



spol. s r.o.  
**OSTRATICKÝ**  
Týnec u Břeclavi

**Tel./Fax: +420-519-342491(2)**

# **User's and Maintenance Guide for Compact PN, ST, STS vineyard trimming machine**



**READ CAREFULLY BEFORE FIRST USE !**

## CONTENTS

1. Guide object.....	3
2. Terms of warranty.....	5
3. Machine identification.....	6
4. Use requirements.....	6
5. Technical specifications.....	8
6. General safety rules.....	12
7. Environment protection.....	17
8. Manipulation.....	18
9. Installation.....	18
10. Starting-up and working with the machine.....	21
11. Maintenance and repairs.....	25
12. Cleaning.....	29
13. Transportation methods.....	29
14. Detachment and storage.....	30
15. Dismantling and setting aside the machine.....	30
16. Notes.....	31

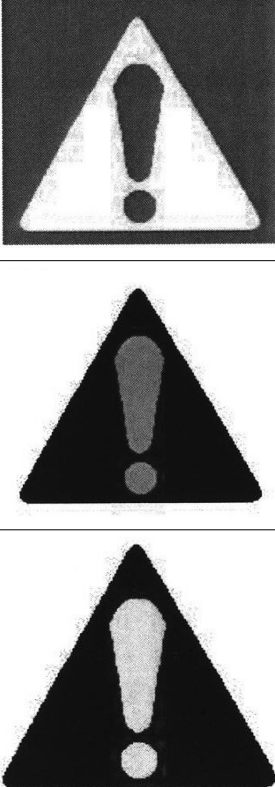
## 1. GUIDE OBJECT

### 1.1 The object of this manual

The guide contains complete practical information for a proper and safety function, operation and maintenance of the machine.

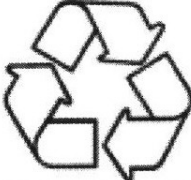


Read it carefully and do observe all the instructions and advice regarding your safety.

### 1.2 Warning and danger signs

	<b>DANGER !</b>
	Symbolizes imminent danger which, when not prevented, causes heavy injuries or even death.
	<b>CAUTION !</b>
	Symbolizes imminent danger which, when not prevented, may cause heavy injuries or even death.
	<b>WARNING !</b>
	Symbolizes imminent danger which, when not prevented, may cause slight or heavy injuries.

Respecting these warning signs is necessary for your safety. When you notice these signs do consider possible injury hazard, read carefully relevant instructions and also do inform other users.

### 1.3 Other signs

	Symbolizes measures taken in order to protect the environment.
	Common warning sign.
	Particularly important technical direction.

10-07-30

#### 1.4 Machine parts movement description

Terms “right” and “left” mean a movement orientated clockwise and counter-clockwise regarding the machine movement orientation.

#### 1.5 Storing the manual

Keep this manual always ready to hand in the place of work, stored in a place designated by supervisor. Give this manual over to further users and also when selling or hiring the machine out to a third party.

#### 1.6 Keeping the manual up-to-date on the time of release

Technical development and scientific research improve the technology and may cause changes in the final product. Some changes may occur between the user's guide and machine itself. Owing to this the data in form of numbers, figures and description are not binding the manufacturer and it may be in no way a standpoint for laying any claims.

#### 1.7 Important notice

In case of dubious function of the machine do not take any risks and do not try to carry out any unqualified intervention. Contact your distributor immediately. He is the only one to inform you since he has been trained in operating this machine.

## 2. TERMS OF WARRANTY

The constructor provides a one-year guarantee on parts and work spending on repairs in case of every manufacturing or material defect except for parts and components not produced by the Ostratický, s.r.o. company. In such cases the guarantee depends upon their producer's statement.

### 2.1 Object of warranty

This warranty applies to the trimming machine and is extended to cover all the equipment, provided such has been delivered together with the trimming machine.

### 2.2 Conditions

#### 2.2.1 Specification

This warranty is provided to the initial owner and does not transfer to a third party when the machine is resold to a third party before the warranty expires. The warranty applies only when defect parts are returned to constructor and is limited to new parts delivery settlement for work spending, according to directions set by the constructor. Defect parts replacement under the warranty does not prolong the warranty. In no case the warranty binds the constructor to replace the machine under warranty.

#### 2.2.2 Warranty period

The warranty comes into force on the date of delivery.

The warranty can be only applied in cases of revision or regular maintenance carried out in accord with the User's and Maintenance Guide, and in cases when intervention under warranty or requested changes and adjustment are carried out in the Ostratický, s.r.o. manufactory or by authorized agent.

#### 2.2.3 Warranty exceptions

The warranty does not include the following:

- a) damaged parts and components which are to be replaced as a part of regular maintenance – expendable parts.
- b) regarding the wear and tear period, damage caused by a standard wear of material, parts and components.
- c) indirect physical damage or financial loss
- d) damage caused by using parts or equipment not authorized by the constructor, or by not respecting the delivery terms
- e) damage caused by putting the device into operation before its repair is complete and finished.

#### 2.2.4 Warranty cannot be applied:

- a) when no regular checks are carried out as instructed in the manual delivered with the trimming machine
- b) when checks and interventions into the device are carried out anywhere but within the network of authorized OSTRATICKÝ company vendors or their agents.
- c) when original parts are replaced with unsuitable ones
- d) when the damage is caused directly or indirectly on installation or adjustment which does not comply with the standards or are carried out without approval of the constructor.
- e) when repeated errors occur due to excessive use of high-pressure cleaner.
- f) when damage appears to be caused by inappropriate maintenance, fault or inexperience of the driver, or by misusing the machine in operations it was not designed for.

## 2.2.5 Secondary costs – specification

The warranty does not cover:

- parts replacement and delivery related transport expenses
- eventual expenses on local intervention, transport costs of constructor's agents
- work station inspection
- finance spent on labour force necessarily used to dismount and remount any component and any part of trimming machine equipment
- expendable supplies in time of warranty repair: oil, fuelling, etc.

## 3. MACHINE IDENTIFICATION

Identification plate is placed on the bottom of lifting arm and includes:

Conformity label CE Type

Year and month of construction, serial number

Machine type

Machine weight, homologation number for transport on public roads

Fill in fields (type, year, serial number) information from the plate (use the plate fixed to the machine). Tell your distributor these enquiries. He shall know exactly the type of machine and will be able to inform you as quickly as possible.

Do not remove the plate fixed to the machine

In case of damaging the plate, ask your distributor for replacement.

## 4. TERMS OF USE

### 4.1 Standard use of the machine

This device is utterly design for trimming in vineyard. This means either complete or partial removal of overhanging annual shoots.

Any other use of the machine is against the standards and inadmissible.

### 4.2 Operator's competence

Machine can be operated and repaired only by individuals with perfect knowledge of safety rules and machine construction and function.

Please familiarize yourself with all the control functions and its proper use before starting the machine.

It will be too late when the machine is in operation.

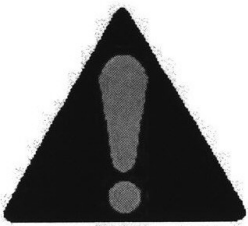
The machine is not self-supporting, it is to be fixed to a tool carrier or a tractor for work.

Special equipment to fix the machine in other carriers must be provided by the constructor.

In other cases the installation must be carried out in accordance with instructions and approved by your distributor who ensures proper installation.

### 4.3 Working positions description

The machine is designed to be triggered by the carrying device or the tractor engine. It cannot work separately. Only the driver is authorized to start up the machine, there is no need of any third party intervention.

