipe):	0,25 MPa
Oil purity:	min. class 9, (25 µm)

7.2.4 HAN 80.80

Maximum oil flow:	80 $l.min^{-1}$
Hydraulic oil quantity:	80 l
Type of oil filling:	min. cat. HM 46
Oil change intervals:	at least after 500 working hours or 1 year of use

7.2.5 Hydraulic block

Machines can be in case of sufficient hydraulic power of the carrier supplied by direct connection to the hydraulic system of this carrier. In case of insufficient hydraulic power of the carrier are the machines supplied by their own source of hydraulic energy, where the pump of the hydraulic aggregate is driven by the PTO shaft of the carrier.

7.2.5.1 Hydraulic oil purity

Hydraulic oil of min. class HM46 must be used to drive the machines. Oil purity for the drive has to accord the class quality 9, i.e. 25 µm or better.

8 MACHINE DELIVERY

	Be careful when handling the machine, bearing in mind the possibility of injuries to the limbs. Wear personal protective equipment.

Use only forklift and transport skids when handling the machine. Always make sure the load is properly secured before handling.

It is forbidden to handle the machine during assembly and disassembly using a lifting device. There is a risk of injury if the lifting device is not properly balanced. For example, use a forklift when handling.

8.1 Instructions for safe handling

	Since the moment the driver has to leave the driving seat to adjust machine or any other reason, the engine of the carrier must be turned off and the set must be secured against accidental movement. The driver has to keep ignition key with him/her to prevent the third person from starting or manipulating the set without his/her knowledge.

Do not enter under the unsecured machine.
Do not allow any unauthorized person to operate the machine.
Do not ever wear loose or opened clothing as scarves, loose coats, ties, etc., which could stuck in the moving parts of the machine.
Do not ever use the machine under the influence of alcohol, drugs, medication or in any event of excessive fatigue.

	All moving parts of the machine have to move freely and without restraints. Check it carefully before any initiation of a work.

8.2 Receiving the machine

The machine can be coated by a packaging (foil) for transport. Be careful about using a hook to prevent damage a of the electric cable or hydraulic hose, when unpacking.

Use the forklift, to move the machine.

Check that the machine is complete (parts, accessories and all ordered items) and that is not damaged, during the receiving. In a case of damage make a listing, take photos and let it sign by an independent person.

9 MOUNTING AND INSTALLATION

Mounting procedures shown below are standard mounting procedures. In a case of differences contact your dealer or an authorized representative of the manufacturer.

9.1 Staff qualification

The machine can be assembled only by persons who are trained and familiarized with its construction and methods of mounting and with putting into operation. Any special tools are not necessary to mount the machine. Common tools used in a workshop are sufficient.

9.2 Connecting the machine to a carrier

	Ensure that no person, animal, or obstacle get near the machine during maneuvering. Keep children away from the machine. Make sure before any intervention on the machine that it cannot be accidentally started. Before each use, after each adjustment and maintenance, make sure that all protective devices are in place and in good condition and that their use is activated. Never bring your hands, arms or legs close to moving parts even at low speed. Keep safety distance from the machine.

Connecting the machine to the carrier can be carried out only on a flat and firm surface.

Do not stand between the carrier and the machine without applying the speed to neutral, apply the carrier handbrake.

Do not stand between the carrier and the machine during the lifting maneuver.

Make sure that there is no overload or poor weight distribution on the carrier when the machine is connected, which could disrupt its stability.

9.2.1 Connecting the machine to the 3-point linkage

1. Remove the pin (1) from the machine suspension.
2. Connect the machine to a carrying vehicle using the lower pins (2), in any case do not use damaged pins.
3. Connect the upper pin (1) to the 3-point linkage.
4. Using the safety pins assure to safe and properly securing the machine.

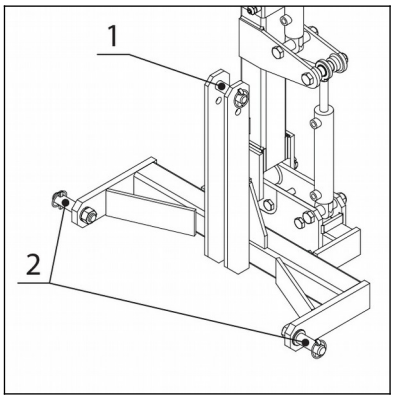


Fig. 10

9.2.2 Mounting the suspension frame on the tractor

The machines use universal connection to a tractor or tool carrier a 70x70x5 mm square thick-walled tube. When mounting the suspension frame, follow the drawing documentation supplied with the suspension frame.
If your machine has been delivered without a suspension frame, it must be made. Contact your supplier (dealer or authorized representative).

Fig. 11

Fig. 12

9.2.2.1 Mounting the lifting post

Attach the lifting post to a sufficielntly firm and profesionally welded suspension frame.

1. Lift the post to such vertical position, that the mounting flange is aimed down.
2. Lean the post by upper attaching bolts (1) against the tube of the suspension frame.
3. Insert lower attaching bolts (2) to the mounting flange (post STS) and put on the securing shackles (post STS).
4. Mount the spring pads and nuts on all bolts and tight them thoroughly.

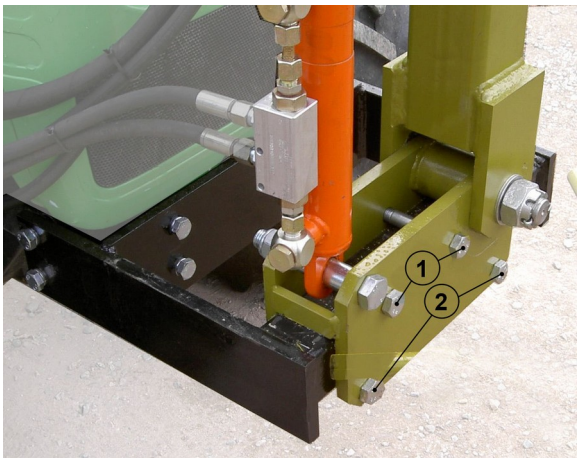


Fig. 13

The connection of the machine and the carrier must be sufficiently strong and fixed on the carrier so there is secured sufficient and stable position of the machine at work and transport.

If you are unsure, consult it with your supplier or your local service center.

	Always ensure about proper and secure connection after attaching the machine to the carrier.

	Always make sure, before connecting the machine to the carrier that the permissible axle load is not exceeded and that the set will always have sufficient stability even at maximum machine load.

9.3 Mounting the working tool on the post

1. Loose the nuts (1) of the bolts (2).
2. Remove the bolts (2).
3. Insert the tube (4) of the leaves remover head frame into the fork (3) of the suspension arm.
4. Mount back the bolts (2) and secure them thoroughly by the nuts (1).

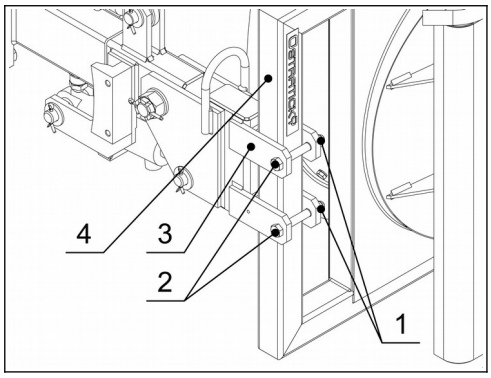


Fig. 14

Always further check:

Hydraulic system perfectness.
Machine movement freedom.

9.4 Hydraulic assembly

The machine is connected to the carrier hydraulic system using the ISO hydraulic quick couplings.

The individual function parts of the machine (lifting, tilting) must be connected to the external double acting hydraulic circuit of the carrier.

Hydraulic hoses of the OSTRATICKÝ machines are ended by the quick couplings and marked by colored caps according to the following scheme:

main functions (drive of the machines)	RED
lifting	BLUE
tilting	GREEN
lateral movement	YELLOW
pressure-less outlet (back flow from the control valves)	BLACK
pressure-less outlet (back flow from the hydraulic motors)	BLACK

Hydraulic hoses of the machine connect to the hydraulic system of the carrier as follows:

Main functions (drive of the machines)
- single acting hydraulic circuit with the arrested working position and flow control

Lifting
- double acting hydraulic circuit with arrested floating position

Tilting
- double acting hydraulic circuit without arrested end positions

Sliding
- double acting hydraulic circuit without arrested end positions

Pressure-less outlet (back flow from the control valves)
- special outlet of the hydraulic system of a carrier, maximum pressure of the backward line 0,25 Mpa

Pressure-less outlet (back flow from the hydraulic motors)
- special outlet of the hydraulic system of a carrier, maximum pressure of the backward line 0,25 Mpa

	Before you connect the hydraulic quick couplings of the machine, provide that they are cleaned of dirts (soil, sand, dust). Do not connect or disconnect hydraulic quick couplings when there is pressure in the hydraulic system. Do not use the machine in aggregation with a carrier that does not meet the requirements for safe machine aggregation with respect to machine weight and connection parameters. Observe the specified quality and purity of the hydraulic oil.

9.4.1 Hydraulic diagram

The machine can be connected to one hydraulic circuit of the carrier with electric remote control (Fig. 16) or to the dual circuit hydraulic system of the carrier (Fig. 15) controled by control levers.

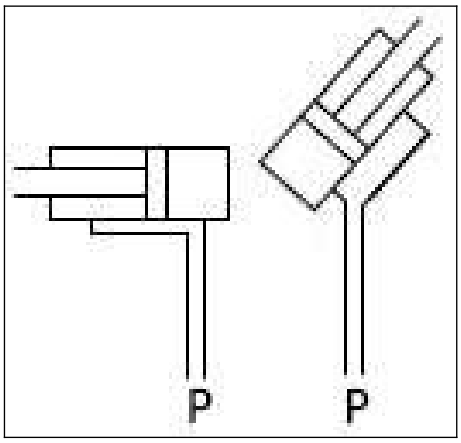


Fig. 15

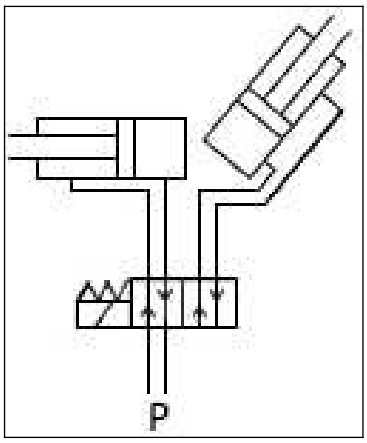


Fig. 16

9.5 Electric assembly

The machines can be in standard version equipped by electrohydraulical control of the functional parts. This device is connected using the standard 12 V socket. Make always sure about good condition of the wiring during the using or riding on the road. The riding on the road is forbidden in case of a malfunction. Observe the applicable regulations concerning the use on the public roads.

10 PUTTING INTO OPERATION

Operation of the functional parts of the machine is made by actuating the carrier hydraulic system to which the relevant machine parts are connected.

