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# Instruction manual

## Weed control equipment LPO single-side




**READ BEFORE YOU USE THE MACHINE !**

**Original instruction manual, v. 14-03-18**

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***Machine identification***

| | |
|---|---|
| Serial number | |
| Date of delivery | |

# 1. PURPOSE OF THE MANUAL

## *1.1 Warning symbols*

| | |
|---|---|
|  | **DANGER !**<br>Indicates an imminent danger which inflicts a serious injury or even death, unless you avoid it. |
|  | **WARNING !**<br>Indicates an imminent danger which can inflict a serious injury or even death, unless you avoid it. |
|  | **ATTENTION !**<br>Indicates an imminent danger which inflicts light or medium injury, unless you avoid it. |

These warning signs must be observed for your safety. When you find any of those symbols, observe the risk of potential injury, carefully read the appropriate instructions and inform other users of the machine.

## *1.2 Other symbols*

| | |
|---|---|
|  | Indicates the measures taken to protect the environment. |
|  | General warning symbol. |
|  | Particularly important technical instruction. |

## *1.3 What is this instruction manual*

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.

## *1.4 Definitions of motion*

The terms "right" and "left" are defined by rotating clockwise and counterclockwise and are determined to the running direction of the machine.

### *1.5 Storing*

Keep this manual by the hand at your workplace. Place for the documents will determine your senior engineer. Leave the manual to other users, even if you selling or renting your machine to third parties.

### *1.6 Important warning*

In case of doubt about the running of the machine, do not take unnecessarily risk and do not try to take inexpertly 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.

## 2 . WARRANTY TERMS

Owner of the new weed control equipment (hereinafter referred to as LPO) has a guarantee of 1 year on the parts and labor costs for repairs in case of any manufacture defects or defects of materials, parts and components except those are not manufactured by OSTRATICKÝ where the warranty period depends on the statement of their manufacturer.
The place for application warranty demands is the OSTRATICKÝ place of business.

### *2.1 Warranty subject*

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

### *2.2 Conditions*

#### *2.2.1 Specification*

This warranty is provided to the first purchaser and can not be transferred to the third party in the case that the machine has been resold to a third party before the expiration of the warranty period.
The warranty can be used if the defective parts are returned to the manufacturer and is limited for the supply of new parts and for the payment of the labor costs according to the norms established by the manufacturer. Replacement of the defective parts under warranty do not affect the warranty extension. In any case it does not oblige the manufacturer to exchange the machine protected by warranty.

#### *2.2.2 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.

#### *2.2.3 Warranty exceptions*

Are exempted from the warranty:
- damage on the parts and components whose regular exchange is part of the normal maintenance
- wearing parts
- due to the time of use, damages emerged from the common material, parts and components wear out
- indirect tangible and intangible damages

- damage caused by using the parts or accessories that have not been approved by the manufacturer or by disrespecting the delivery conditions
- damage emerged from putting into the operation the damaged machine before its final and complete repair

### *2.2.4 Warranty is not valid:*

- if regular inspections have not been carried out in accordance to the instruction manual provided by the delivery of the weed control equipment
- if revisions or interventions have been realized out of the authorized dealers network of the OSTRATICKÝ company or its representatives
- if the original parts have been replaced by inappropriate components
- 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 the driver and also by using the machine at work, for which was not determined.

### *2.2.5 Additional costs - specification*

Are not admitted in the warranty:
- transport costs related to the sending parts and their replacement
- the potential costs for the intervention on the place or for the transport to manufacturer's representative workshops
- labor costs caused by removing and re-installing the components and accessories that are included in the equipment of the weed control equipment and whose removal would 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 and includes:

- CE conformity marking
- year and month of production
- serial number
- machine type marking
- the highest technically permissible weight of the machine, number of the authorization for use on the road (if it was granted)


Fill in the table on page 2 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 those 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 case of damage the plate, contact your dealer to replace it.

## 4 . TERMS OF USE

### *4.1 Purpose of the machine*

Weed control equipment is carried working machine, designed for aggregation with a tractor or other tool carrier fitted by the three-point hitch category I or II, driven by an external hydraulic circuit of the carrying vehicle. It is designed to process the soil in the

trunk zone and area between the seedlings in vineyards and orchards. Any other use of the machine contradict the normal use and are not permitted without the agreement of the manufacturer. The machine is produced in variants listed in the chapter 5, with working widths 30, 40 and 50 cm.

### *4.1.1 Illegal use*

The machine may not be used if:
- the construction of the machine has been tampered, without agreement of the manufacturer
- is hitched to the carrying vehicle that does not meet the requirements of hydraulic system to drive the weed control equipment
- the weed control equipment, or any its section/part is damaged by a previous operation, or is incomplete
- the operator does not have the required qualifications

### *4.2 Operator qualification*

The machine can be used and repaired only by persons well familiarized with the construction and operation of the machine and the necessary safety regulations.
Before using the machine, familiarize yourself with all the controls and its proper use.
During the work it will be too late to do it.
The machine is not stand-alone, it is intended to be mounted on a carrier or on a tractor, designed to work in the vineyard or orchard. Specific adaptation to certain carriers has to be supplied by the manufacturer. In other cases, the installation has to be done according to the instructions and approved by your supplier to ensure the correct mounting.

### *4.3 Definition of the working places*

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 grape hoe*

| **WARNING !** | Since the moment when the driver has to leave the place for driving, must be shut down the motor of carrier vehicle and the assembly has to be locked against the possible movement by the parking brake and wheel chocks in 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. |
|---|---|
|  | |

### *4.4 Environmental conditions*

### *4.4.1 Working on slope terrain*

Adjust the speed and method of driving on a slippery surface. Be careful when driving, after mounting the weed control equipment is changed the weight distribution of the tractor or carrier.
Drive the machine at lower speeds especially on slippery surfaces, in the curves and on the transverse slope. Avoid the sudden changes of direction. To control the machine as smooth as possible.

### *4.5 Lighting, working at night*

In case of insufficient light conditions, use the light equipment on a carrier or a tractor. For good visibility, add lights on the machine. If this is not possible, use the machine only in daylight. Use the different electric circuit from the circuit of the weed control equipment.

### *4.6 Responsibility of the manufacturer and 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 the written agreement.
Ignoring these principles deprives the manufacturer of responsibility.

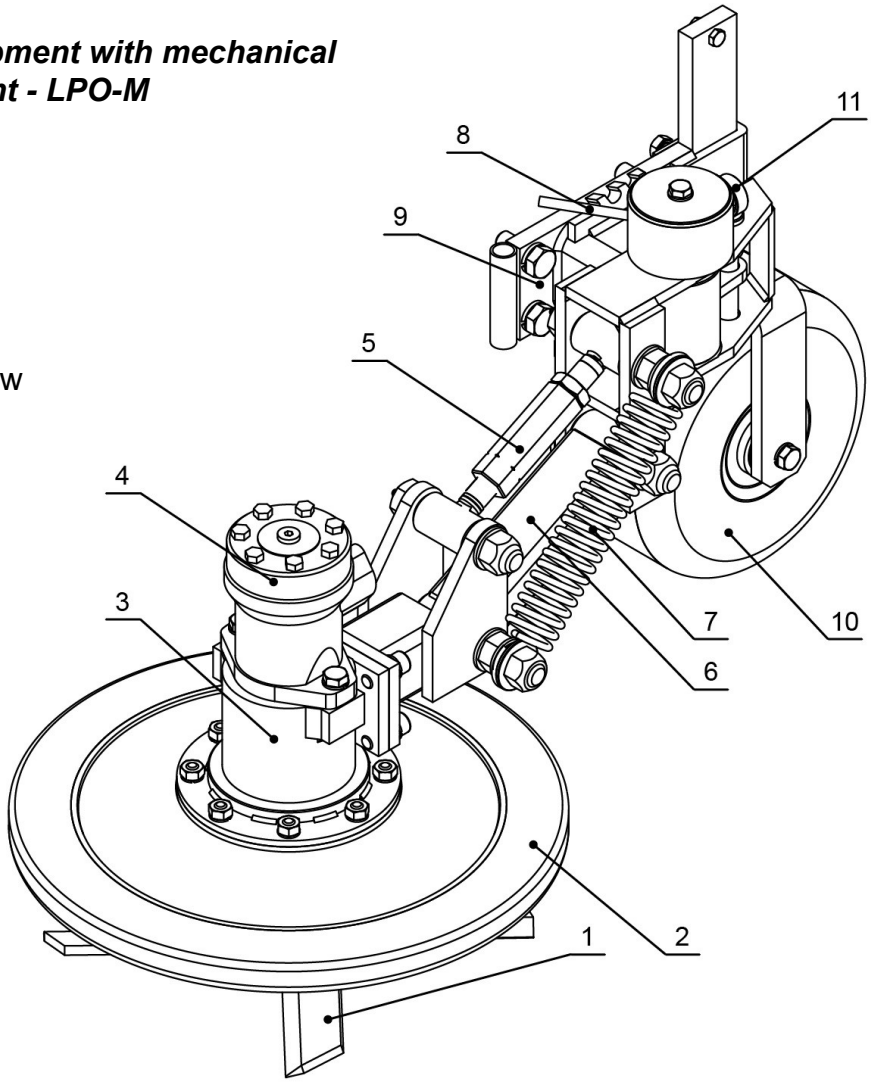
## 5 . TECHNICAL SPECIFICATIONS

### *5.1 Definitions of terms used on machines*

Weed control equipments OSTRATICKÝ are manufactured in LPO-M, LPO-H, LPO-HP version. Each version has a different way to control the lateral movement. For attachment to the tractor are using different types of suspension. The descriptions and illustrations show the commonly used combinations. However, it is possible that your machine will be combined differently. Then are valid the informations and descriptions relating to the individual components of your concretely machine

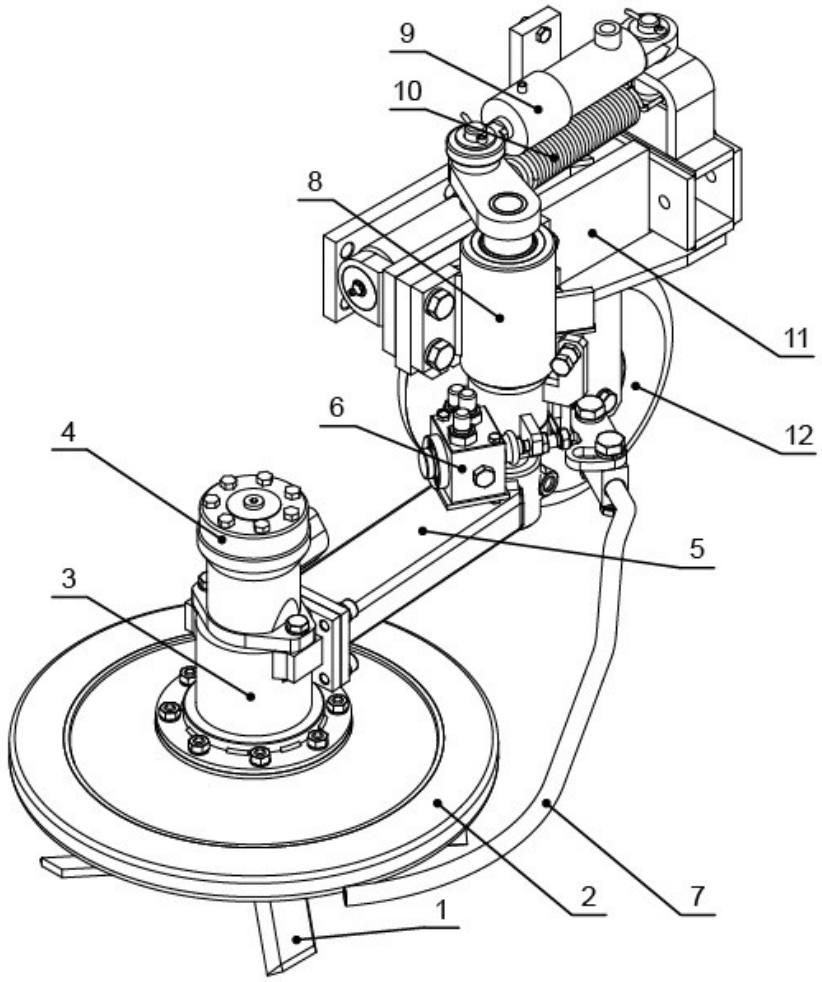
#### *5.1.1 Weed control equipment with mechanical operated lateral movement - LPO-M*

1. Loosening knives
2. Rotor cover
3. Bearing case
4. Hydromotor
5. Rotor tilt adjustment screw
6. Lower draw rod of the parallelogram
7. Knives downforce spring
8. Lateral movement spring
9. Main holder
10. Supporting wheel
11. Locking pin
12. Hydraulic hoses (are not figured)




(fig. 1)

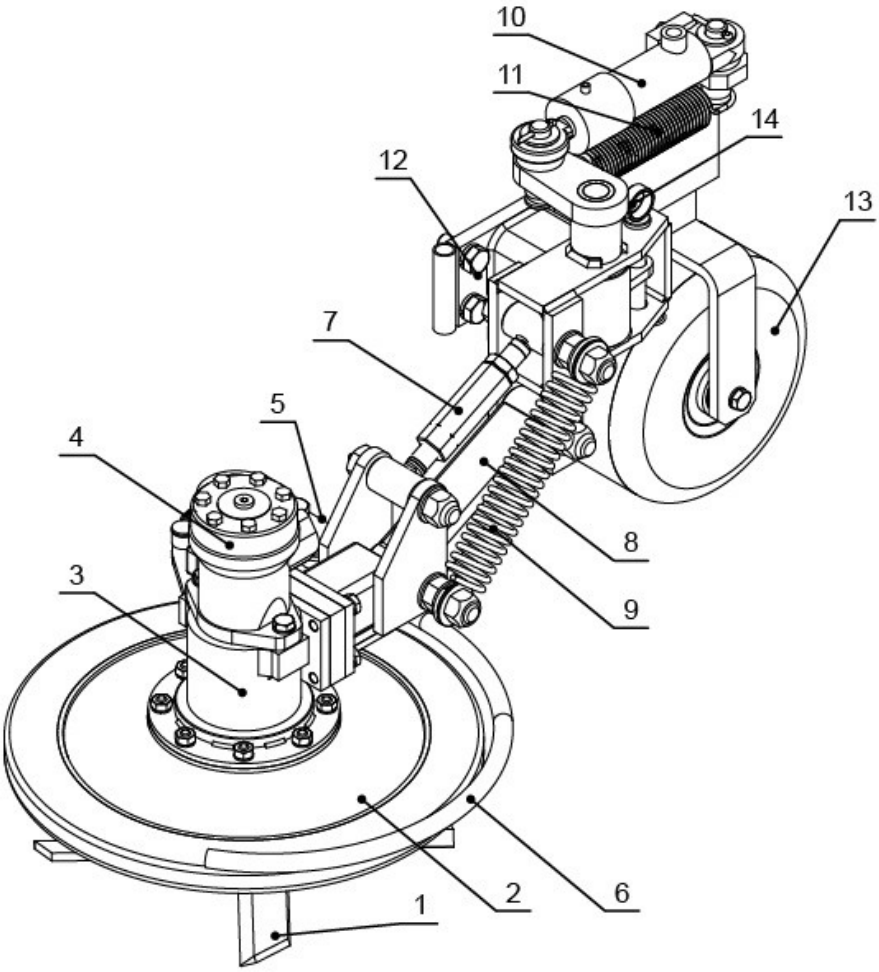
### *5.1.2 Weed control equipment with hydraulically operated lateral movement - LPO-H*




(fig. 2)

1. Loosening knives
2. Rotor cover
3. Bearing case
4. Hydromotor
5. Rotor arm
6. Control valve
7. Sensor of the lateral movement hydraulical system
8. Bearing case
9. Hydraulic cylinder of the lateral movement
10. Restoring spring of the lateral movement
11. Main holder
12. Supporting wheel
13. Hydraulic hoses (are not figured)

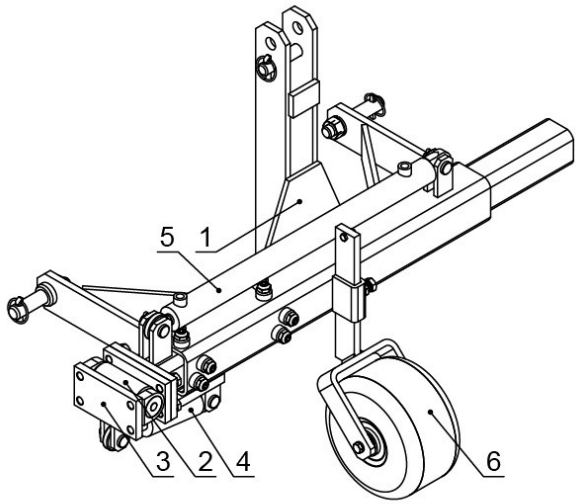
### *5.1.3 Weed control equipment with hydraulically operated lateral movement - LPO-HP*




(fig. 3)

1. Loosening knives
2. Rotor cover
3. Bearing case
4. Hydromotor
5. Control valve
6. Sensor of the lateral movement hydraulical system
7. Rotor tilt adjustment screw
8. Lower draw rod of the parallelogram
9. Knives downforce spring
10. Hydraulical cylinder of the lateral movement
11. Restoring spring of the lateral movement
12. Main holder
13. Supporting wheel
14. Locking pin
15. Hydraulic hoses (are not figured)

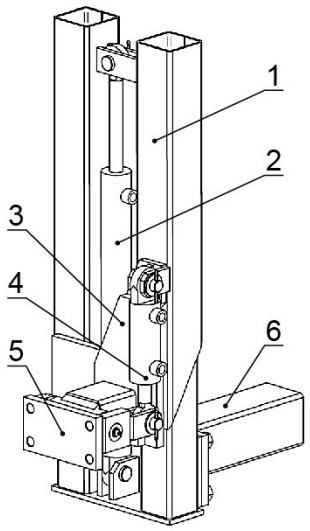
### *5.1.4 Suspension of the working tools type 12, 12M, 12H – to front/rear 3-point suspension*




1. 3-point suspension
2. Tilting head
3. Flange of the tilting head
4. Extensible bolt of the tilt adjustment (12M)
4. Hydraulic cylinder of the tilt adjustment (12H)
5. Hydraulic cylinder of the extending
6. Supporting wheel
7. hydraulic hoses (is not figured)

(fig. 4)

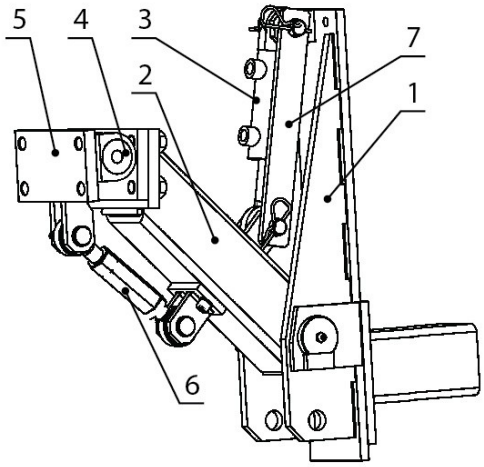
### *5.1.5 Suspension of the working tools type 01E, 02E, 01, 02 – to the connecting chassis*




1. Lifting post type 01E (50/60)
1. Lifting post type 01 (70/80)
2. Hydraulic cylinder of the lifting
3. Tilting head
4. Hydraulic cylinder of the tilt adjustment
5. Flange of the tilting head
6. Suspension tube
7. Hydraulic hoses (is not figured)

(fig. 5)

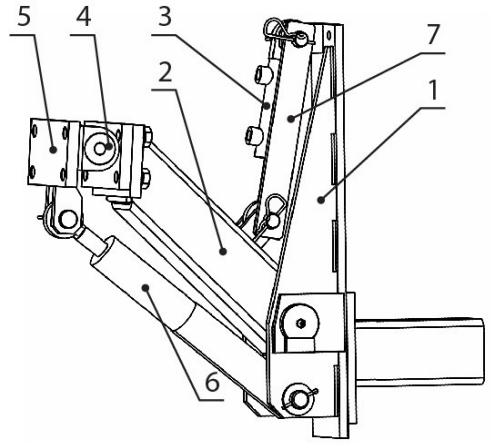
### *5.1.6 Suspension of the working tools type 03lpo – to the connecting chassis*




1. Suspension console
2. Lifting arm
3. Hydraulic cylinder of the lifting
4. Tilting head
5. Flange of the tilting head
6. Extensible bolt of the tilt adjustment
7. Arresting belt of the hydraulic cylinder of the lifting
8. Hydraulic hoses (is not figured)

(fig. 6)

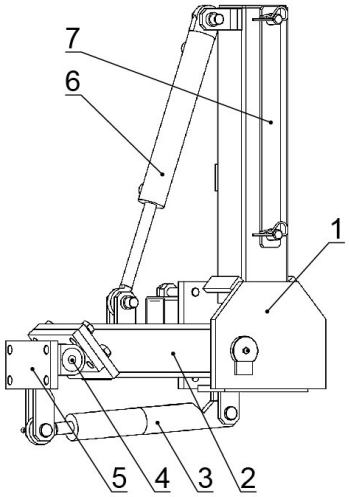
### *5.1.7 Suspension of the working tools type 03, 04 – to the connecting chassis*