CAUTION !	
	From the moment driver has to leave his seat to set up the machine or for any other reason, the carrier or tractor engine must be turned off and the driver must keep the ignition key so that the engine cannot be started up by any other person.

## 4.4 Working environment specifications

### 4.3.1 Operation on oblique surface

Adjust the speed and driving technique to land, roads and lanes. Stay alert and careful. The machine keeps changing its tractor and carrier weight resolution and balance.

In any case and especially on an undulating and oblique surface and on crossfalls turn slowly and avoid quick gear change.

Do not put the brakes on or pick up speed quickly when driving up or down the slope.

### 4.3.2 Lightening, night work

When the lightening is insufficient, use the carrier or tractor lights. For a good visibility apply also the lights on the trimming machine. If none of this is possible, use the device merely in the day-time.

Use a different electric circuit from that of trimming machine.

## 4.4 Constructor's and user's liabilities

Do observe all the instructions regarding installation, operation, control, maintenance and repairs in this manual.

Use only spare parts recommended by the constructor.

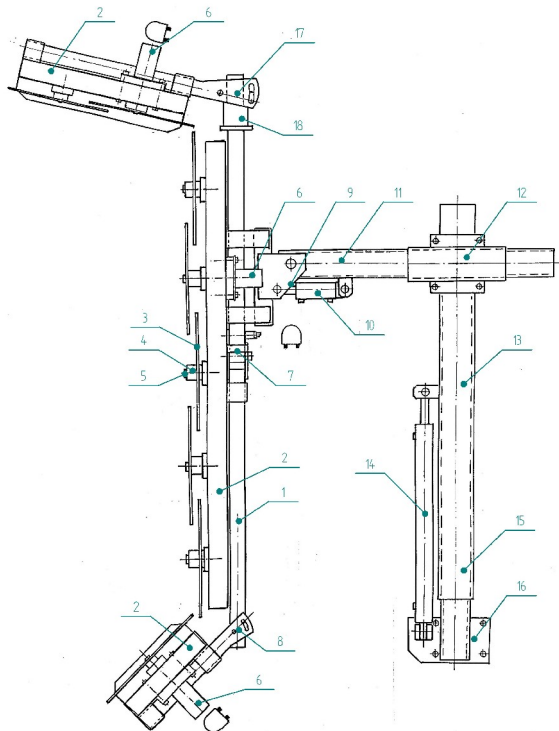
Do not make or have made any adjustment on the machine or its equipment unless you ask your distributor for a permit.

Not respecting these precautions can make your device hazardous. In case of damage or injury the constructor is relieved from responsibility.

## 5. TECHNICAL SPECIFICATIONS

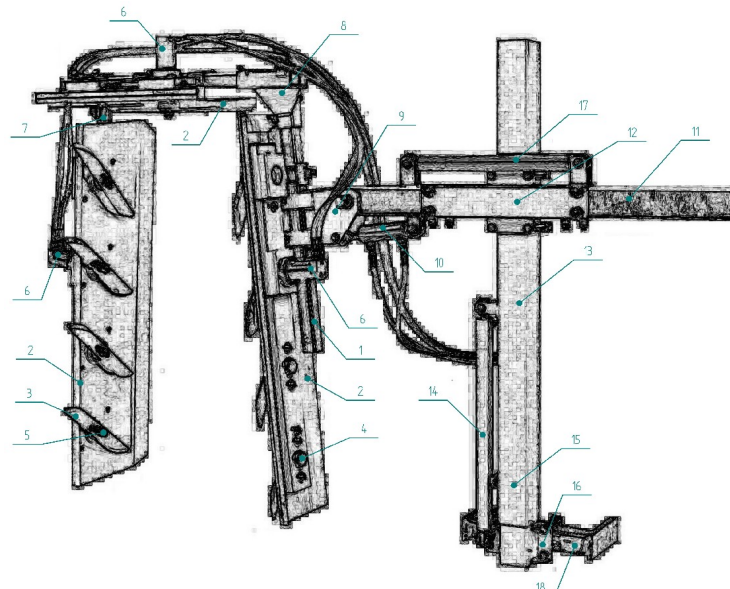
### 5.1 Definition of the terms used herein

#### 5.1.1 Unilateral trimming machine PN (PN1, PN2)



1. Trimming strip girder
2. Trimming strip
3. Trimming knife
4. Rotor coil
5. Backnut
6. Rotary hydraulic motor
7. Vertical protection
8. Lower jib hinge
9. Swing head
10. Hydraulic tilting cylinder
11. Telescopic jib
12. Suspension sleeve
13. Lifting arm
14. Hydraulic lifting cylinder
15. Arm distance bolts
16. Flange
17. Upper jib hinge
18. Upper strip protection

