

# OPERATING INSTRUCTIONS

# PALAX Power 100

powered by tractor  
powered by electricity  
swing conveyor of 4.3-metres with hydraulic motor



**SERIAL NUMBER**

\_\_\_\_\_

**YEAR OF MANUFACTURE**

\_\_\_\_\_

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# 1 BASIC SPECIFICATIONS AND RESPONSIBILITIES

## 1.1 Foreword

This Instruction Manual is intended for a professional operator of the machine. The operator must have usual general knowledge and skills. For example, the buyer of a tractor-powered machine is expected to master the use of power take-off shaft transmission.

Before the installation and operation, the operator of the machine must become thoroughly familiar with the contents of the manual. The operator is also obliged to gain familiarity with the operating controls of the machine and the emergency stop mechanism. For more information about our products, please visit our website at [www.palax.fi](http://www.palax.fi).

**NOTE !      Keep this manual with the machine at all times.**

## 1.2 EU Declaration of Conformity

Directive 2006/42/EC

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Product: Palax Power 100 s  
a firewood processor with 4,3-m discharge conveyor  
Powered by: Tractor P.T.O. or electric motor  
Models: TR Powered by tractor equipped with own hydraulic system  
SM Powered by electric motor

Serial number of the machine: \_\_\_\_\_

We hereby certify that the machine meets the requirements of the Government Decree 12.6.2008/400 on safety of machinery through which the Machine Directive 2006/42/EC has been put into effect, and that during the manufacturing process the following harmonized standards have been applied.

SFS-HANDBOOK 93-series, SFS-EN 349-1+A1, SFS-EN 609-1+A1, SFS-EN 618, SFS-EN 620, SFS-EN 847-1+A1, SFS-EN 847-2+A1, SFS-EN 847-3, SFS-EN 953+A1, SFS-EN 954-1, SFS-EN 982+A1, SFS-EN 1870-3+A1, SFS-EN 4254-1, SFS-EN 11684, SFS-EN 12100-1+A1, SFS-EN 12100-2, SFS-EN 13850, SFS-EN 13857, SFS-EN 14121-1, ISO/TR 14121-2, SFS-EN 60204-1+A1.

Ylistaron Terästäkomo Oy  
11.2.2015



Pekka Himanka  
Managing Director

### 1.3 Intended use of the machine

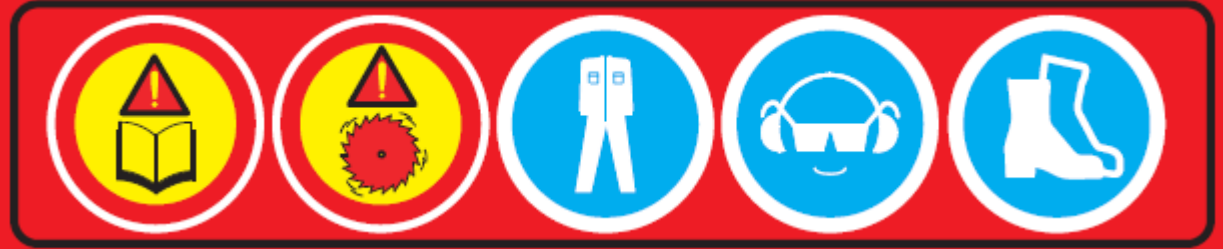






This Firewood Processor with Conveyor is intended to be used for production of firewood from round timber. Use of the machine for any other purposes is prohibited.

#### **Maximum size of the wood**

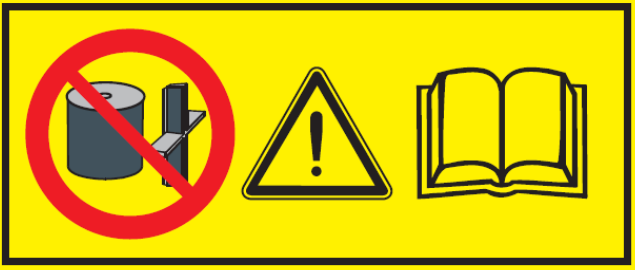



Crosscut capacity, the max. diameter of the tree is about 40 cm.

Depending on the type of infeed deck, the longest allowed billet size of the processed tree is 4...6 m.

### 1.4 Warning signs

		
<p><b>Read the User Manual, Beware of the crosscut blade, Do not wear loosely hanging clothes, Use eye guards and hearing protectors, Wear safety shoes</b></p>		
 <p><b>Lifting point of the machine</b></p>	  <p><b>The protective net for the splitting chute cannot be opened unless the crosscut saw-blade is in its upper position</b></p>	
 <p><b>Lubrication point</b></p>	 <p><b>Emergency stop (SM)</b></p>	 <p><b>Direction of rotation of the blade</b></p>

 <p><b>Interrupting the splitting</b></p>	 <p><b>Launch of splitting.</b></p>	 <p><b>Reversing the in-feed conveyor</b></p>	 <p><b>Feeding with the infeed conveyor</b></p>
 <p><b>Revolutions range of the PTO shaft</b></p>	 <p><b>Lifting point of the machine</b></p>	 <p><b>Beware of PTO shaft</b></p>	 <p><b>Read the User Manual for the machine</b></p>
 <p><b>Beware of rotating blade</b></p>	 <p><b>Stay away from moving parts of the machine</b></p>	 <p><b>Disconnect the machine from the electric supply before taking to any service measures</b></p>	 <p><b>The machine may only be operated by one person</b></p>
 <p><b>Safe distance from the conveyor</b></p>		 <p><b>Stopping the functions of the machine by slackening the V-belts</b></p>	

 <p><b>Take care that the log is not in an upright position when being fed for splitting</b></p>	 <p><b>Dismantle the blade using the key delivered with the machine</b></p>
 <p><b>Adjusting the discharge conveyor's speed</b></p>	 <p><b>Adjusting the crosscut saw-blade's lowering speed</b></p>

- Refer to pages 13 and 14, chapter 2.4 “Main parts of the machine”, for a description of the machine's operating controls. Figs. 4 and 6. Figs. 4 and 6

## 1.5 Nameplates

### ***Nameplate on the machine***

- Name and address of the manufacturer.
- Mark showing type of machine.
- Total weight of the machine: TR 1,780kg, SM 1,850kg.
- Diameter of the crosscut saw-blade 1000 mm, the hole 40 mm.
- The highest permitted rotational speed is 1000 r.p.m
- Hydraulics, max. 210 bar
- Serial number and year of manufacture.

The nameplate is located at the infeed deck end of the machine.

### ***Nameplates on the electric drive***

- 3-phase motor
- Voltage 230/380 V or 380/600 V, may vary depending on the country.
- Output 15 kW.
- Current 35 A.



## 1.6 The main dimensions and models of the machine

Machine model	Power 100 s	
DRIVING POWER	TR	SM
Weight	1,780 kg	1,850 kg
Height/width/length	Transport position 2.55 m / 1.75m / 3.2m	
In-feed conveyor	Length 2.4m Height 0.9 m	
Diameter of blade/hole	1000mm/ 40 mm	
Max. rotation speed of blade	1000 r.p.m.	
Max. diameter of the log	Max. cutting diameter of the log 40cm	
Max./min. length of the log	The maximum length of log that can be split is 55 cm.	