	**Before every use of the machine:** - check the hydraulic system perfectness, - check the mechanical parts perfectness, - check that the screw joints and pins are in perfect condition, - check the free movement of the machine, - do not ever use the machine if it is not in perfect condition.

10.1 Getting started

	Always make sure that nobody is in dangerous distance 150 m of the machine.
	Always check that the machine is correctly connected to the carrier and that all moving parts are working properly before using the machine.

10.2 Daily machine inspection

- connection of the machine to the carrier
- wiring functionality
- safety covers

- perfectness of the hydraulic system
- attachment of the working tools
- other controls, see chapter 11.2

Remove any defects, deformations, defects in the connection to the carrier or other defects that may affect the functionality of the machine, work safety or health. Do not ever use the machine if it is not in perfect condition.

Using a machine that is not in perfect condition may result in damage to your health, property, or the health and property of people around.

10.3 Preliminary checks

10.3.1 Checking the HAN tank oil level

1. Remove the cap (1) of the oil tank.
2. Use the gauge (2) and check if there is sufficient oil in the tank. End of the gauge, aprox 1 cm should be covered by oil.
3. Fill the oil as needed.
4. Screw the cap (1) of the oil tank back.

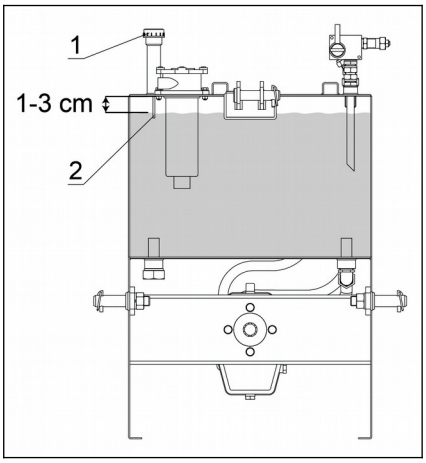


Fig. 17

10.3.2 Safety features

Verify the presence, functionality and perfect condition of all protection devices, connections, working tools, hydraulic system, wiring of the machine.

10.4 Putting the machine into operation

	Before putting the machine into operation for the first time, check that the machine is connected to the carrier hydraulic system and that the permissible machine load is not exceeded.

1. Set the carrier motor speed to minimum.
2. Activate, in case of carriers equipped with an independent hydraulic pump or PTO-driven hydraulic generators, the pump operation (if the carrier has a system of activating on its pump) or PTO drive.
3. Add oil to the machine by distributor located between the oil source and the engine, if equipped.
4. Gradually increase the motor revolutions to its rated speed, when activating the working tool.
5. Do not turn off the machine hydraulic system at the end of the row while turning, just lower the carrier motor speed. When the maneuver is complete, return the engine to operating mode.

	Stopping and putting into operation in the full throttle mode damages hydraulic engine and transmission.

Familiarize with disposable performances in case of a carriers equipped with the pump with variable power and check that they are compatible with used hydraulic motor. Pay attention to avoid launching the pruning bars with the pump powered on maximum drive.
Always adjust drive speed to state of vegetation when working with the machine, do not overload the machine or make excessive stress on the drivetrain.

10.4.1 Machine driven by the hydraulic system of the carrier

10.4.1.1 Putting the working tool into operation using the control levers of the carrier

1. Put the working tool into operation by moving the lever of the carrier, to which the working tool is connected to position "turned on".
2. Turn off the working tool drive so you move the lever of the carrier, to which the working tool is connected to position "turned off".

10.4.1.2 Putting the working tool into operation using the control unit

1. Turn the working tool on by pulling the button cap (5) on the control unit (Fig. 18). You must overcome the safety catch before pulling. Therefore, first turn the cap in the direction of the arrows.
2. Turn off the working tool by pressing the button cap (5) on the control unit (Fig. 18).

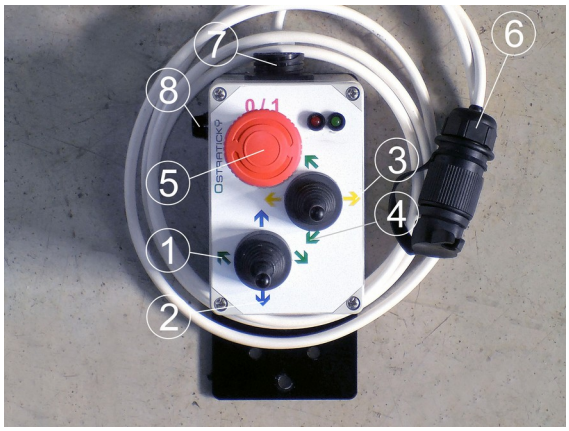


Fig. 18

10.4.2 Machine driven by an independent source of hydraulic flow

It is possible to equip the machine with the hydraulic generator, which provides straight delivery of the hydraulic oil necessary for drive the working tools of the machine in case of insufficient power of hydraulic system of a carrier. Hydraulic generator is with the machine connected by the drive shaft and is driven the PTO shaft of the carrier, maximum allowed rotation speed is 540 RPM. Make sure about correct setting of the PTO before any machine launching. Otherwise, you may damage entire machine, not covered by the warranty.
1. Put the working tool into operation by turning on the PTO shaft lever, to which is the independent hydraulic flow source pump connected.
2. Turn off the working tool drive so you turn off the PTO shaft lever, to which is the independent hydraulic flow source pump connected.

10.5 Leaves removing

Be especially cautious during this activity and pay in attention to danger caused by possible flying of sucked material from the machine. Leaves removers are high revolutions working machines. Do not ever step close to the machine until they are not in absolute standstill.
Adjust the speed of the carrier when operating the machine to the working conditions. Avert excessive pressure of the leaves removing head to the vineyard, you will prevent risk of leaves removing head damage.

	Keep in mind that the leaves removers are high-speed machines. You risk serious injury or property damage of yours or persons close to the machine by disrupting any of regulations of the manufacturer. The manufacturer does not hold responsibility for damages caused by unskilled intervention to the machine by person, which is not authorized to provide the maintenance or repair the machine.

	Always make sure that nobody is in dangerous distance of the machine.

10.5.1 Adjusting the working tool rotation speed

You will need a device for contact or contactless scanning the speed - tachometer. When using the tachometer, follow the instructions described in instructions manual of the tachometer.

	Do not ever approach working tools when in motion.

Using the contactless device:
- follow the instructions in the tachometer instructions manual
1. Measure the speed of the working tool according to the instructions in the tachometer instructions manual.
2. Set the appropriate hydraulic flow using flow controllers.

10.6 Stopping the machine

10.6.1 The device for normal stop of the leaves remover

The leaves remover mounted on the wheeled tractor, gantry tractor or harvesting machine is stopped by a device to stop the hydraulic circuit of the carrier. This device is mechanical or electronic depending on the type of carrier.
The leaves remover mounted on the carrying arm with the electro-hydraulic block OSTRATICKÝ has an electrical device and a switch to stop the machine. Stopping the machine with this device does not mean that the main hydraulic circuit is off. Use the appropriate device of the carrier to stop it.

10.6.2 Method of re-entry into operation after a sudden stop

Follow earlier described instructions to put into operation.

10.7 Definition of transport position

Position the machine place in such a way as it not endanger the safety, health or property of you or others when transporting the machine.
Secure the machine in the transport position against falling as described in the instructions manual of the carrier.

10.8 Setting the working position

Working position setting is possible:

Manually - basic machine design, mechanical extending.

Hydraulically - optional equipment, extending by hydraulic cylinders.

10.8.1 Height adjustment

10.8.1.1 Manually - by changing the position of the carrying arm

1. Secure the carrying arm (1) against fall.
2. Loose the bolts (2)
3. Set the cyrraing arm (1) to desired position.
4. Tight the bolts (2) to secure the carrying arm (1).

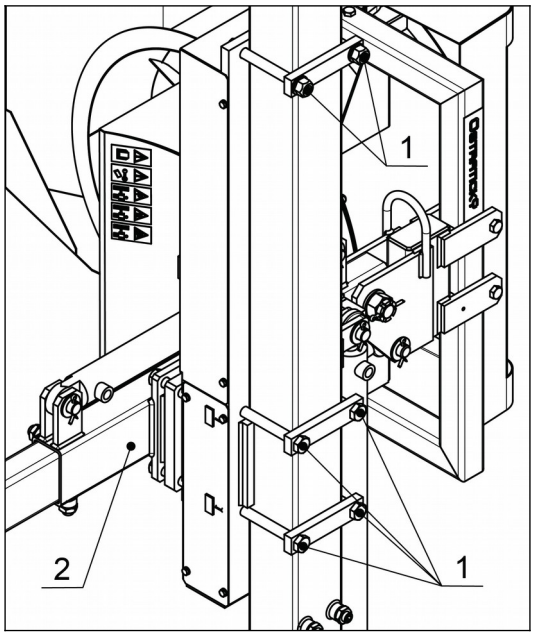


Fig. 19

10.8.1.2 Manually - by changing the position of the leaves remover head in the fork of the carrying arm

1. Secure the leaves remover head (1) against fall.
2. Loose the nuts (2) of the bolts (3).
3. Move the leaves remover head (1) to desired working height.
4. Thoroughly tight the nuts (2) of the bolts (3).

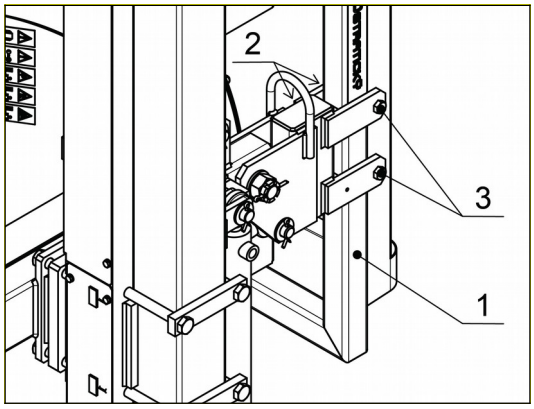


Fig. 20

10.8.1.3 Hydraulically - by the lifting cylinder

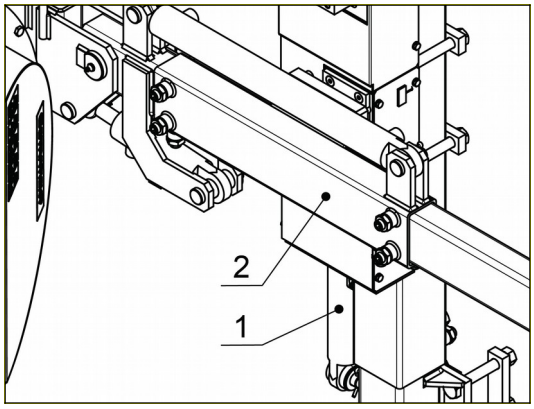


Fig. 21

1. Start the carrier (tractor).
2. Use the carrier control levers to set the desired working height by the hydraulic cylinder (1).

The most advantageous position is when the leaves remover head is in its real working height and the lifting cylinder (1) is moved for 20 cm. This adjusment enables sufficient lift (40 cm) in case of fall of the tractor to a rut or protruded posts and sufficient lowering by terrain conditions changes. Adjusting the default position can be provided by moving the sleeve of the suspension (2), adjusting the default height of the suspension or by combination of those two methods.