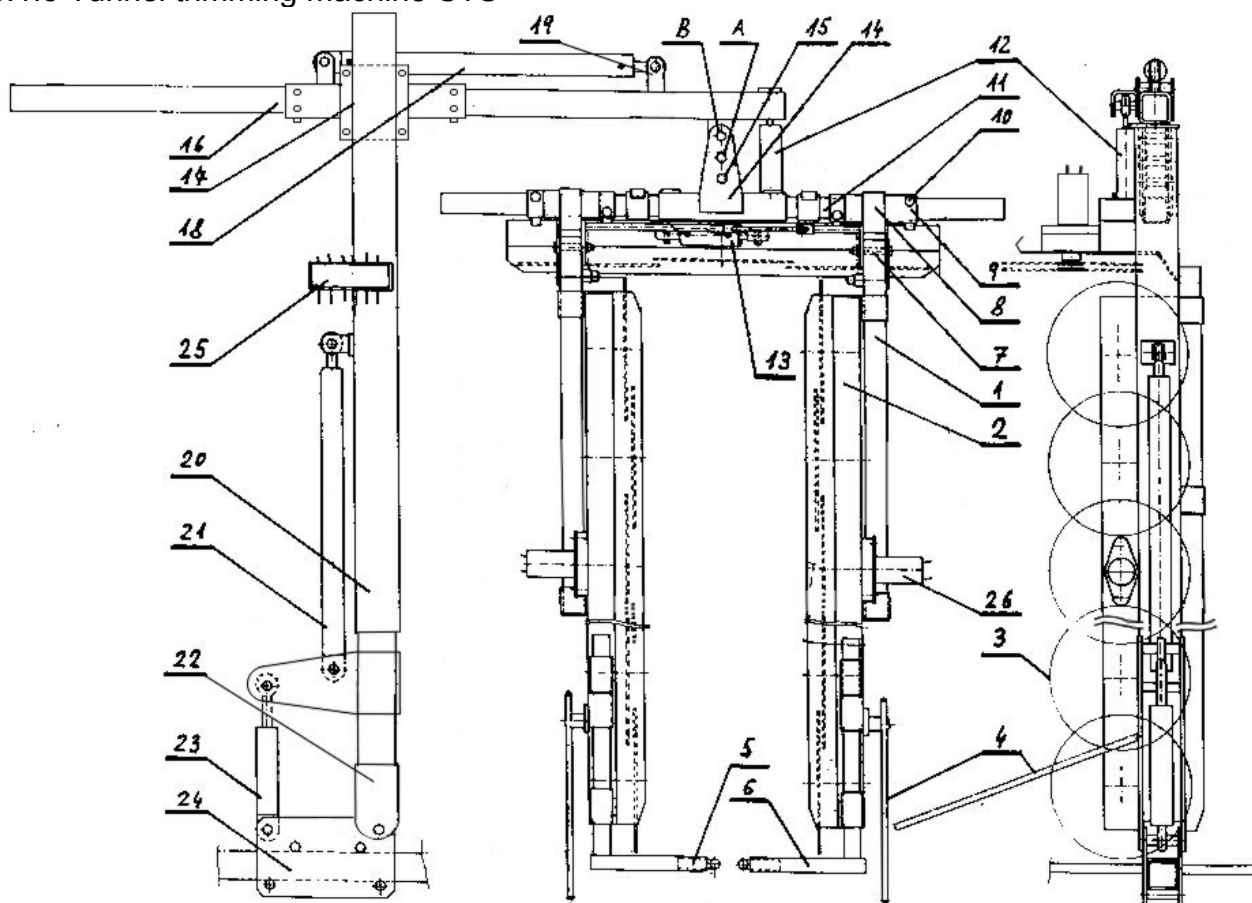
#### 5.1.2 Tunnel trimming machine ST



1. Trimming strip girder
2. Trimming strip
3. Trimming knife
4. Rotor coil
5. Backnut
6. Rotary hydraulic motor
7. Inner strip vertical protection
8. Inner jib hinge
9. Swing head
10. Hydraulic tilting cylinder
11. Telescopic jib
12. Suspension sleeve
13. Lifting arm
14. Hydraulic lifting cylinder
15. Arm distance screws
16. Flange
17. Hydraulic extension cylinder
18. Fixing frame



## 5.1.3 Tunnel trimming machine STS



- |                           |                            |
|---------------------------|----------------------------|
| 1. Beam                   | 15. Swing head pin         |
| 2. Knives casing          | 16. Extension jib          |
| 3. Trimming knife         | 17. Sleeve                 |
| 4. Shoot lifter           | 18. Hydraulic cylinder     |
| 5. Finder                 | 19. Sleeve                 |
| 6. Finder bracket         | 20. Lifting arm            |
| 7. Vertical protection    | 21. Hydraulic cylinder     |
| 8. Trimming strip bracket | 22. Swing head             |
| 9. Sleeve                 | 23. Hydraulic cylinder     |
| 10. Distance bolt         | 24. Sleeve                 |
| 11. Balance beam          | 25. Binding block          |
| 12. Absorber              | 26. Rotary hydraulic motor |
| 13. Hydraulic cylinder    | A. Locking plunger I       |
| 14. Swing head            | B. Locking plunger II      |

## 5.2 Operating parameters, oil demand

Trimming knife rotation speed	:	1550 rev/min
Maximum oil flow (long-term operation):		20 l/min
Maximum hydraulic circuit pressure:		180 bars
Maximum counterpressure:		30 bars
Maximum return circuit pressure (outflow pipes):		2,5 bars

### 5.3 Hydraulic distributor

Bilateral trimming machines (consist of two working machines) can be provided with a hydraulic distributor allowing to operate only left or only right head, or both heads at the time.

### 5.4 Purity of oil

Oil purity must be in accordance with the quality class 9, which is 25 µm or better.

### 5.5 Operating dimensions

Model	PN1 240	PN1 250	PN2 241	PN2 242	PN2 251	PN2 252
No. of knives						
Upper strip	2	2	2	2	2	2
Vert. strip	4	5	4	4	5	5
Lower strip	0	0	1	2	1	2
Cutting range	2 knife strip = 70 cm					
	3 knife strip = 100 cm					
	4 knife strip = 130 cm					
	5 knife strip = 160 cm					
Suspension cylinder	type US					
	hydraulic lifting, hydraulic tilting					

Model	ST 323	ST 424	ST 525	STS 424	STS 434	STS 535
No. of knives						
Upper strip	2	2	2	2	3	3
Vert. strip	3	4	5	4	4	5
Cutting range	2 knife strip = 70 cm					
	3 knife strip = 100 cm					
	4 knife strip = 130 cm					
	5 knife strip = 160 cm					
Suspension cylinder	type US			type STS		
	hydraulic lifting, hydraulic tilting			hydraulic lifting, hydraulic tilting, hydraulic extension		

### 5.6 Characteristics of the carrier or tractor

Standard fuel consumption and a pressure necessary for the trimming machine to work correctly must be secured by the carrier or tractor hydraulic supply. You can find the consumption in paragraph 5.2. When the hydraulic supply is insufficient, the trimming machine must be connected to a secondary hydraulic supply provided by the OSTRATICKÝ company as an additional equipment.

The connection joints must be completely rid of impurities (soil, sand etc.). The hydraulic joints are universal and can be used in all OSTRATICKÝ equipment and carriers.

Distributors are required to provide customers with and install connections applicable to carrier or tractor.

Electric connection is applicable to every engine with 12V/DC electric supply. When the carrier or tractor is not furnished with such a supply, it is up to the distributor to implement connection while holding the right polarity. The anode (+) complies with conductor 1, the negative pole complies with conductor 2. The supply must be attached to the plus clip to avoid the risk of short circuit on disconnecting the carrier or tractor.

The mechanical attachment of the trimming machine to carrier or tractor must be carried out only with help of facility capable of lifting the machine. It is advisable to use universal OSTRATICKÝ suspension frames for this purpose.

#### 5.7 The ambient noise propagation level

The machine noise slurs with noise of the carrier or tractor, which produce a louder noise. For safer use it is recommended to wear protection muffs especially when the carrier cabin is not sound-proof.

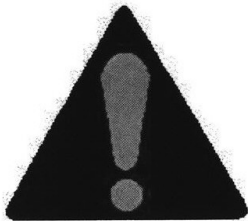
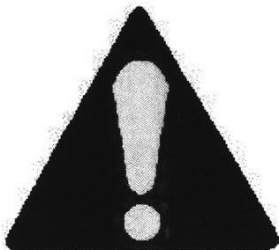
## 6. GENERAL SAFETY RULES

### 6.1 General specifications

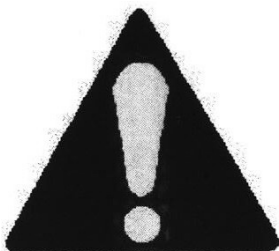
Following chapters contain additive information which also are to be respected for your safety.

**CAUTION AND CIRCUMSPECTION are fundamental for your safety.**

**Safety measures and regulations preventing from accidents and relating to general safety, medicine practiced in work stations, environmental protection and road traffic must be respected in all circumstances!**

<b>CAUTION !</b>  	<p>Make sure that no other person, no animal and no object is in the vicinity of trimming machine before starting-up the engine and during the working process.          Keep children at a safe distance from the machine.          Never use the machine for personal transport.          Before any intervention make sure the machine cannot be accidentally turned on.          Before every use and after every adjustment and maintenance operation make sure that all the protection equipment is in its place and good state and it is ready to use.          Loose clothes, long flowing hair or chainlets could be caught or pulled in by machine parts.          Never move your hands, arms or legs close to moving parts.          Always keep at a safe distance</p>
<b>WARNING !</b>  	<p>Every remote controller (cord, cable, rod, hose) must be fixed safely so that it cannot be turned on at random and cause accident or damage.          Do not walk on the hood or any other part of the machine except for the parts designed for it (ladder, deck).          Before use check if all the bolts, joints and nuts are tightened.          If necessary, tighten them.          Make sure that the ground is even and free from shards of wood, iron, plastics etc. which could damage the trimming machine.          If you hear a noise or feel unusual vibration, it is necessary to turn off the machine. Seek the cause of failure and remove it before further operation.          If necessary, call your distributor.</p>

### 6.2 Individual protection equipment





<b>WARNING !</b>  	<p>Before touching sharp-edged parts i.e. when replacing trimming knives, wear protective gloves.</p>
---	---

### 6.3 Warnings / signs

Warnings and signs placed at the machine provide information about safety measures which have to be taken to prevent accidents.