- ❑ The 4.3 m firewood conveyor is included in the weight.

## 1.7 Safety instructions

### General regulations and restrictions

- ❑ The maximum length of log that can be cut is 4 metres. If no log-stand or log-deck is used.
- ❑ The machine is exclusively intended for the production of firewood.
- ❑ The machine may only be operated by one person.
- ❑ The machine must be equipped with additional lights for transportation on public roads.
- ❑ The danger zone around the conveyor is 5 metres to the sides and to the rear
- ❑ Lift and lock the infeed deck and the discharge conveyor in the transport position for transportation.
- ❑ Only persons over 18 years of age are allowed to operate this machine.
- ❑ Never remove any safety-related devices from the machine.

### The operator

- ❑ Every person operating the machine, must thoroughly study the entire user manual.
- ❑ Always use eye guards and hearing protectors.
- ❑ Always wear protective shoes.
- ❑ Always wear work gloves.
- ❑ Do not wear loosely-fitting clothing.

### Before use

- ❑ Always carry out the required preparations on both the machine and the conveyor before starting the operation.
- ❑ Make sure that all other people stay outside the operating range.
- ❑ Only use a fault-free PTO shaft and attach the chain for the shaft-guard. The permissible revolutions range of the power take-off shaft is 450–480 r.p.m.
- ❑ Only operate the machine on a sufficiently firm and level surface.
- ❑ Only operate the machine in an adequately lit space.
- ❑ Keep the tractor-powered machine attached to one of the lifting arms. Also ensure that sufficient space is provided for the PTO shaft and its guard.
- ❑ Always check that all the covers are intact and properly fastened.
- ❑ Always check that the crosscut saw-bar is intact.
- ❑ Always ensure that the electric conductors are intact.
- ❑ Always check that all the controls are operational.

- ❑ Always check the oil level and make sure that the hydraulic hoses and components are free of damage.
- ❑ Before starting the work, make sure that the machine is firmly in position.

### **During operation**

- ❑ Carelessness during the cut-off operation constitutes a major hazard!
- ❑ During the cut-off operation, make sure that at the cutting point the tree is always supported by the support rollers of the crosscut deck: danger of rolling over!
- ❑ Exercise particular caution when cutting knotty or crooked logs, because, as a result of faulty cutting, the log might roll over or twist the saw-bar with enough force to break it.
- ❑ Keep the working space clean and clear of foreign objects.
- ❑ Always stop the machine and disconnect the power supply cable or the power take-off shaft before servicing.
- ❑ Only cut one log at a time.
- ❑ Danger! Stay away from moving parts.

## **1.8 Noise emission and vibration**

The equivalent continuous A-weighted sound-pressure level at the workstation is about 88 dB (A) and the sound power level is about 102 dB (A). The vibration emission values do not exceed 2.5 m/s<sup>2</sup>.

## **1.9 Responsibilities of the operator**

- ❑ The machine may only be used to produce firewood.
- ❑ All the safety-related devices are necessary to ensure a sufficient level of safety.
- ❑ The Power 100 is a very safe machine provided that the instructions supplied are properly followed, the regular maintenance routines are duly executed and the work is carried out without haste.
- ❑ It is the responsibility of the operator to ensure before the work is started that all the safety-related devices are in perfect order and the machine has been serviced in a due manner.
- ❑ The operator is responsible for ensuring that no one else is subjected to any danger.
- ❑ Modifying the construction of the machine is prohibited.
- ❑ The machine must never be operated under the influence of alcohol or drugs.
- ❑ Remember that as the operator you are responsible for any injuries caused if safety-related devices have been removed from the machine.

## **1.10 Operating conditions**

- ❑ Always place the machine on as level a surface as possible.
- ❑ Prevent risks, such as slipping in winter, by organising the work site in a due manner.
- ❑ Otherwise the weather conditions do not set any restrictions on the operation. When starting the machine in severe frost, allow it to idle at about 1/4 of the maximum speed for about 5 to 10 minutes.
- ❑ Only operate the machine in an adequately lit space.
- ❑ It is recommended that a suitable stand be purchased or made that enables the trees to be processed where the logs are ready at the level of the in-feed deck. Hence, unnecessary lifting may be avoided and the work can proceed much faster. We recommend using either the Palax Mega log-deck or the Palax Log log-stand.
- ❑ The most suitable temperature range for operation is approximately - 20 to +30 degrees Centigrade. Otherwise, the weather conditions do not set any restrictions on the

operation.

- ❑ Make sure that no other people, especially children, are present inside the operating range.
- ❑ Never use the machine indoors, owing to the risk of dust generation or the danger of exhaust gases.

### **1.11 Terms of warranty**

The warranty period runs for 12 months from the date of purchase.

#### **The warranty covers:**

- ❑ Parts which have been damaged during normal operation of the machine due to any defects in material or workmanship.
- ❑ The reasonable repair cost as set forth in the agreement between the buyer and the manufacturer.
- ❑ A new part is delivered as a replacement for the defective one.

#### **The warranty does not cover:**

- ❑ Defects due to normal wear, faulty operation or negligent maintenance.
- ❑ The crosscut saw-blade, the in-feed belt, the V-belts and oils.
- ❑ Defects in the machine due to any modifications which the buyer has made or ordered from a third party and which have affected the machine in such a way that it can no longer be considered to correspond to its original configuration.
- ❑ Other possible expenses or financial claims due to the above-mentioned measures.
- ❑ Any indirect costs and/or travel expenses incurred from making repairs under the guarantee.
- ❑ For parts changed during the warranty period, the warranty expires at the same time as the warranty period of the machine.

### **1.12 Operating instructions for the winch**

Please refer to the user manual of the winch or visit our website at [www.palax.fi](http://www.palax.fi) for more detailed operating instructions for the winch.