10.8.2 Hydraulically - by electro-hydraulic remote control

Fig. 22

1. Start the carrier (tractor).
2. Use the control unit to set the desired working height by the hydraulic cylinder (Fig. 21, No. 1).

10.9 Adjusting the position of the carrying arm

10.9.1 Manuallly

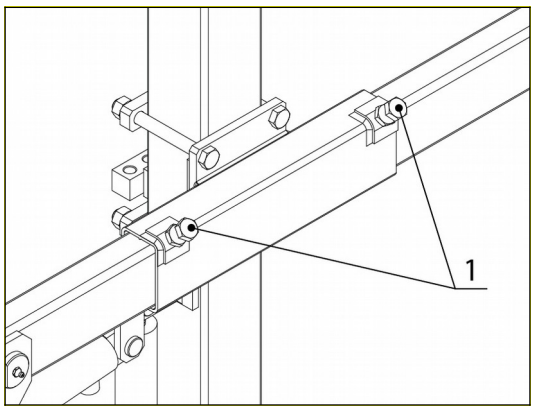


Fig. 23

1. Loose the bolts (1).
2. Select desired working width.
3. Thoroughly tight the bolts (1).

10.9.2 Hydraulically

1. Start the carrier (tractor).
2. Use the control levers to set desired working width by the hydraulic cylinder (1).

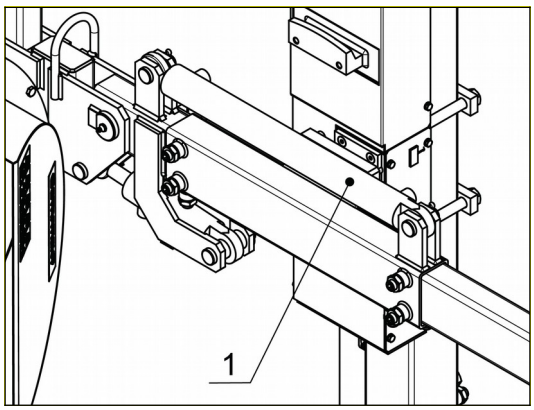


Fig. 24

10.9.3 Hydraulically - by electro-hydraulic remote control

1. Start the carrier (tractor).
2. Use the control unit to set the desired working width by the hydraulic cylinder (Fig. 24, No. 1).

Fig. 25

10.10 Adjusting the tilt of the leaves removing head

10.10.1 Hydraulically

1. Start the carrier (tractor).
2. Use the carrier control levers to set desired leaves removing head tilt by the hydraulic cylinder (1).

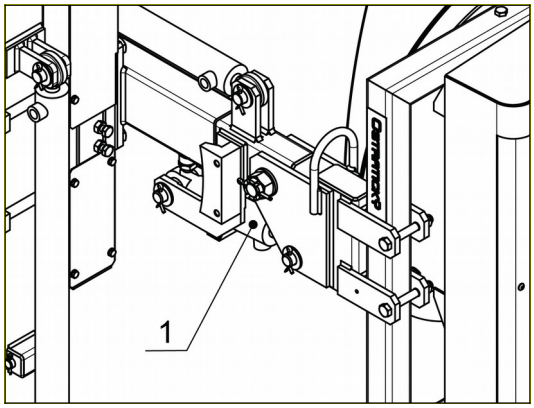


Fig. 26

10.10.2 Hydraulically - by electro-hydraulic remote control

1. Start the carrier (tractor).
2. Use the control unit to set desired leaves removing head tilt by the hydraulic cylinder (Fig. 26, No. 1).

Fig. 27

10.11 Adjusting the angle of the machine (STS post)

10.11.1 Manually

1. Adjust desired angle by tightening or loosening the spacing bolt (1).

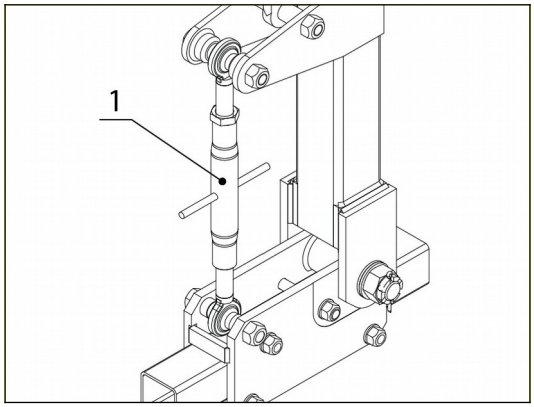


Fig. 28

10.11.2 Hydraulically

1. Start the carrier (tractor).
2. Use the control levers of carrier and adjust by the hydraulic cylinders (1) desired angle.

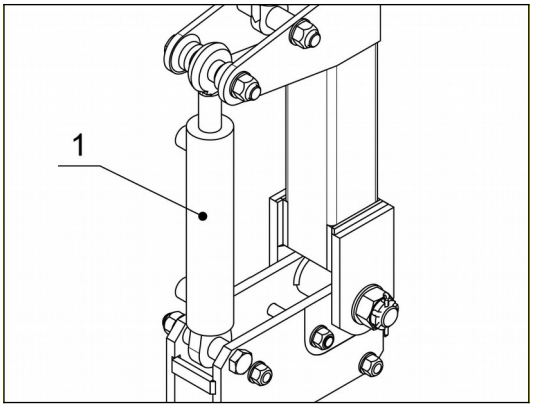


Fig. 29

10.11.3 Hydraulically - by electro-hydraulic remote control

1. Start the carrier (tractor).
2. Use the control unit to set desired STS post andgle by the hydraulic cylinder (Fig. 29, No. 1).

Fig. 30

10.12 Adjusting the angle of the machine (hydraulic vertical tilting)

10.12.1 Hydraulically

1. Start the carrier (tractor).
2. Use the control levers of carrier and adjust by the hydraulic vertical tilting (1) desired angle.

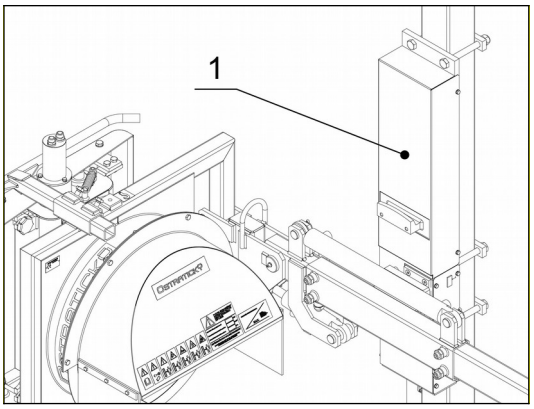


Fig. 31

10.12.2 Hydraulically - by electro-hydraulic remote control

Fig. 32

1. Start the carrier (tractor).
2. Use the control unit to set desired angle by the hydraulic vertical tilting (Fig. 31, No. 1).

10.13 Adjusting the leaves remover EF2000

10.13.1 Adjusting the parallelgram of the leaves remover head EF2000

10.13.1.1 Adjusting the angle of the leaves remover head

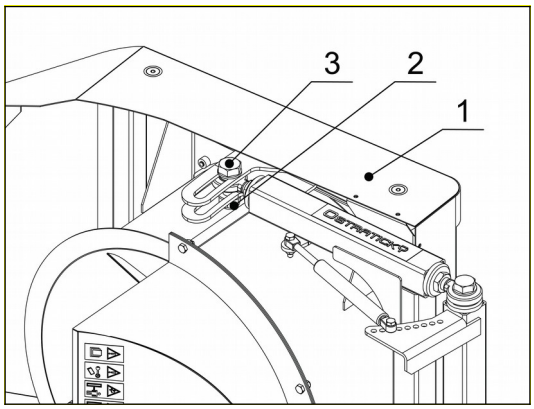


Fig. 33

1. Secure the leaves remover head (1) against fall.
2. Loose the nut (2) of the bolt (3).
3. Set the desired angle of the leaves remover head (1).
4. Thoroughly tight the nut (2) of the bolt (3).

10.13.1.2 Adjusting the leaves remover head pressure

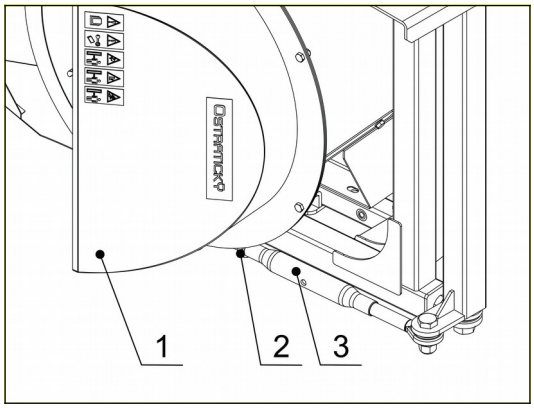


Fig. 34

1. Secure the leaves remover head (1) against fall.
2. Loose the securing nut (2) of the spacing bolt (3).
3. Extend/contract the spacing bolt (3) to select desired leaves remover head pressure (1).
4. Secure the spacing bolt (3) by the securing nut (2).

10.13.2 Adjusting the ejection direction of the leaves remover head EF2000

1. Raise the machine to working height and secure it against movement.
2. Secure the cover (1) of ejection against fall.
3. Loose the cover (1) of ejection by loosening the bolts (2).
4. Turn the cover (1) of ejection to the desired position.
5. Thoroughly secure the bolts (2).

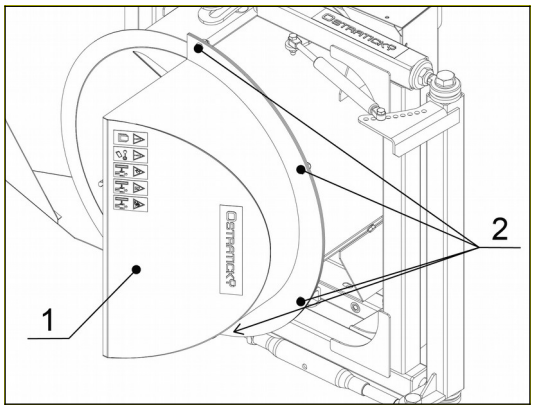


Fig. 35

10.14 Adjusting the leaves remover EF3001

10.14.1 Adjusting the distance of the sensors

1. Secure the leaves remover head (1) against fall.
2. Loose the bolts (2) of the sensors (3).
3. Adjust desired distance of the sensors (3) from the leaves remover head (1).
4. Thoroughly tight the bolts (2).