See to it that all the warnings and signs are clean and visible. When any damage occurs ask your distributor for new warning signs adhesives. In case of repair see to it that all spare parts are provided with the same warnings and signs as the original parts.

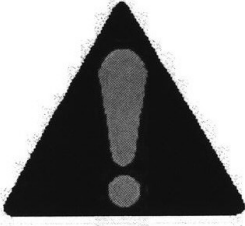

#### Warning signs on the trimming machine

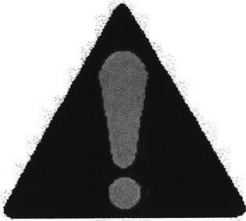
	<p>Read over the user's manual before use.</p>
	<p>Before carrying out any repair, adjustment or maintenance secure the machine from starting, pull the key from ignition box and follow the instructions in user's manual.</p>
	<p>WARNING! Danger of hit by ejected object – keep at a safe distance.</p>
	<p>WARNING! Danger of mortal or heavy injury by rotating parts – keep at a safe distance.</p>

## 6.4 Toxic products

The machine is put into operation by a hydraulic liquid which is under pressure and can have a temperature up to 80°C (176°F). If the hose is leaking, turn off the power supply immediately.

<b>Do not try to fix the hose !</b>	
	Contact your distributor as soon as possible.

<b>CAUTION !</b>	
	<p>The hydraulic power of liquid leaking from the hose is great enough to penetrate skin and cause serious injuries.</p> <p>A pressure of 20 bars is dangerous. In case of such injury call your doctor instantly.</p>
	

<b>CAUTION !</b>	
	Avoid a contact of oils and dissolving agents with skin, eyes or mouth. Most of these products contain deleterious substances.



**It is recommended to keep a medical kit ready at hand!**

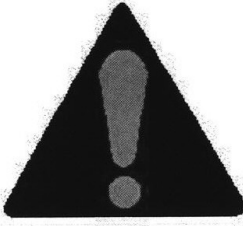
## 6.5 Obstruction of the machine

There are several reasons for obstruction occurrence between the knife and trimming strip or between trimming strips. Usually the trimming knife stops rotating.

In such case:

- stop the machine
- turn off the engine, pull out the key
- shift to neutral
- put the hand-brake on
- seek the cause of obstruction
- when found try to loose it
- after loosening the obstruction the machine can operate at a minimum performance

	Trimming knives must rotate freely and without restraint.
	When cleaning the machine wear protective gloves.

<b>CAUTION !</b>	
	<p>From the moment driver has to leave his seat to set up the machine or for any other reason, the carrier or tractor engine must be turned off and the driver must keep the ignition key so that the engine cannot be started up by any other person without notifying the driver.</p>

## 6.6 Fire

The machine and its equipment must be kept clean to prevent fire. Accumulated remains of plants and grease can catch fire as a result of moving parts' friction.

### 6.6.1 Fighting the fire

It is recommended to keep a fire extinguisher close at hand (not the water one) so that you can prevent damage when the fire starts.

In case of fire on the machine try to get the carrier or tractor to a safe location, leave the machine immediately and prevent anybody from approaching it.

## 6.7 Attachment / traction

### 6.7.1 General information

The machine can be attached to the carrier only on designated locations.

Try to use a carrier compatible to the machine (minimum engine power, type of attachment, carrier capacity specifications etc.).

Do not step between the machine and the carrier without shifting to neutral, put the hand-brake on, turn off the secondary engine.

Do not step between the machine and the carrier when lifting the carrier.

Secure the attachment device after attaching the machine.

Check the security and state of attachment before setting off.

Make sure that after attachment neither overburdening nor faulty weight distribution occurs on the carrier, this could disturb its stability.

## 6.8 Accessory drive / cardan shaft

The hydraulic control box can distribute power supply to the trimming machine. Hydraulic control boxes are driven by the cardan shaft. Follow the instruction in next chapter.

### 6.8.1 Safety operation of the accessory drive and driveshaft

Make sure that the speed and rotation of carrier accessory drive are compatible with implied use of the machine.

Make sure that the accessory drive casing is in a good state. If not, replace it immediately.

Do not use the accessory drive when the engine is switched-off.

Turn off the accessory drive when there is a risk of exceeding the cranking angle of cardan shaft, especially on turning, ascent and descent.

Every physical contact of the cardan shaft with the carrier or machine can result in damage.

### 6.8.2 Safety operation of the cardan shaft

Use only a distributor recommended cardan shaft.

Make sure that the cardan shaft gear cylinders overlap correctly both in operational and transport mode.

Respect the safety standards of the cardan shaft manufacturer.

Before attaching and detaching the cardan shaft, turn off the accessory drive and the engine and pull out the key.

Before every use make sure that the cardan shaft is in a good state and tightened correctly.

Make sure that the cardan shaft casing is in its place and a good state. If damaged, replace it immediately.

After detaching the tractor's accessory drive cardan shaft the cardan shaft must be fixed by a protective cap.

## 6.9. Basic maintenance and repairs

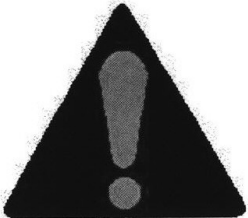
### 6.9.1 General information

Maintenance and repairs must be carried out by a qualified person only.

Make sure that the machine and its equipment is sustained in a perfect state.

#### 6.9.1.1 Machine shut-down

##### **Prior to every intervention:**

CAUTION !	
	

From the moment driver has to leave his seat to set up the machine or for any other reason, the carrier or tractor engine must be turned off and the driver must keep the ignition key so that the engine cannot be started up by any other person without notifying the driver.

#### 6.9.1.2 Stopping the moving parts on machine's operation

##### **Before every intervention:**

- 1.turn off the accessory drive
- 2.disconnect the ignition box
- 3.wait until all the moving parts stop moving
- 4.disconnect hydraulic hoses

#### 6.9.1.3 Stability of the machine and its parts

##### **Before every intervention:**

- 1.lower the machine to adequate working level.
- 2.place the attaching device

#### 6.9.1.4 Cooling the hot parts

Wait until the machine oil cools down



### 6.9.2.Welding

When welding on the machine disconnect the battery of carrier or tractor, if the machine is attached. Cover the flexible conduit, hoses, electric cables and all plastic parts from damaging by molten sparks, which could result in hydraulic liquid loss or short circuit.

### 6.9.3 Interventions in the electric circuit



Before any work on the electric equipment, disconnect the battery. It is recommended not to work with the electric circuit without at least minimal experience and without the electric scheme.

### 6.9.4 Interventions in the hydraulic circuit

Before any work on the hydraulic circuit make sure it is not under pressure. Remove the pressure before detaching the hydraulic circuit. It is recommended not to work with the hydraulic circuit without at least minimal experience and without the hydraulic scheme.

### 6.9.5 Repairs

Remove or have removed every trouble which could threaten safety.  
Fix every untightness or damage of the hydraulic circuit.

		Do not impound the leakage of hydraulic oil with your fingers.
---	---	--

Faulty or damaged fuse fenders must be replaced immediately. No original fender can be replaced or removed.



Hoses or conduit already applied elsewhere cannot be used.

Non-flexible conduit cannot be welded. Damaged flexible or non-flexible conduit must be replaced immediately.

Repairs of parts which are under pressure or live ( springs, accumulators etc. ) require specific procedures and tools. It must be carried out by qualified personnel only.