1. Suspension console
2. Lifting arm
3. Hydraulic cylinder of the lifting
4. Tilting head
5. Flange of the tilting head
6. Extensible bolt of the tilt adjustment (03)
7. Hydraulic cylinder of the tilt adjustment (04)
8. Arresting belt of the hydraulic cylinder of the lifting
9. Hydraulic hoses (is not figured)

(fig. 7)

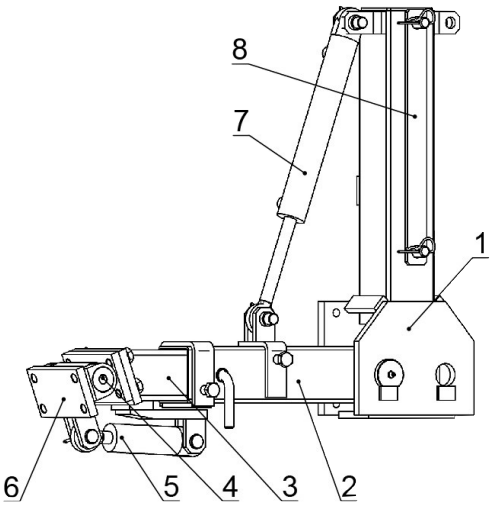
### *5.1.8 Suspension of the working tools type 03m, 04m – to the connecting chassis*




1. Suspension console
2. Lifting arm
3. Hydraulic cylinder of the tilt adjustment (type 04m)
3. Extensible bolt of the tilt adjustment (type 03m)
4. Tilting head
5. Flange of the tilting head
6. Hydraulic cylinder of the lifting
7. Arresting belt of the hydraulic cylinder of the lifting
8. Hydraulic hoses (is not figured)

(fig. 8)

### *5.1.9 Suspension of the working tools type 05M, 05H – to the connecting chassis*




1. Suspension console
2. Lifting arm
3. Extensible arm
4. Tilting head
5. Hydraulic cylinder of the tilt adjustment (type 05H)
5. Extensible bolt of the tilt adjustment (type 05M)
6. Flange of the tilting head
7. hydraulic cylinder of the lifting
8. Arresting belt of the hydraulic cylinder of the lifting
9. hydraulic hoses (is not figured)

(fig. 9)

### *5.2 Operation parameters*

| | |
|---|---|
| Hydraulic quick couplings | ISO DN12,5<br>ISO DN20 |
| Machine linkage | TBZ I, II<br>3-point linkage cat. I, II |
| Wiring | 12 V |

### *5.3 Operation parameters - LPO-M*

| | |
|---|---|
| Loosening head revolutions: | min. 240 RPM<br>max. 300 RPM |
| Oil flow (for continuous work) | min. 30 l/min<br>max. 35 l/min |
| Maximum pressure in the hydraulic circuit: | 180 bars |
| Maximum backward pressure: | 30 bars |
| Maximum pressure of the return line (drain pipe) | 2,5 bar |
| Oil purity | min. class 9, (25 μm) |

### *5.4 Operation parameters - LPO-H, LPO-HP*

| | |
|---|---|
| Loosening head revolutions: | min. 240 RPM<br>max. 300 RPM |
| Oil flow (for continuous work) | min. 40 l/min<br>max. 45 l/min |
| Maximum pressure in the hydraulic circuit: | 180 bars |
| Maximum backward pressure: | 30 bars |
| Maximum pressure of the return line (drain pipe) | 2,5 bar |
| Oil purity | min. class 9, (25 μm) |

### *5.5 Hydraulic block*

Weed control equipments LPO have to be equipped with a special hydraulic block which enables set up the optimum operating conditions. This hydraulic block can be the part of a tractor or carrier or can be added. The specific type is always determined by the manufacturer of the weed control equipment.

### *5.6 Oil purity*

Oil purity for power the weed control equipment has to comply the quality class 9, i.e. 25 μm or better, carrying vehicle has to be equipped with the necessary filter.

### *5.7 Working width, tractor connection options*

| **Model** | **LPO-M** | | |
|---|---|---|---|
| **Type** | **LPO-xxxM/12** | **LPO-xxxM/12M** | **LPO-xxxM/12H** |
| **Linkage** | 3-point linkage | 3-point linkage | 3-point linkage |
| **Tilting** | without tilting | mechanical | hydraulical |
| **Working width** | 400 - 500 | | |
| **Aggregation with the tractor** | rear | rear | rear |
| | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | |

* Linkage dimensions cat. I and cat. I / II according to ISO 730-1.
** „xxx“ means working width of the machine in the type term.

| Model | LPO-H | | |
|---|---|---|---|
| Type | LPO-xxxH/12 | LPO-xxxH/12M | LPO-xxxH/12H |
| Linkage | 3-point linkage | 3-point linkage | 3-point linkage |
| Tilting | without tilting | mechanical | hydraulical |
| Working width | 300 - 400 | | |
| Aggregation with the tractor | rear | rear | rear |
| | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | |

* Linkage dimensions cat. I and cat. I / II according to ISO 730-1.
** „xxx“ means working width of the machine in the type term.

| Model | LPO-M | | |
|---|---|---|---|
| Type | LPO-xxxHP/12 | LPO-xxxHP/12M | LPO-xxxHP/12H |
| Linkage | 3-point linkage | 3-point linkage | 3-point linkage |
| Tilting | without tilting | mechanical | hydraulical |
| Working width | 300 - 400 - 500 | | |
| Aggregation with the tractor | rear | rear | rear |
| | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | |

* Linkage dimensions cat. I and cat. I / II according to ISO 730-1.
** „xxx“ means working width of the machine in the type term.

| Model | LPO-M | | | | | | |
|---|---|---|---|---|---|---|---|
| Type | LPO-xxxM/01E | LPO-xxxM/02E | LPO-xxxM/01 | LPO-xxxM/02 | LPO-xxxM/03lpo | LPO-xxxM/03 | LPO-xxxM/04 |
| Linkage | vertical 01E | vertical 02E | vertical 01 | vertical 02 | tilting 03lpo | tilting 03 | tilting 04 |
| Tilting | without tilting | hydraulical | without tilting | hydraulical | mechanical | mechanical | hydraulical |
| Working width | 400 - 500 | | | | | | |
| Aggregation with the tractor | side | side | side | side | side | side | side |
| | front | front | front | front | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | | | | | |

** „xxx“ means working width of the machine in the type term.

| Model | LPO-H | | | | | | |
|---|---|---|---|---|---|---|---|
| Type | LPO-xxxH/01E | LPO-xxxH/02E | LPO-xxxH/01 | LPO-xxxH/02 | LPO-xxxH/03lpo | LPO-xxxH/03 | LPO-xxxH/04 |
| Linkage | vertical 01E | vertical 02E | vertical 01 | vertical 02 | tilting 03lpo | tilting 03 | tilting 04 |
| Tilting | without tilting | hydraulical | without tilting | hydraulical | mechanical | mechanical | hydraulical |
| Working width | 300 - 400 | | | | | | |
| Aggregation with the tractor | side | side | side | side | side | side | side |
| | front | front | front | front | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | | | | | |

** „xxx“ means working width of the machine in the type term.

| **Model** | **LPO-HP** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Type** | **LPO-xxxM/01E** | **LPO-xxxM/02E** | **LPO-xxxM/01** | **LPO-xxxM/02** | **LPO-xxxM/03lpo** | **LPO-xxxM/03** | **LPO-xxxM/04** |
| **Linkage** | vertical 01E | vertical 02E | vertical 01 | vertical 02 | tilting 03lpo | tilting 03 | tilting 04 |
| **Tilting** | without tilting | hydraulical | without tilting | hydraulical | mechanical | mechanical | hydraulical |
| **Working width** | 300 – 400 - 500 | | | | | | |
| **Aggregation with the tractor** | side | side | side | side | side | side | side |
| | front | front | front | front | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | | | | | |

** „xxx“ means working width of the machine in the type term.

| **Model** | **LPO-M** | | | | |
|---|---|---|---|---|---|
| **Type** | **LPO-xxxM/03lpom** | **LPO-xxxM/03m** | **LPO-xxxM/04m** | **LPO-xxxM/05M** | **LPO-xxxM/05H** |
| **Linkage** | tilting 03lpom | tilting 03m | tilting 04m | tilting 05M | tilting 05H |
| **Tilting** | mechanical | mechanical | hydraulical | mechanical | hydraulical |
| **Working width** | 400 - 500 | | | | |
| **Aggregation with the tractor** | front | front | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | | | |

** „xxx“ means working width of the machine in the type term.

| **Model** | **LPO-H** | | | | |
|---|---|---|---|---|---|
| **Type** | **LPO-xxxH/03lpom** | **LPO-xxxH/03m** | **LPO-xxxH/04m** | **LPO-xxxH/05M** | **LPO-xxxH/05H** |
| **Linkage** | tilting 03lpom | tilting 03m | tilting 04m | tilting 05M | tilting 05H |
| **Tilting** | mechanical | mechanical | hydraulical | mechanical | hydraulical |
| **Working width** | 300 - 400 | | | | |
| **Aggregation with the tractor** | front | front | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | | | |

** „xxx“ means working width of the machine in the type term.

| **Model** | **LPO-HP** | | | | |
|---|---|---|---|---|---|
| **Type** | **LPO-xxxHP/03lpom** | **LPO-xxxHP/03m** | **LPO-xxxHP/04m** | **LPO-xxxHP/05M** | **LPO-xxxHP/05H** |
| **Linkage** | tilting 03lpom | tilting 03m | tilting 04m | tilting 05M | tilting 05H |
| **Tilting** | mechanical | mechanical | hydraulical | mechanical | hydraulical |
| **Working width** | 300 - 400 - 500 | | | | |
| **Aggregation with the tractor** | front | front | front | front | front |
| Transport speed 25 km.h$^{-1}$ (15 MPH) | | | | | |

** „xxx“ means working width of the machine in the type term.

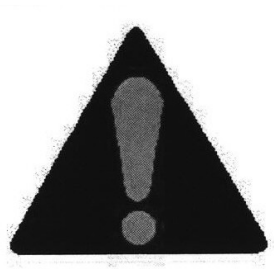
# 6 . GENERAL SAFETY RULES

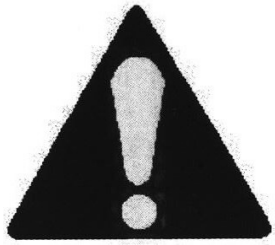
## *6.1 General informations*

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

**CAUTIOUSNESS and CAREFULNESS are the main guarantee of your safety.**

**Rules and regulations that lead to the prevention of accidents and are related to safety, occupational hygiene, health, environment and the traffic protection must be observed at all times!**

| **WARNING !** | Make sure that no person, no animal and no obstacle gets close to the machine before it is put into operation and during maneuvering.<br>Keep children at a safe distance from the machine.<br>Before any intervention on the machine, make sure that the machine can not be accidentally started.<br>Before every use, after any adjustment and servicing, make sure that all safety devices are in place and in good condition and that they are ready to be used.<br>Never place your hands, arms or legs near to the moving parts even at low speeds.<br>Keep a safety distance from the machine. |
|---|---|
|  | |

| **ATTENTION !** | Before every use, check the tightness of all bolts, joints and bolts. Tight them if they are loosened.<br><br>Make sure that land does not contain any inequalities and debris (wood, iron, plastic, etc.) that could damage the machine. When you hear an unusual noise or feel a vibration, it is necessary to stop the machine. Search and remove the cause of failure before you start a work again.<br><br>Call your dealer if necessary. |
|---|---|
|  | |

- Maximal transport speed on the road is 25 km.h-1 (15 MPH), on the field has to be appropriately reduced.
- In this instruction manual there are troubles and failures introduced and described that can occur on the product and which can user fix with the assistance of appropriately trained staff. Report other problems and failures directly to the supplier which is always available for you.
- It is forbidden to carry out any intervention on the machine or modifications that are not introduced in this instruction manual and are not approved by the manufacturer.
- The manufacturer is not responsible for damages to persons or close neighborhood, which are caused by nonobservance the instruction manual.
- In the intervening time when the product is not used and it is aggregated with carrier vehicle, do not leave the keys in the ignition box of the vehicle.
- Make the maintenance and control of the tightening bolt connections in regular intervals.
- Keep the machine clean, perform its cleanup after a work.

- All work on the machine must be carried out only during standstill time of the machine and properly locked against movement.
- It is forbidden to carry out the maintenance on the machine lifted on the suspension locked against fall by struts.
- Keep clean particularly the hydraulic machine elements.
- Do not use gasoline or other solvents and chemicals as a cleaning detergent.
- Do not use the machine until you are well familiarized its use.
- Do not make any repairs that are beyond your capabilities.

### *6.2 Terms of use on a road*

- It is allowed to connect the weed control equipment to a carrier vehicle if it is not exceeded the maximum allowed weight of a carrying vehicle or the maximum allowed weight on the axles and load of the front axle is not less than 20 % of the total weight of a carrying vehicle with the machine.
- Carrying vehicle has to be in the rear equipped by a triangle for slow vehicles and on the cab roof there has to be attached orange warning flashing light.
- During the transportation on roads the machine must be in transport position as it is described in the instruction manual.
- The orange flashing light has to be activated on a carrier during the movement on a roads.
- The maximum allowed transport speed is 25 km.h-1, during a transport on roads may not be exceeded.
- Before driving, all the residues that could contaminate a road must be removed from the cultivator.
- During transport, a driver must observe the current national regulations for a road.

### *6.3 Warnings / 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 on the weed control equipments**

| | |
|---|---|
|  | Before you use the machine read carefully the instruction manual. |

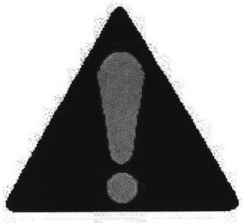
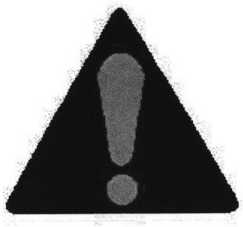
| | |
|---|---|
|  | Before service, adjusting or maintenance, lock the machine against launching, remove the key from the ignition box and follow the instruction manual. |
|  | Keep a safety distance. |
|  | ATTENTION! Risk of death or serious injury of fingers or hand - keep a safety distance. |
|  | 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. |
|  | Maximum slope ability of the machine is determined by the maximum slope ability of a carrying vehicle. |

### *6.4 Environmental protection*

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.
Avoid leakage of hydraulic fluid into the soil and groundwater !

| **Do not try to fix the hydraulic hose!** | |
|---|---|
|  | Contact your dealer as soon as possible. |

| **WARNING !** | | |
|---|---|---|
|  |  | Leaking hydraulic fluid under pressure can have sufficient force to penetrate skin and cause serious injury.<br>Just the pressure of 20 bar is enough.<br>in the case of this kind of injury immediately contact your doctor. |
| **WARNING !** | | Avoid any contact of hydraulic fluids and solvents with skin, eyes, mouth. Most of these products contain substances harmful to your health.<br>Always follow all informations on a labels of containers with toxic products.<br>in the case of accident, immediately contact your doctor and inform him about the product. |
|  | | |

**It is recommended to have a first aid kit at hand!**

### *6.5 Machine blocking (congestion)*

Congestion of the weed control equipment may occur for several reasons. Rotor of the weed control equipment usually stops rotating.

In that case:

1. Stop the machine
2. Stop the engine, remove a key
3. Put the gear shifting lever to neutral
4. Pull up the parking brake
5. Search for a cause of the congestion
6. After you discover it, try to disengage it
7. After disengage the machine can be commissioned at the minimum power

| | |
|---|---|
|  | All moving parts of the weed control equipment have to move freely and without restraints. |
|  | During the cleaning, use gloves. |

### *6.6 Attachment*

### *6.6.1 General informations*

Connecting the machine to a carrier may be performed only in designated areas.
Do not stand between a carrier and the machine during connecting.
Do not stand between a carrier and the machine during a lifting maneuver of a carrier.
After connecting the machine lock the connecting device.
Verify the correct locking and connection condition before driving.
Make sure that connecting the machine does not cause overload or poor weight distribution to a carrier, which could disrupt its stability.
Make sure that machine connection does not limit the maneuverability of a carrier vehicle.

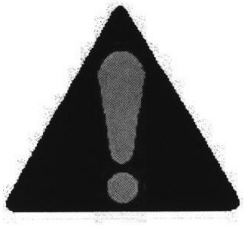
### *6.7 Basic maintenance and repair*

### *6.7.1 General issues*

Regular maintenance and repairs must be performed by qualified person.
Keep the machine and its accessories in perfect condition.
Ensure the good quality and purity of the hydraulic fluid.
Note the regularity of maintenance intervals.

### *6.7.2 Stopping the machine*

Before every intervention:

| **WARNIING !** | |
|---|---|
|  | Since the moment when a driver has to leave the place for driving, the motor of carrier vehicle must be shut down and the assembly has to be locked against a possible movement by the parking brake and wheel chocks in a 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. |

### *6.7.3 Stopping the parts during the machine movement*

Before any action:
1. turn off the drive and the engine of a carrier vehicle
2. disconnect the ignition box, pull out the power supply 12VDC
3. wait until all moving parts are stopped
4. disconnect the hydraulic hoses

### *6.7.4 Stability of the machine and its parts*

Before every intervention:
1. lower the machine to the appropriate working height and secure it against the fall
2. do not enter under the unsecured device

### *6.7.5 Cooling a hot parts of the machine*

Let the hydraulic fluid in the machine cool down.

### *6.7.6 Welding*

Disconnect the battery of a carrier vehicle during a welding on the machine, if the machine is connected. Protect flexible pipes, hoses, electrical cords and all plastic parts against a damage by the incandescent sparks that could cause a loss of hydraulic fluid or short circuit.

### *6.7.7 Interventions into the electrical circuits*

Before you start any electrical work, disconnect the battery. It is not recommended to interfere the electrical circuit without the necessary experience and without a wiring diagram.

### *6.7.8 Interventions into hydraulic*

Before any intervention to the hydraulic circuit, make sure that it is not under pressure. Eliminate the pressure before disconnecting hydraulic circuits. It is recommended not to interfere the hydraulic circuit without a necessary experience and without hydraulic diagram.

### *6.7.9 Repairs*

Remove or have one's removed any failure that could threat the safety.
Repair any leaks or damage of the hydraulic circuit.

| | | |
|---|---|---|
|  |  | Do not stop the leakage by bare hands or other body parts. |

Defective or damaged covers and fuses have to be replaced immediately.

Hoses or pipes, that have already been used in another circuit, may not be used again.

Rigid pipe must not be welded. When the flexible or rigid pipe is damaged, it must be immediately replaced.

Repairs of the parts under pressure or under voltage (springs, batteries, etc.) require specific working procedures and tools. It can be performed only by qualified persons.

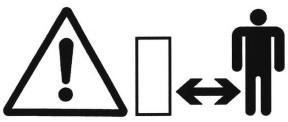
# 7 . ENVIRONMENTAL PROTECTION

## *7.1 Storing, preventing of losses and environmental damage*

| | |
|---|---|
|  | When removing the used hydraulic fluid and other lubricants, observe the regulations for environmental protection.<br>Do not spill any used lubricants and hydraulic fluids it on a ground and do not throw it into a waste. |
|  | **Recommendation:**<br>Let your supplier or your authorized staff perform the maintenance which is necessary to prevent such losses.<br>Wash the places on a skin that came into contact with hydraulic fluid and lubricants during a work very carefully by water and soap.<br>Keep children away from the hydraulic fluids and lubricants. Follow the instructions on the packaging of these products. |

# 8 . MANIPULATION

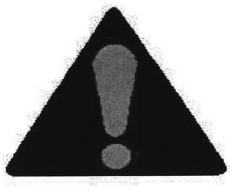
During transport, acceptance, installation and storing to its place you must use appropriate device. Make always sure about right securing on the designated places before handling. During a transport on a carriage the device must be attached to a palette.
The machine can be optionally equipped with a stand with wheels. Four turntable wheels can be used only for a setting to certain position and they cannot be used for pulling the machine over long distances.

| | |
|---|---|
|  | During the manipulation keep the safe distance from the machine. |

## *8.1 Instructions for safe handling*

- perform the measures against the fall of the device on hydraulic suspension
- do not enter under the unlocked machine
- do not allow any unauthorized person to operate with the machine
- do not try to put the machine into operation if it is defective
- never wear loose or opened clothing as scarves, loose coats, ties, etc., which could stuck in the moving parts of the machine
- never use the machine under the influence of alcohol, drugs, medication or in any event of excessive fatigue

| | |
|---|---|
|  | All moving parts of the weed control equipment have to move freely and without restraints. Before any initiation of the works, check it visually. |
|  | During the cleaning, use protective gloves. |

| WARNING ! | |
|---|---|
|  | Since the moment when a driver has to leave the place for driving, the motor 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. |

# 9 . MOUNTING AND INSTALLATION

## *9.1 Receiving the machine*

### *9.1.1 Unloading delivered machine*

Weed control equipment is usually supplied assembled, stored on the shipping pallet. If the machine is supplied dismantled, its usually provided as pre-assembled groups:
- working tool (weed control equipment) with hydraulic control
- suspension of the working tool (by type)

### *9.1.2 Equipment on request*

- connecting frame on a tractor or connecting tube
- set of parts for assembling the pressure-less outlet
- oil flow control valve
- hydraulic or solenoid operated valve for controlling the functions
- electrically operated STOP button
- various special hydraulic components
- supporting wheels / rollers
- extended holder for supporting wheels / rollers
- passive set
- tine with share
- cutting knife
- cutting disc
- share for ploughing towards + sleeve
- share for ploughing away

### *9.1.3 Delivery*

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

To move the machine, use a transport pallet or forklift.