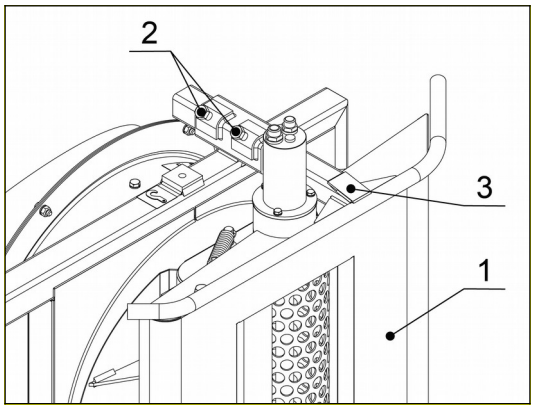


Fig. 36

10.14.2 Adjusting the ejection direction of the leaves remover head EF3001

1. Raise the machine to working height and secure it against movement.
2. Secure the cover (1) of ejection against fall.
3. Loose the cover (1) of ejection by loosening the bolts (2).
4. Turn the cover (1) of ejection to the desired position.
5. Thoroughly secure the bolts (2).

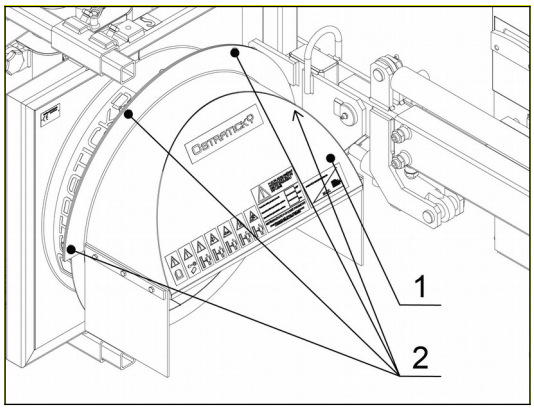


Fig. 37

11 MAINTENANCE AND REPAIRS

	The carrier must be stopped for this manipulation. The machine must be secured against spontaneous movement.

	You risk serious injury or property damage of yours or persons close to the machine by disrupting any of regulations of the manufacturer. The manufacturer does not hold responsibility for damages caused by unskilled intervention to the machine by person, which is not authorized to provide the maintenance or repair the machine.

	Always use appropriate and undamaged tools for work. Pay attention safety and health protection during the work. Always wear personal protective equipment during the work.

11.1 Staff qualification

Other interventions during the maintenance and repairing than those that require the seller intervention, must be performed by a trained person.

11.2 Types of interventions during the maintenance - regular checks and inspections

Caution for operation	Make an overall inspection of the machine, check the tightness of all bolt connections, the perfection of all hydraulic and electric components: - before 1st use - no later than after the first 2 worked hours and then - no later than after 4 worked hours - no later than after 10 worked hours **Then ALWAYS BEFORE USING THE MACHINE.**
	

Type of control	**Frequency**
Mechanical: - tightening of the linkage - tightening of all bolts - attachments pins of the linkage - bolts of the frame	 before every use before every use before every use before every use
Hydraulical: - condition of the hydraulic hoses (tension, blockage, wear out by friction) - leakage of hydraulic components (tightness) - leakage of hydraulic cylinder (tightness) - oil in the HAN tank condition Hydraulic oil: - recommended hydraulic fluid HM 46	 before every use before every use before every use before every use

Type of control	Frequency
Electric: - cables condition (tension, blockage, wear out by friction) - connectors condition - control elements condition	 before every use before every use before every use
Greasing: - lubricate all places marked by ● (lubrication point, see chapter 6.3) with a grease gun - use universal lubricant	before every use

11.3 Fast wearing parts

- **leaves remover head EF2000** (11.4)
    - knife
    - fan propeller
    - knife bearings
    - fan propeller bearings
    - hydraulic motor shaft coupling
    - hydraulic motor
- **leaves remover head EF3001** (11.5)
    - fan propeller
    - fan propeller bearings
    - motor bearings
    - pressure cylinder
    - pressure cylinder bearings
    - pressure cylinder spring
    - suction cylinder
    - suction cylinder bearings
    - suction cylinder shaft coupling
    - hinge rubber washer
- **lifting post** (11.6)
    - hydraulic adjustment of working height sliders
- **carrying arm** (11.7)
    - hydraulic adjustment of working width sliders
- **hydraulic vertical tilting** (11.8)
    - gear
    - gear front bearing
    - gear rear bearing
    - toothed rack
- **hydraulic generator HAN** (11.9)
    - seal of the HAN pump
    - pump of the HAN
    - seals of the HAN gearbox
    - bearings of the HAN gearbox
    - hydraulic filter of the HAN insertion
    - hydraulic oil

11.4 Leaves remover head EF2000

11.4.1 Knife replacement

1. Raise the machine to working height and secure it against movement.
2. Remove the grille (1) by removing the bolts (2).
3. Remove the bolt (3) including the washer.
4. Remove the botls (4), including the washers.
5. Remove the knife (5) and replace it with a new one.
6. Secure the new blade (5) by tightening the bolts (4) and (3) with washers.
7. Mount back the grid (1) by tightening the bolts (2).

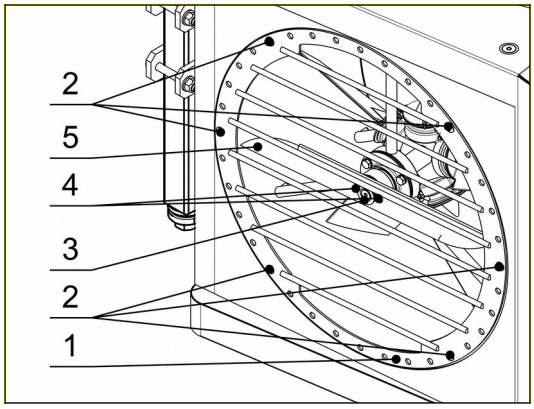


Fig. 38

!	**Ensure that the new knife is correctly positioned with respect to the direction of rotation, when mounting.**

11.4.2 Fan propeller replacement

1. Raise the machine to working height and secure it against movement.
2. Remove the ejection cover (1) by removing the bolts (2).
3. Remove the bolts (3) and slide out the rotor hub (4).
4. Remove the securing ring (5) and slide out the fan propeller (6).
5. Mount the new fan propeller (6) back and secure it with the securing ring (5).
6. Mount the rotor hub (4) back and secure it with the bolts (3).
7. Mount the ejection cover (1) back by tightening the bolts (2).

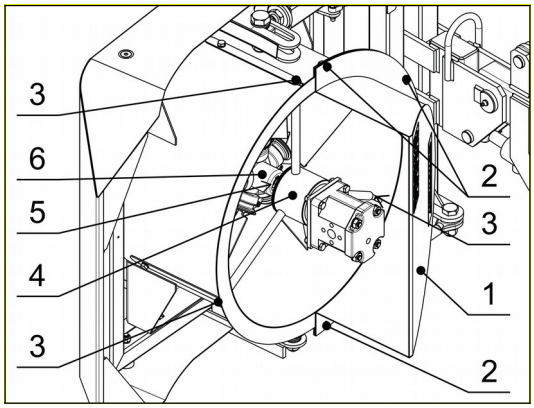


Fig. 39

11.4.3 Knife bearing replacement

1. Follow the steps in chapter 11.4.1 to remove the knife.
2. Remove the coupling (1) and the pin (2).
3. Remove the bolts (3) securing the bearing (4) to the rotor bracket.
4. Remove the bearing and replace it with a new one.
5. Secure the new bearing (4) with bolts (3).
6. Mount back the pin (2) and the coupling (1).
7. Mount back the blade as described in chapter 11.4.1.

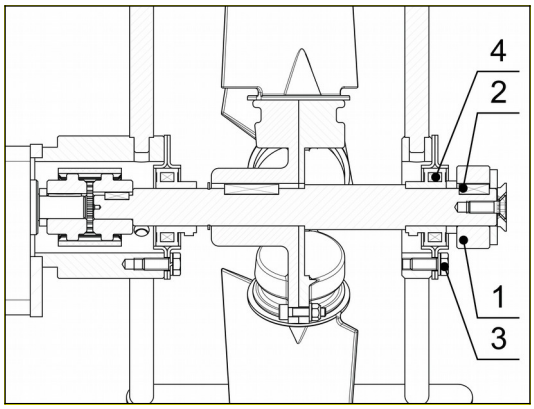


Fig. 40

11.4.4 Fan propeller bearing replacement

1. Remove the rotor hub (1) as described in section 11.4.2.
2. Remove the fan propeller bearing (3) by loosening the bolts (2).
3. Replace the new bearing (3) by securing the botls (2).
4. Mount back the rotor hub (1) as described in section 11.4.2.

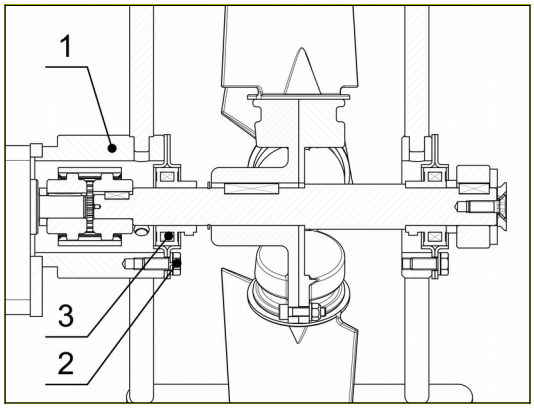


Fig. 41

11.4.5 Hydraulic motor shaft coupling replacement

1. Remove the hydraulic motor (2) bolts (1).
2. Remove the hydraulic motor (2).
3. Pull the polyamide connection (3) out of the groove and replace it with a new one.
4. Mount back the hydraulic motor (2) and secure it with the bolts (1).

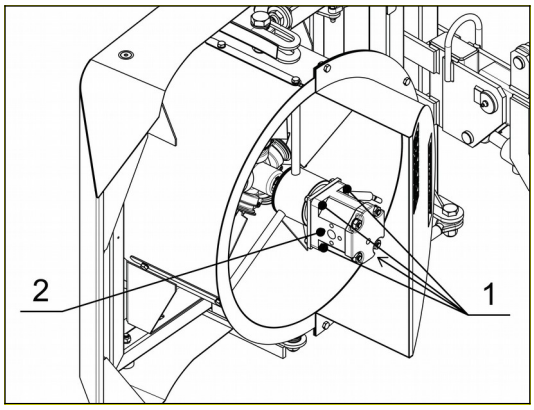


Fig. 42

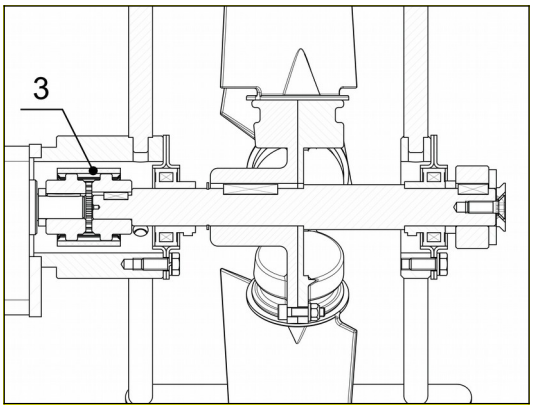


Fig. 43

11.4.6 Hydraulic motor replacement

1. Remove the hydraulic motor (2) bolts (1).
2. Remove the hydraulic motor (2).
3. Mount back the new hydraulic motor (2) and secure it thoroughly with the bolts (1).