## 2 TAKING DELIVERY AND SETTING UP THE MACHINE FOR OPERATION

### 2.1 Lifting the machine

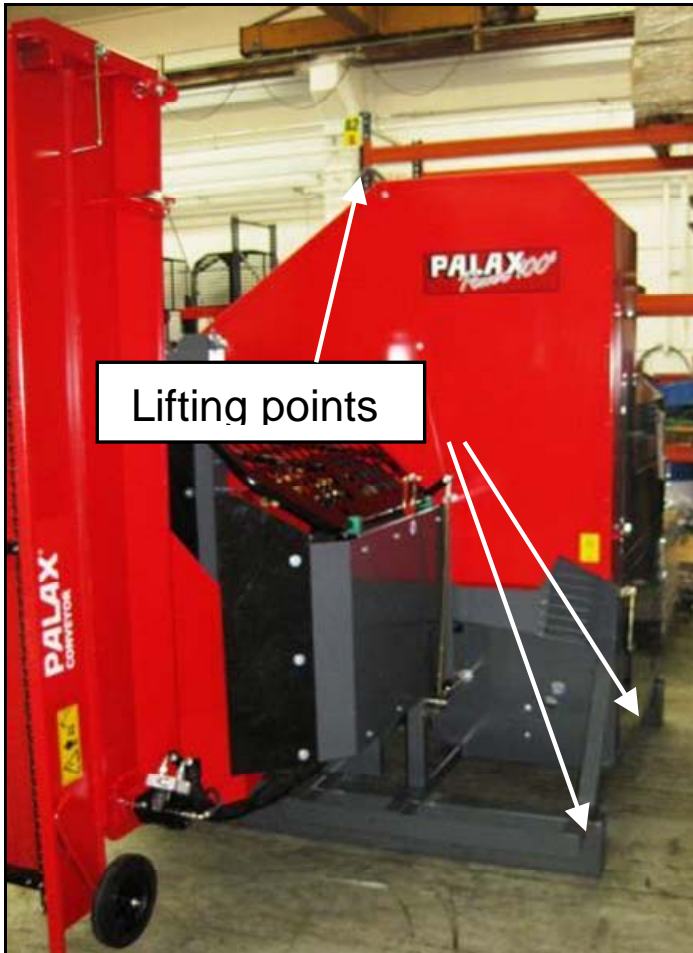


Fig. 1

The machine can be lifted with a forklift truck from both sides. There are guide rails for lifting forks under the chassis. There is also a lifting lug on the upper part of the machine frame.

### 2.2 The transport set-up and unpacking

- ❑ The machine is delivered almost ready assembled and with the conveyor attached.
- ❑ The extension table for the infeed conveyor and the loading conveyor are in the transport position.
- ❑ The angular gear is filled with transmission oil.

### 2.3 Acceptance inspection

- ❑ Check the delivered goods without delay.
- ❑ If the product shows evidence of transport damage, mark the damage on the freight

bill, and then contact the freight company and your dealer.

## 2.4 Main parts of the machine

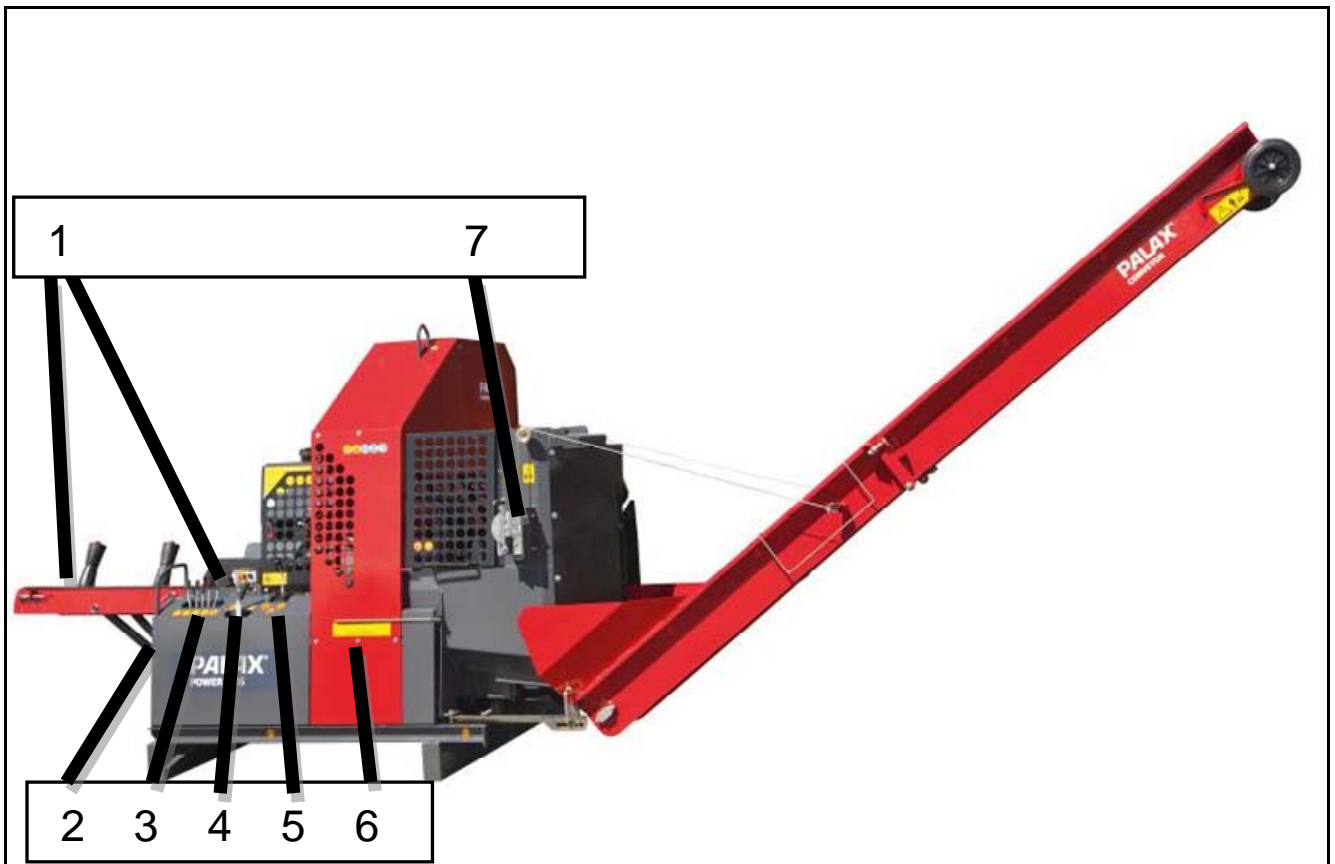


Fig. 2

1. Infeed conveyor and table extension
2. Hydraulic connectors for log-table
3. Control levers for adjusting the machine
4. Operating lever for launching the splitting cylinder
5. Operating lever, hydraulic control of the saw-blade and the infeed conveyor as well as the automatic start of the splitting cylinder.
6. Scale for the Palax Optimi system
7. Winch for conveyor

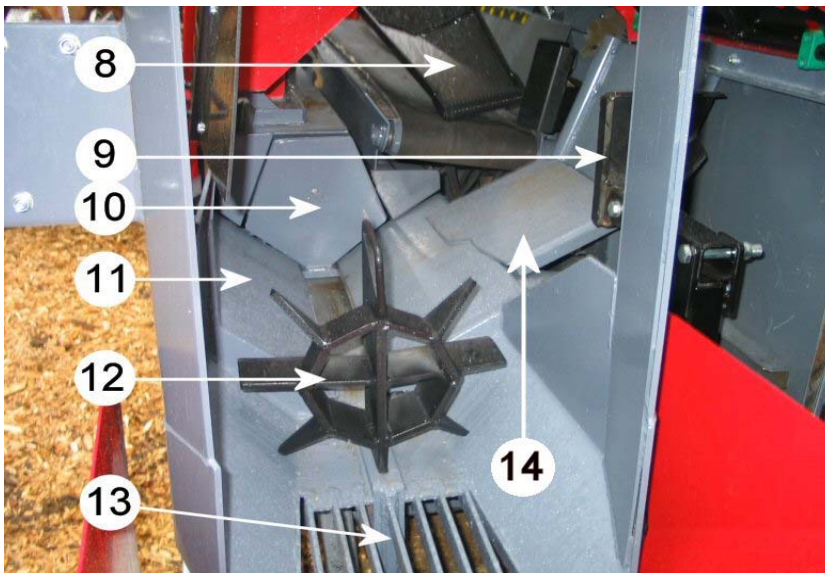


Fig. 3

- 8. Clamp
- 9. Cutting length limiter
- 10. Pusher
- 11. Splitting chute
- 12. splitting wedge
- 13. Grate
- 14. Dropping plate