The machine can be optionally equipped with a stand with wheels. Four turntable wheels can be used only for the setting to certain position and they cannot be used for pulling the machine over long distances. Do not move the machine over long distances in any case. The wheels are designed only for routing the machine during the connection and for pulling the machine into a workshops niche during the storage.

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

### *9.2 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.

### *9.3 Mounting methods*

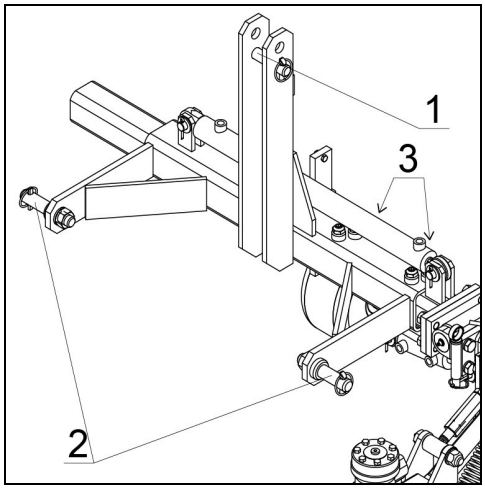
Mounting procedures shown below are standard mounting procedures. In a case of differences contact your dealer or an authorized representative of the manufacturer.

#### *9.3.1 Connecting the machine to a carrier vehicle, mechanical mounting*

#### *9.3.1.1 Connecting the machine to the 3-point linkage*

Weed control equipments use for a connection to a carrying vehicle usually the 3-point linkage category I or II. Make always sure before connecting the machine, that the category of the 3-point linkage is the same as the machine suspension dimensions. Always properly check the perfectness and safety of the connection between the machine and carrier. You will prevent possible damage to the machine or injury.

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.
5. Set up the overlap of the weed control equipment over the profile of a tractor.
6. Thoroughly tight the fastening bolts (3) of the supporting arm.
7. Connect the hydraulic system of the machine to a carrier vehicle.



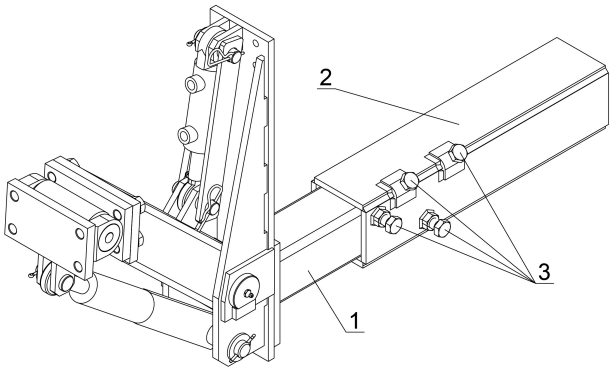

(fig.10)

#### *9.3.1.2 Connecting the machine to a carrying vehicle using the supporting frame*

Attach the hydraulically operated weed control equipment to adequately strong and professionally welded supporting frame.

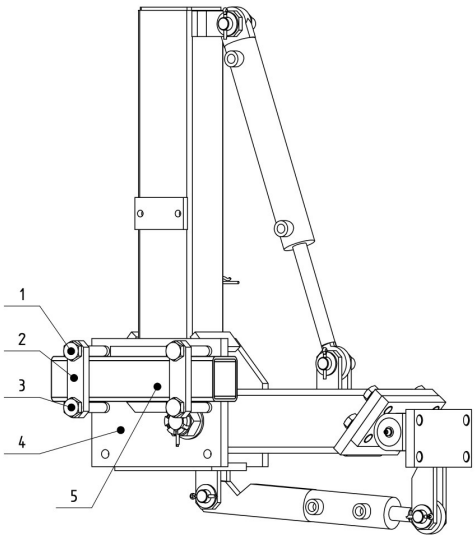
a) side mounted - type 01E, 02E 01, 02, 03, 04
- connection to the connecting tube

1. Insert connecting tube (1) of the hydraulically operated weed control equipment into the tube of the supporting frame on a tractor (2).
2. Set overlap of the weed control equipment over the profile of a tractor.
3. Secure the connecting tube (1) in the connecting frame tube (2) using the bolts (3).
4. Thoroughly tight all bolts.
5. Connect the hydraulic system of the machine to a carrying vehicle.




(fig. 11)

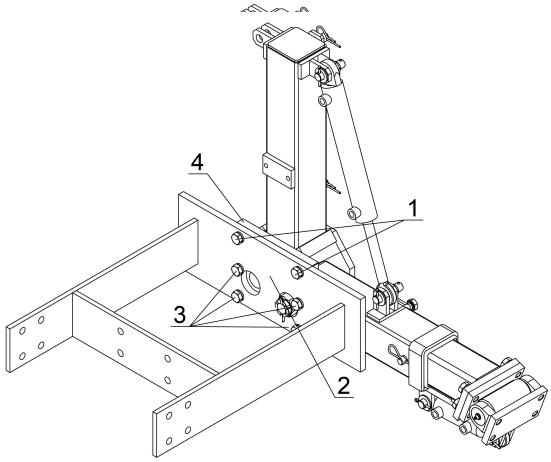
b) front mounted - type 03m, 04m, 05M, 05H - connection to the connecting tube 70x70x5 mm




(fig. 12)

1. Lift the console of the hydraulically operated weed control equipment to vertical position so that the flange is headed (4) down.
2. Put the spring pads and yokes (2) on the fastening bolts (1).
3. Insert bolts (1) into the upper holes of the flange (4) of the console of the hydraulically operated weed control equipment and partially tight them.
4. Lean the console by the upper bolts (1) on the supporting frame tube (5).
5. Insert the lower fastening bolts (3) fitted with the spring pads into the lower holes of the yokes (2) and bolt them into the flange (4) of the console of the hydraulically operated weed control equipment.
6. Set desired overlap of the weed control equipment over the edge of a tractor.
7. Thoroughly tight all bolts.
8. Connect the hydraulic system of the machine to a carrying vehicle.

c) front mounted - 05M, 05H - connection to the connecting flange




(fig. 13)

1. Lift up the post of the hydraulically operated weed control equipment to a vertical position so that the flange is headed (4) down.
2. Put the spring pad on the fastening bolts (1) and (3).
3. Place the flange (4) of the console of the hydraulically operated weed control equipment to the flange (2) of the connecting frame.
4. Put bolts (1) fitted with spring pads into the upper holes of the flange (4) of the hydraulically operated weed control equipment console and tight them up.
5. Successively insert the bolts (3) fitted with spring pads into the other holes in the flange of the connecting frame (2) and bolt them into the console flange (4) of the hydraulically operated weed control equipment. Thoroughly tight bolts (1) and (3).
6. Slightly loose the bolts (5) and set desired overlap of the weed control equipment over the edge of a tractor by moving the arm (6).
7. Thoroughly tight all bolts.
8. Connect the hydraulic system of the machine to a carrying vehicle.

### *9.3.1.3 Connecting the machine to a carrying vehicle using the supporting frame*

Carrying vehicle uses the universal connection by the connecting frame in extraordinary cases where is not possible to connect weed control equipments with a carrier vehicle using a 3-point linkage. The basic part of the supporting frame usually consists of the connecting tube:

- rectangular thick-walled tube 80x80x8 mm - type 01E, 02E - side, front mounted
- rectangular thick-walled tube 100x100x8 mm - type 01, 02, 03 04 - side mounted
- rectangular thick-walled tube 120x120x8 mm - type 01, 02, 03 04 - side mounted
- rectangular thick-walled tube 70x70x5 mm - type 03m, 04m, 05M, 05H - side, front mounted
- mounting flange - type 05M, 05H - front mounted

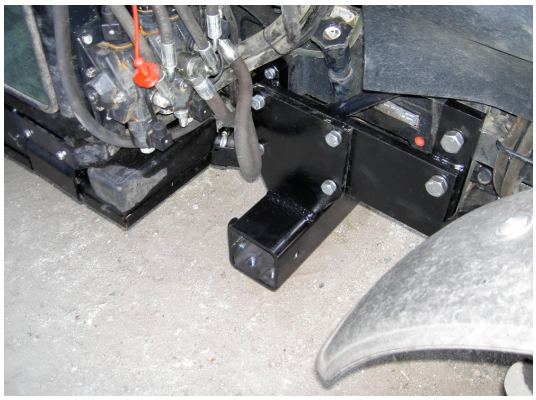
### *9.3.1.4 Connecting the machine to a tractor using the supporting frame - mounting height*

The correct height of the working tool must be always observed when the universal connection frame for connecting the weed control equipment to a tractor is mounted – see chap. 9.3.1.5 and 9.3.1.6

It is necessary to observe this mounting height to ensure sufficient sink of the working tools - cultivation blade in different terrain conditions and to achieve sufficient lift to position for safe transport.

### *9.3.1.5 Mounting the machine to the side of a tractor - type 01E, 02E, 01, 02, 03, 04*

The supporting frame must be executed with consideration to the desired height position of the hydraulically operated weed control equipment on a tractor (see chapter 9.3.1.4) and with consideration on the size and direction of the force that will have an effect on the machine during the work when attaching a tube holder.
The holder of the connecting pipe must be adequately rigid and mounted on a tractor to ensure a sufficiently stable position of the machine at work in the soil.
If you are not sure, consult it with your local dealer or service center for your tractor.
Pay attention that the connecting pipe holder has been attached to a tractor always at least in three different points.

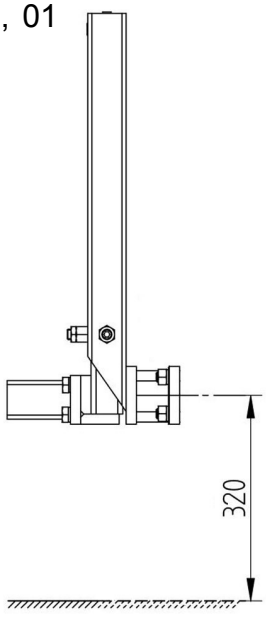


(fig. 14)

(fig. 15)

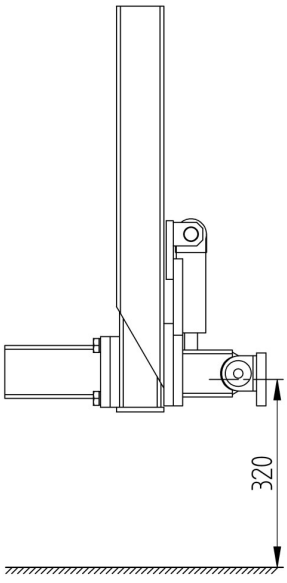
Always consider the recommended mounting heights for each type of suspension when determining the mounting height of the connecting tubes. The following diagrams show recommended mounting heights for each types of suspension.

type 01E, 01

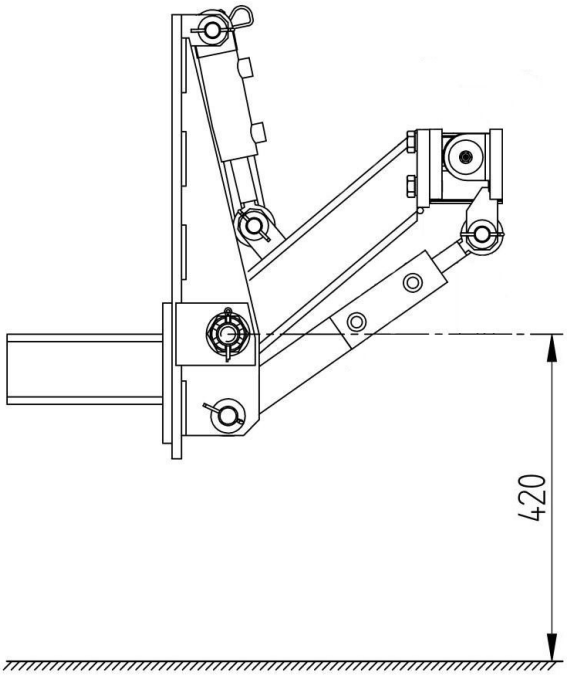



(fig. 16)

type 02E, 02




(fig. 17)

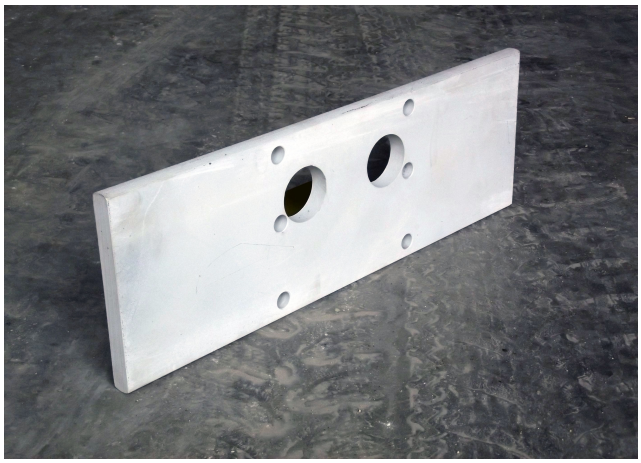



(fig. 18)

### *9.3.1.6 Mounting the machine to the front of a tractor - type 03m, 04m, 05, 05A*

Suspension on the frame with a rectangular thick-waled tube 70x70x5 mm (this frame can also be used to attach the post of the blade trimmers) can be used for attaching the machine, or mounting the flange. Attachment with mounting flange has higher stability and we give him precedence particularly in heavy soil conditions.
Installation of supporting tube and mounting flange must be made with regard to desired height position of the hydraulically operated weed control equipment (see chapter 9.3.1.4) on a tractor and the size and direction of the force that will effect on the machine during the work.
Holder of the supporting tube must be adequately firm and mounted on a tractor to ensure a stable position of the machine during the work in the soil. If you are not sure, consult it with your local dealer or service center for your tractor.

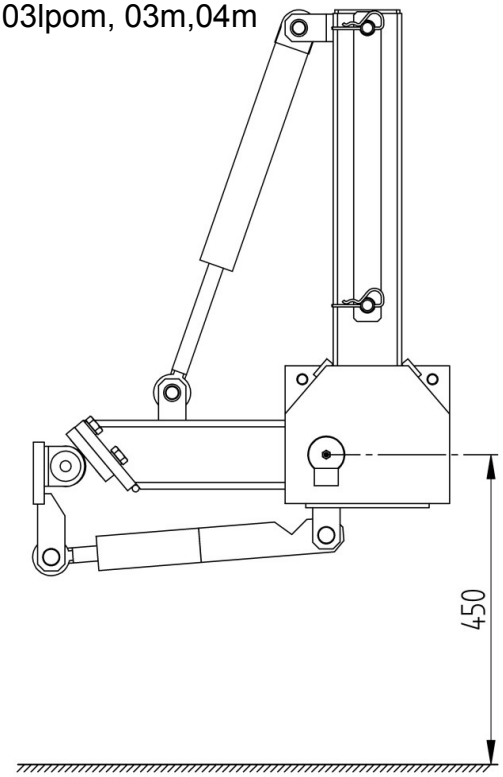
(fig. 19)



(fig. 20)

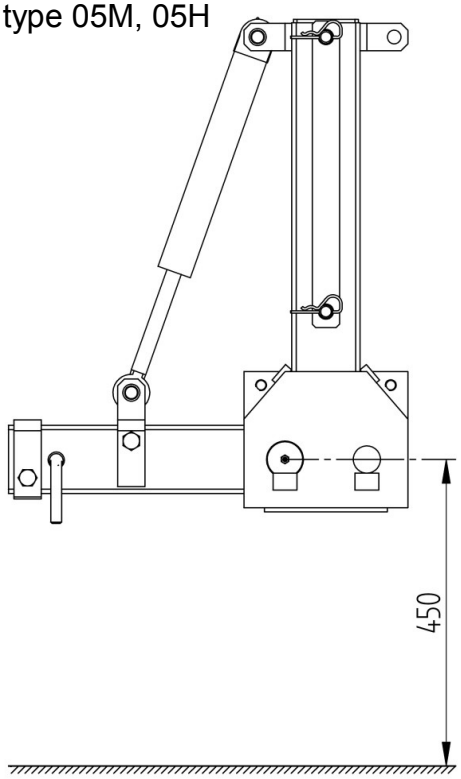
Always consider the recommended mounting heights for each type of suspension when determining the mounting height of the connecting tubes. The following diagrams show recommended mounting heights for each types of suspension.

type 03lpom, 03m,04m




(fig. 21)

type 05M, 05H




(fig. 22)

### *9.3.2 Hydraulic assembly*

| | |
|---|---|
| ! | **Before you connect the hydraulic quick couplings of the machine, provide that they are cleaned of dirts (soil, sand, dust). In addition, provide the purity of hydraulic quick couplings of the carrier and make sure that there is not residual pressure.** |

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** |
| **sliding** | **=** | **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 grape hoe connect to the hydraulic system of the tractor 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 (backflow from the control valves)**

- special outlet of the hydraulic system of the tractor, maximum pressure of the backward line 2,5 bars

**Pressure-less outlet (backflow from the hydraulic motors)**

- special outlet of the hydraulic system of the tractor, maximum pressure of the backward line 2,5 bars

### *9.3.3 Electric assembly*

LPO-H and LPO-HP can be optionally equipped with the electric controlled STOP-button. This device is connected via standard three-pin socket. When you use and drive the machine, always make sure about the perfectness of the wiring.

### *9.4 Ballasting the carrier - wheel tractors*

| | |
|---|---|
|  | **If you are using the tractor with insufficient weight, it is necessary to weight it adequately.** |
|  | Pay attention that you do not cross the maximum allowed load up of the axles during the ballasting. It can disturb stability of the tractor / carrier. |

Several solutions for ballasting:

1. Wheel ballast on the left rear wheel.
2. Wheel ballast on the left front wheel.
3. Ballast hanged in the rear 3-point linkage.
4. Tank on the hydraulic switchboard provided by the ballasts.
5. Combination of these four methods.

These additional weights must be added in sufficient quantity to provide sufficient stability of tractor and machine. In a case of ballasting the chassis of the carrier or tractor observe the manufacturer's regulations of the tractor.

## 10 . PUTTING INTO OPERATION AND WORK WITH THE MACHINE

## 10.1 Weed control equipment with mechanical lateral movement - LPO-M

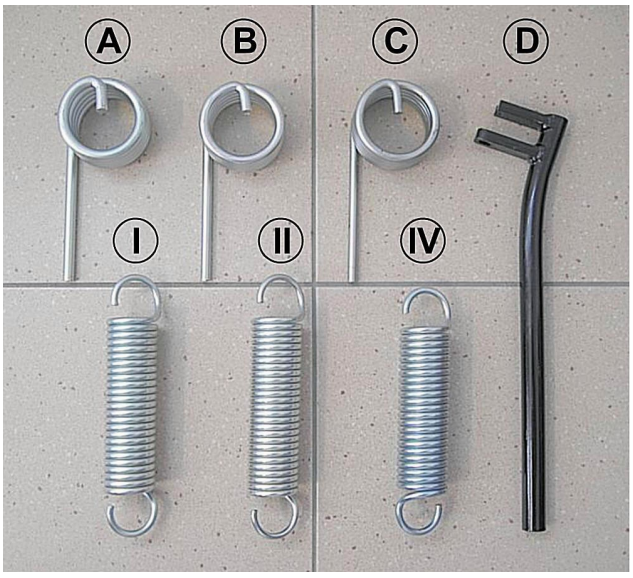
| | |
|---|---|
|  | **For manipulation is necessary to stop the machine and carrying vehicle.** |

The LPO-M is equipped by spring for adjusting:

1. pressure of the blades
   - I = strong lightening (6 mm)
   - II = middle (5.5 mm)
   - IV = strong pressing (6 mm)

2. pressure of lateral movement
   - A = strong (10 mm)
   - B = middle ( 9 mm)
   - C = soft ( 8 mm)

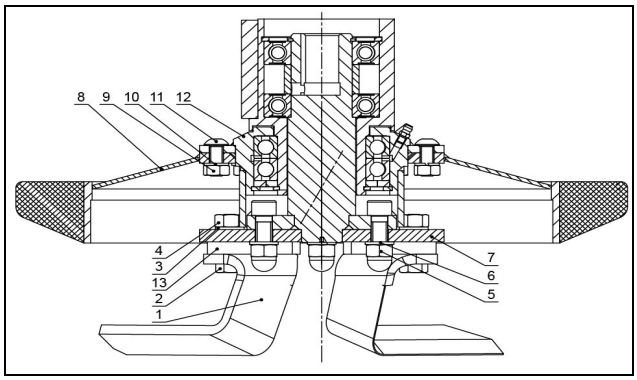
and special tool (D).