## 7. ENVIRONMENT PROTECTION

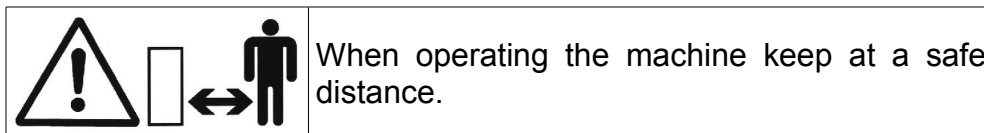
### 7.1 Storage, prevention from losses and harms on the environment

	When removing used oil and other greasing respect the law concerning environmental protection. Do not spill used greasing and hydraulic oils on the ground and do not bin it.
	<b>Recommendation:</b> Have your distributor or authorized person do the maintenance necessary for prevention from such losses. With water and soap wash very carefully those spots on your skin which had come to touch with oils and greasing used in work. Keep oils and greasing away from children. Respect warnings on these products' packaging

## 8. MANIPULATION

During the transport, delivery, installation and storage a trolley or other means for manipulation must be used.

The machine may be equipped with rack of four wheels on demand. Four turning wheels serve for setting a position only, in no way may this rack be used for a long-distance transportation.



## 9. INSTALLATION

Distributor or accredited agent is responsible for mounting, adjustment, installation and start-up of the machine attached to a carrier or tractor.

### 9.1 Machine receipt

#### 9.1.1 Setting up the machine assembly

On the machine delivery you obtain:

- Trimming strips (number and dimensions according to the model, see chapter 5.5)
- Suspension cylinder
- Suspension arm
- Set of interconnecting hydraulic hoses
- User's and maintenance guide

#### 9.1.2 Custom equipment

- Flow splitter for knives rotation regulation
- Tractor or cylinder suspension frame
- Hydraulic or electro-hydraulic distributor for functions control
- Set of parts for low-pressure out-flow installation
- Wheeled rack

#### 9.1.3 Delivery

The machine can be wrapped in plastic during the transport. When unwrapping be careful and do not cut any electric cable or hydraulic hose.

Use a pallet or fork-lifter for transport.

Never use wheels for transport of the machine. Wheels fixed to the rack serve only for steering the machine when attaching to a carrier or tractor and for moving the machine to the designated storage place in your work room.

On receiving the machine make sure that it is complete (parts, equipment and all the ordered items) and that it is not damaged. If the machine shows up damaged, make a list of the damage and take pictures of it, and have these signed by an independent person.

### 9.2 Operation personnel qualification

The machine may only be installed by a person who knows perfectly its specifications and means of its installation and setting-up. No special tools are required for the installation. The tools used in common workshop are sufficient.

### 9.3. Surrounding environment conditions

The mounting and installation must be carried out on an even and solid ground. There must be space around the machine and carrier enough for the staff to move freely. Do not leave obstructive things on a floor.

### 9.4 How to mount the trimming machine

The following mounting process is a usual one, if any difference occurs, contact your distributor or an accredited agent.

#### 9.4.1 Mechanical installation

##### 9.4.1.1 Fixing the suspension frame

The OSTRATICKÝ trimming machines use a universal junction with angular thick-walled tubes 70x70x5 for attaching to the machine or tools carrier. To install the suspension frame follow the construction scheme delivered together with the suspension frame.

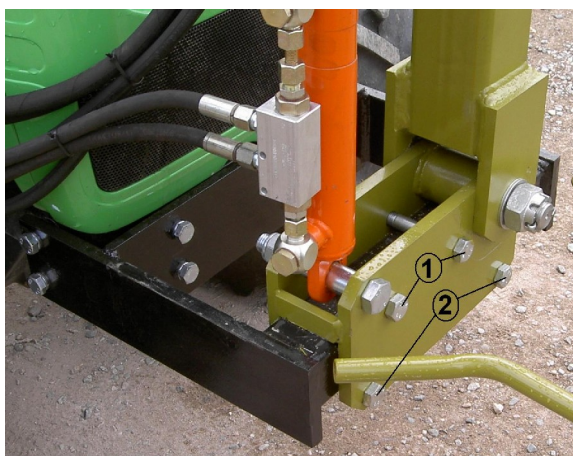
If your machine is not provided with the suspension frame, it is necessary to make one. Contact your distributor or an accredited agent.



##### 9.4.1.2 Installation of the lifting post

Fix the lifting post to a solid and competently welded suspension frame.

1. Lift the post into vertical position so that the mounting flange is downwards.
2. Lean the upper fixing bolts (1) against the suspension frame tube.
3. Insert bottom fixing bolts (2) into mounting flange (STS model) and put on the safety strap (model US).
4. Fix spring washers and nuts to all the bolts and tighten them properly.



#### 9.4.1.3 Installation of trimming strips

1. Fix the extension arm sleeve to the lifting arm
2. Insert the extension arm into the extension arm sleeve.
3. Put together the trimming strips as showed in the picture, chapter 5.1. The trimming strips setting up differ in various models.
4. Fix the trimming strips to the lifting arm:
  - a) trimming machines PN1, PN2, ST – by inserting the trimming strips girder into extension arm fork (swing head)
  - b) trimming machines STS – by suspending the set of trimming strips on the extension arm.
5. Check properly and tighten all bolts.

#### 9.4.2 Instalation of hydraulics



**Before connecting the hydraulic quick-coupling device, make sure it is rid of all impurities (soil, sand). Then make sure that hydraulic quick-coupling device of the carrier is clean and is not under remanent pressure.**

Hydraulic hoses of the OSTRATICKÝ trimming machines are in its endings equipped with quick-couplers and marked by color caps as shows the following figure:

<b>Main function of trimming knives drive</b>	=	<b>RED</b>
<b>Lifting</b>	=	<b>BLUE</b>
<b>Tilting</b>	=	<b>GREEN</b>
<b>Extension</b>	=	<b>YELLOW</b>
<b>Pressureless outflow (hydraulic engines waste)</b>	=	<b>BLACK</b>

Hydraulic hoses of the trimming machine must be connected to the tractor hydraulic system this way:

##### **Main function of the trimming knives drive**

- Single-acting hydraulic circuit with latched work position and flow regulation

##### **Lifting**

- Double-acting hydraulic circuit without latched end positions

##### **Tilting**

- Double-acting hydraulic circuit without latched end positions

##### **Extension**

- Double-acting hydraulic circuit without latched end positions

**Pressureless outflow (hydraulic engines waste)**- Special tractor hydraulic system outlet , maximum backpressure is 2,5 bars.

#### 9.4.3 Electric installation

Trimming machines have no specifics in electric installation.

#### 9.5 Wheel tractors extra load



**When you intend to use the tractor in a very narrow row (<120 cm) it is instructed to apply extra load to the tractor.**

Several ways of applying extra load:

1. Left rear wheel weight.
2. Weight / load suspended on a rear 3-point linkage.
3. Tank on the hydraulic control box burdened with weight.
4. Combination of the three methods above.

This additional weight must be sufficient to secure the stability both of the tractor and machine. When burdening the carrier or tractor chassis, respect the tractor manufacturer's instructions. The extra load is obligatory, when it's the tunnel trimming machine model.

## 10. STARTING-UP AND WORKING WITH THE MACHINE

### 10.1 Mechanical functions and description of adjustment.



**For this kind of manipulation the machine and the carrier must be turned-off.**

#### 10.1.1 Upper trimming strip height adjustment

The most effective position is sliding up the lifting cylinder **(14)** (or **(21)** in tunnel trimming machine) by 20 cm, its upper trimming strip is in a real work position. This adjustment enables sufficient lifting (40 cm) in case when the tractor slumps in the track or when the cylinder exceeds, it also enables work when the field conditions vary. The initial point can be adjusted by shifting the suspension sleeve **(12)**, by changing the initial suspension height on the tractor, or by combining both methods.