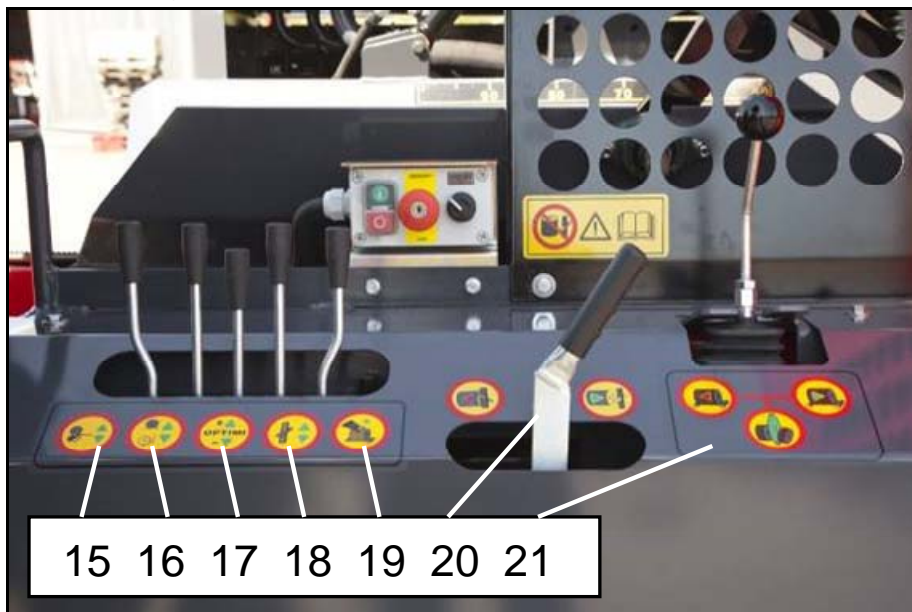


Fig. 4

- 15. Control of log-deck
- 16. Dropping plate
- 17. Adjustment of cutting length
- 18. Height adjustment of splitting wedge
- 19. Lightening of the pusher
- 20. Control of forced splitting cylinder movement, from the year 2005: motion to the left/right



21. Multi-function lever: Controls the machine's main functions

### 3 SETTING UP THE MACHINE FOR OPERATION AND TRANSPORTATION

#### 3.1 Table extension

Pull the handle of the fixing device, swing the table extension (Fig. 5) into the working position and place the stay B in the slot C.



Fig. 5

#### 3.2 Setting the log-stop



*Fig. 6*

The Power 100S is equipped with a special Palax Optimi cutting length adjuster, which adjusts the stroke length of the splitting cylinder in accordance with the actual cutting length. The cutting length is adjusted hydraulically using the control lever in the centre and the scale (Fig. 6) at the right side of the machine's main frame.

### 3.3 Bringing the conveyor in work position

*Fig. 7*

1. Pull down the conveyor and leave it supported by the winch ropes and the tip wheel. Remove the conveyor chain holder from under the conveyor.

*Fig. 8*

2. Lower the conveyor with the winch and lock it in a straight position using the split cotters. Adjust the correct cotter gap with the locking pins. The recommended gap is about 0.5 - 1 mm.

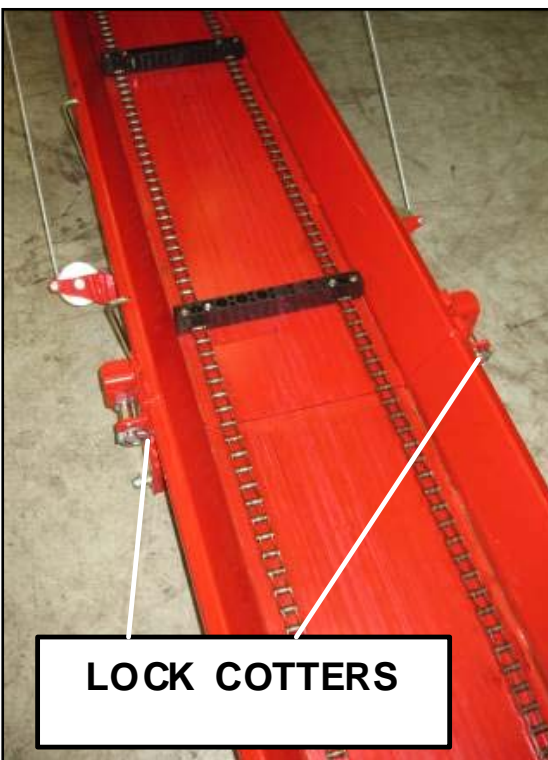






Fig. 9

3. Adjust the conveyor to a suitable height for working.

**WARNING!** Make sure that there is nobody under the conveyor as you perform the height adjustment. Always hold by the winch handle as you perform the height adjustment of the conveyor.



Fig. 10

The machine is equipped with lowering speed control for the discharge conveyor. If you want to slow down or speed up the discharge conveyor, adjust the control valve in either (+) or (-) direction.

### **3.4 Bringing the conveyor in work position**

1. Use the winch to lower the conveyor until the tip wheel touches the ground.
2. Put the conveyor chain holder in place.
3. Remove the locking cotters from the conveyor.
4. Lift the conveyor into the upright position against the transport support.

## 4 POWERED BY A TRACTOR

- The tractor-powered machine must always be connected to the tractor's lifting arm. This ensures that the distance between the firewood processor and the tractor stays correct. If it changes during operation, severe damage might result.
- Usually, the machine is delivered with the attachment lug removed. The log shall be attached by the customer.
  
- The attachment lug and the fittings required for installation (Fig. 11), are delivered with the tractor-powered machine.



Fig. 11

### 4.1 Installation

1. Put the attachment lug into place, then thread the M12 lock bolt through the square hollow section (Fig.12). Place the other bolt to the rear of the pipe (not shown in the picture).



*Figs. 12 and 13*

2. Fix the bracket (Fig. 13) that is located under the frame pipe to the M12 lock bolts. 2 pcs. of M12 Nyloc-nuts and 2 pcs. of 12 mm washers are required for the attachment. Do not tighten.
3. Put the toplink lug in place, and insert the bolts.
4. Position the lug so that its distance from the PTO shaft's centre-line is suitable for the tractor (Fig. 14).
5. After this, tighten the M12 nuts, which were left loose at stage 6.