(fig. 23)

### *10.1.1 Adjusting the working depth*

The working depth is adjusted by setting up the height of the supporting wheels.
Supporting wheels height adjust so that the rubber hoop of the rotor cover is lying free on the soil surface and arms of the towing parallelogram id oriented slightly downward.
If necessary, at the type of soil, adjust the downforce of the knives see chapter 10.2.5
Working depth of the cultivation knives is 8 cm. It is fixed by the distance of the working edge of the cultivation knives from the lower edge of the cover. The working depth can be changed by the special pads 1 cm height. You can use up to 4 sets of pads.




(fig. 24)

1. Loose the screws (2) of the cultivation of knives (1).
2. Remove cultivation knives (1) with screws (2).
3. To the screws (2) put the pads (13).
4. Screws (2) with pads (13) put back
5. Carefully tight up all screws.

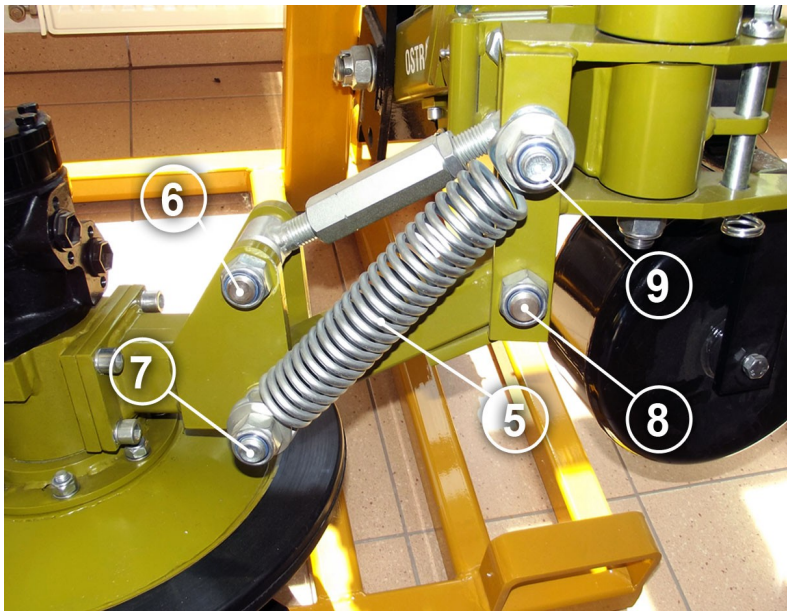
### *10.1.2 Adjusting the blades pressure*

The working tool of LPO-M is hanged up on the parallelogram and the blades of loosening head are pushed to the soil by its own weight. This is not suitable for all types of soil.

There are four steps for adjusting a pressure of tool to the blades and corresponding spring:

1. step – light soils, spring I
   - an equipment is lightened by the tension of spring I
2. step – light/medium soils, spring II
   - an equipment is lightened by the tension of spring II
3. step – medium soils, without spring
   - an equipment is pushed to the soil by its own weight
4. step – heavy soils, spring IV
   - an equipment is pushed to the soil by the tension of spring IV

### *10.1.3 Replacement of the blades pressure spring*




(fig. 25)

Change 1. step -> 2. step -> 3. step – spring I, II and without spring

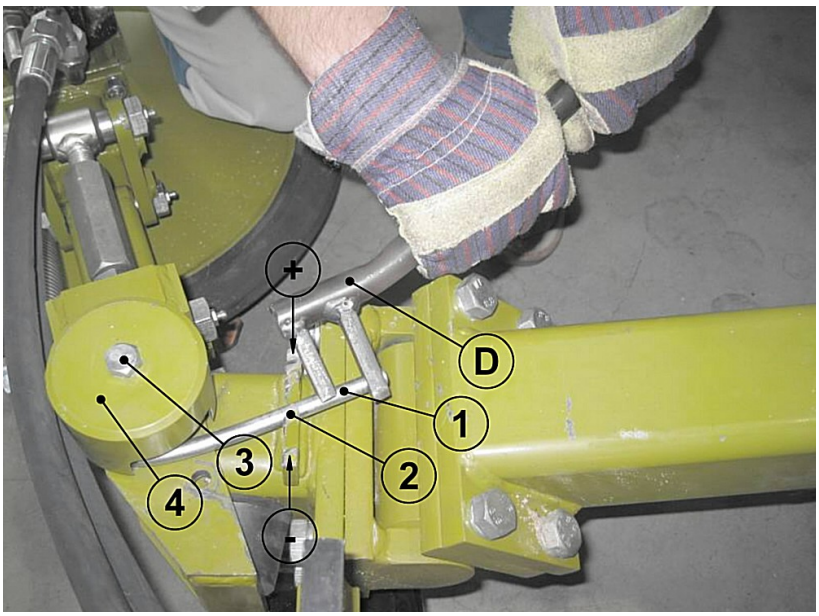
1. Remove the locking-nuts from bolts (7) and (9).
2. Raise the loosening head, loose and remove the spring (5).
3. Replace the spring (5) for another one - I to II [change 1.step to 2. step] or take the spring (5) off [change 2.step to 3. step].
4. Put the locking-nuts back to bolts (7) and (9), so the spring rotates freely (it could turn). Lock the locking-nuts carefully.

Change to 4. step – spring IV, pushing the tool to soil:

1. Remove the locking-nuts from bolts (7) and (9).
2. Raise the working tool, loose it and take it off the spring (5).
3. Remove the self locking nuts from bolts (6), (7), (8) and (9).
4. Remove the bolts (6), (7), (8) and (9) from parallelogram of loosening head.
5. Put the bolts (6), (7), (8) and (9) back to the parallelogram in inverted position – change the position of bolts (6) and (7), (8) and (9) among each other – the bolt (7) will be above, the bolt (9) will be below. This way you change the position of spring and its function.
6. Take the spring IV (5) and put it on the bolts (7) and (9).
7. Put the locking-nuts back to bolts (7) and (9), so the spring rotates freely (it could turn). Lock the locking-nuts carefully.

### *10.1.4 Adjusting the pressure of the lateral movement*

There is not any hydraulic system for control of lateral movement of the loosening head on the machine, loosening head is slided from the row by the pressure on the rotor cover ring.




(fig. 26)

LPO-M is commonly equipped with springs for adjusting the pressure of lateral movement:

| | | |
|---|---|---|
| LPO-500M | = | A + B (10 mm + 9 mm) |
| LPO-400M | = | A + B (10 mm + 9 mm), optionally C (8 mm) |

You can adjust the pressure of lateral movement of equipment in 3 steps on each spring

spring A = A- / A0 / A+
spring B = B- / B0 / B+
spring C = C- / C0 / C+

You have to use the special tool (D) for adjusting.

Adjusting the pressure step of spring (fig. 26):

1. Lower the equipment to the ground. Stop the motor of tractor.
2. Loose the bolt (3) a little bit – one turn approximately. Check if the cover of spring (4) turns freely.
3. Take the tool (D), put it to the spring (1) by the way displayed on the picture and raise the spring up from the teeth (2).
4. Change the position of spring in the teeth (2) as you want. The position (+) means more pressure of loosening head, the position (-) means less pressure of loosening head
5. Check the play of cover (4) on the side finger of spring (1); during a lateral movement of the loosening tool, the spring must not touch the side walls of opening of cover (4).
6. Tight the bolt (3) of cover (4).

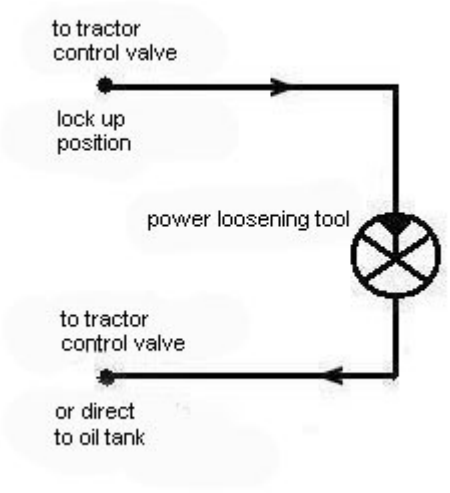
Lateral movement spring replacement (fig. 26):

1. Lower the equipment to the ground. Stop the motor of tractor.
2. Loose the bolt (3) a little bit – one turn approximately. Check if the cover of spring (4) turns freely.
3. Take the tool (D), put it to the spring (1) by the way displayed on the picture and raise the spring up from the teeth (2).
4. Put the spring out of teeth (2) to the position behind the position (-) - loose it totally.
5. Unbolt the bolt (3) and remove the cover (4).
6. Change the spring.
7. Put on the cover (4) and tight the bolt (3) up to position so the cover (4) has small play and it turns with the finger of spring (1).
8. Take the tool (D), put it to the spring (1) and put the spring (1) to the needed position in the teeth (2). The position (+) means more pressure of loosening head, the position (-) means less pressure of loosening head.
9. Check the play of cover (4) on the side finger of spring (1), the lateral movement of the loosening tool the spring must not touch the side walls of opening of cover (4).
10. Tight the bolt (3) of cover (4).

### *10.1.5 Tilt adjustment*

It is necessary to ensure that the machine always works in a vertical position for proper function of weed control equipment.
1. Adjust the position by hydraulic cylinder of the tilting head, if your machine is equipped with hydraulic tilting adjustment.
2. Adjust the position by expansion bolt in the lower part of the tilting head, if your machine is equipped with mechanical adjusting of the tilting, do not forget to secure the nut after the adjusting.
3. Machine without tilt adjustment is recommended to use only on flat surfaces.

### *10.1.6 Adjusting the oilflow*




(fig. 27)

1. In the case of this machine any specific adjustment of the hydraulic system is not necessary.
2. Working tool needs for its drive 25 - 35 l/min, if needed reduce the oil delivery by appropriate hydraulic element.
3. Lateral movement of the working tool is controlled mechanically.
4. It is necessary to adjust the pressure of the blades to the soil - it is provided mechanically

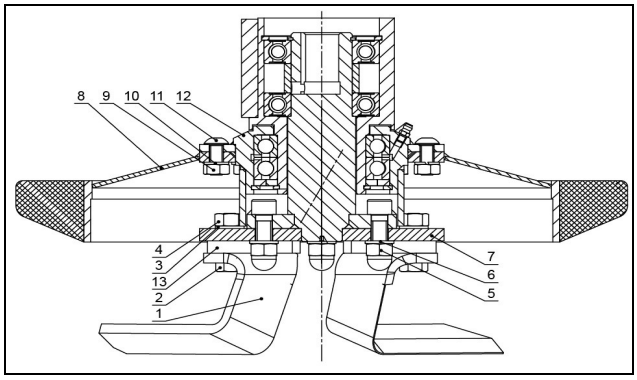
If the revolutions of the loosening head are too low (lower than 240 rpm) raise the oil delivery from carrier to the machine, if the revolutions of the loosening head are too high (higher than 300 rpm) reduce the oil delivery from carrier to the machine. Maximum allowed oil-flow through the loosening head motor is 60 l/min.

## 10.2 Weed control equipment with hydraulically operated lateral movement - LPO-H

| | |
|---|---|
| ! | **For this manipulation, it is necessary that the machine and carrying vehicle are stopped.** |

### *10.2.1 Working depth adjustment*

The working depth is adjusted by setting up the height of the supporting wheels.
supporting wheels height adjust so that the rubber hoop of the rotor cover is lying free on the soil surface. Working depth of the cultivation knives is 8 cm. It is fixed by the distance of the working edge of the cultivation knives from the lower edge of the cover. The working depth can be changed by the special pads 1 cm height. You can use up to 4 sets of pads.

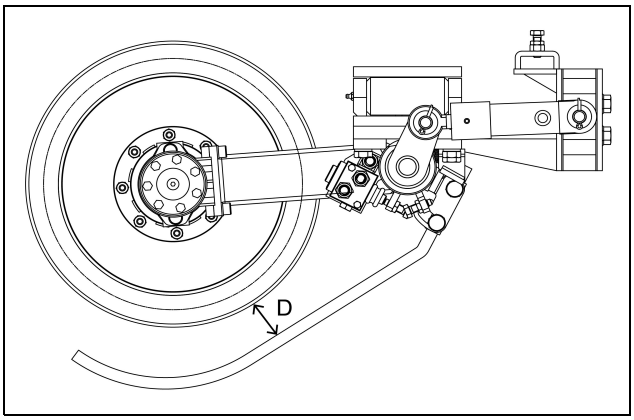



(fig. 28)

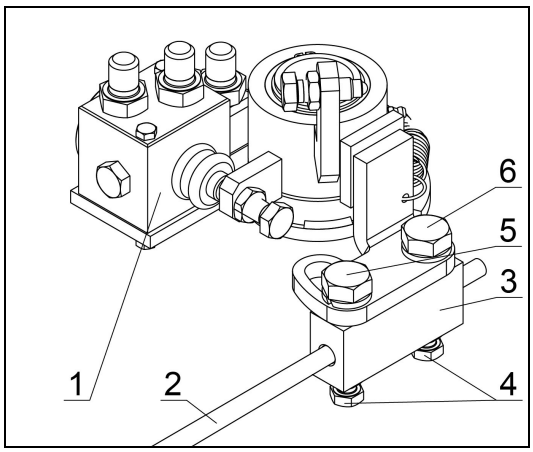
1. Loose the screws (2) of the cultivation of knives (1).
2. Remove cultivation knives (1) with screws (2).
3. To the screws (2) put the pads (13).
4. Screws (2) with pads (13) put back.
5. Carefully tight up all screws.

### *10.2.2 Sensor adjustment*

Adjusting of this element is decisive for the quality of work and precise guidance of the weed control equipment between seedlings. Basically the worser are the conditions of plantations (trunk curvature) the greater distance between the sensor and robber edge of the rotor cover (D) must be set. And the other way, the straighter trunks are, the higher the quality of work can be achieved.




(fig. 29)




(fig. 30)

Adjust the correct position of the sensor by the bolts of the sensor holder:

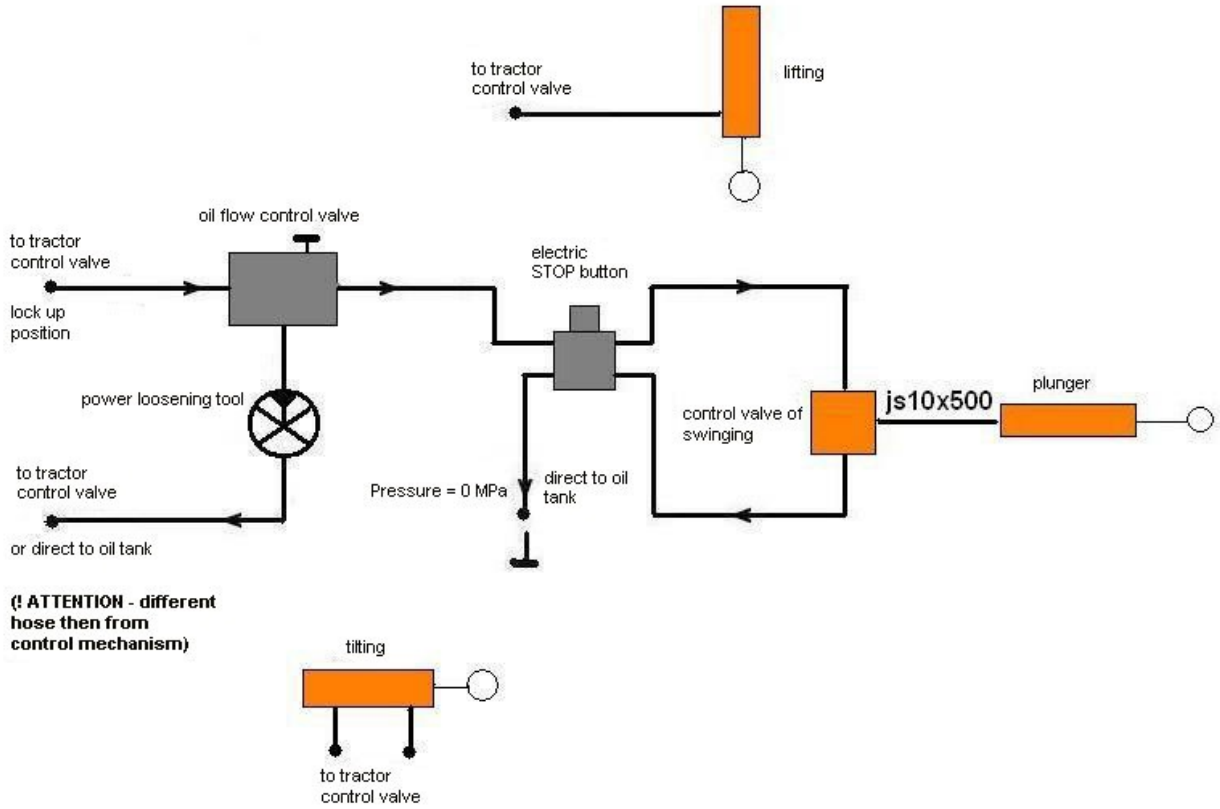
I. Setting the safe distance (D) of the sensor:
1. Loose the bolts (5) and (6).
2. Set the sensor (2) to desired position by turning it and its body (3).
3. Thoroughly tight up the bolts (5) and (6).

II. Setting the cross slope of the sensor:
1. Loose the bolts attaching the sensor (4).
2. By turning the sensor (2) in the body (3) set its desired cross slope.
3. By tightening the bolts of attaching the sensor (4) secure the sensor.

III. Setting the extension of the sensor:
1. Loose the bolts attaching the sensor (4).
2. By moving the sensor (2) in the body (3) set its desired extension.
3. By tightening the bolts of attaching the sensor (4) secure the sensor.

### *10.2.3 Adjusting the hydraulic system*

1. In a case of this machine specific adjustment of the hydraulic system is necessary.
2. Working tool needs for its drive 40 - 50 l/min, if needed limit the oil delivery by appropriate hydraulic element.
3. Lateral movement of the working tool is controlled hydraulically.

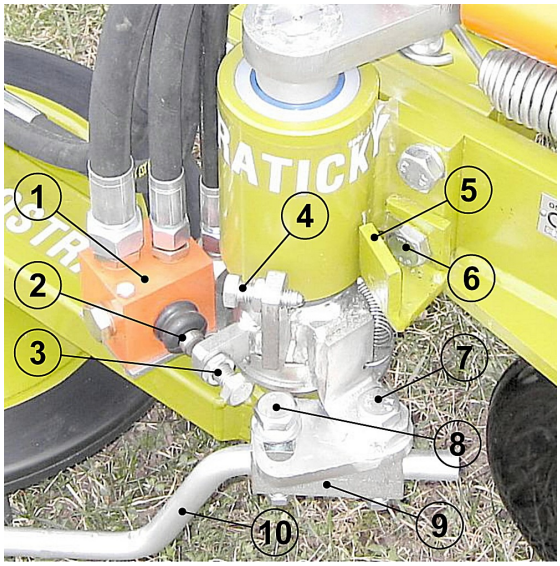



(fig. 31)

1. Check the clearance of the stop bolt (3) and head of the slide valve (2) of the control valve (1) of the lateral movement of machine - it should be about 2 mm. Set up the correct clearance if needed.

2. Adjust safety distance of the sensor (10) - see chapter 10.2.3.

3. Close the regulator of the oil flow control valve (fig. 33, lett. A) and entirely loose the lightening bolt (fig. 32, no. 4) of the controlling mechanism of the lateral movement.



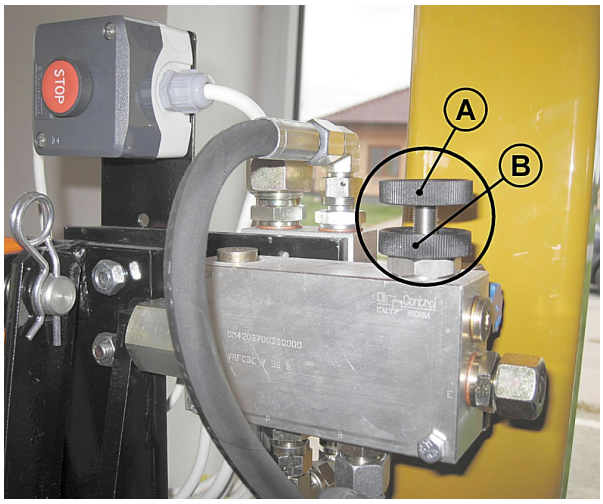

(fig. 32)

4. Turn on the oil flow into the machine and set the working revolutions of the tractor engine, typically 1500 - 1600 rpm. You can hear that the sound of the tractor engine has changed. If the working tool is turned on (in working position), the engine of the tractor is loaded by the pump of the hydraulic system. Pressure in the input hose of the equipment is the same as the maximum pressure of the tractor hydraulic system (up to 180 bars, 18 MPa). Cultivation blades do not rotate.

5. Set the maximum speed of the lateral movement of the machine using the control button (A) on the oil flow control valve (fig. 33) - the machine must move quickly, but softly without

any oscillations and beats in the end position (working position) – the oscillations and beats in the end position (working position) mean that the oil flow to the hydraulic system of the lateral movement control is too high. Set the optimal oil flow and lock the adjustment by the nut (B).