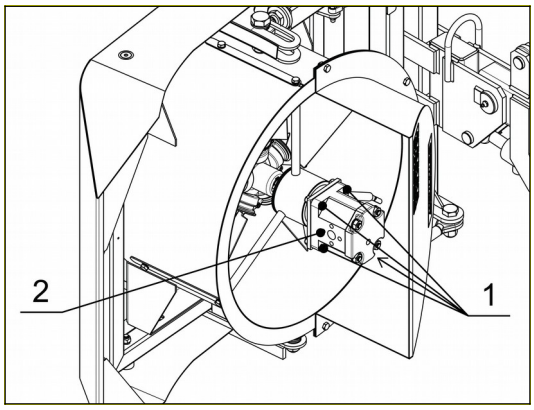


Fig. 44

11.5 Leaves remover head EF3001

11.5.1 Fan propeller replacement

1. Raise the machine to working height and secure it against movement.
2. Remove the ejection cover (1) by removing the bolts (2).
3. Remove the bolts (3) and slide out the rotor hub (4).
4. Remove the securing ring (5) and slide out the fan propeller (6).
5. Mount back the new fan propeller (6) and secure it with the securing ring (5).
6. Mount back the rotor hub (4) and secure with the bolts (3).
7. Mount back the ejection cover (1) by tightening the bolts (2).

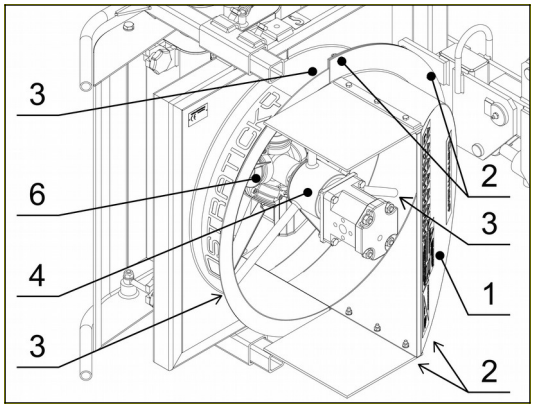


Fig. 45

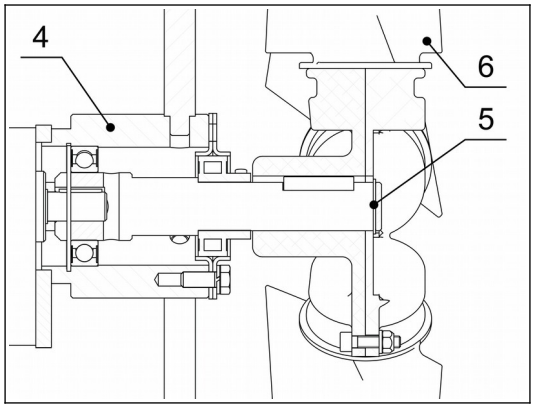


Fig. 46

11.5.2 Fan propeller bearing replacement

1. Remove the rotor hub (1) as described in section 11.5.1.
2. Remove the securing ring (2), the pin (3) and the fan propeller (4).
3. Remove the motor bearing (6) by loosening the bolts (5).
4. Mount back the new bearing (6) and secure it with the bolts (5).
5. Slide back the fan (4) and secure it with the pin (3) and securing ring (2).
6. Mount back the rotor hub (1) as described in section 11.5.1.

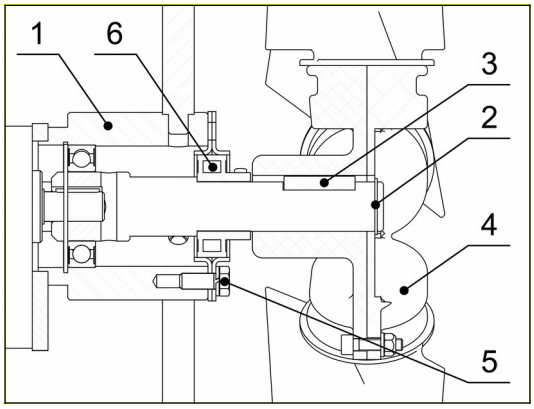


Fig. 47

11.5.3 Hydraulic motor replacement

1. Remove the hydraulic motor (2) bolts (1).
2. Remove the hydraulic motor (2).
3. Mount back the new hydraulic motor (2) and secure it thoroughly with the bolts (1).

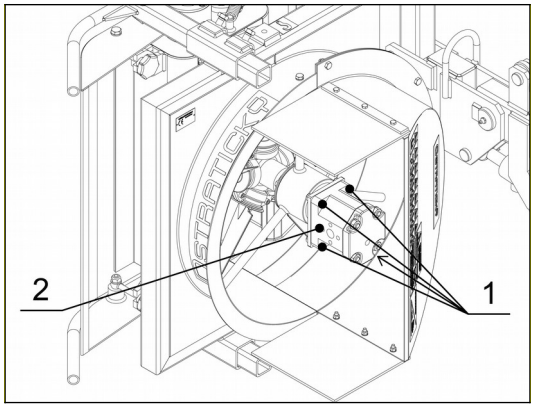


Fig. 48

11.5.4 Hydraulic motor bearing replacement

1. Remove the engine (2) bolts (1).
2. Remove the motor (2).
3. Remove the securing ring (3) and remove the bearing (4).
4. Mount back the new bearing (4) and secure it with the securing ring (3).
5. Mount back the engine (2) and thoroughly tight it with the bolts (1).

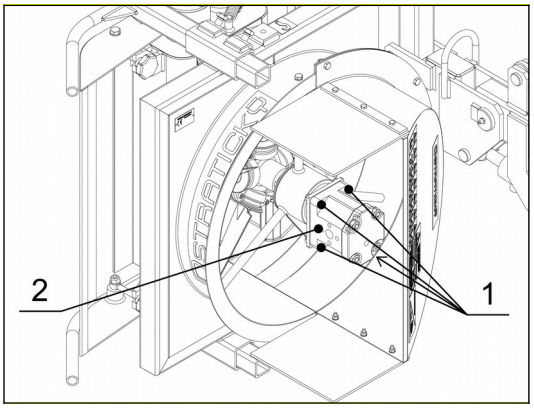


Fig. 49

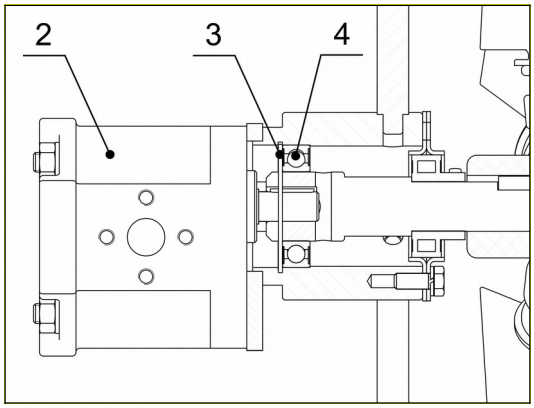


Fig. 50

11.5.5 Pressure cylinder replacement

1. Raise the machine to working height and secure it against movement.
2. Loose the star nuts (1) and open the stainless steel cover (2).
4. Secure the pressure cylinder (8) against falling.
4. Remove the nut (3) and remove the spring (4).
5. Remove the nuts (5) and (6).
6. Remove the upper bearing (7).
7. Repeat steps 3, 4 and 5 to remove the lower bearing.
8. Remove the pressure cylinder (8) and replace it with a new one.
9. Replace the upper bearing (7) and secure it with nuts (5) and (6).
10. Tight the nuts (5) and (6) so that the pressure cylinder (8) can move freely.
11. Mount back the spring (4) and secure it with the nut (3).
12. Repeat steps 6, 7 and 8 to mount back the lower bearing.
13. Close the stainless steel cover (2) and secure it properly by tightening the star nuts (1).

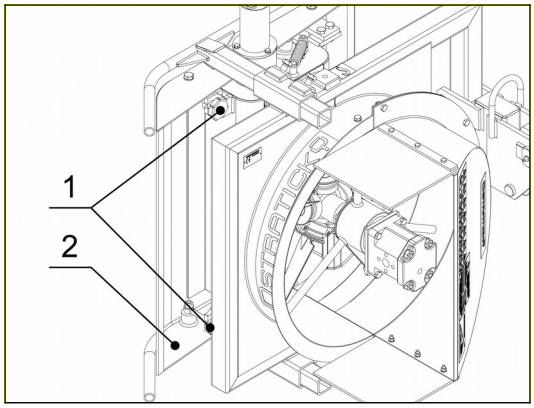


Fig. 51

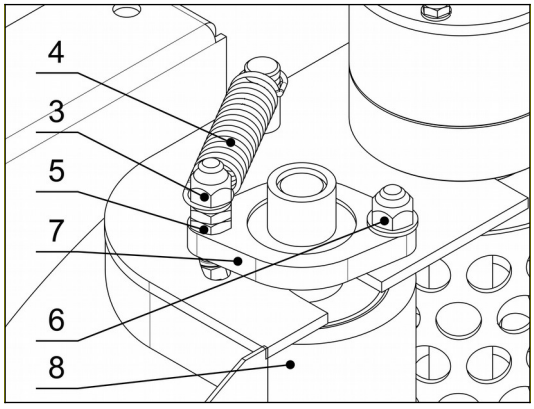


Fig. 52

11.5.6 Pressure cylinder bearing replacement

1. Raise the machine to working height and secure it against movement.
2. Loose the star nuts (2) and open the stainless steel cover (1).
3. Remove the nut (3) and remove the spring (4).
4. Remove the nuts (5) and (6).
5. Remove the bearing (7) and replace it with a new one.
6. Mount back the new bearing (7) and secure it by the nuts (5) and (6).
7. Tight the nuts (5) and (6) so that the pressure roller (8) can move freely.
8. Mount back the spring (4) and secure with the nut (3).
9. Repeat steps from 3 to 8 on the other side of the pressure roller (8) if necessary.
10. Close the stainless steel cover (1) and secure thoroughly by tightening the star nuts (2).