*Figs. 14 and 15*

- ❑ Always hitch the machine to the three-point linkage of the tractor by the lug that is installed in the machine (Fig. 15).
- ❑ A suitable power take-off shaft is, for example, BONDIOLI A 143 or WALTERSCHEID W 2300.
- ❑ No safety clutch is required for the PTO shaft.

- ❑ Only use fault-free PTO shafts and always attach the chains for the shaft-guard to the machine (Fig. 16).
- ❑ Before starting up the PTO shaft, always ensure that the shaft is properly fastened, and sufficient space has been reserved for it.



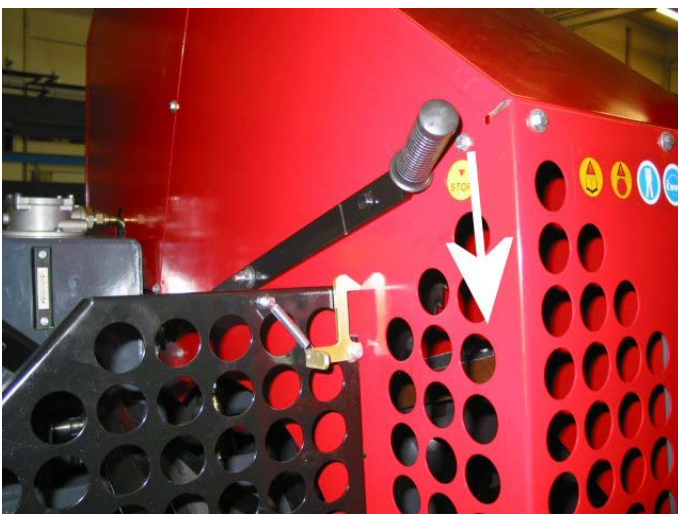
*Figs. 16 and 17*

- ❑ When you disconnect the PTO shaft from the tractor, hang it on the hook (Fig. 17) on the machine.
- ❑ The suitable range of speeds for the PTO shaft is from min. 450 to max. 480 rpm.

**NOTE !      The PTO shaft must absolutely be removed from the machine for transportation by trailer!**

#### **4.2 Emergency stop switch for a tractor-powered machine**

- ❑ The tractor-powered machine comes with a special emergency stop device that immediately stops the transmission from the angular gear to the machine. This stops all operations of the machine.
- ❑ In an emergency situation, pull the lever (Fig. 18) downward to the point where it locks. In this position, the V-belts are loose.



*Fig. 18*



**NOTE !** Only use the lever in an emergency, to avoid the V-belts, which chafe the angle-drive pulley slightly, wearing too quickly.

### 4.3 Required measures in an emergency situation

- If the switch has been used in an emergency situation, e.g. when a log has stuck in the circular saw-blade as a result of a mistake during the sawing, immediately also switch off the power take-off transmission of the tractor, because the pulley of the angle drive can wear down the V-belts unnecessarily.

**NOTE !** Switch the Rapid Stop Device back to the operation position before engaging the transmission of the tractor.

### 4.4 Transporting the machine by trailer (Fig. 19)

- The maximum towing speed of the Palax trailer is 30 km/h. The stipulations of the National Road Traffic Act must, however, be followed.
- Exceeding the fixed maximum speed may break the wheel hubs.
- Before transportation, always check that all the moving and lockable components (such as, for example, the extension table for the infeed deck and the discharge conveyor) are properly locked in position.



Fig. 19

## 5 OPERATING THE FIREWOOD PROCESSOR

### 5.1 Electric drive, start and emergency stop.

- ❑ The power output of the motor is 15 kW and the speed is 1500 rpm.
- ❑ The machine is equipped with a starter with an emergency stop switch.
- ❑ All the electric installations have been made ready.
- ❑ In the 380 V-system the fuse size is 35 A slow.
- ❑ The cross-section of the required extension cord is 6 mm<sup>2</sup>.
- ❑ Check the direction of rotation when starting up the machine. If the circular saw is rotating in the wrong direction, try switching the positions of the two phases in the plug. If you are not sure how to do this, leave it to a professional.
- ❑ The machine is equipped with automatic star-delta starting.

#### ***Emergency stop of an electric motor-powered machine:***

- ❑ The emergency stop is carried out by depressing the emergency stop button on the starter.
- ❑ The button is released by resetting the key.

**NOTE !** If a machine powered by electric motor is operated in temperatures below -15 degrees Centigrade, it is recommended that a less viscous hydraulic oil be used, such as ISO VG22S multigrade oil or synthetic hydraulic fluid, because a machine with electric drive takes the full revolutions right from the start of operation.

### 5.2 Control of the machine

- ❑ Cutting the log, starting the splitting as well as operating the infeed conveyor are controlled using just one lever (21, Fig.4).
- ❑ See the chapter 2.4 for the operating controls and their illustrations.
- ❑ When the control lever is in the neutral position, the operating cylinder of the wedge and the engine of the infeed conveyor are not subjected to any pressure.

#### ***Advancing the infeed conveyor:***

- ❑ To feed the log forward, depress the lever upwards and to the right.

#### ***Reversing the infeed conveyor:***

- ❑ To reverse the log, depress the lever upwards and to the left.

#### ***Cutting the log:***

1. Pull the lever down to make the saw-blade perform a work cycle and cut the wood.
2. To raise the saw-blade push the lever up.
3. The splitting cycle will start automatically as the saw-blade reaches its upper position.

### 5.3 Use of the firewood processor, crosscut operation

- ❑ The machine is intended for operation by one person only.

- ❑ Never leave the machine, which is easy to start, unattended.

#### 5.4 Operating the crosscut saw, before the operation

Clean any protective grease off the new circular saw-blade, because a greasy blade accumulates resin easily, causing it to get hot, lose its tension and change shape.

#### 5.5 During the operation

- ❑ Exercise caution, always keep your hands away from the saw-blade.
- ❑ Never stop the rotation of the blade by pressing wood against it.
- ❑ During the cut-off operation, make sure that the tree always leans against the support roller at the cutting point.

#### 5.6 Placing the wood on the deck

- ❑ Place the log on the deck so that it touches the wall behind the conveyor. Otherwise, the log may move during cutting.
- ❑ Exercise particular caution when cutting crooked logs.

**WARNING!** Crooked logs might be turned on the deck by the cutting force, thus twisting the blade so strongly that it breaks.

#### 5.7 Crosscut operation

- ❑ Pull the control lever of the hydraulic valve backward to bring the saw-blade down and cut through the wood.
- ❑ Be especially careful when you cut knotty or crooked trees.