Note: some trimming machines can be (on demand) equipped with height-adjustable upper strip (see special equipment). When your trimming machine is equipped with height-adjustable upper strip, set the upper strip height against vertical strips before setting initial position of the upper trimming strip.

#### 10.1.2 Trimming strips tilt adjustment

The OSTRATICKÝ COMPACT series trimming machines are standardly equipped with joints enabling adjustment of the tilting angle between the upper and vertical trimming strip (PN1, PN2), and between the vertical and bottom trimming strip (PN2) and between upper and vertical trimming strips (ST, STS).

By shifting the suspension sleeves of these strips' girders adjust the tilting angle:

1. Unscrew both middle and safety bolt (in the beam mortise) of the setting joint so that the strip can be moved.
2. Set the angle
3. Tighten both bolts properly

**WARNING!** – the bolts must be loosen only slightly so that trimming strips cannot move freely.

#### 10.1.3 Upper strip cutting range adjustment (only tunnel models ST and STS)

Tunnel trimming machines OSTRATICKÝ, COMPACT series work with easily adjustable operating width (between vertical trimming strips).

1. Loosen the vertical strip sleeve safety bolts (9).
2. Set the height.
3. Fasten both bolts properly.

4. Repeat on the other side.

**WARNING!** - the bolts must be loosen only slightly so that trimming strips cannot move freely.

**WARNING!** – the STS series require the same distance between vertical trimming strips and the centre.

#### 10.1.4 Checking the distance between trimming knives

Before starting the machine up (connecting the hydraulic system) check whether, on the corners (surface contact between the trimming strips), the trimming knife swing diameters do not overleap. If there is a possibility of trimming knives meeting one another, adjust the distance between strips (by changing the width, tilting angle between strips or height of vertical strips).

#### 10.2 Hydraulic function

The construction of trimming machine is designed for rated speed 1500 rev/min. This complies with 20 litres per minute oil supply. The input for correct function must be at least 50% higher, otherwise the trimming knives stop working whenever the machine changes its position.

To reach sufficient oil flow and correct function it is recommended to equip the trimming machine with a special flow splitter with pressure regulation (see the custom equipment).

##### 10.2.1 Turning on and off

1. When using carriers with hydraulic pump or pumping generators operated by output shaft set the carrier engine speed to minimum.
2. Activate the power input or start the pump (provided the power control is on the carrier pump).
3. Add oil to the trimming machine using the distributor between the oil supply and trimming machine engine.
4. When changing the trimming knives position increase the engine speed up to 2500 rev/min.
5. When turning around at the end of the row do not turn off the hydraulic system, only set the carrier engine speed lower. After turning the tractor around set the engine to working mode again.

**Turning off and on in the full power mode damages the hydraulic engine and gear mechanism.**

When using carriers with variable delivery pump familiarize yourself with available performance of the pump and make sure it is compatible with the hydraulic motor.

##### 10.2.2 Setting the trimming knives' rotation speed



**This operation requires respect of all safety standards. Stop the machine and the carrier.**

To set the rotation speed of the knives correctly you will need a device for contact or non-contact rotation speed sensing – tachometer.

Using the non-contact device:

1. Stick a shred of reflective strip to the knife.
2. Turn on the trimming machine.

3. Set the tachometer to rev/min mode.
4. Set the digital tachometer to an optical insert reading mode, 15 or 20 centimetres from the reflective strip. The device displays speed in rev/min.
5. Use the power regulator to adjust the hydraulic output.

Using the contact device

1. Remove from the vertical trimming strip casing of the first rotor under the hydraulic motor. The rotor shaft is hollowed
2. Turn on the trimming machine.
3. Set the measuring device to rev/min mode.
4. Place the tachometer close to the rotor shaft. The speed is displayed in rev/min.
5. Use the power regulator to adjust the hydraulic output.



### 10.3 Electric function



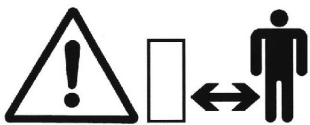
The trimming machine with only one trimming head usually has no electric system.

### 10.4 Setting off in the vineyard

#### 10.4.1 Preliminary revisions


- Oil-level check
- Presence of all safety devices, good state of working implements, hydraulic system tightness check (prevention from oil leakage).

#### 10.4.2 Initiating trimming strips

	Check properly hydraulic connections and pressures. A pressure above 2,5 bars in the outflow circuit may result in hydraulic motors damage	
	Respect all the instructions for initiating the carrier or tractor	
	Keep at a safe distance.	

#### 10.4.3 Steering the machine, moving in the row

1. Position the trimming machine in a parallel with the grapevine.
2. Increase the speed of tractor until you get the correct rotation speed.
3. Proceed with the machine in the row.
4. Adjust the position using various hydraulic equipment on the suspension arm or carrier.
5. In the end of the row, pass the last stake, turn the machine into such position that the tractor makes its way outside the row.
6. When driving, it is possible to adjust the machine's position using the hydraulic system.

	<b>If you hear a suspect noise, stop the machine immediately.</b>
---	---

10-07-30

## 10.5 Turning the machine off

### 10.5.1 Trimming machine standard switch-off

Trimming machine mounted to a wheeled tractor, gantry tractor or harvesting machine is switched off by a carrier hydraulic circuit turn-off device. This device is either electric or mechanic accordingly to the type of carrier.

Trimming machine mounted to a suspension arm with OSTRATICKÝ electric hydraulic console is equipped with electric device and machine control switch. It means that when stopping the trimming machine the hydraulic circuit is off. To stop the machine, use the appropriate tractor equipment.

### 10.5.2 Equipment for immediate switch off in the work place


Trimming machines furnished with our electric divider can be switched off immediately.

The harvesting machine (carrier) is equipped with its own switch for immediate turning off.

To obtain as comprehensive information on immediate turning off as possible consult the user's manual of the carrier.

### 10.5.3 Restart of the machine after immediate turn off

Follow the above instructions on starting up the machine.

<b>Caution!</b>	<b>To do general inspection of equipment, to check fastness of all bolts, faultlessness of all hydraulic and electric parts:</b> <ul style="list-style-type: none"><li>- latest after first 2 working hours and then</li><li>- latest after 4 working hours</li><li>- latest after 10 working hours</li></ul> <b>Then EVERYTIME BEFORE USE OF EQUIPMENT.</b>
	



## 11. MAINTENANCE AND REPAIRS

### 11.1 Staff competence

All the maintenance or repair operations apart from those which require distributor's intervention, must be performed by a trained person.

### 11.2 Types of maintenance operation – regular checks and service

Service type	Frequency
<b>Electric:</b> <ul style="list-style-type: none"> <li>- power supply electric cables and equipment (strain, obstructions, frictional wear)</li> <li>- remote control box (starting-up, adjustment, turning off)</li> </ul>	on every use on every use
<b>Hydraulic:</b> <ul style="list-style-type: none"> <li>- hydraulic hoses condition (strain, obstructions, frictional wear)</li> <li>- hydraulic parts untightness (tightening)</li> <li>- hydraulic cylinder leaks (packing)</li> <li>- trimming knives hydraulic motor</li> <li>- pressure filter choking indicator, when indicating in the red zone and the oil temperature is 50°C (122°F), clean up the filter.</li> </ul>	on every use on every use on every use on every use
<b>Recommended hydraulic liquid:</b> <ul style="list-style-type: none"> <li>- hydraulic oil type HM 46</li> </ul>	
<b>Mechanic:</b> <ul style="list-style-type: none"> <li>- trimming knives tightening – grasp the knife in your hand, no pulling and rotating play should occur, otherwise tighten the bolts</li> <li>- trimming knife bearings – grasp the knife in your hand. If the shaft is moving or cannot be rotated, that means the knife or bearings are damaged.</li> <li>- belts tension – press the belt in the inspection hole down with your finger, the belt must have a sufficient resistance</li> </ul>	on every use on every use on every use
<b>- USE PROTECTIVE GLOVES WHEN WORKING</b> <ul style="list-style-type: none"> <li>- all bolts tightness check</li> <li>- gas pressure spring (STS) and safety links</li> <li>- suspension attachment bolts</li> <li>- frame bolts</li> </ul>	on every use
<b>Greasing:</b> <ul style="list-style-type: none"> <li>- lubricate all the spots marked ● using the grease press</li> <li>- use all-purpose lubricants</li> </ul>	in case of stiffening

## 11.3 Repairs



Use original parts only.