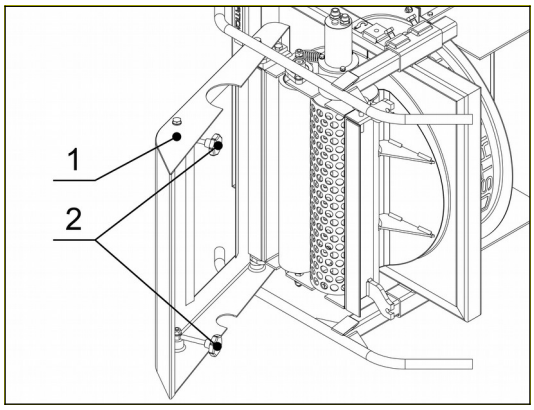


Fig. 53

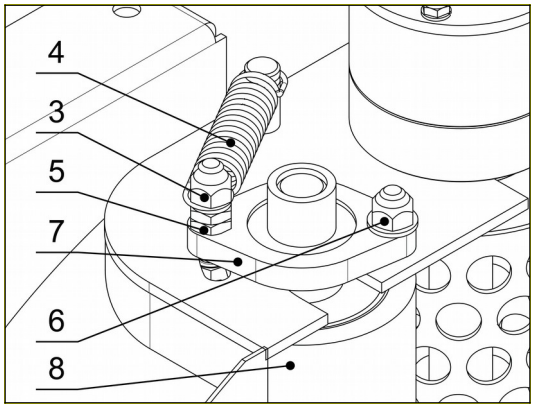


Fig. 54

11.5.7 Pressure roller spring replacement

1. Raise the machine to working height and secure it against movement.
2. Loose the star nuts (Fig. 53, No. 2) and open the stainless steel cover (Fig. 53, No. 1).
3. Remove the nut (Fig. 54, No. 3) and remove the spring (Fig. 54, No. 4).
4. Mount back new spring (Fig. 54, No. 4) and secure it with a nut (Fig. 54, No. 3).
5. Close the stainless steel cover (Fig. 53, No. 1) and secure it by thorough tightening the star nuts (Fig. 53, No. 2).

11.5.8 Suction cylinder replacement

1. Open the stainless steel cover as described in chapter 11.5.6.
2. Secure the suction cylinder (11) against falling.
3. Loose the bolts (1) and remove the motor (2) including the drive hub (4) of the claw coupling and the spacing flange (3).
4. Remove the spacing ring (5) and the driven hub (6) of the claw coupling.
5. Remove the securing ring (7).
6. Remove the bearing (8).
7. Remove the securing ring (9).
8. Remove the sealing ring (10).
9. Remove the nuts (13) with washers.
10. Remove the bearing (12).
11. Remove the suction cylinder (11) and replace it with a new one.
12. Mount back the new suction cylinder (11).
13. Mount back the bearing (12) and secure it by the nuts (13) with washers.
14. Mount back the sealing ring (10).
15. Mount back the securing ring (9).
16. Mount back the bearing (8) and secure it with the securing ring (7).
17. Mount back the driven hub (6) and the claw coupling spcaing ring (5).
18. Mount back the spacing flange (3).
19. Mount back the motor (2) including the drive hub (4) the claw coupling and secure it with the bolts (1).
20. Close the stainless steel cover as described in section 11.5.6.

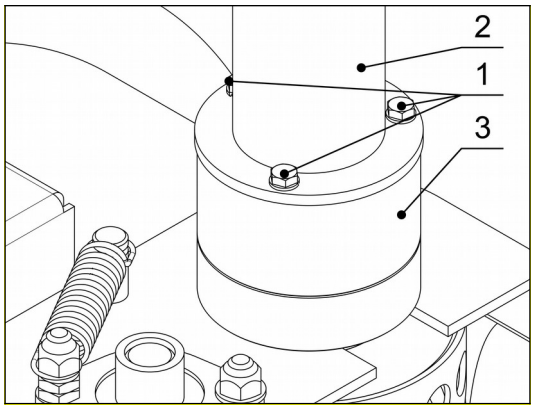


Fig. 55

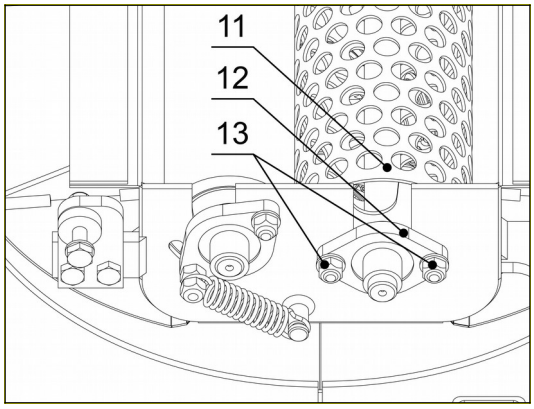


Fig. 56

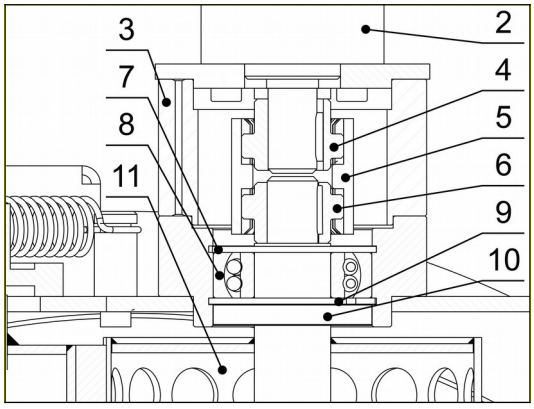


Fig. 57

11.5.9 Suction cylinder bearing replacement

1. Open the stainless steel cover as described in chapter 11.5.6.
2. Loose the bolts (1) and remove the motor (2) including the drive hub (4) of the claw coupling and the spacing flange (3).
3. Remove the spacing ring (5) and the driven hub (6) of the claw coupling.
4. Remove the securing ring (7).
5. Remove the bearing (8) and replace it with a new one.
6. Mount back new bearing (8) and secure it with the securing ring (7).
7. Mount back the driven hub (6) and the claw coupling spcaing ring (5).
8. Mount back the spacing flange (3).
9. Mount back the motor (2) including the drive hub (4) the claw coupling and secure it with the bolts (1).
10. To replace the bearings on the other side of the suction cylinder, follow the steps in chapter 11.5.8.
11. Close the stainless steel cover as described in section 11.5.6.

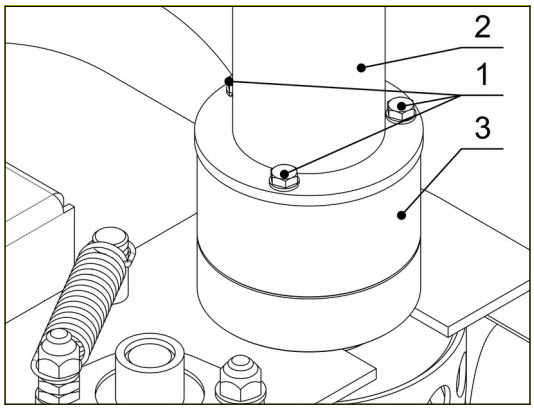


Fig. 58

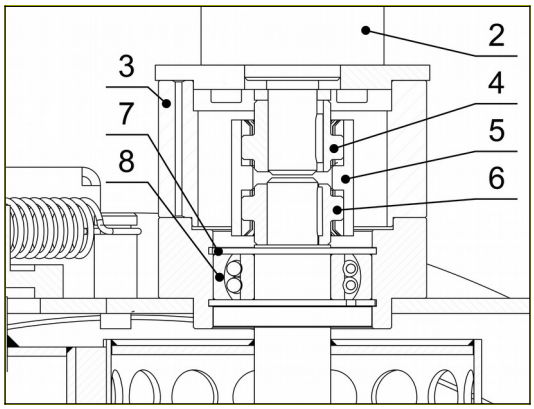


Fig. 59

11.5.10 Suction cylinder shaft coupling replacement

1. Open the stainless steel cover as described in chapter 11.5.6.
2. Loose the bolts (1) and remove the motor (2) including the drive hub (4) of the claw coupling and the spacing flange (3).
3. Remove the drive hub (4) of the claw coupling from the motor shaft (2) and replace it with a new one.
4. Remove the the claw coupling spcaing ring (5) and driven hub (6).
5. Mount back the driven hub (6) and the claw coupling spcaing ring (5).
6. Mount back the spacing flange (3).
7. Mount back the motor (2) including the drive hub (4) the claw coupling and secure it with the bolts (1).
8. To replace the bearings on the other side of the suction cylinder, follow the steps in chapter 11.5.8.
9. Close the stainless steel cover as described in section 11.5.6.

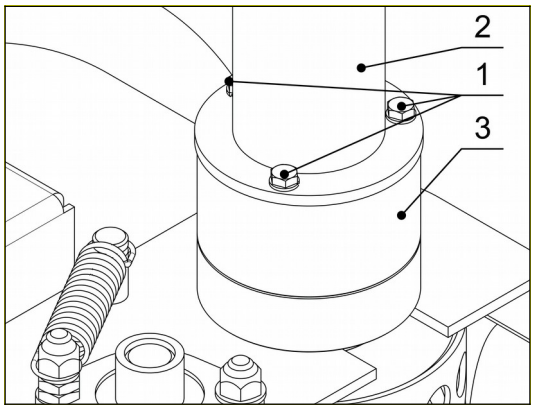


Fig. 60

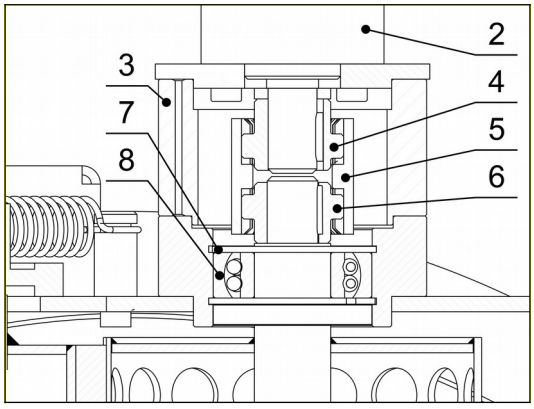


Fig. 61

11.5.11 Hinge rubber washer replacement

1. Raise the machine to working height and secure it against movement.
2. Secure the stainless steel cover (4) against falling.
3. Remove the nuts (3) with washers and upper and lower bolts (2) of the hinge.
4. Remove the stainless steel cover (4).
5. Remove the rubber washers (1) of the upper and lower hinges and replace them with new ones.
6. Mount back the new rubber washers (1).
7. Mount back the stainless steel cover (4).
8. Mount back the upper and lower hinge bolts (2) and secure them with nuts (3) with washers.

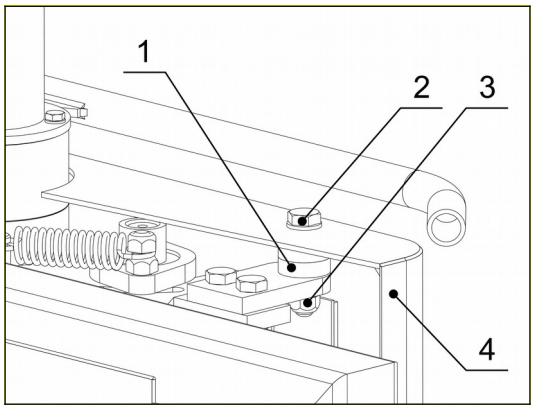


Fig. 62

11.6 Lifting post

11.6.1 Hydraulic working height sliders replacement

1. Secure the post (Fig. 63, No. 3) against movement.
2. Loose the bolts nuts (Fig. 63, No. 1)
3. Remove the sliders and replace them with new ones.
4. Reinsert the bolts (Fig. 63, No. 1) and adjust the sliders clearance as described in section 11.6.2.
5. Tight the bolts nuts (Fig. 63, No. 1).