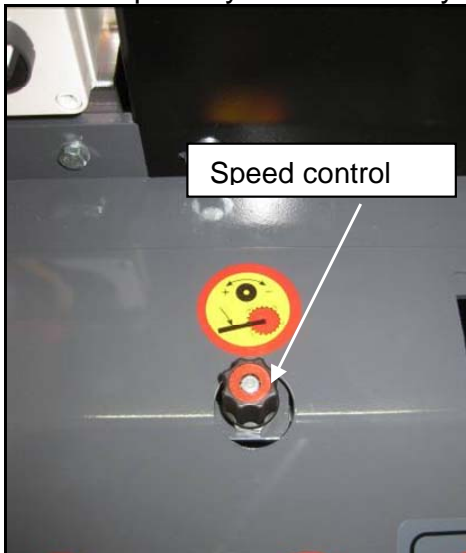


Fig. 20

- ❑ The machine is equipped with lowering speed control for the crosscut saw-blade. If you want to speed up or slow down the crosscut saw-blade's lowering speed, adjust the valve in either (+) or (-) direction.



## 5.8 Cutting the last log

### **Correct and safe cutting practice !**

- In this example the desired length of processed firewood is 30 cm.
- **Always saw off an equalizing piece A** as the remaining length of wood still enables the cutting of 2...3 more pieces of firewood. Refer to the scale for correct wood length.
- Never cut the logs into pieces shorter than 25 cm, because the wood clamp is not able to hold such short logs in position.
- If the log moves during cutting, interrupt the process immediately.

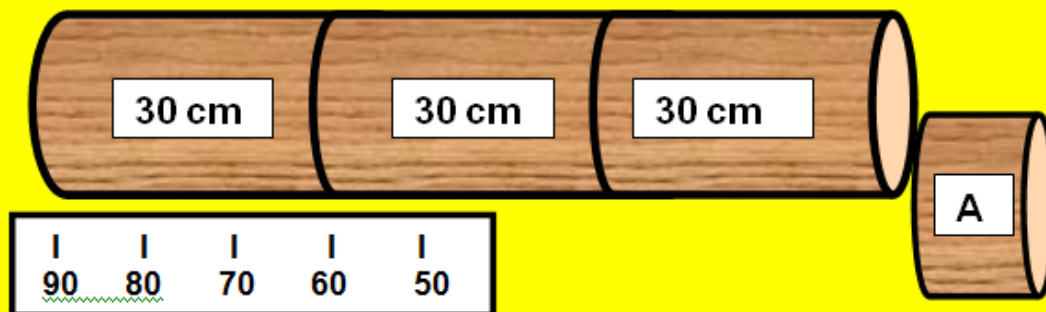


Fig. 21

- Always observe the remaining length of the log.
- If you intend to cut pieces of firewood 30 cm in length, then you must cut the so-called equalizing piece at the latest when the remaining length of the log is 2 times the cutting length (in this example  $2 \times 30$  cm). This ensures that the last piece cut is never too short. The clamp (Fig. 3) cannot prevent a log that's too short from swinging against the saw-blade. The swinging of the log may break the blade.

## 5.9 Feeding the last log for splitting

- Drop the last piece of the log, without allowing it to touch the blade, onto the dropping plate (Fig. 3) and from there to the splitting chute for splitting (Fig. 4, lever 16). In this case launch the splitting motion manually (Fig. 4, lever 20) after first ensuring that the log has fallen into the chute in the correct position.
- The scale above the infeed conveyor helps to cut the equalizing piece.

## 5.10 Disturbances during crosscut operation and their remedy

### ***Crooked trees:***

- Cut crooked trees where they bend.
- As you cut crooked trees, make sure that the log is leaning against the support roller.

### ***Big trees:***

- If the cutting sound is soft, the cutting speed and the saw-blade revolutions are correct.
- If the cutting sound is loud and cracking, the blade is proceeding too fast and the saw-dust grooves get clogged. Check the rotation speed and the sharpness of the saw-blade.
- If the tree gets stuck in the blade as a result of faulty cutting, stop the machine immediately
- Check the stuck blade before sawing. Cracks may have appeared in the roots of the teeth.
- A faulty saw-blade must not be used for cutting.

## 6 USE OF THE FIREWOOD PROCESSOR, SPLITTING OPERATION

### 6.1 Splitting cylinder

- The machine can be equipped with a splitting cylinder of either 10 tons or 16 tons.

### 6.2 Splitting wedges

#### **Standard wedge:**

- The 2/6 wedge for splitting the wood in 2 or 6 ways.

#### **Optional wedges:**

- The short straight wedge for splitting the wood in 2 ways or, if the wedge is lowered, no splitting will take place.
- The 2/8 wedge for splitting the wood in 2 or 8 ways. Normally requires a cylinder of 10 tons.
- The 2/10 -wedge for splitting the wood in 2 or 12 ways. Normally requires a cylinder of 16 tons.
- The 2/12 -wedge for splitting the wood in 2 or 12 ways. Normally requires a cylinder of 16 tons.

### 6.3 Height adjustment of the splitting wedge

- The machine is equipped with a hydraulic system for height adjustment of the wedge.
- It is possible to both raise and lower the wedge during the operation.

### 6.4 Disturbances during the splitting operation and their remedy

#### **A stuck log:**

- As the logs are big and have big branches, the cylinder force might not be sufficient, and the log might stick to the blade. To make the log come off, do the following.
  1. Reverse the cylinder using the manual control.
  2. Raise the splitting-wedge and retry the splitting using the manual control. Changing the position of the log will help in many cases.
  3. If the log will not split, open the cover and knock the stuck log loose using another log.
  4. If the log has a big branch, make the branch split by turning the log and pushing it towards the wedge with the root end first. Doing it this way requires the least power..

#### **If the log has fallen into the splitting chute in a wrong position:**

- After the cutting operation, if the log for some reason falls into an upright position, then the splitting motion may be prevented by pushing the control lever for forced splitting to the left (Fig. 4, lever 20), and simultaneously lifting up the cutting blade. In this case the automatic splitting operation does not start.
- After that, correct the position of the log and start the splitting motion manually by pushing the lever for forced splitting to the right.

## **6.5 Re-splitting the logs safely**

- If you want to produce small-sized pieces of firewood from large logs, then even wood split once may still be too large in size.
- Proceeding in the following way will help you to split the wood safely into even smaller pieces.
  1. Open the cover.
  2. Place the logs to be split into the splitting chute. E.g. one on top of the other. The pieces of wood will stay in this position, if you hit them carefully against the wedge.
  3. Close the cover.
  4. Start the splitting motion using the lever for forced splitting.

## 7 MAINTENANCE OF THE MACHINE

**NOTE!** Always stop the machine and disconnect it from the power source before performing any service measures.

**NOTE !** To clean up the guide rails for the pusher, drive the Palax Optimi once a day to its extreme position (55 cm) and after that, return it to the desired cutting length.

### 7.1 Replacing the crosscut saw-blade, Fig. 22

1. Remove the attachment screws of the cover casing, a 13 mm wrench.
2. Swing the large cover casing to the back.
3. Unscrew the blade-nut using the special wrench delivered with the machine. Right-hand thread, a 36 mm wrench
4. Lift up the crosscut saw-blade from its normal position.
5. Clean up the surfaces of the flanges thoroughly.
6. Lift the new blade into position.
7. Before installing the blade, make sure that the pin, which prevents the saw-blade from rotating, is in place.
8. The gap between the guide blocks and the blade must not be less than 5 mm.
9. Fix the blade and its protective cover.