6. Adjust the speed of rotating the rotor of the weed control equipment - the machine has to be turned on in the working position for this adjustment. Take the bolt (fig. 32, no. 4) and turn it until it touches the supporting surface (fig. 32, no. 5). Keep turning until the rotor starts rotating. After that continue as long as the speed of the rotor will raise. Lock the lightening bolt (fig. 32, no. 4) with a nut and tight it thoroughly up. You can check the pressure in the input hose of equipment, it should be at most between 50 – 80 bars (5-8 MPa) if the working tool is switched on.




(fig. 33)

Now the machine is adjusted and ready to work. Check the adjustment several times during the first days of working and then every time in the case of any troubles.

If the revolutions of the loosening head are too low (lower than 240 rpm), increase the oil delivery from the tractor to the machine, if the revolutions of the loosening head are too high (higher than 300 rpm), reduce the oil delivery from the tractor to the machine. Maximum allowed oil-flow through the motor of the loosening head is 60 l/min.

| | |
|---|---|
| ! | **Check the adjustment several times during the first days of working and then whenever are there any problems.** |

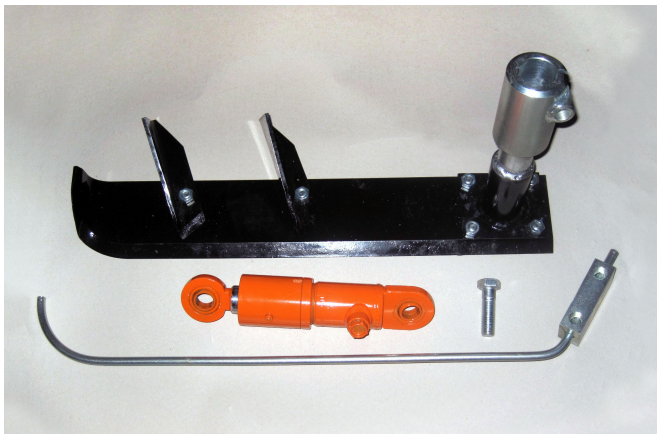
### *10.2.4 Tilt adjustment*

It is necessary to ensure that the machine always works in a vertical position for proper function of weed control equipment.

1. Adjust the position by hydraulic cylinder of the tilting head, if your machine is equipped with hydraulic tilting adjustment.
2. Adjust the position by expansion bolt in the lower part of the tilting head, if your machine is equipped with mechanical adjusting of the tilting, do not forget to secure the nut after the adjusting.
3. Machine without tilt adjustment is recommended to use only on flat surfaces.

### *10.2.5 Replace the loosening head by passive set - turning to knife section*

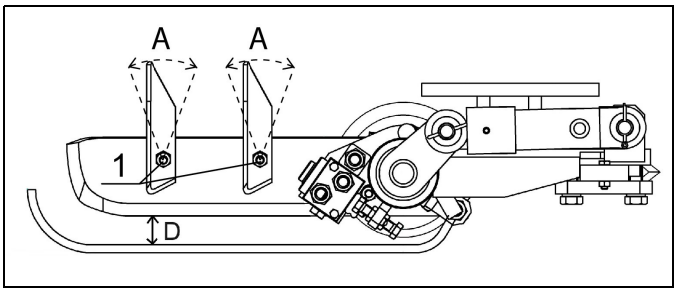
Hydraulic circuit of the LPO-H works on the same principle as the swinging knife section OSTRATICKÝ with the power loosening tool. Main holder of the weed control equipment LPO-H is identical with the main holder of the grape hoe OSTRATICKÝ. Accessories of the weed control equipment LPO-H with the passive set are identical with accessories of the hydraulic operated grape hoe. Weed control equipment can be supplemented with a passive set which can change the machine by simple conversion to the hydraulic operated grape hoe. It provides additional options for cultivation of the soil in the trunk zone and area between the seedlings



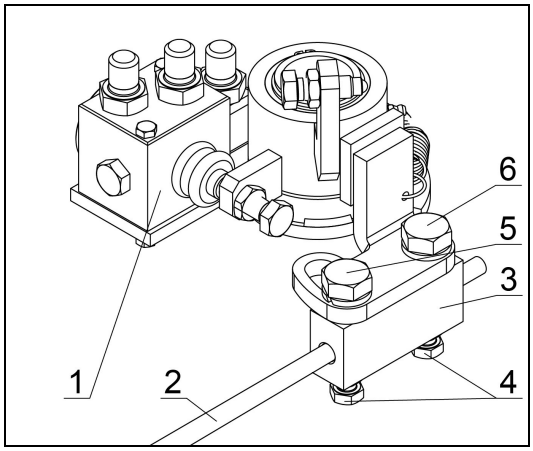
(fig. 34)

1. Disconnect the hydraulic hoses of hydraulic motor of loosening head.
2. Connect the drainage hose of hydraulic motor of loosening head to outlet „B“ of oil flow control valve.
3. Loose and take off the screw of arm of loosening head and take the loosening head off the tilting shaft.
4. Take off the end stop plate (fig. 32 no. 5). Replace the screw (fig. 32 no. 6) by shorter one (shorter for 5 mm).
5. Mount the shaft extension to the shaft and fix with the screw. Mount the foot of knife and knife. Proceed as in the cultivation knife replacement, see chapter 11.3.13. All screws lock tightly.
6. Replace the sensor LPO (fig. 32 no. 10) by sensor of knife (lighter one) and adjust the safety distance the sensor to edge of knife. Lock the screws of sensor holder.
7. Check the adjusting of the lightening bolt (fig. 32 no. 4) – the motor of tractor should go lightly, without any loading of pump of hydraulic system if the working tool (knife) is switched on. You can check the pressure in the supply hose of equipment it should be most between 50 – 80 bars (5-8 MPa) if the working tool (knife) is switched on.

Adjusting of this element is decisive for the quality of work and precise guidance of the cultivation knife between seedlings. Basically, the worser are the conditions of plantations (trunk curvature) the greater distance between the sensor and front edge of the cultivation knife (D) must be set. And the other way, the straighter trunks are, the higher the quality of work can be achieved.




(fig. 35)




(fig. 36)

Adjust the correct position of the sensor by the bolts of the sensor holder:

I. Setting the safe distance (D) of the sensor:
1. Loose the bolts (5) and (6).
2. Set the sensor (2) to desired position by turning it and its body (3).
3. Thoroughly tight up the bolts (5) and (6).

II. Setting the cross slope of the sensor:
1. Loose the bolts attaching the sensor (4).
2. By turning the sensor (2) in the body (3) set its desired cross slope.
3. By tightening the bolts of attaching the sensor (4) secure the sensor.

III. Setting the extension of the sensor:
1. Loose the bolts attaching the sensor (4).
2. By moving the sensor (2) in the body (3) set its desired extension.
3. By tightening the bolts of attaching the sensor (4) secure the sensor.

### *10.2.6 Adjustment of the lightening bolt of the machine with a passive set (fig. 32 no. 4)*

Follow the instructions to adjustment in chapter 10.2.4

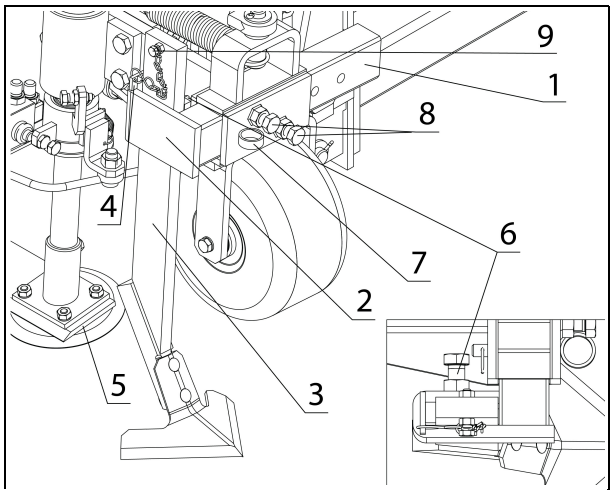
### *10.2.7 Adjustment of the weed control equipment LPO-H with the passive set - accessories*

Accessories of the weed control equipment LPO-H with the passive set are consistent with accessories of the hydraulic operated grape hoe.

#### *10.2.7.1 Adjustment of the angle of the winglets of the cultivation knife (fig. 35)*

1. Remove the bolts nuts (1) of the blade winglets.
2. Set desired position (A) of the blade winglets.
3. Thoroughly tight up all bolts.

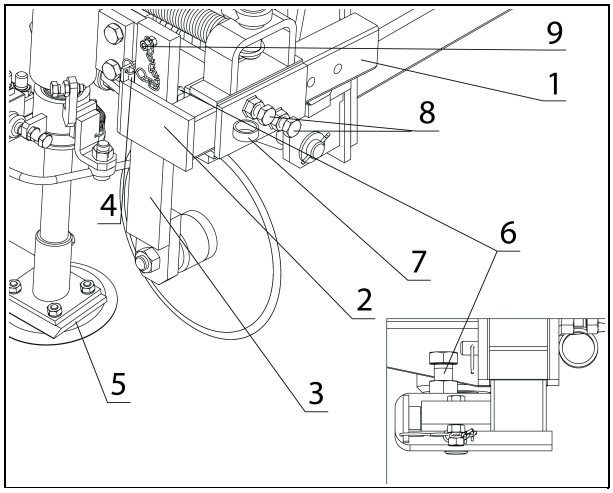
### *10.2.8 Mounting and adjusting the working depth of the duck-foot shaped share/chisel*




(fig. 37)

1. Remove from the tine (3) by loosening the locking bolt (9) and spacing part (4).
2. Put the tine with share (3) into the socket (2) of the extensible holder (1).
3. Adjust the working depth of the tine 3-5 cm lower than the front edge of the cultivation blade (5).
4. Insert the spacing part (4) into the socket (2) of the extensible holder (1) behind the tine with share (3).
5. Secure the tine with share (3) by bolt (6).
6. Attach the chain of the spacing part (4) by using the locking bolt (9) on the tine with share (3).
7. Adjust the position of the tine (3) with share to the axis of the cultivation blade shaft.
8. Secure the extensible holder (1) by the pin (7), tight the bolts (8) of the extensible holder (1).
9. Thoroughly tight all bolts.

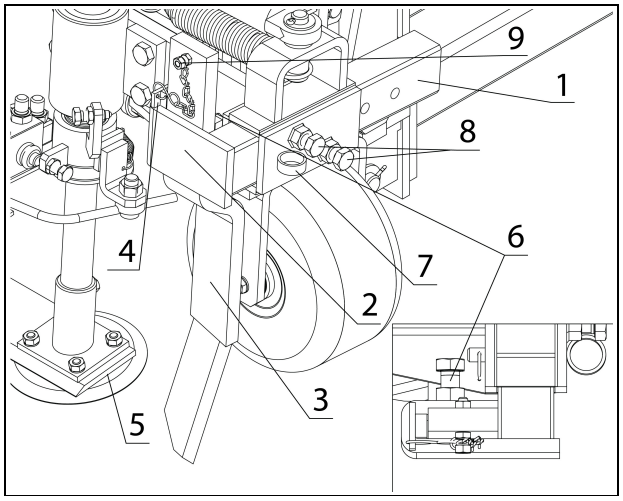
### *10.2.9 Mounting and adjustment of the cutting disc (special equipment)*




(fig. 38)

1. Remove from the tine (3) by loosening the locking bolt (9) and spacing part (4).
2. Put the tine with disc (3) into the socket (2) of the extensible holder (1).
3. Adjust the working depth of the tine 3-5 cm lower than the front edge of the cultivation blade (5).
4. Insert the spacing part (4) into the socket (2) of the extensible holder (1) behind the tine with disc (3).
5. Secure the tine with disc (3) by bolt (6).
6. Attach the chain of the spacing part (4) by using the locking bolt (9) on the tine with disc (3).
7. Adjust the position of the tine (3) with share to the axis of the cultivation blade shaft.
8. Secure the extensible holder (1) by the pin (7), tight the bolts (8) of the extensible holder (1).
9. Thoroughly tight all bolts.

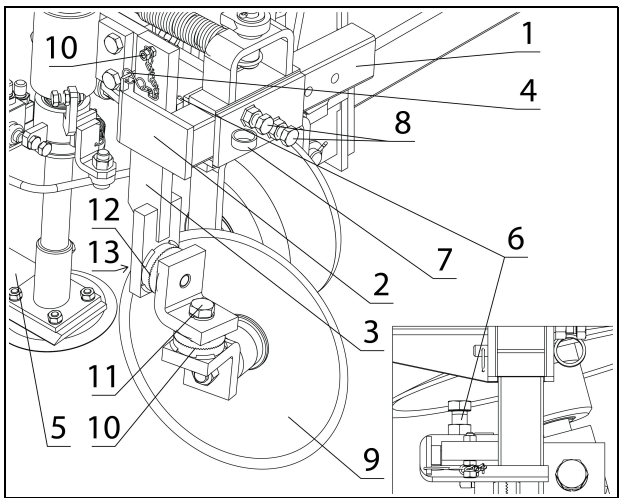
### *10.2.10 Mounting and adjustment of the cutting blade (special equipment)*




(fig. 39)

1. Remove from the tine (3) by loosening the locking bolt (9) and spacing part (4).
2. Put the tine with blade (3) into the socket (2) of the extensible holder (1).
3. Adjust the working depth of the tine 3-5 cm lower than the front edge of the cultivation blade (5).
4. Insert the spacing part (4) into the socket (2) of the extensible holder (1) behind the tine with blade (3).
5. Secure the tine with blade (3) by bolt (6).
6. Attach the chain of the spacing part (4) by using the locking bolt (9) on the tine with blade (3).
7. Adjust the position of the tine (3) with blade to the axis of the cultivation blade shaft.
8. Secure the extensible holder (1) by the pin (7), tight the bolts (8) of the extensible holder (1).
9. Thoroughly tight all bolts.

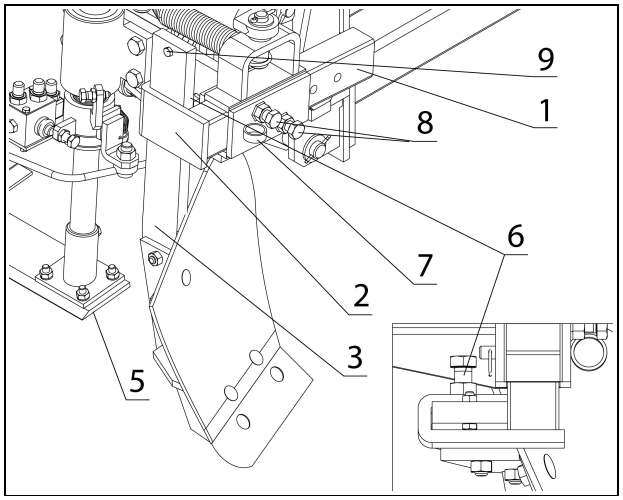
### *10.2.11 Mounting and adjustment of the cutting disc for ploughing away / towards (special equipment)*




(fig. 40)

1. Remove from the tine (3) by loosening the locking bolt (9) and spacing part (4).
2. Put the tine with disc (3) into the socket (2) of the extensible holder (1).
3. Adjust the requested depth. For ploughing away not lower than the front edge of the cultivation blade (5). For ploughing towards 3-5 cm lower than the front edge of the cultivation blade (5).
4. Insert the spacing part (4) into the socket (2) of the extensible holder (1) behind the tine with disc (3).
5. Secure the tine with disc (3) by bolt (6).
6. Attach the chain of the spacing part (4) on the tine with disc (3) by using the locking bolt (9).
7. Adjust the cutting disc (9) to the ploughing away or towards position using the horizontal rosette (10). Slightly loose the bolt (11) and by rotating the cutting disc (9) set its desired position. Make sure that adjusted angle enables rolling of the disc and that there is not excessive stress of other parts of the cutting disc (9) or the tine (3).
8. Set desired vertical deflection of the cutting disc (9) by using the vertical rosette (12). Slightly loose the bolt (13) and by rotating the cutting disc (9) set its desired position. Make sure that adjusted angle enables rolling of the disc and that there is not excessive stress of other parts of the cutting disc (9) or the tine (3).
9. Secure the extensible holder (1) using the pin (7), tight the bolts (8) of the extensible holder (1) socket.
10. Thoroughly tight all bolts.

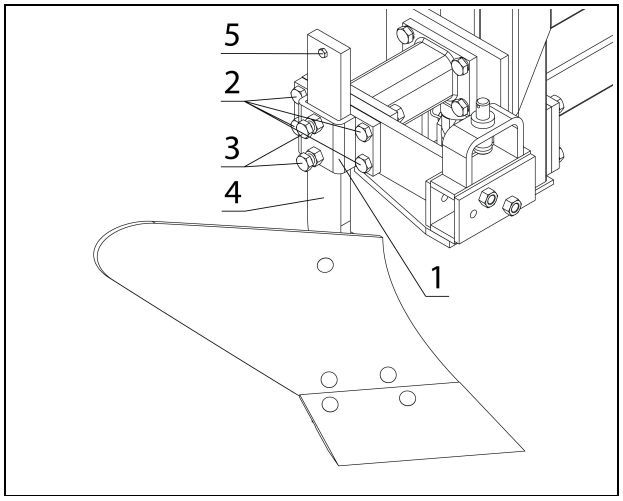
### *10.2.12 Mounting and adjustment of the plough for ploughing away (special equipment)*




(fig. 41)

1. Remove by loosening the locking bolt (9) from the tine with plough (3).
2. Put the tine with the plough (3) into the socket (2) of the extensible holder (1).
3. Adjust the working depth of the plough not lower than the front edge of the cultivation blade (5).
4. Secure the tine with a plough (3) by bolt (6).
5. Attach on the tine with a plough (3) the securing bolt (9).
6. Adjust the position of the tine with plough (3) approx to the half of length of the cultivation blade.
7. Secure the extensible holder (1) by pin (7), tight the bolts (8) of the extensible holder (1) socket.
8. Thoroughly tight all bolts.

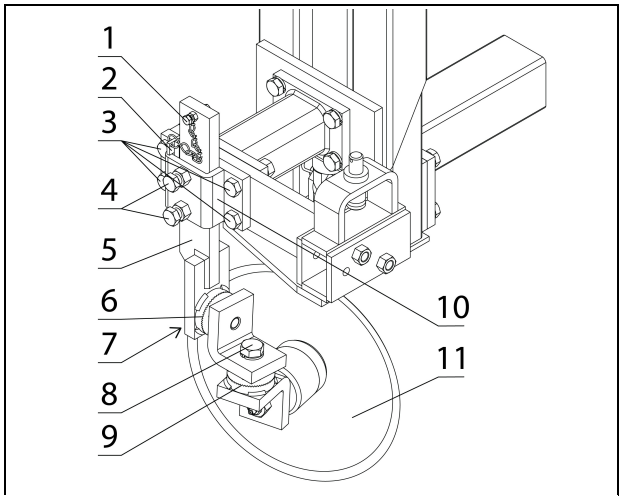
### *10.2.13 Mounting a adjustment of the plough for ploughing towards*




(fig. 42)

1. Remove the grape hoe device, including the hydraulic system.
2. Attach the socket of the plough (1) to the flange of the suspension, thoroughly tight the bolts (2).
3. Remove by loosening the locking bolt (5) from the tine with plough (4).
4. Put the tine with plough (4) into the socket of the plough (1).
5. Attach the securing bolt (5) on the tine with plough (4).
6. Adjust desired working depth of the plough.
7. Secure the tine with plough (4) by tightening the locking bolts (3).
8. Thoroughly tight all bolts.

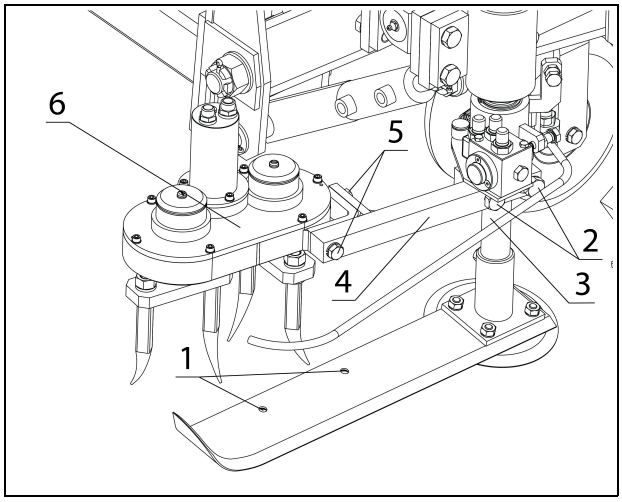
### *10.2.14 Mounting and adjustment of the cutting disc for ploughing towards / away*




(fig. 43)

1. Remove the grape hoe device, including the hydraulic system.
2. Attach the socket (10) to the flange of suspension, thoroughly tight the bolts (3).
3. Remove by loosening the locking bolt (1) and spacing part (2).
4. Put the tine (5) with cutting disc into the socket (10).
5. Attach the spacing part (2) securing chain to the tine (5) with cutting disc using the securing bolt (1).
6. Set desired working depth of the cutting disc (11). Put the spacing part (2) behind the tine (5).
7. Secure the tine (5) with cutting disc by tightening the bolts (4).
8. Set the cutting disc to position for ploughing towards / away using the horizontal rosette (6). Slightly loose the bolt (8) and set desired position by rotating the cutting disc (11). Make sure that adjusted angle enables rolling of the disc and that there is not excessive stress of other parts of the cutting disc (11) or the tine (5).
9. Set vertical deflection of the cutting disc (11) using the vertical rosette (6). Slightly loose the bolt (7) and set desired position by rotating the cutting disc (11). Make sure that adjusted angle enables rolling of the disc and that there is not excessive stress of other parts of the cutting disc (11) or the tine (5).
10. Thoroughly tight all bolts.