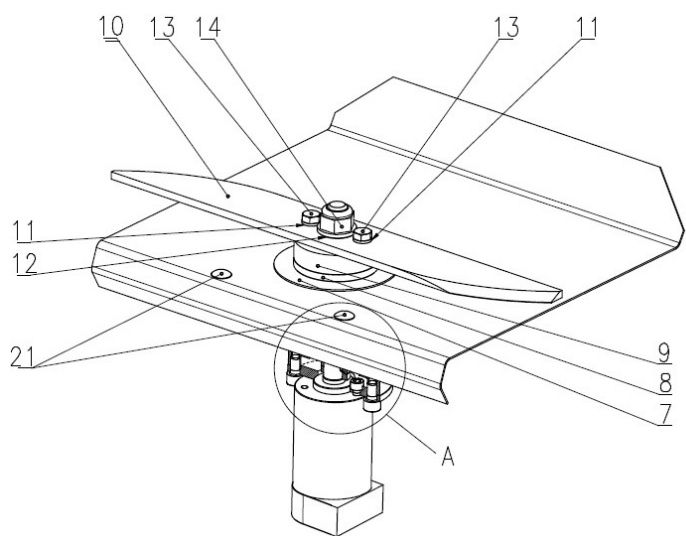
**The machine and carrier must be turned off for these operations.**

### 11.3.1 Parts subject to hard wear

- knife
- plastic fitting of the hydraulic motor
- drive belts
- shaft bearings

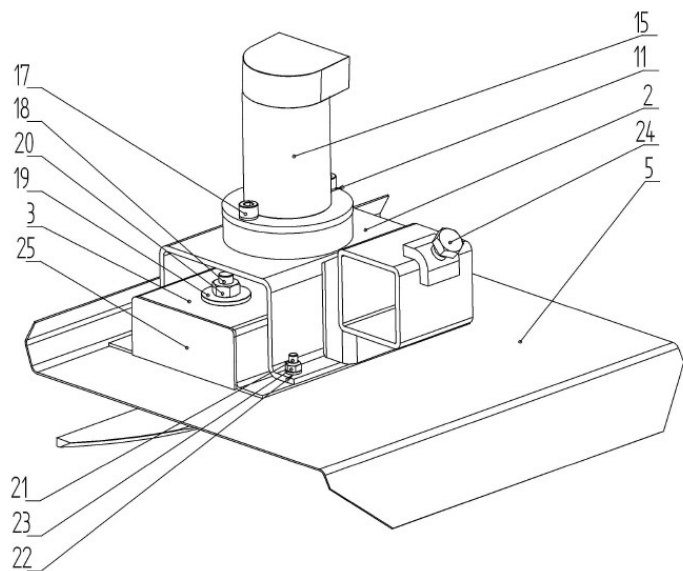
### 11.3.2 Knife replacement

1. Remove the nut (14) and the washer (12).
2. Unscrew 2 bolts (13).
3. Remove and replace the knife.
4. Insert back and tighten the bolts (13), insert the washer (12) and tighten the nut (14).



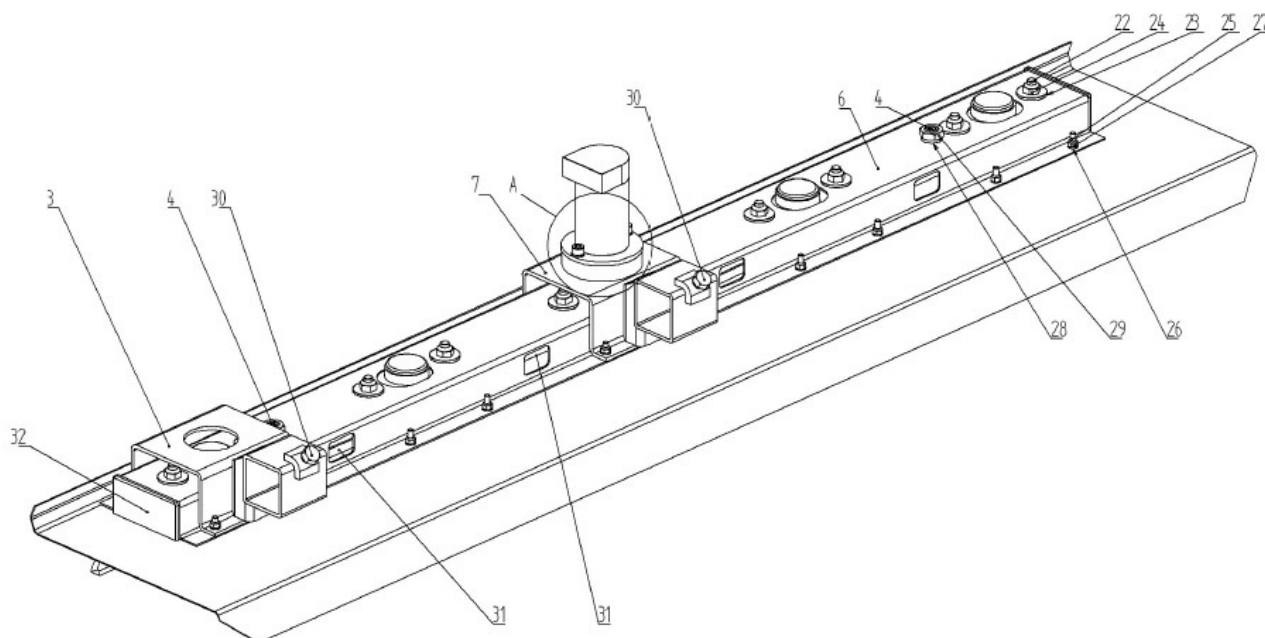
### 11.3.4 Plastic fitting of the hydraulic motor replacement

1. Remove the bolts (17) of the hydraulic motor (15).
2. Pull out the hydraulic motor.
3. Remove the worn away plastic ring.
4. Insert and tighten the hydraulic motor (15), insert bolts (17) and tighten them properly.



### 11.3.5 Drive belts - straining

1. Unscrew the rotor bolts (22) approx. by  $\frac{1}{2}$  turn only on one side of the strip (from the hydraulic motor to the end).
2. Remove the backnut (29) of the belt-stretcher.
3. Insert the hexagon spanner into the stretcher bolt (4) and screw clockwise.
4. Check the belts strain through the inspection holes (31).when the strain is optimal the belt slack after pressing by power of 30 N should be approx. 1 cm.
5. Tighten the backnut (29) of the stretcher and tighten the rotor bolts (22) properly
6. Repeat the instructions 1 to 5 also on the other side.