Fig. 22

## **7.2 Sharpening the blade, hard-metal blade**

- The hard-metal blade can be sharpened "lightly" using a diamond file.
- Depending on the cleanliness of the wood, as many as 500-1000 bulk cubic metres of wood can be processed with a hard-metal saw-blade without resharpener.
- The best sharpening result and durability of the blade is achieved when the saw-blade is sharpened using an appropriate grinding machine with a diamond disc.

## **7.3 Setting the saw-blade, hard-metal blade**

- The hard-metal blade does not normally show any tendency for tension fault, but especially when a blunt saw-blade is used for cutting and it gets very hot, tension faults can occur.
- Leave the prestressing of the hard-metal blade to a professional.

## **7.4 Tightening the V-belts, angular gear /centre shaft**

- The Palax Power 100S is equipped with automatic tightening devices for the belts.

## **7.5 Tightening the V-belts, centre shaft/ saw-blade shaft**

- The Palax Power 100S is equipped with automatic tightening devices for the belts.

## **7.6 Replacement of V-belts, angular gear /centre shaft**

1. Remove the rear cover plate from the machine.
2. Remove the attachment flange of the oil pump, 4 pcs of M 10 screws, a 17 mm wrench.
3. Slacken the belts by turning the tightening devices further away.
4. Replace the old belts with the new ones.
5. Release the tightening device. Thus the belts will automatically attain their correct tightness.
6. Replace the rear cover.

## **7.7 Replacement of the V-belts, centre shaft / saw-blade shaft**

1. Remove the attachment screws of the cover casing, a 13 mm wrench.
2. Swing the large cover casing to the back.
3. Remove the saw-blade. Unscrew the blade-nut using the special wrench delivered with the machine(right-hand thread, 36 mm wrench).
4. Slacken the tightening device of the belt.
5. Change the belts.
6. Carefully clean the surfaces of the flanges before re-installation of the blade.
7. Before installing the blade, make sure that the pin, which prevents the saw-blade from rotating, is in place.
8. Attach the cover casing.

## 7.8 Tightening of the infeed conveyor belt



Fig. 23

- There are tightening screws between the infeed conveyor and the extension deck, which can be used for tightening the belt.
- As you tighten the belt, make sure that the belt travels in the centre of the roller.

## 7.9 Replacing the infeed conveyor belt, Fig. 24

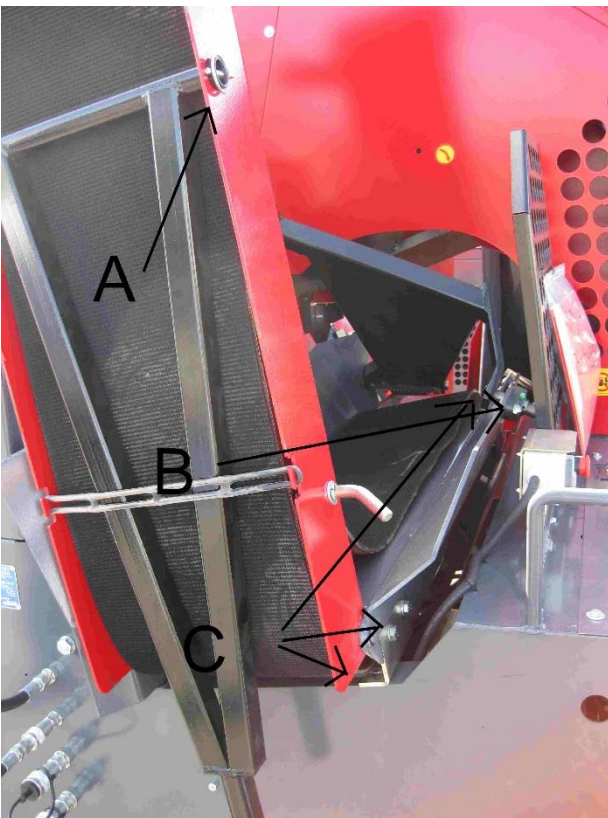


Fig. 24

1. Swing the extension table of the infeed conveyor into the transport position.
2. Remove the support leg A.
3. Remove the lower bearing bracket of the clamp. This makes it possible to turn the clamp to the side B.
4. Remove the elevation piece C, which is fixed with three bolts to the lower edge of the infeed conveyor's left end.
5. Remove the cover plate C, which is fixed with two bolts to the side of the splitting chute.
6. Remove the old belt, put the new belt into place, and fix in place the bearing bracket, elevation piece, cover plate and support leg.

### **7.10 Changing the oil in the angular gear**

1. Remove the oil refill plug and drain the used oil.
2. Fill up with about 0.9 litres of new oil.

### **7.11 Change of the hydraulic oil**

- The normal hydraulic oil volume is 160 litres.
- The quality of oil should be ISO VG 32, e.g. Univis 32, SHELL Tellus 32, NESTE HYDRAULI 32 or equivalent.
- For continuous operation under warm conditions, use ISO VG46.
- If a machine powered by electric motor is operated in temperatures below -15 degrees, it is recommended that a less viscous hydraulic oil be used, e.g. ISO VG 22S multi-grade oil or synthetic hydraulic fluid, because a machine with electric drive works at full speed right from the start of operation
- Observe particular cleanliness during the oil change, because the flawless operation of the machine is highly dependent on the purity of the oil.

### **7.12 Lubricating the machine**

- The-ball bearings on the centre shaft and the saw-blade shaft. Lubrication interval about 50 hours and always at the end of the working season if the machine is to be left standing for a long period of time. Thus the bearings will be soaked with new grease which efficiently protects them against moisture and corrosion.
- Ball-bearings of the operating levers, articulation bearings of the control levers for the blade every 200 hours, and always at the end of the operating season. If the machine remains unused for a longer period, the bearings remain filled with fresh grease, which efficiently protects the bearings against moisture and corrosion.
- The log-stop, the support roller for the infeed deck, and the auxiliary deck joints need to be lubricated 80-hour intervals using Vaseline spray.
- The detent ends of the hydraulic valve spools must be lubricated once a month.





Fig. 25

Fig. 26

1. Only open the cover on the spool detent end.
  2. When the cover is removed, the spool must not be shifted, as the balls inside the detent bushing can easily fall out and get lost.  
Spray thin CRC-type lubricating oil generously into the detent end.
  3. Attach the cover casing.
- ❑ The same grease is used on the joint head as on the ball-bearings.
  - ❑ You can also spray lubrication oil through the hole in the head of the detent end.

### 7.13 Tightening the conveyor chain

- ❑ The conveyor is hydraulically driven and equipped with automatic tightening of the chain.

**NOTE !** As you bring the conveyor to the work position, check that at the lower end, the chain rests on the drive roller, and that at the top end it rests on the tightening roller.

### 7.14 Cleaning the conveyor

- ❑ Keep the conveyor free of debris to ensure its trouble-free operation.
- ❑ Especially in winter, it is important that the conveyor is always cleaned at the end of every working session.
- ❑ The conveyor can also be washed with a high-pressure washer. The conveyor chain must be lubricated after high-pressure washing.