### *10.2.15 Mounting and adjusting the power loosening tool*



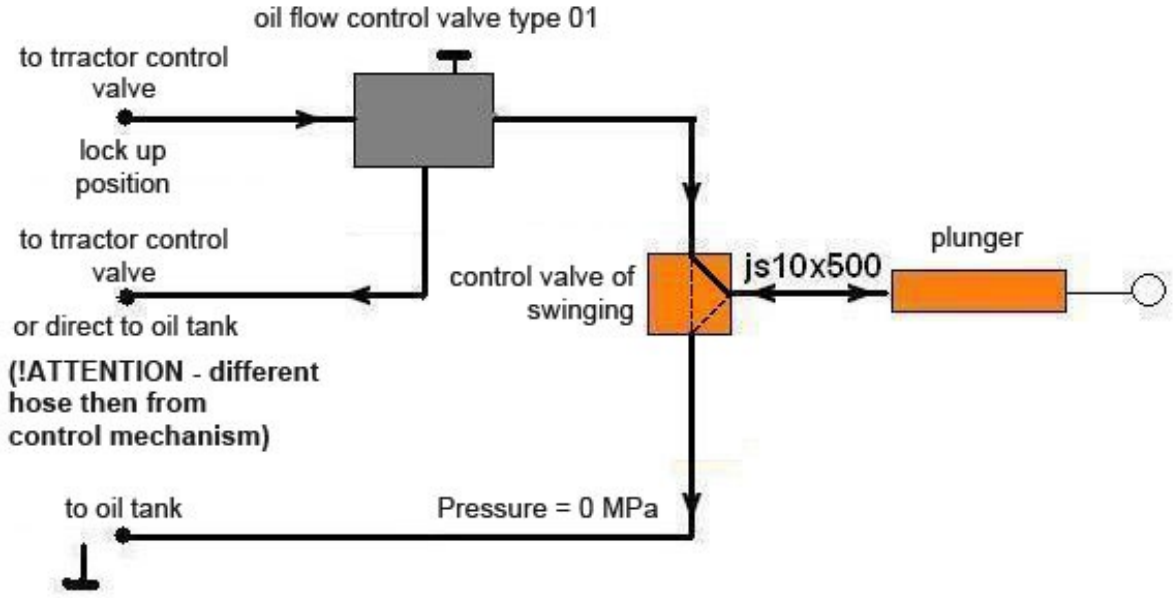

(fig. 44)

1. Remove the nuts of the fastening bolts of the cultivation winglets (1) and remove the winglets.
2. Attach the holder of the loosening tool (4) on the shaft (3) of the cultivation blade by the bolts (2).
3. Attach using the bolts (5) the loosening tool (6) on the holder of the loosening tool (4).
4. Carefully loose the bolts (2), to adjust the requested position of the loosening tool, then tight the bolts (2).
5. Thoroughly tight all bolts.
6. Hydraulic connection of the power loosening tool is described in chapter 10.2.8, for connecting is required the oil flow control valve type 02.

### *10.2.16 Hydraulic functions and the description of the adjustment the LPO-H with passive set*

#### *10.2.16.1 Hydraulic diagram of the machine without power loosening tool*

1. In the case of this machine specific adjustment of the hydraulic system is necessary
2. Working tool needs for its drive 8 - 10 l/min
3. Lateral movement of the working tool is controlled hydraulically



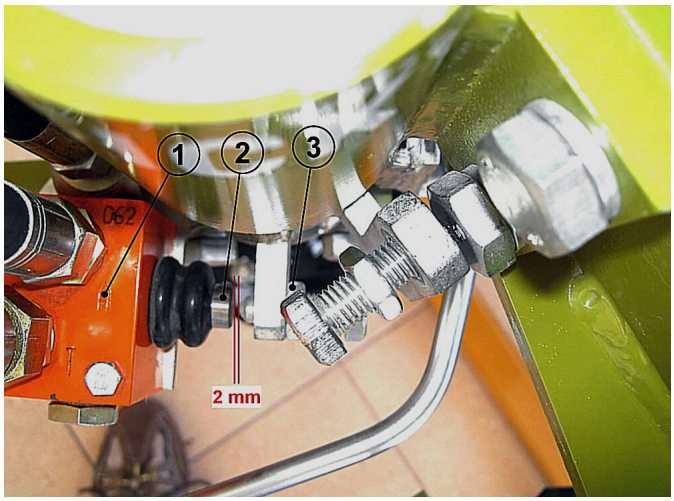

(fig. 45)

#### *10.2.16.2 Adjustment of the hydraulic flow of the machine without power loosening tool*

1. Check the clearance of the stop bolt (3) and head of the slide valve (2) of the control valve (1) of the lateral machine - it should be about 2 mm. Set up a correct clearance if needed.

2. Adjust safety distance of the sensor (6) - see chapter 10.2.5.

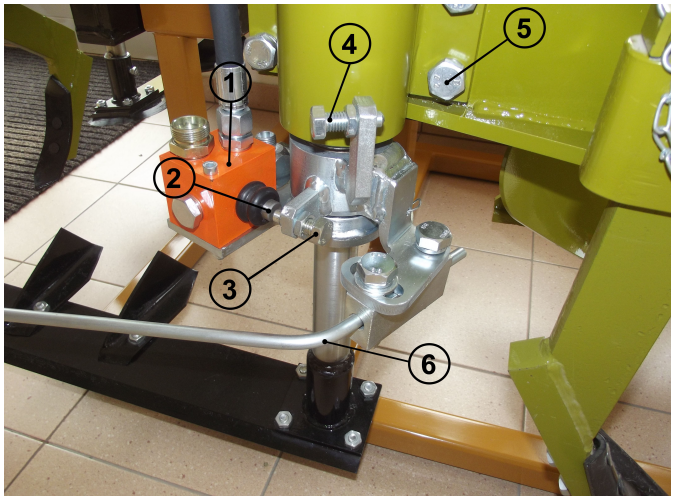
3. Close the regulator of the oil flow control valve (fig. 48, lett. A) and entirely loose the lightening bolt (fig. 47, no. 4) of the lateral movement control mechanism.




(fig. 46)

4. Turn on the oil flow into the machine and set the working revolutions of the tractor engine, typically 1500 - 1600 rpm. You can hear that the sound of the tractor engine has changed. If the working tool (cultivation blade) is turned on (in working position), the engine of the tractor is loaded by the pump of the hydraulic system. Pressure in the input hose of the grape hoe is the same as the maximum pressure of the tractor hydraulic system (up to 180 bars, 18 MPa).

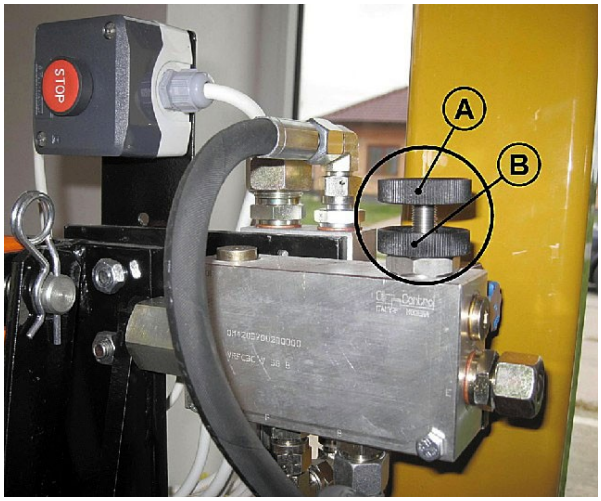
5. Set the maximum speed of the lateral movement of the machine using the control button (A) of the oil flow control valve (fig. 47) - the machine must move quickly, but gently, without any flicks and hits at the end positions (especially in working position). Flicks and hits at the end positions (especially in working position) mean that the oil flow to the hydraulic system of the movement control is too high. Set the optimal oil flow and secure the adjustment by the nut (B).




(fig. 47)

6. Now take the lightening bolt (4) and turn it until it touches the head of the bolt (5) - (fig. 46). Continue the rotation until you hear that the engine of the tractor slows down without load of the pump of the hydraulic system. Secure the lightening bolt (4) by the nut. You can check the pressure in the input hose of the device, it should be at most between 50 - 80 bars (5-8 MPa), if the working tool (cultivation blade) is turned on.

Now the machine is adjusted and ready to work. Check the adjustment several times during the first days of working and then whenever there are any problems.



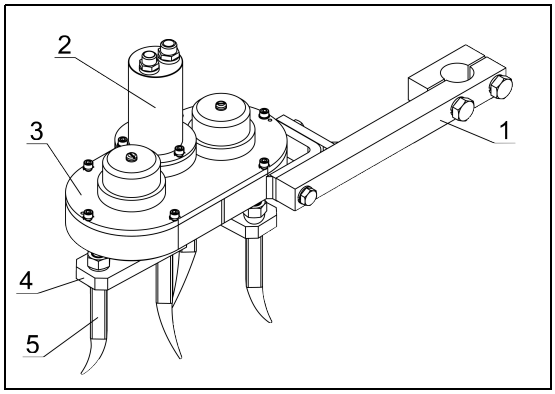

(fig. 48)

| | |
|---|---|
| ! | **Check the adjustment several times during the first days of working and then whenever there are any problems.** |

## 10.2.16.3 Adjusting the hydraulic system with power loosening tool

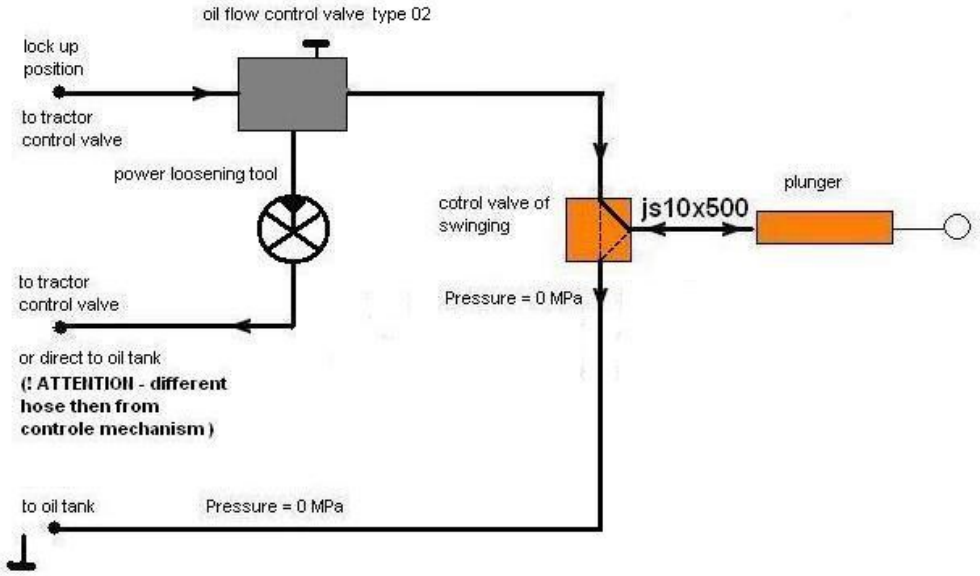
***Power loosening tool***

1. Loosening tool holder
2. Hydraulic motor
3. Loosening tool housing
4. Points holder
5. Loosening point




(fig. 49)

1. In a case of this machine specific adjustment of the hydraulic system is necessary
2. Working tool needs for its drive 25 - 30 l/min
3. Lateral movement of the working tool is controlled hydraulically



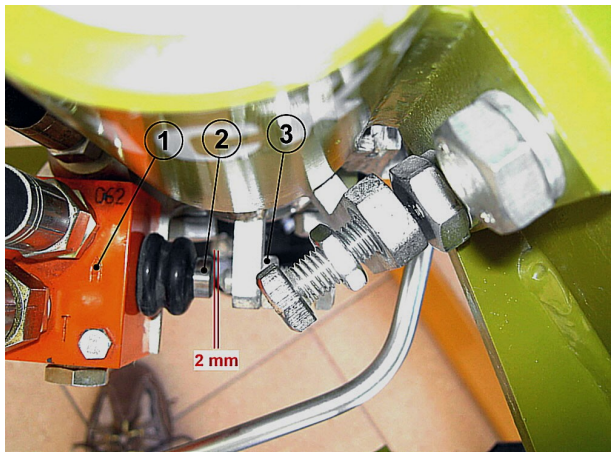

(fig. 50)

## 10.2.16.4 Adjusting the hydraulic flow of the hydraulically operated grape hoe with power loosening tool

1. Check the clearance of the stop bolt (3) and head of the slide valve (2) of the control valve (1) of the lateral machine - it should be about 2 mm. Set up a correct clearance if needed.

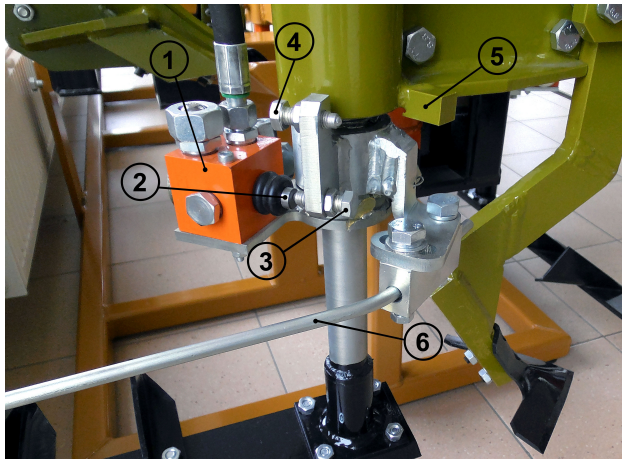
2. Adjust safety distance of the sensor (6) and working tool (cultivation blade) - see chapter 10.2.5.

3. Close the regulator of the oil flow (fig. 53, lett. A) and entirely loose the lightening bolt (fig. 52, no. 4) of the lateral movement control mechanism.



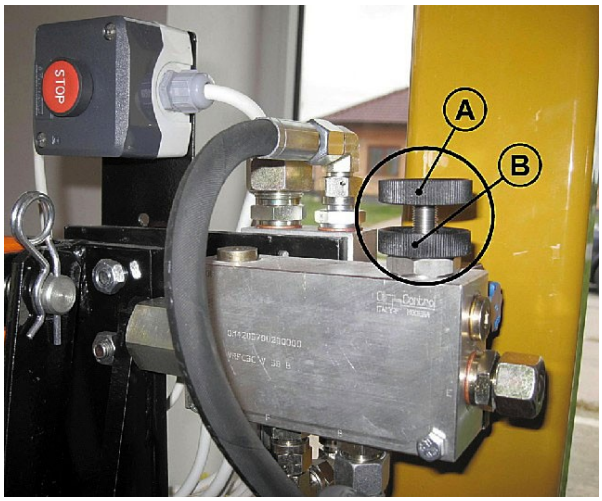

(fig. 51)

4. Turn on the oil flow into the machine and set the working revolutions of the tractor engine, typically 1500 - 1600 rpm. You can hear that the sound of the tractor engine has changed. If the working tool (cultivation blade) is turned on (in working position), the engine of the tractor is loaded by the pump of the hydraulic system. Pressure in the input hose of the grape hoe is the same as the maximum pressure of the tractor hydraulic system (up to 180 bars, 18 MPa).




(fig. 52)

5. Set the maximum speed of the lateral movement of the machine using the control button (A) of the oil flow control valve (fig. ) - 53 the machine must move quickly, but gently, without any flicks and hits at the end positions (especially in working position). Flicks and hits at the end positions (especially in working position) mean that the oil flow to the hydraulic system of the movement control is too high. Set the optimal oil flow and adjustment secure by the nut (B).

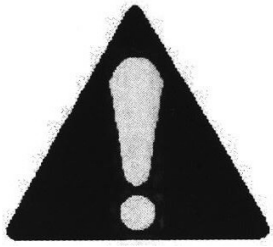



(fig. 53)

6. Now adjust the rotation speed of the power loosening tool - the machine must run for this adjustment and be in working position. Take the lightening bolt (4) and turn it until it touches the head of the bolt (5) - (fig. 52), keep turning until the rotors start rotate. After that continue as long as the speed of the rotors will raise. Secure the lightening bolt (4) by the nut. You can check the pressure in the input hose of the device, it should be at most between 50 - 80 bars (5-8 MPa), in the case that the working tool (cultivation blade) is turned on.

Adjust the oil flow at the input of the hydraulically operated grape hoe, do not across maximum allowed oil-flow through the hydraulic motor of power loosening tool - 20 l/min.

| | |
|---|---|
| ! | **Check the adjustment several times during the first days of working and then whenever there are any problems.** |

| **ATTENTION !** | |
|---|---|
|  | **Maximum allowed oil flow through the hydraulic motor of the power loosening tool is 20 l/min. Adjust the correct oil flow at the input of the hydraulically operated grape hoe.** |

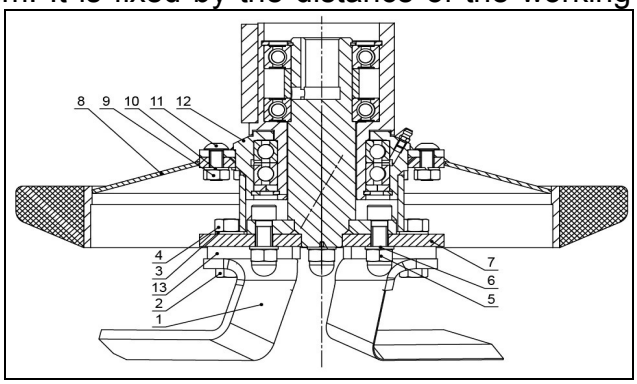
## 10.3 Weed control equipment with hydraulically operated lateral movement – LPO-HP

| | |
|---|---|
|  | **For this manipulation, it is necessary that the machine and carrying vehicle are stopped.** |

### *10.3.1 Setting the working depth*

The working depth is adjusted by setting up the height of the supporting wheels.
Supporting wheels height adjust so that the rubber hoop of the rotor cover is lying free on the soil surface and arms of the towing parallelogram id oriented slightly downward.
If necessary, at the type of soil, adjust the downforce of the knives see chapter 10.3.2
Working depth of the cultivation knives is 8 cm. It is fixed by the distance of the working edge of the cultivation knives from the lower edge of the cover. The working depth can be changed by the special pads 1 cm height. You can use up to 4 sets of pads.

1. Loose the screws (2) of the cultivation of knives (1).
2. Remove cultivation knives (1) with screws (2).
3. To the screws (2) put the pads (13).
4. Screws (2) with pads (13) put back
5. Carefully tight up all screws.

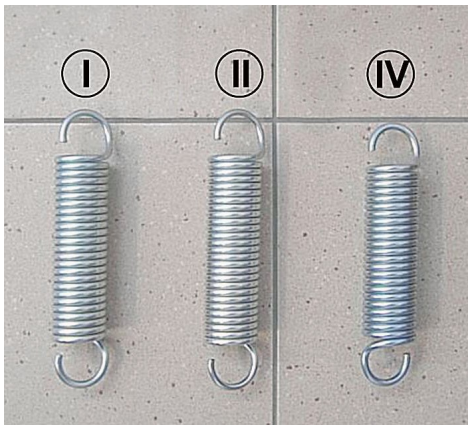



(fig 54)

### *10.3.2 Adjusting the pressure of the blades*

Weed control equipment LPO-HP is equipped with the springs for adjusting the pressure of the blades.

I = strong lightening (6 mm)
II = middle (5.5 mm)
IV = strong pressing (6 mm)



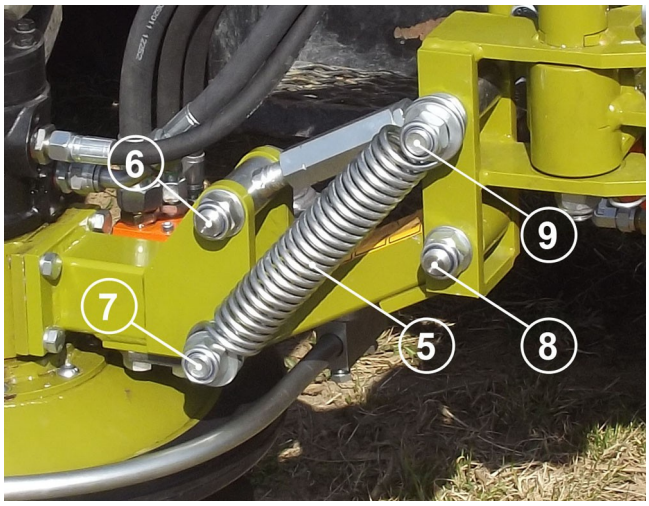

(fig. 55)

The working tool of LPO-HP is hanged up on the parallelogram and the blades of loosening head are pushed to the soil by its own weight. This is not suitable for all types of soil.