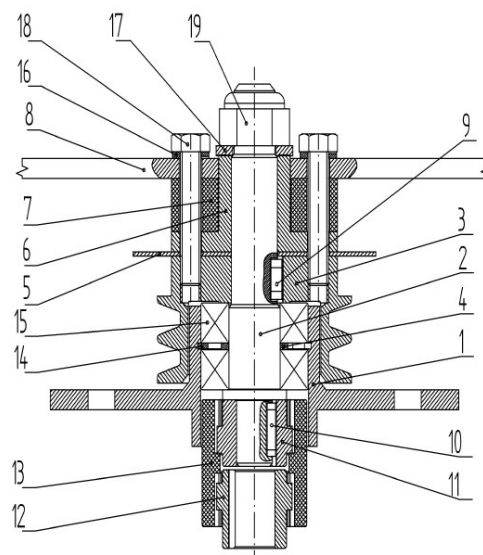


### 11.3.6 Drive belts - replacement

1. Untighten and pull out the hydraulic motor and the drive rotor plastic fitting.
2. Unscrew all the trimming knives, remove it together with driving flanges and slinger rings.
3. Unscrew the rotor bolts (22) from the whole strip, apart from the male rotor.
4. Loosen the stretcher backnuts (29) on both sides of the strip.
5. Loosen the bolts (25) and nuts (27) to separate the trimming strip (6) from the casing.
6. Turn the strip so that you can easily reach belts and those which are damaged replace with new ones.
7. Put the strip back together by the instructions as follow: 5 – 4 – 3 – 2 – 1.

### 11.3.7 Rotor bearing - replacement

1. Follow the drive belts replacement instruction from point 1 to 5.
2. Remove the belts from rotors with damaged bearings.
3. Unscrew the bolts (22) from the rotor with damaged bearing and pull out the rotor from the trimming strip.
4. Pull out the rotor shaft (2) and remove bearings (15) from the shell (1) (you can help yourself using assembly press, the bearings however must be pushed out each the other direction)
5. Assembly the rotor and put it back to the strip. Then follow the instructions in step 7 for belts replacement.



## 11.4 Removal of fault

### 11.4.1 Mechanical faults

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
- unusual noise of rotating knives	- working knives are spinning - foreign object in the machine	- replacement of the drive plastic fitting - removing the object
- vibration of trimming strips	- rotation speed is too high - knife disbalance as a cause of damage or break	- lower the rotation speed - check the trimming knives
- trimming knives are not rotating	- polyamide fittings are broken - the motor is seized	- check whether the fitting needs to be replaced - replace the motor

### 11.4.2 Electrohydraulic faults

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
- the machine does not work	- hydraulic or electric supply does not work	- start up the tractor - check the carrier (pump, limiter) - check the hydraulic hoses linkage - check the electric supply function - check the gearbox - check the electric cables linkage - make sure that the electromagnetic slide valves are alive - check the electrical control system of the hydraulic circuit

## 11.5 Restarting the machine after intervention

After intervention into electric, mechanic and hydraulic system of the machine respect the instructions for starting-up the machine.

## 12. Cleaning

### 12.1 Before you start

First, place the machine in a cleaning area.

### 12.2 Protection equipment

Use clothes suitable for cleaning the machine, which is rubber boots, goggles and a raincoat.

### 12.3 Cleaning instructions

Do not direct the water jet on shaft bearings and moving parts.

Firstly use a wide tube to get sufficient amount of water.

Rinse the machine, do not rinse boxes and electric cabling, hydraulic system and dividers.

If the machine is heavily soiled use an appropriate washing and cleaning agents.

If using jet wash keep the end of the tube 30 to 40 cm from the machine and do not direct the stream on electronic parts, motor and electric supply, tubing and hydraulic hoses, couplings, bearings, symbols and signs.

### 12.4 Cleaning agent types

Do not use aggressive agents (containing chlorine)

Use sponges, swabs and smooth brushes.

### 12.5 Checking good condition after washing

After washing leave the machine running for several minutes so that the remanent can be released.

Let the machine completely dry out.

Check the condition of electric and hydraulic hoses (leaks, cuts, frictional wear).

If necessary, replace the hoses.

Carry out grasing as instructed.

Check tightnes of all hydraulic connections and all bolts.

## 13. TRANSPORT / MOVING

### 13.1 The correct position for transport

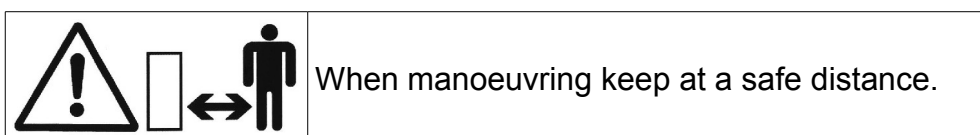
The trimming machine is for transport purposes attached to a rack or a powerful suspension device of the tractor or carrier.

Safety position of the trimming machine is requisite for its transport. These are the steps taken for safety transport:

- Hydraulic lifter must be in the lower position (the lever pulled in)
- The machine will be as lowered as possible, the clearance is sufficient however to avoid any obstruction.

Important is that in such position iimpacts on the uneven ground transferred onto the machine are minimal.

Never set off with the rack mounted to the trimming machine.



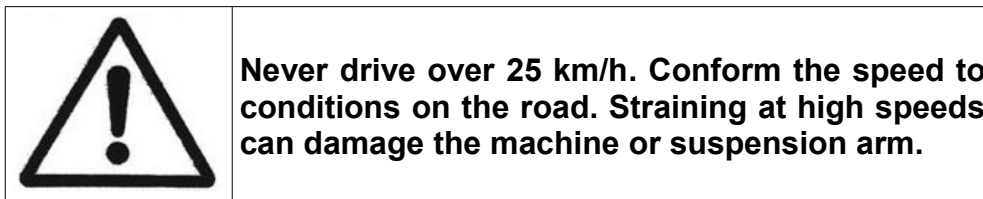
### 13.2 Transport on public roads

The machine must not block the view of traffic lights and signs in accordance with relevant directions.

If the tractor or carrier signalization is hidden, use a substitute signaling and lighting. This equipment may be removable. In such case ask for information about installation (schemes, electric supply of the tractor).

Before setting of on public roads:

- Put the machine into transport position as instructed in the manual
- Respect rated maximum dimensions (length, width), when maximum dimensions are exceeded follow the transport directions for the material transported.



### 13.3 Putting to work position after transport

A machine without any special equipment for transport is ready to use instantly. It is necessary to demount the substitute signaling and lighting.

## 14. DETACHMENT AND STORAGE

### 14.1 Regular maintenance

For storing the machine it is recommended:

- Take out batteries of electric equipment
- Clean the machine completely
- Check the condition of electric cables (leaks, cuts, frictional wear). Replace it when necessary.
- Check the condition of hydraulic hoses (leaks, cuts, frictional wear). Replace it when necessary.

### 14.2 Storing the machine

- Store the machine in aired room, protected from bad weather and away from children
- Do not cover the machine with protective sheet, it could cause condensation

### 14.3 Starting up the machine after storing.

Proceed as in the case of first starting up.

## 15. DISMANTLING AND SETTING ASIDE THE MACHINE

You are supposed to dismantle the machine and sort the parts. These parts are processed by companies or centres specialized in processing industrial waste. This waste can be turned into new products.

Hydraulic parts group:

- hydraulic components (sleeves, hydraulic block, washer, limiterm reducer, etc.)
- hydraulic hoses

Hydraulic liquids and lubricants group

- hydraulic oil
- greasing

Ferrous parts group:

- every ferrous part of the machine

Non-ferrous parts group:

- every aluminium, bronze and brass part
- every plastic part

Electric parts group:

- every electric and electronic part

**PROTECT YOUR ENVIRONMENT !**

## 16. NOTES