### 7.15 Washing the machine

- ❑ Wash the machine occasionally with a high-pressure cleaner. This is especially important if the machine is left standing for a longer period of time. Lubricate the machine after washing.

**NOTE !** Do not direct the water jet onto electric devices or bearings.

### 7.16 Storing the machine.

- ❑ The machine is intended for outdoor use but it is recommended to keep it under cover for longer standstills to avoid corrosion or malfunctions.

### 8 MAINTENANCE SCHEDULE

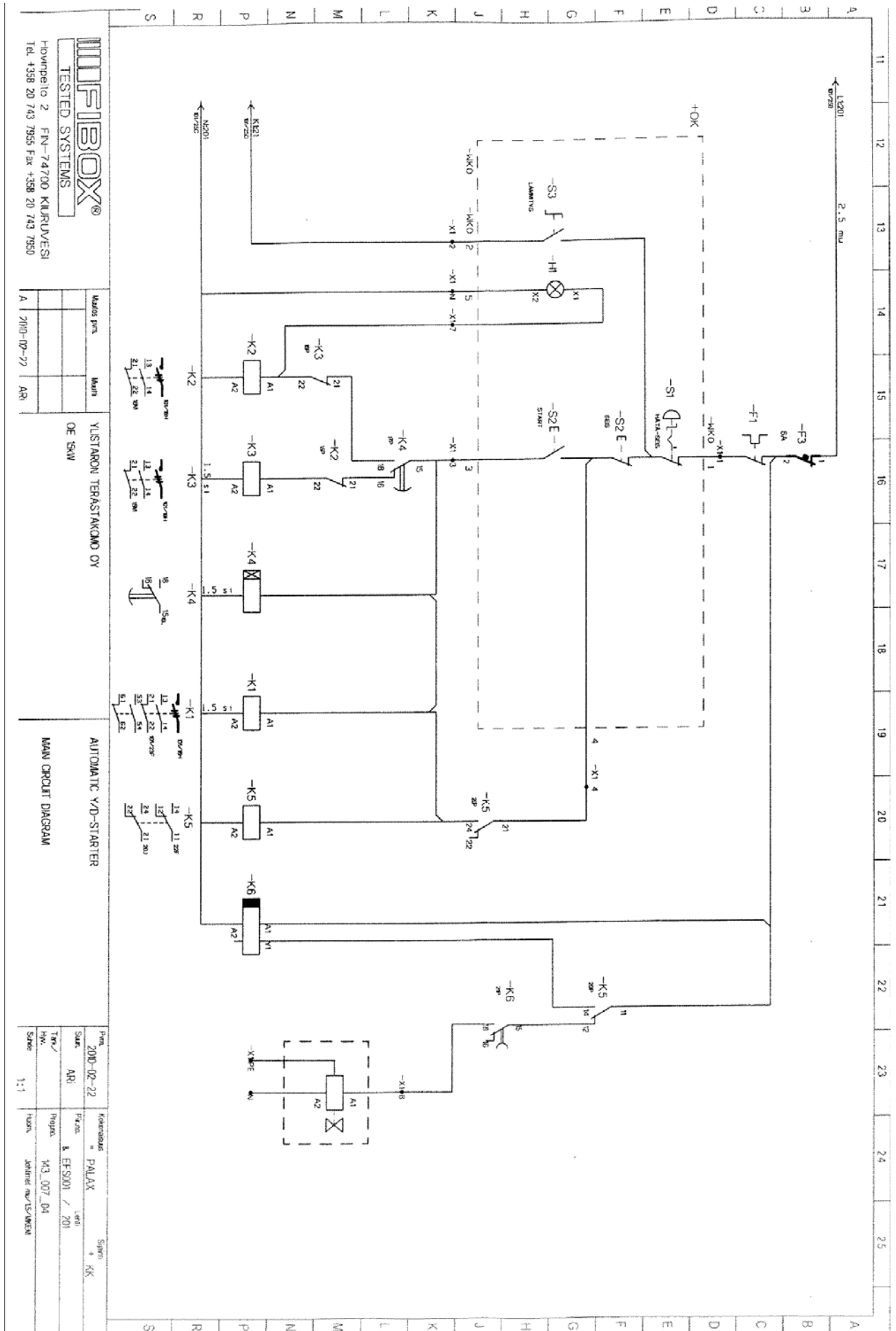
Object	Task	Daily	Service inter- val hours	Material /Method
Angular gear	Check 1 Change 2 Change		100 500 1000	SAE 80 0,9 l
Hydraulic oil	Check 1 Change 2 Change		X 500 1000	Hydraulic oil (x) ISO VG 32
Oil filter	Check 1 Change 2 Change		500 1000	FIO 180/3
All ball bearings	Lubrication		50 or once a week about 2 pushes.	Ball bearing Vaseline
All levers	Lubrication	X		Lubrication oil
Machine	Cleaning	X		
And locking the ends of the spool valves rod ends	Lubrication		80	spray oil
The detent ends and the joint ends of the hydraulic valve spools must be lubricated once a month				

x.) For continuous operation under warm conditions, use ISO VG46. Electric motor driven under cold conditions, temperature below -15° C, ISO VG 22S multigrade oil

## 9 MALFUNCTIONS AND THEIR REMEDY

Disturbance	Cause	Remedy
The saw-blade speed drops while cutting	<ol style="list-style-type: none"> <li>1. The blade is blunt</li> <li>2. V-belts have worn out</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen the saw-blade</li> <li>2. Replace the V-belts</li> </ol>
The saw-blade starts to wobble after a short time of cutting	<ol style="list-style-type: none"> <li>1. The blade is blunt and hot, and loses its tension as a result</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen the saw-blade and check its tension</li> </ol>
The blade whines	<ol style="list-style-type: none"> <li>1. Speed too high, max. allowed speed is 1,000 r.p.m.</li> <li>2. Crack in the blade</li> </ol>	<ol style="list-style-type: none"> <li>1. Lower the rotation speed</li> <li>2. Do not operate</li> </ol>
The saw-blade rotates in the wrong direction	<ol style="list-style-type: none"> <li>1. The phase-order of the electric motor wrong</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch places of 2 phase conductors</li> </ol>
The electric motor stops easily.	<ol style="list-style-type: none"> <li>1. The blade is blunt</li> <li>2. Incorrect setting of the thermo-relay</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen the saw-blade</li> <li>2. Reset the thermo-relay</li> </ol>





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Materiaali	Määrä
AR1	1

YLISTARON TERÄSTAKKO OY  
OE ISW

AUTOMATIC VFD-STARTER  
MAIN CIRCUIT DIAGRAM

Pvm:	2000-02-22	Kokonaistus:	PALAX	Sivut:	1 + KK
Sarj:	AR1	Projekti:	5. EFS/01 / 201		
Työ:		Ma:	M3_007_04		
Skala:	1:1	Luonnos:	Johannes / TS/OKEN		