There are four steps of adjusting the pressure of tool to the blades and corresponding spring:

1. step – light soils, spring I
   - the equipment is lightened by the tension of spring I
2. step – light/medium soils, spring II
   - the equipment is lightened by the tension of spring II
3. step – medium soils, without spring
   - the equipment is pushed to the soil by its own weight
4. step – heavy soils, spring IV
   - the equipment is pushed to the soil by the tension of spring IV

### *10.3.2.1 Replacement of the blades pressure spring*




(fig. 56)

Change 1. step -> 2. step -> 3. step – spring I, II and without spring

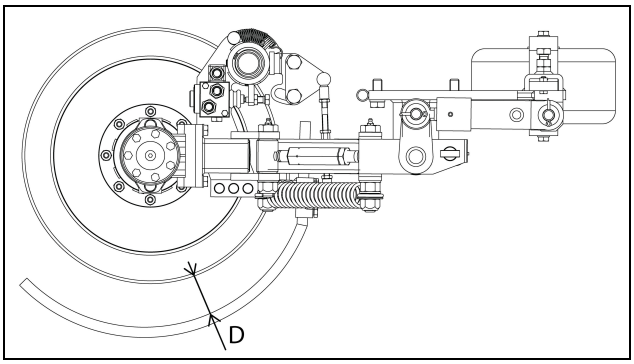
1. Remove the locking-nuts from bolts (7) and (9).
2. Raise the loosening head, loose and remove the spring (5).
3. Replace the spring (5) by other one - I to II [change 1.step to 2. step] or take the spring (5) off [change 2.step to 3. step].
4. Put the locking-nuts back to bolts (7) and (9) and tight them lightly, so the spring rotate freely (it could turn). Lock the locking-nuts.

Change to 4. step – spring IV, pushing the tool to the soil

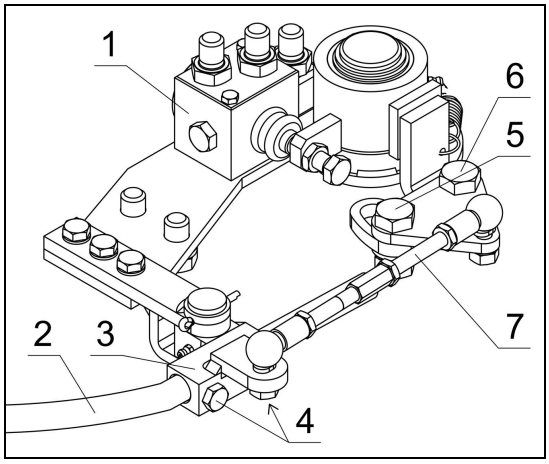
1. Remove the locking-nuts from bolts (7) and (9).
2. Raise the working tool, loose and remove the spring (5).
3. Remove the self locking nuts from bolts (6), (7), (8) and (9).
4. Remove the bolts (6), (7), (8) and (9) from parallelogram of loosening head.
5. Put the bolts (6), (7), (8) and (9) back to the parallelogram in inverted position – change the position of bolts (6) and (7), (8) and (9) among each other – the bolt (7) will be above, the bolt (9) will be below. This way you change the position of the spring and its function.
6. Take the spring IV (5) and put it on the bolts (7) and (9).
7. Put the locking-nuts back to bolts (7) and (9) and tight them lightly, so the spring rotate freely (it could turn). Lock the locking-nuts.

### *10.3.3 Setting the sensor*

Adjusting of this element is decisive for the quality of work and precise guidance of the weed control equipment between seedlings. Basically the worse are the conditions of plantations (trunk curvature), the greater distance between the sensor and robber edge of the rotor cover (D) must be set. And on the other way, the straighter trunks are, the higher quality of work can be achieved.




(fig. 57)




(fig. 58)

The correct position of the sensor to adjust the bolts on the sensor:

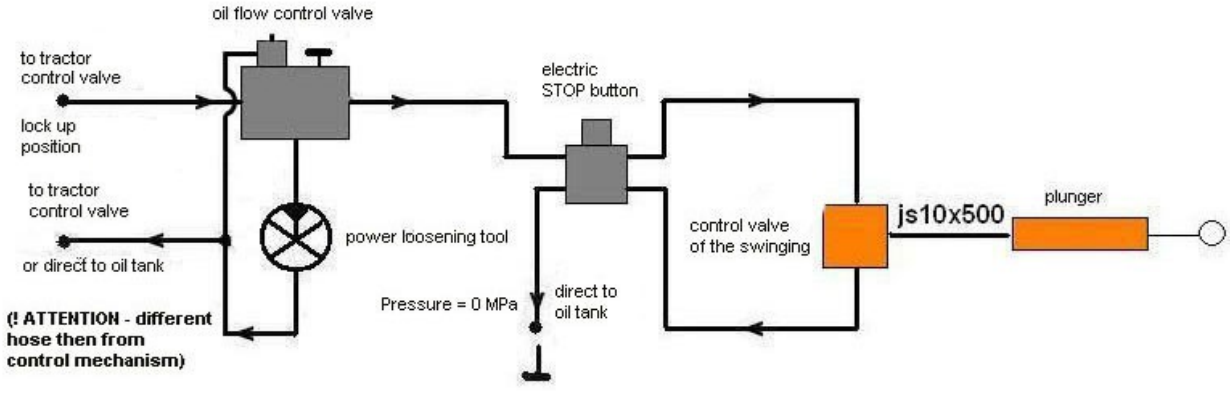
I. Setting the distance of the sensor:
1. Loose the bolts (5) and (6).
2. Adjust desired distance of the sensor (2) by shifting the bolt (5).
3. Thoroughly tight up the bolts (5) and (6).
4. Use the adjustable nut of the connecting rod (7) in the case that the adjusting of the safety distance will not be sufficient by following the step 2. or in the case that you will need to make light adjustment.

II. Setting the cross slope of the sensor:
1. Loose the bolts attaching the sensor (4).
2. By turning the sensor (2) in the body (3) set its desired cross slope.
3. By tightening the bolts of attaching the sensor (4) secure the sensor.

III. Setting the extension of the sensor:
1. Loose the bolts attaching the sensor (4).
2. By moving the sensor (2) in the body (3) set its desired extension.
3. By tightening the bolts of attaching the sensor (4) secure the sensor.

### 10.3.4 Adjusting the hydraulic system

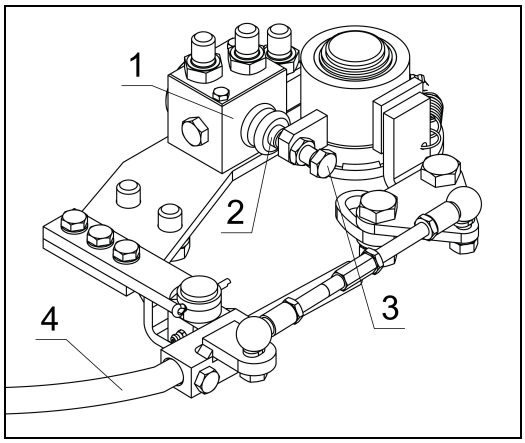
1. In the case of this machine specific adjustment of the hydraulic system is necessary.
2. Working tool needs for its drive 40 - 50 l/min.
3. Lateral movement of the working tool is controlled hydraulically.
4. It is necessary to adjust the machine pressure to the soil - it is provided mechanically.




(fig. 59)

### *10.3.4.1 Adjusting the oil-flow*

1. Check the clearance of the stop bolt (3) and head of the slide valve (2) of the control valve (1) of the lateral movement of machine - it should be about 2 mm. Set up the correct clearance if needed.




(fig. 60)

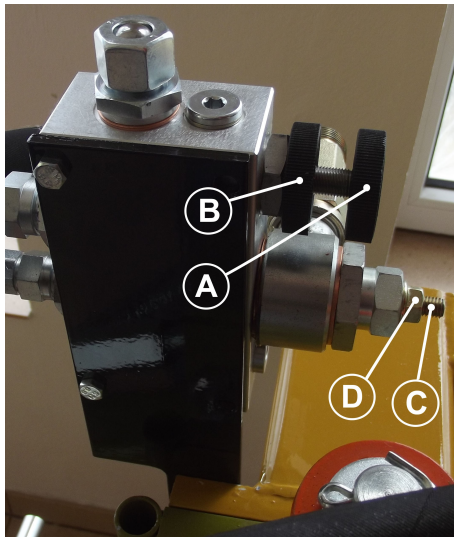
2. Adjust safety distance of the sensor (4) - see chapter 10.3.3.

3. Close the regulator of the oil flow control valve (fig. 61, lett. A) and entirely tight up the pressure regulator bolt (fig. 61, lett. C).

4. Turn on the oil flow into the machine and set the working revolutions of the tractor engine, typically 1500 - 1600 rpm. You can hear that the sound of the tractor engine has changed. If the working tool is turned on (in the working position), the engine of the tractor is loaded by the pump of the hydraulic system. Pressure in the input hose of the equipment is the same as the maximum pressure of the tractor hydraulic system (up to 180 bars, 18 MPa). Cultivation blades do not rotate.

5. Set the maximum speed of the lateral movement of machine using the control button (A) on the oil flow control valve (fig. 61) - the machine must move quickly, but softly without any oscillations and beats in the end position (working position) – the oscillations and beats in the end position (working position) means that the oil flow to the hydraulic system of the lateral movement control is too high. Set the optimal oil flow and lock the adjustment by the nut (fig. 61, lett. B).

6. Adjust the speed of rotating the rotor of the weed control equipment - the machine has to be turned on in the working position for this adjustment. Take the bolt (fig. 61, lett. C) and turn it until the rotor of equipment starts rotate. After that continue as long as the speed of the rotor will raise. Lock the bolt (fig. 61, lett. C) with a nut (D) and tight it thoroughly up. You can check the pressure in the input hose of equipment it should be at most between 50 – 80 bars (5-8 MPa) if the working tool is switched on.




(fig. 61)

Now the machine is adjusted and ready to work. Check the adjustment several times during the first days of working and then every time in the case of any troubles.

If the revolutions of the loosening head are too low (lower than 240 rpm), increase the oil delivery from the tractor to the machine, if the revolutions of the loosening head are too high (higher than 300 rpm), reduce the oil delivery from the tractor to the machine. Maximum allowed oil-flow through the motor of the loosening head is 60 l/min.
In a case that the rotor stops during a work or the power for the movement to the row is not sufficient, raise the pressure in the system by slight tightening the bolt (C). The pressure in the system should never cross the 80 bars (8 Mpa).

| | |
|---|---|
| ! | **Check the adjustment several times during the first days of working and then whenever there are any problems.** |

### *10.3.5 Tilting adjustment*

It is necessary to ensure that the machine always works in the vertical position for proper function of weed control equipment.
1. Adjust the position by hydraulic cylinder of the tilting head, if your machine is equipped by hydraulic tilting adjustment.
2. Adjust the position by expansion bolt in the lower part of the tilting head, if your machine is equipped by mechanical adjusting of the tilting, do not forget to secure the nut after the adjusting.
3. Machine without tilt adjustment is recommended to use only on flat surfaces.

### *10.4 Using the electrically operated STOP-button*

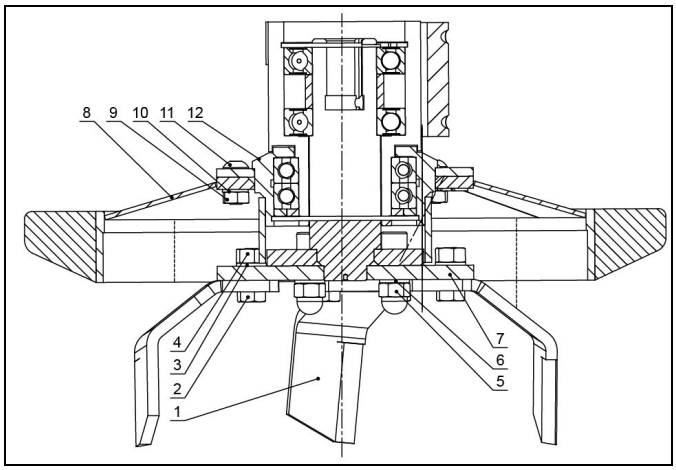
The electrically operated STOP-button is an optional equipment. It is an solenoid operated valve connected to the hydraulic system of the weed control equipment or passive set. Its working function is such like a function of the lateral movement control valve. Control button of the solenoid valve of the STOP-button must be placed in the cab in reach of a driver.


(fig. 62)

Using:
1. For this feature the equipment must be in the working position, the carrier has to be in a motion.
2. Press the control button marked STOP.
3. The pressing causes immediately cut off the hydraulic oil flow into the hydraulic cylinder of the lateral movement.
4. Soil pressure on the working tool will put it to the position parallel to the axis of the carrier.
5. When you release the button, the working tool will be immediately put back to working position and automatic working mode.

Using the electrically operated STOP-button has no effect to the automatic system with the sensor and it supplements this function. It serves particularly to avert danger when it may cause a damage of seedlings hoed by the machine working in automatic mode or to manual control of the lateral movement during a work without sensor of the automatic system (e.g. in young vineyards).

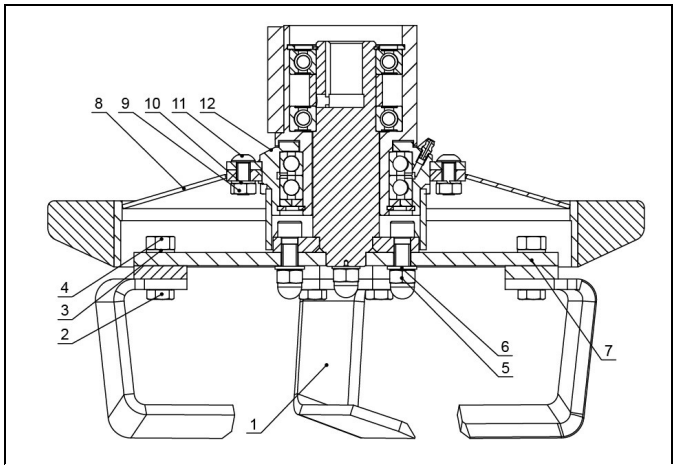
### *10.4.1 Conversion of the additional tool LPO to deep cultivation blades*




(fig. 63)

1. Lift the machine to position for transport and secure it against the fall.
2. Set the working tool to such position to have the best possible access to the blades.
3. Release the bolts (2) of the cultivation blades (1).
4. Remove the cultivation blades (1).
5. Thoroughly clean up all contact surfaces from the soil residues and dirt.
6. Replace the cultivation blades for the deep cultivation blades.
7. Mount the deep cultivation blades (1) with bolts (2) and pads (13) to the holder (7).
8. Thoroughly tight up all bolts.
9. Follow the steps in chapter 10.3.1 for changing the working depth using the pads.

### *10.4.2 Conversion of the additional tool LPO for soil removing blades*




(fig. 64)

1. Disconnect the machine from the rotary stripe cultivator.
2. Set the working tool to such position to have the best possible access to the blades.
3. Release the bolts (5) and remove the holder (7) of standard cultivation blades including the blades, bolts (2), pads (3) and nuts (4). When you loose the nuts (5), hold the assembly so you prevent its fall to the ground.
4. Thoroughly clean up all contact surfaces from residues and dirt.
5. Mount the holder (7) with the soil removing blades (1).
6. By tightening the nuts (5) place the holder (7), including the nuts (4), pads (3), bolts (2) and soil removing blades (1).
7. Thoroughly tight up all bolts and nuts.
8. Follow the steps in chapter 10.3.1 for changing the working depth using the pads.

# 11 . MAINTENANCE AND REPAIR

## *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:**<br>- before 1st use<br>- no later than after the first 2 worked hours<br>and then:<br>- no later than after 4 worked hours<br>- no later than after 10 worked hours<br>**Then ALWAYS BEFORE USING THE MACHINE.** |
|---|---|
|  | |

| Type of the control | Frequency |
|---|---|
| **Mechanical:** | |
| - tightening of working tools | before every use |
| - perfection of security covers | before every use |
| - tightening of all bolts | before every use |
| - attaching pins of all bolts | before every use |
| - bolts of the frame | before every use |
| **Hydraulical:** | |
| - condition of the hydraulic hoses (tension, blockage, wear out by friction) | before every use |
| - leakage of hydraulic components (tightness) | before every use |
| - leakage of hydraulic cylinder (tightness) | before every use |
| **Recommended hydraulic fluid:**<br>- hydraulic oil of category HM 46 | |
| **Electrical:** | |
| - cables condition | before every use |
| - connectors condition | before every use |
| - control elements condition | before every use |

| | |
|---|---|
| **Greasing:**<br>- lubricate all places marked by ● with a grease gun<br>- use universal lubricant | before every use |

### *11.3 Fast wearing parts*

weed control equipment LPO
- working blades
- rotor cover rubber ring
- rotor bearings
- rotor hub cover bearings

version LPO-M
- spring of the blades pressure
- spring of the lateral movement
- lateral movement main pin bearings

version LPO-H
- sensor
- restoring spring of the lateral movement hydraulic cylinder
- stabilizing spring of the sensor
- slide valve washer of the control valve
- seals of the lateral movement hydraulic cylinder
- sensor holder bearings
- working tool carrying arm shaft bearings

version LPO-HP
- spring of the blades pressure
- sensor
- restoring spring of the lateral movement hydraulic cylinder
- stabilizing spring of the sensor
- slide valve washer of the control valve
- seals of the lateral movement hydraulic cylinder
- lateral movement shaft bearings

weed control equipment LPO with passive set
- duck-foot shaped share / chisel
- cultivation blade foot
- cultivation blade
- blade winglets
- cultivation blade holder
- sensor
- restoring spring of the lateral movement hydraulic cylinder
- stabilizing spring of the sensor
- slide valve washer of the control valve
- seals of the lateral movement hydraulic cylinder
- sensor holder bearings
- cultivation blade shaft bearings
- points of the power loosening tool

### *11.3.1 Replacement of the weed control equipment (loosening head) blades (1) - fig. 65*

1. Raise the equipment to transport position and lock it against falling down.

2. By the tilting head adjust the working tool to the position where you have the best possible access to the blades. Lock the tilting head against moving.

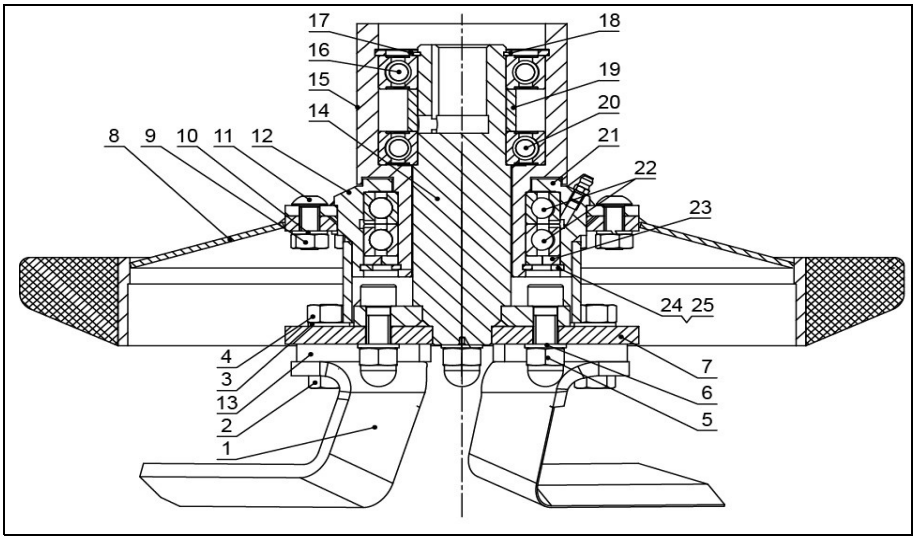
3. Remove the nuts (4), washers (3) and bolts (2) of blades (1) step by step. If the nuts (4) are loosed, hold the blade to prevent falling down. Remove the blades (1).

4. Clean the blades holder (7) from the rest of soil and all impurities.

5. Take new blades (1), put it to the holder (7) and fix by bolts (2), washers (3) and nuts (4).

6. Tight all bolts and nuts tightly.

7. Replacing procedure is the same for all types of blades.




(fig 65)

### *11.3.2 Replacement of the working tool cover (8) - fig. 65*

1. Remove the blades following instructions 1. to 4. of chapter 11.3.1.

2. Remove the nuts (5) and the pads (6) of driving disc (7). If the nuts (5) are loosed, hold the driving disc (7) to prevent falling down. Remove the blades holder (7).

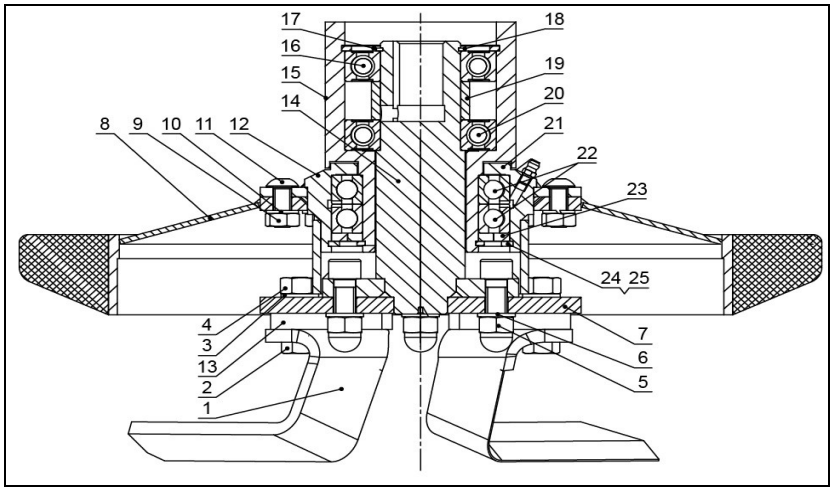
3. Remove the nuts (11), pads (10) and bolts (9) of the cover (8) in turn. If the nuts (11) are loosed, hold the cover (8) to prevent to fall down. Remove the cover (8).