11.6.2 Setting the clearance of the sliders of the hydraulic working height setting

1. Loose the bolts (1) nuts.
2. Reduce the clearance between the slider and the tube (2) of the lifting post by gradual tightening.
3. Increase the clearance between the slider and the tube (2) of the post by gradual loosening.
4. Set up the smallest possible clearance of the sliders under the bolts (1) following the steps 2. and 3. so the hydraulic cylinders (4) move smoothly and without any resistance.
5. Thoroughly tight the bolts (1) nuts.

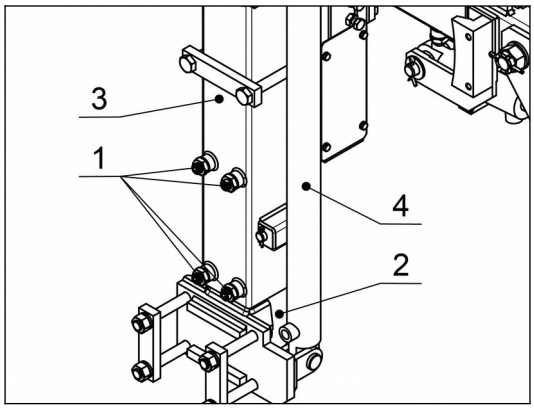


Fig. 63

ATTENTION – insufficient clearance between the slides and the tube (2) of the lifting post can lead to premature wear out of the lifting tube (2), excessive clearance between the slides and the tube (2) of the lifting tube could lead to firm disrupt of the lifting post mounting.

11.7 Carrying arm

11.7.1 Hydraulic working width sliders replacement

1. Secure the carrying arm (Fig. 64, No. 3) against movement.
2. Loose the bolts nuts (Fig. 64, No. 1)
3. Remove the sliders and replace them with new ones.
4. Reinsert the bolts (Fig. 64, No. 1) and adjust the sliders clearance as described in section 11.7.2.
5. Tight the bolts nuts (Fig. 64, No. 1).

11.7.2 Setting the clearance of the slides of the hydraulic working width setting

1. Loose the bolts (1) nuts.
2. Reduce the clearance between the slide and the carrying arm (2) of the working tool (3) by gradual tightening.
3. Increase the clearance between the slide and the carrying arm (2) of the working tool (3) by gradual loosening.
4. Set up the smallest possible clearance of the slides under the bolts (1) following the steps 2. and 3. so the hydraulic cylinders (4) move smoothly and without any resistance.
5. Thoroughly tight the bolts (1) nuts.

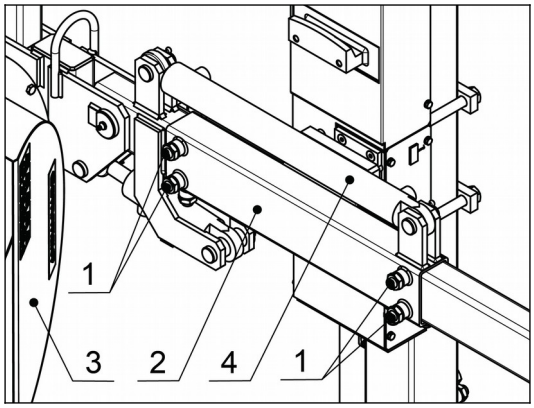


Fig. 64

ATTENTION – insufficient clearance between the slides and the carrying arm (2) can lead to premature wear out of the carrying arm, excessive clearance between the slides and the carrying arm (2) could lead to firm disrupt of the carrying arm mounting.

11.8 Hydraulic vertical tilting

11.8.1 Gear replacement

1. Remove the bolts with washers (1) and remove the covers (2), (3) and (4).
2. Remove the bolts (5) and remove the hinge clamping plate (6).
3. Secure the gear (13) against falling.
4. Remove the bolts (7) and slide out the shaft (8), remove the pens (10) and (12) when pulling the shaft (8) out.
5. Remove the gear (13).
6. Reinsert the new gear (13) into which prepare the pens (10) and (12).
7. Reinsert the shaft (8), when inserting mount the pens (10) and (12) back into their original positions.
8. Secure thoroughly the shaft (8) with bolts (7).
9. Replace the hinge clamping plate (6) and secure it thoroughly with the bolts (5).
10. Replace the covers (2), (3) and (4) and secure them thoroughly with the washers (1).

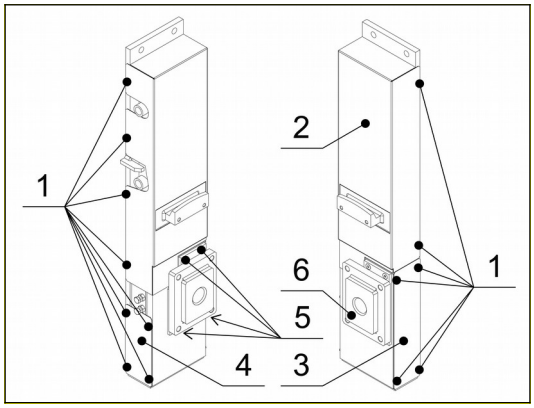


Fig. 65

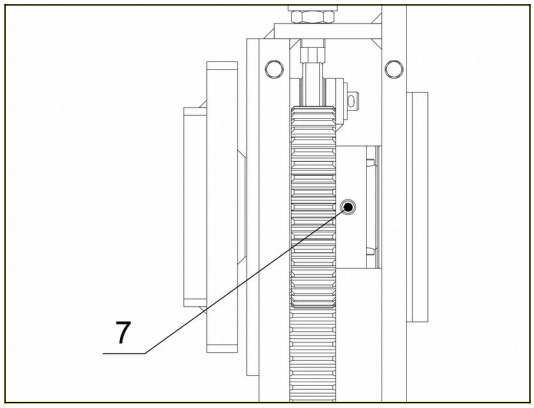


Fig. 66

11.8.2 Gear front bearing replacement

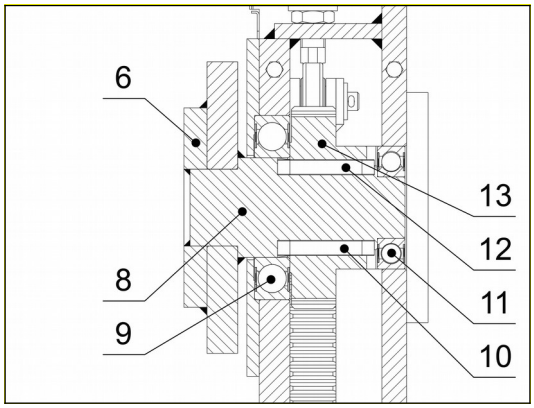


Fig. 67

1. Remove the bolts with washers (1) and remove the covers (2), (3) and (4).
2. Remove the bolts (5) and remove the hinge clamping plate (6).
3. Secure the gear (13) against falling.
4. Remove the bolts (7) and slide out the shaft (8), remove the pens (10) and (12) when pulling the shaft (8) out.
5. Remove the gear (13).
6. Remove the bearing (9).
7. Mount back new bearing (9).
8. Reinsert the gear (13) into which prepare the pens (10) and (12).
9. Reinsert the shaft (8), when inserting mount the pens (10) and (12) back into their original positions.
10. Secure thoroughly the shaft (8) with bolts (7).
11. Replace the hinge clamping plate (6) and secure it thoroughly with the bolts (5).
12. Replace the covers (2), (3) and (4) and secure them thoroughly with the washers (1).

11.8.3 Gear rear bearing replacement

1. Remove the bolts with washers (Fig. 65, No. 1) and remove the covers (Fig. 65, No. 2), (Fig. 65, No. 3) and (Fig. 65, No. 4).
2. Remove the bolts (Fig. 65, No. 5) and remove the hinge clamping plate (Fig. 65, No. 6).
3. Secure the gear (Fig. 67, No. 13) against falling.
4. Remove the bolts (Fig. 66, No. 7) and slide out the shaft (Fig. 67, No. 8), remove the pens (Fig.67, No. 10) and (Fig. 67, No. 12) when pulling the shaft (Fig. 67, No. 8) out.
5. Remove the gear (Fig. 67, No. 13).
6. Remove the bearing (Fig. 67, No. 11).
7. Mount back new bearing (Fig. 67, No. 11).
8. Reinsert the gear (Fig. 67, No. 13) into which prepare the pens (Fig. 67, No. 10) and (Fig. 67, No. 12).
9. Reinsert the shaft (Fig. 67, No. 8), when inserting mount the pens (Fig. 67, No. 10) and (Fig. 67, No. 12) back into their original positions.
10. Secure thoroughly the shaft (Fig. 67, No. 8) with bolts (Fig. 66, No. 7).
11. Replace the hinge clamping plate (Fig. 65, No. 6) and secure it thoroughly with the bolts (Fig. 65, No. 5).
12. Replace the covers (Fig. 65, No. 2), (Fig. 65, No. 3) and (Fig. 65, No. 4) and secure them thoroughly with the washers (Fig. 65, No. 1).

11.8.4 Toothed rack replacement

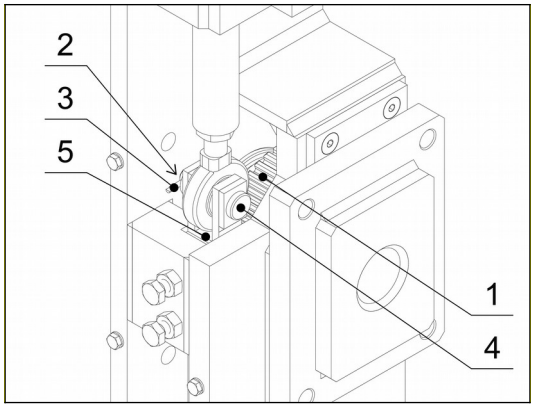


Fig. 68

1. Remove gear (1) as described in chapter 11.8.1.
2. Secure the toothed rack (5) against falling.
3. Remove the cotter pin (3) its washer (2).
4. Remove the pin (4).
5. Remove the toothed rack (5) and replace it with a new one.
6. Mount back the new toothed rack (5) and secure it with the pin (4).
7. Mount the washer (2) back on the pin (4) and secure them with a cotter pin (3).

8. Mount the gear (1) back as described in chapter 11.8.1.

11.9 Hydraulic generator – HAN

11.9.1 HAN pump seals replacement

1. Remove HAN pump by following steps in chapter 11.9.2.
2. Contact your dealer or authorized representative of the manufacturer to replace the HAN pump seals.
3. Mount the HAN pump back.

11.9.2 HAN pump replacement

1. Secure the pump (1) against fall.
2. Remove hydraulic hoses.
3. Remove bolts (2) and unmount the pump (1).
4. Mount back spare pump (1) and secure it by the bolts (2).
5. Connect hydraulic hoses.