4. Clean the body of hub (12) of loosening head from the rest of soil and all impurities.

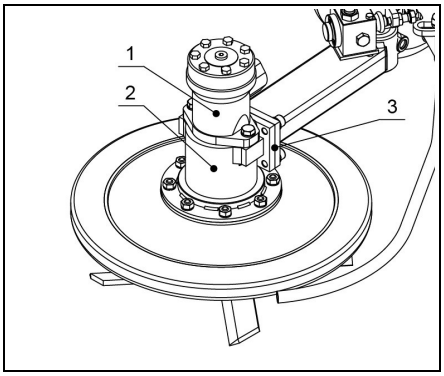
5. Take a new cover (8), put it to the hub (12) and fix by bolts (9), pads (10) and nuts (11).

6. Remount back the blades holder (7), pads (6) and tight up the nuts (5). On the blades holder (7) put the blades (1) and fix it by bolts (2), pads (3) and nuts (4).

7. Tight all the bolts and the nuts tightly.




(fig. 66)




(fig. 67)

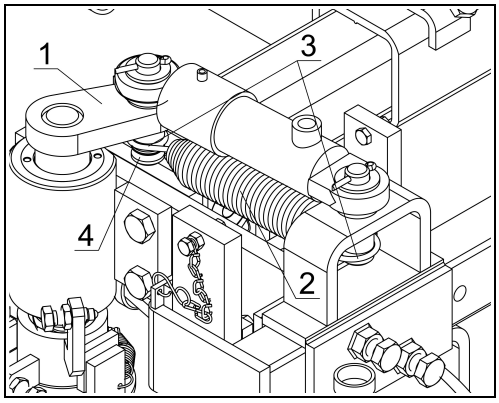
### *11.3.3 Replacement of the weed control equipment rotor bearings - fig. 66 a 67*

1. Clean the machine from soil residues and impurities thoroughly, follow the instructions in chapter 12.
2. Remove the hydraulic motor (fig. 67, no. 1) from the hub (fig. 67, no. 2)
3. Remove the working tool by unscrewing the bolts of the hub flange (fig. 67, no. 3).
4. Remove the locking rings (17) and (18).
5. Pull out the drive shaft (14) of the rotor.
6. Remove the bearing (16), distance ring (19) and bearing (20).
7. Replace the set of bearings (16) and (20) - always replace the entire set.
8. Lock bearing locking ring (18).
9. Fit the bearing (20), spacer (19) and bearing (16) on rotor shaft (14).
10. Lock the rotor shaft (14) by the locking ring (17).
11. Mount the working tool to the carrying arm using the bolts of the hub connecting flange (fig. 67, no. 3).
12. Mount the hydraulic motor (fig. 67, no. 1).

### *11.3.4 Replacement of the weed control equipment rotor cover hub bearings - fig. 66 a 67*

1. Clean the machine from soil residues and impurities thoroughly, follow the instructions in chapter 12.
2. Remove the hydraulic motor (fig. 67, no. 1) from hub (fig. 67, no. 2).
3. Remove the working tool by unscrewing the bolts of the hub flange (fig. 67, no. 3).
4. Remove the locking ring (17).
5. Pull out the drive shaft (14) of the rotor.
6. Remove locking rings (24) and (25).
7. Remove distance set (23).
8. Remove the hub of the rotor cover (12).
9. Replace bearings (22) - always replace the entire set.
10. Slide in the hub of the rotor cover (12) to the rotor hub (15).
11. Place the distance set (23).
12. Lock the distance set (23) by locking rings (24) and (25).
13. Put in the rotor assembly by drive shaft (14) into the rotor hub (15).
14. Lock it by locking ring (17).
15. Mount the working tool to the carrying arm using the bolts of the hub connecting flange (fig. 67, no. 3).
16. Mount the hydromotor (fig. 67, no. 1)

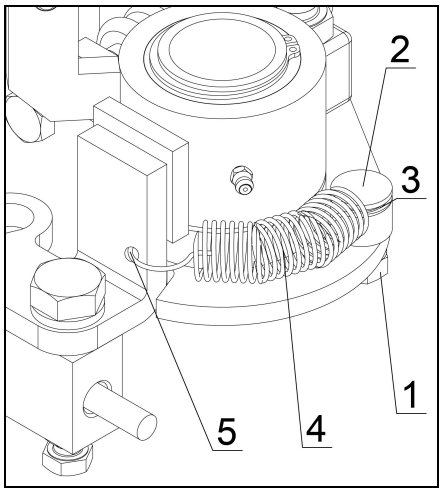
### *11.3.5 Replacement of the restoring spring of the lateral movement cylinder*




(fig. 68)

1. Unhook the spring (2) at the both of its ends from the grooves (3).
2. Then put back replaced spring (2) into the grooves (3).
3. Ensure the correct positioning of the springs (2) by the free eye (4) towards to the crank of the blade shaft (1).
4. These steps are the same for all machines with hydraulically controlled equipment.

### *11.3.6 Replacement of the sensor stabilizing spring*

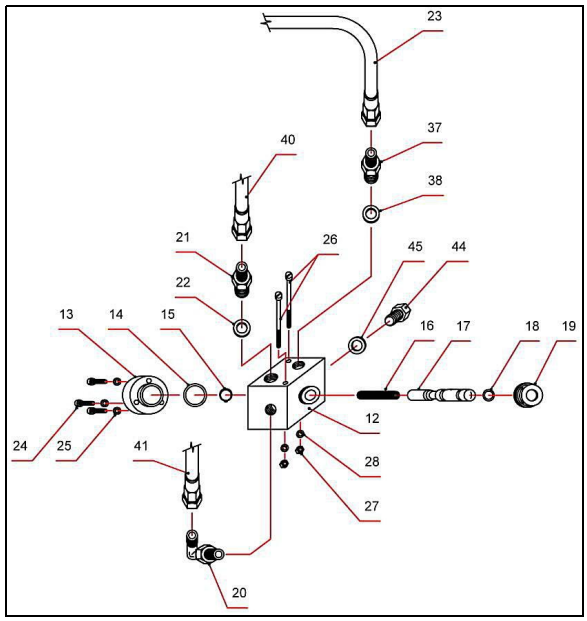



(fig. 69)

1. Remove the nut (1) holding the bolt (2) of the spring (4).
2. Remove the pin (2) with spring (4) from the control valve holder.
3. Unhook the spring (4) from the hole (5) on the holder of the sensor and from the groove of the pin (3).
4. Replace the spring (4).
5. Hook up the replaced spring (4) into the hole (5) on the sensor holder.
6. Place the spring (4) into the groove (3) on the spring pin (2).
7. Pin (2) with the spring (4) insert into the hole on the control valve holder and lock it by the nut (1), carefully tight the nut.
8. The steps are for all machines with hydraulically controlled equipment.

### *11.3.7 Replacement of the slide valve washer of the control valve*

1. Remove the rubber dust proof seal (19).
2. Remove the bolts (24) and carefully remove the rear cover (13) and remove the spring (16).
3. Push the slide valve (17) slightly backwards and remove the locking ring (15).
4. Push the slide valve (17) forward and remove it from the body (12) of the control valve.
5. Replace the sealing ring (18).
6. From the front side insert the slide valve (17) back into the body (12) of the valve. Gently push it so it is at back slightly jutted out and it is possible to mount the locking ring (15). You have to be very careful to avoid by pushing the slide valve (17) too deep into the valve body (12) damaging the new sealing ring (18).
7. Check the perfection of the sealing ring (14) and its placement. Put back the rear cover (13) and tight the bolts (24).
8. Put back the rubber dust proof seal (19).
9. These steps are the same for all machines with hydraulically operated lateral movement.

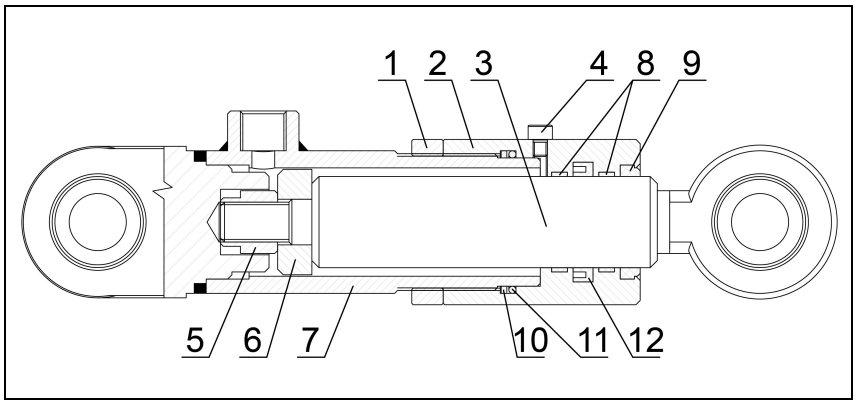



(fig. 70)

### *11.3.8 Replacement of the seals of lateral movement cylinder*

1. Release securing nut (1).
2. Remove the head (2) of the hydraulic cylinder and from the body (7) remove the piston rod (3).
3. Remove the nut (5), the thrust collar (6) and pull out the piston rod (3) from the head (2) of the hydraulic cylinder.
4. Step by step replace the worn out sealing parts.
5. Mount the spare sealings. It is recommended to change the whole set at the same time.
6. Insert the piston rod (3) back to the head (2), put back the thrust collar (6) and secure it by the nut (5).
7. Put the piston rod (3) back to the hydraulic cylinder body (7), screw on the head (2) and secure it by the nut (1).
8. Connect the hydraulic system and bleed the hydraulic cylinder of lateral movement after the mounting. Use the bleed screw (4).

Seals set contains:
- 2 guide strips (8)
- scraper ring (9)
- thrust collar (10)
- sealing ring (11)
- piston cup (12)




(fig. 71)

### *11.3.9 Replacement of the sensor holder bearings*

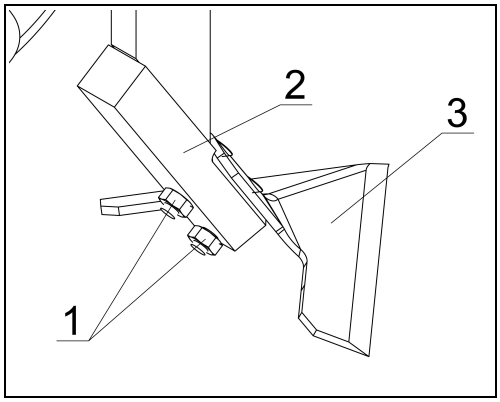
Contact your dealer or authorized representative of the manufacturer to replace the sensor holder bearings.

### *11.3.10 Replacement of the cultivation blade shaft bearings*

Contact your dealer or authorized representative of the manufacturer to replace the cultivation blade shaft bearings.

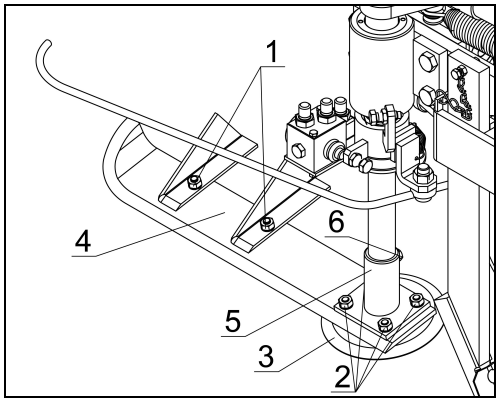
### *11.3.11 Replacement of the duck foot shaped share/chisel*

1. Remove the nuts of the bolts (1) and remove share/chisel (3) from the tine (2).
2. Check the cleanness of all parts, clean them if necessary.
3. Replace share/chisel (3).
4. Insert the bolts (1) into the share/chisel (3) and attach the share/chisel (3) on the tine (2).
5. Carefully tight all bolts.




(fig. 72)

### *11.3.12 Replacement of the cultivation blade foot*




(fig. 73)

1. Remove the nuts of the bolts (2) and remove the cultivation blade (4) with cultivation blade foot (3).
2. According to cultivation blade foot (3) wear out turn it or replace it.
3. Check the cleanness of all parts, clean them if necessary.
4. Insert the bolts (2) to cultivation blade foot (3) and put it with the bolts (2) on the cultivation blade (4).
5. Attach entire assembly to the cultivation blade holder (5).
6. On the bolts (2) put the washers and lock them by the nuts.
7. Tight all bolts and nuts carefully.

### *11.3.13 Replacement of the cultivation blade (fig. 73)*

1. Remove the nuts of the bolts (2) and remove the cultivation blade (4) with the cultivation blade foot (3).
2. Remove the nuts of the bolts (1) and remove the blade winglets.
3. Check the cleanness of all parts before mounting, clean them if necessary.
4. Replace the cultivation blade (4) and attach the winglets by the bolts (1) to the replaced one.
5. Insert the bolts (2) to the cultivation blade foot (3) and put it with the bolts (2) on the cultivation blade (4).
6. Attach entire assembly to the cultivation blade holder (5).
7. On the bolts (2) put the washers and lock them by the nuts.
8. Tight all bolts and nuts carefully.

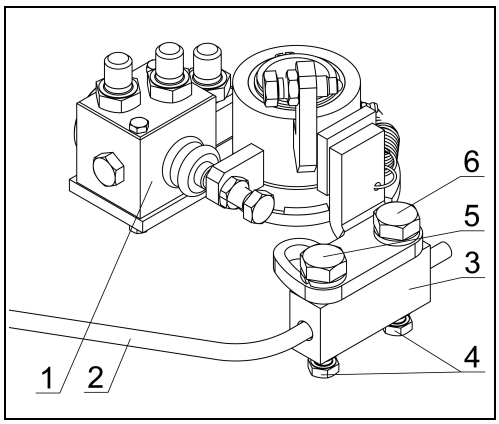
### *11.3.14 Replacement of the cultivation blade winglets (fig. 73)*

1. Remove the nuts and bolts and remove the blade winglets (1).
2. Check the cleanness of the blade surface, clean it if necessary.
3. Place replaced winglets to the cultivation blade (4).
4. By carefully tightening of the nuts and bolts (1) lock the winglets on the cultivation blade (4).

### *11.3.15 Replacement of the cultivation blade holder (fig. 73)*

1. Remove the nuts of the bolts (2) and remove the cultivation blade (4) with the cultivation blade foot (3).
2. Remove the bolt (6) of the cultivation blade holder (5).
3. Carefully grind off the locking weld on the cultivation blade holder (5).
4. Replace the cultivation blade holder (5) for a new one.
5. Adjust the position of the holder (5) so that the axis of the cultivation blade (4) is parallel to the axis of the tractor.
6. Attach replaced cultivation blade holder (5) on the shaft by tightening the bolt (6).
7. Joint the cultivation blade holder (5) with the shaft of the blade by semi circular locking weld.
8. Check the cleanness of the surfaces of all parts, clean them if necessary.
9. Insert the bolts (2) to the cultivation blade holder (3) and put it with the bolts (2) on the cultivation blade (4).
10. Attach entire assembly to the cultivation blade holder (5).
11. Put the washers on the bolts (2) and lock them by nuts.
12. Tight all bolts and nuts carefully.

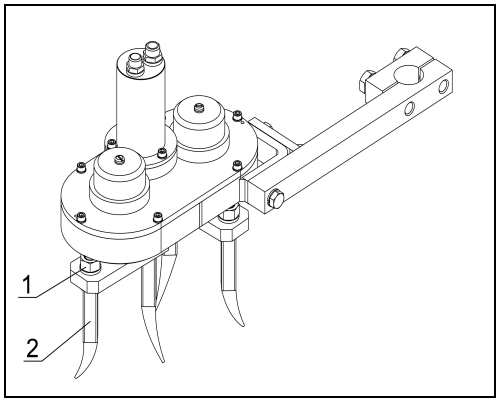
### *11.3.16 Replacement of the sensor*




(fig. 74)

1. Remove the bolts (4) of the sensor attachment.
2. Slide out the sensor (2) from the holder of the sensor (3).
3. Insert a new sensor (2) into the holder of the sensor (3) and set the requested position - see chapter 10.2.3 / 10.2.5 / 10.3.5 depend on the machine you have.
4. Thoroughly tight up all bolts and nuts.
5. The steps are for all machines with hydraulically operated lateral movement.

### *11.3.17 Replacement of the power loosening tool points*




(fig. 75)

1. Remove the nut (1) of the pin (2).
2. Remove the pin (2) from the power loosening tool.
3. Insert a new pin (2) to the arm of the power loosening tool.
4. Lock it by the nut (1).
5. Repeat the procedure of exchange on all remaining pins.

### *11.3.18 Replacement of the spring of the blades pressure*

Follow the steps in chapter 10.1.3 to replace the LPO-M spring of the blades pressure.

Follow the steps in chapter 10.3.2.1 to replace the LPO-HP spring of the blades pressure.

### *11.3.19 Replacement of the spring of the lateral movement*

Follow the steps in chapter 10.1.4 to replace the LPO-M spring of the lateral movement.

### *11.3.20 Replacement of the lateral movement main pin bearings LPO-M*

Contact your dealer or authorized representative of the manufacturer to replace the lateral movement main pin bearings.

### *11.3.21 Replacement of the working tool carrying arm shaft bearings LPO-H*

Contact your dealer or authorized representative of the manufacturer to replace the working tool carrying arm shaft bearings.

### *11.3.22 Replacement of the lateral movement shaft bearings LPO-HP*

Contact your dealer or authorized representative of the manufacturer to replace the lateral movement shaft bearings.

## *11.4 Mechanical malfunctions*

| Problem | Reason | Measures |
|---|---|---|
| - machine blockage | - blocked rotor | - release blocked rotor, remove plant debris from the rotor |
| | - blocked cultivation knife (LPO-H with passive set) | - release blocked cultivation knife, clean the knife |
| - rotor does not move in the soil | - damaged spring of the lateral movement | - replace the spring of the side movement |
| | - improper spring of the lateral movement | - according to soil conditions use the right spring of side movement |
| - rotor cannot be sinked | - improper spring of the knives downforce | - according to soil conditions use the right spring of knives downforce |
| - rotor sinks to the soil during the work | - improper spring of the knives downforce | - according to soil conditions use the right spring of knives downforce |

## *11.5 Electro-hydraulic malfunctions*

| Problem | Reason | Measures |
|---|---|---|
| - machine does not work | - hydraulic source is not working | - start up the tractor<br>- check the carrier (pump, limiter)<br>- check the connection of hydraulic hoses<br>- check the hydraulic generating set |
| | - electric source is not working | - check the gearbox<br>- check the connection of electrical cables<br>- check if the voltage to the electro-magnetic valves is available<br>- check the electric control of hydraulic circuit |
| - excessive rigidity of the sensor | - poor pressure-less outlet throughput | - check the connection of the pressure-less outlet |
| - loosening of the sensor bolt | - poor pressure-less outlet throughput | - check the connection of the pressure-less outlet |
| - LPO rotor or cultivation blade moves jerky | - high oil-flow | - adjust the flow divider |
| - LPO rotor or cultivation blade moves too slowly | - low oil-flow | - adjust the flow divider |
| - LPO rotor does not rotate | - low oil-flow | - adjust the flow divider<br>- check the hydraulic source function |

| Problem | Reason | Measures |
|---|---|---|
| - LPO rotor rotates slowly | - lightening bolt is not adjusted<br>- low oil-flow | - adjust the lightening bolt<br>- adjust the flow divider<br>- check the hydraulic source function |
| - oil in the tractor heats too much | - lightening bolt is not adjusted | - adjust the lightening bolt |
| - LPO rotor does not move in the soil | - lightening bolt is not adjusted<br>- low oil pressure | - adjust the lightening bolt<br>- check the hydraulic source function |

### *11.6 Putting the machine into the operation after 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 parts 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 of the machine it is recommended to:
- perform general cleaning
- perform a preservation of metal parts of the machine after cleaning which eliminates the corrosive effects
- check a condition of electrical cables (cracks, cuts, damages by friction), replace if necessary
- check a condition of hydraulic hoses (cracks, cuts, damages by friction), replace if necessary

## *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 hoses

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
- all plastic parts

Group of electrical parts:

- all electrical parts and electrical components

**PROTECT YOUR ENVIRONMENT !**

## 15 . DECLARATION OF CONFORMITY

# 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, Ltd.
Hrušecká 388
691 54, Týnec
Czech republic

hereby declares that the machine described below:

**Designation:** **HYDRAULIC SWINGING DISC / LOOSENING SECTION**
**Type:** **LPO**
**Serial number:**
**Brand:** **OSTRATICKÝ**

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 982, ČSN ISO 4254-1

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

Signed in Tynec u Breclavi, at 14.11.2013


Dipl. Eng. Radek OSTRATICKY,
director

## 16 . NOTES