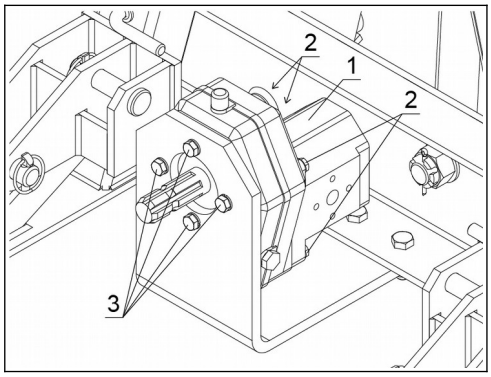


Fig. 69

	Avoid hydraulic fluid leaks into the environment.

11.9.3 HAN gearbox shafts seals replacement

1. Remove gearbox of the HAN pump by following steps in chapter 11.9.5.
2. Contact your dealer or authorized representative of the manufacturer to replace the HAN pump gearbox shafts seals.
3. Mount the HAN pump gearbox back.

11.9.4 HAN gearbox bearings replacement

1. Remove gearbox of the HAN pump by following steps in chapter 11.9.5.
2. Contact your dealer or authorized representative of the manufacturer to replace the HAN pump gearbox bearings.
3. Mount the HAN pump gearbox back.

11.9.5 HAN gearbox replacement

1. Secure gearbox against the fall.
2. Remove the pump by following steps in chapter 11.9.2.
3. Loose the bolts (Fig. 69, No. 3) and remove the gearbox of the HAN
4. Contact your dealer or authorized representative of the manufacturer to replace the HAN gearbox.
5. Mount the gearbox HAN back by securing the bolts (Fig. 69, No. 3).
6. Mount back the pump by following the steps in chapter 11.9.2.

11.9.6 Filter insertion replacement

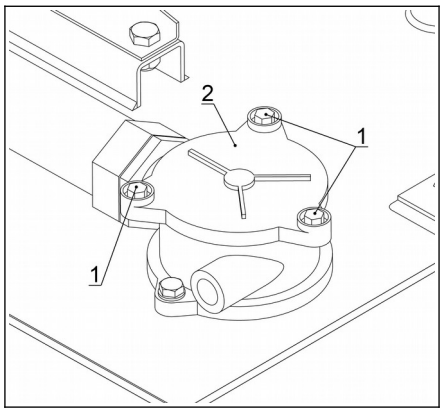


Fig. 70

1. Remove the bolts (1) of the oil filter cap (2).
2. Remove the filter insertion from the oil filter and replace it with a new one.
3. Mount back the cap (2) with new filter cartridge by using the bolts (1).
4. Properly dispose of used oil filter insertion in accordance with the procedure described in chapter 14.

11.9.7 HAN tank oil replacement

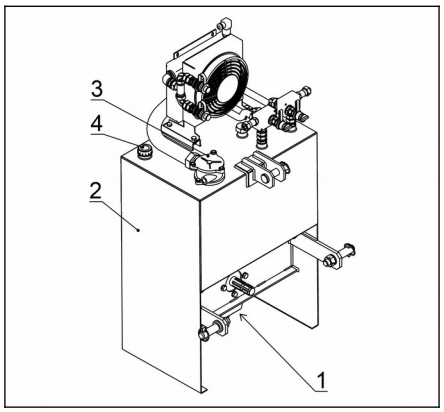


Fig. 71

1. Prepare a clean container for used oil.
2. Dismount the hydraulic hose from the oil pump (1) and drain the oil from the tank (2). Avoid hydraulic fluid leaks into the environment.
3. Replace the old cartridge of the oil filter (3) for the new one. Follow the steps described in chapter 11.9.6.
4. Mount back the hydraulic hose between oil pump (1) and oil tank (2). Thoroughly tight their nuts.
5. Fill prescribed amount of oil throught the filling hole (4), see chapter 10.3.1.
6. Check the tightness and functionality of the HAN hydraulic system before putting the machine into operation.
7. Properly dispose used oil and oil filter as described in chapter 14.

	Avoid hydraulic fluid leaks into the environment.

11.9.8 HAN oil cooler cleaning

Cleaning the cooler should be performed by compressed air or other appropriate method. The air flow has to be directed parallel to the air ribs to avoid their damage. If the collected dirt is oily or greasy, can be the cooler cleaned with a steam flow or hot water. During this procedure has to be protected the electromotor.

	Do not clean the cooler by high pressure cleaner. It can cause its destruction.

11.10 Mechanical malfunctions

Problem	Reason	Measures
- machine blockage	- blocked leaves remover head	- check blocked leaves remover head, remove plant debris
- unusual noise of the propeller in motion	- propeller slipping during operation	- replace the bearings
	- object in the propeller body	- pull out the object
- leaves remover head vibrations	- excessive rotation speed of the propeller	- reduce the speed of propeller rotation
	- imbalance of the propeller caused by damage	- check the propeller condition
	- imbalance of the knife caused by damage	- check the knife condition
- the propeller does not rotate	- broken polyamide connections	- check the condition of the clutch
	- the motor is seized	- replace the engine
- the machine moves too far away from the plants	- the gas spring is damaged or not enough tighted	- move its suspension point on the lever or replace the spring

11.11 Závady elektro-hydraulické

Problem	Reason	Measures
- **the machine does not work**	- hydraulic source is not working	- start up the carrier
		- check the carrier (pump, limiter)
		- check the connection of hydraulic hoses
		- check the hydraulic source function
		- check the gearbox
	- electric source is not working	- check the connection of electrical cables
		- check if the voltage to the solenoid valves is available
		- check the electric control of hydraulic circuit
- the propeller does not rotate	- low oil-flow	- check the hydraulic source function
- the propeller rotates slowly	- low oil-flow	- check the hydraulic source function
		- adjust the flow divider, if the machine is equipped with it

Problem	Reason	Measures
- hydraulic extending does not work	- low oil pressure	- check the hydraulic source function
	- low pressure in the hydraulic system of the machine	- check the hydraulic source function
	- electric source does not work	- check the electric source function
		- check the connection of electrical cables
		- check if the voltage to the solenoid valves is available
		- check the electric control of the hydraulic circuit
- hydraulic lifting does not work	- low oil pressure	- check the hydraulic source function
	- low pressure in the hydraulic system of the machine	- check the hydraulic source function
	- electric source does not work	- check the electric source function
		- check the connection of electrical cables
		- check if the voltage to the solenoid valves is available
		- check the electric control of the hydraulic circuit
- hydraulic tilting does not work	- low oil pressure	- check the hydraulic source function
	- low pressure in the hydraulic system of the machine	- check the hydraulic source function
	- electric source does not work	- check the electric source function
		- check the connection of electrical cables
		- check if the voltage to the solenoid valves is available
		- check the electric control of the hydraulic circuit
- the machine leaves too much leaves	- propeller rotation speed is too slow	- increase propeller rotation speed
	- carrier speed is too high	- reduce the carrier speed

Problem	Reason	Measures
- the machine takes too much leaves	- propeller rotation speed is too high	- decrease propeller rotation speed
	- carrier speed is too slow	- increase the carrier speed
- the machine damages the grapes too much	- gas spring pressure too high	- reduce the spring pressure
	- the machine does not have much pressure	- increase pressure

11.12 Recommissioning the machine after the intervention

After electrical, mechanical and hydraulic intervention on the machine, observe the commands to put into operation in the instruction manual.

12 CLEANING THE MACHINE

12.1 Preparing the machine for cleaning

At first, place the machine on a cleaning area.

12.2 Personal protective equipment

Wear clothing suitable for cleaning machines. This clothing means mostly suitable footwear, protective goggles, protective gloves, head protection.

12.3 Cleaning method

Sweep up the machine or blow it by compressed air. If the machine needs cleaning, wash it by rinse water, avoid the housings and electrical cables, hydraulic hoses and hydraulic control valves. In the case the machine is very dirty, use a detergent for washing and cleaning.

Do not clean the machine by pressurized water.

12.4 Types of cleaning detergents

Do not use aggressive detergents (chlorinated).

Use rags, sponges and soft brushes.

12.5 Checking a good condition of the machine after cleaning

Let the machine run after cleaning for a few minutes. If you used water, let the machine completely dry off.

Check the condition of electrical and hydraulic hoses (cracks, cuts, damages by friction).

If necessary, replace them.

Lubricate the machine as instructed in the manual.

Check the tightness of all hydraulic connections and all bolts.

13 DISCONNECTING AND STORING THE MACHINE

13.1 Preventive maintenance

During storage, the machine do the following:
General cleaning.
Preservation of metal parts of the machine after cleaning which eliminates the corrosive effects.
Check the condition of electrical cables (cracks, cuts, damages by friction), replace if necessary.
Check the condition of hydraulic hoses (cracks, cuts, damages by friction), replace if necessary or prescribed by the manufacturer, at least after two years of operation.

13.2 Storing the machine

Store the machine in the airy room, away from a bad weather, out of reach of children.
–Do not put a protective sheet on the machine that causes condensation.

13.3 Putting the machine into operation after storage

Proceed like by first commissioning.

14 DISASSEMBLY AND DECOMISSIONING

The general rule lies in disassembling a machine and sorting the parts. These parts will be processed by organizations or centers specialized in the treatment of industrial waste.
This waste can be valorized on the new products.

Group of hydraulic parts:
- hydraulic components (sleeve, hydraulic block, insertion, limiter, reducer, etc.)
- hydraulic hose

Group of hydraulic fluids and lubricants:
- hydraulic fluid
- lubricant

Group of ferrous parts:
- all ferrous parts of the machine

Group of nonferrous parts:
- all aluminum, bronze, brass parts of the machine
- all plastic parts

Group of electrical parts:
- all electric parts and electric components

PROTECT THE ENVIRONMENT!

15 EU DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY WITH THE REGULATION FOR MACHINERY

(direction 89/392/EEC,
in wording of statute No 22/1997 and NV No 170/1997 the CZ government)
and with the regulations enacted to its transformation.

The producer: OSTRATICKÝ, spol. s r.o.
Týnec u Břeclavi 142a
691 54, Czech republic

hereby declares that the machine described below:

Description: Leaves remover
Type: EF
Serial Nr.:
Brand : OSTRATICKY

conforms to the provisions of the regulation for machinery direction 89/392/EEC and with the national legislation derived from it.

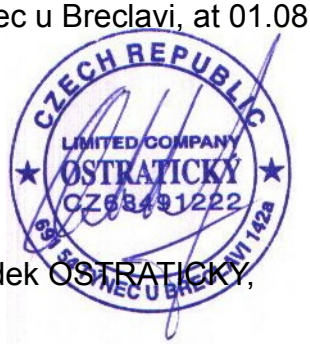
- the provision of regulation for machinery (direction 89/392/EEC) and national prescripts: statute No 34/1996, statute No 125/1997, notice of ČÚBP No 48/1982, notice of MD ČR 102/1995; direction of MC ČSR No 65/1985 HP MZ

- the provisions of the following European directives:

- the provisions of the following harmonised European standards:
ČSN EN 292-2, ČSN EN 706, ČSN EN 982, ČSN ISO 4254-1, ČSN ISO 3864

- the provision of national norms and technical notices
ČSN 119009, ČSN 470060

Signed in Tynec u Breclavi, at 01.08.2001



Dipl. Eng. Radek OSTRATICKY,
director

16 NOTES