ENGLISH

Hakki Pilke 50 S Easy

FIREWOOD PROCESSOR

- **Instructions for assembly, operation and maintenance**
- **EU Declaration of Conformity**
- **Safety instructions**
- **Warranty terms**

The operator must read and understand these instructions before operating the firewood processor!

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1. General information

1.1. Introduction

The purpose of this manual is to ensure that the machine is used in the manner intended by the manufacturer with regard to safety. Every person operating the machine or working in close proximity to it must carefully study this manual.

Operators of the machine are expected to have basic skills in tractor handling, such as utilising the cardan shaft drive and the tractor's lifting equipment. Before commencing work, operators must also familiarise themselves with the machine's control and safety equipment, and ensure their proper operation.

Additional information on Maaselän Kone Oy's products is available on our website at www.maaselankone.fi.

Store the manual in the immediate vicinity of the machine.

1.2. The machine's purpose of use

The Hakki Pilke 50 firewood processor is designed for preparing firewood from pruned wood or logs. The firewood processor must not be used to process any treated wood, such as is found in construction waste. Sand, nails or other impurities in the wood may damage the machine.

The maximum diameter for wood to be split is 50 cm. This limit may not be exceeded. When estimating the diameter of the log you are about to cut, note that the shape of the log and other factors, such as branches or burrs, make the actual diameter larger, and may prevent wood from being fed into the machine. The splitting groove is designed for logs up to 60 cm in length. Never cut or split logs that exceed the maximum length.

1.3. Machine model and basic information

Model	TR	Combi	
Drive	Tractor's cardan shaft (TR)	TR	Electricity
Weight	2,100kg	2,200kg	
TR/Electrical drive	min 35hp / max 500 rpm	15kW (min 32 A fuse)	
Height/width/length	in the transport position 2,900/3,100/1,520 (mm)		
Input/output conveyor	2,850/4,000 (mm)		
Blade flange/chain	Flange: 20’ groove 1.6 mm chain: 71 loops, pitch 0.404’		
Max wood diameter	47 cm		
Max wood length	Processed firewood: max 60 cm / min 17 cm		

The machine's serial number, manufacturing date, weight, operating voltage (electrically-operated machine) and model are indicated on the type plate located on the left-hand side of the machine from the operator's perspective.

1.4. Operating conditions

- The temperature range within which the machine can be operated is -20 – +30 **°C.** In the winter, the operator must ensure that there is no risk of slipping in the working area.
- The working area must be even and clear of unnecessary items. No extra or unauthorised persons are allowed in the working area. The working area must also be sufficiently illuminated.

- The machine must not be used indoors.

1.5. Safety instructions

- This machine is intended to be used by one operator. The danger zone around the machine is 10 m.
- Persons under 18 years of age may not operate the machine.
- The operator must ensure that using the machine does not cause danger to others and that no extra or unauthorised persons are within the danger zone.
- Do not operate the processor while under the influence of alcohol or drugs, or if you are tired.
- Do not use the machine if you have not familiarised yourself with this instruction manual.
- The machine has been designed solely for making firewood.
- The processor must be arranged for transport whenever it is moved. When transporting the machine on a public road, it must be equipped with additional lights.
- The operator is not permitted to modify the structure or operation of the machine, or to remove protective equipment.
- Operators must wear ear protection, sufficiently tight-fitting work clothing, work gloves, protective goggles and safety footwear.
- Before starting up the processor, the operator must ensure that the machine and its shields are intact.
- When powering the machine with a tractor, the operator must ensure that the cardan shaft is undamaged and that the rpm range is correct. The machine must be attached to the tractor's lifting equipment when operating.
- Before starting up the processor, the operator must ensure that all the control and safety devices are functional.
- When cleaning or maintaining the machine, it must be disconnected from its power source.

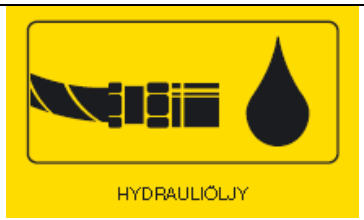
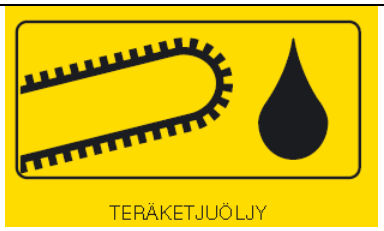
1.6. Noise and vibration

A-weighted sound pressure level at the working location is 87.0 dB (A), and the sound power level is 98.0 dB (A).

The vibration values do not exceed 2.5 m/s2.

1.7. Warning symbols

		
DANGER ZONE	BEWARE OF THE CHAIN	ONLY ONE PERSON AT A TIME IN THE WORK AREA
		
SHUT DOWN BEFORE MAINTENANCE	BEWARE OF MOVING PARTS	RISK OF ENTANGLEMENT WITH THE CARDAN SHAFT
		
RISK OF CRUSHING	DO NOT GO UNDER THE CONVEYOR MAX CONVEYOR TILT ANGLE	BEWARE OF THE SPLITTING BLADE

 READ THE MANUAL BEFORE USE	 USE PROTECTIVE EQUIPMENT	 USE PROTECTIVE EQUIPMENT
 ALWAYS GRAB A LOG BY THE SIDES	 MAX RPM	 Scale
 HYDRAULIC OIL	 LEFT ROTATION	 CHAIN OIL
 LIFTING POINT FOR FORKLIFT		 EMERGENCY STOP

2. Reception and assembly

2.1. Reception inspection

Dispose of the machine's packaging in a environmentally friendly manner. Ensure that the machine's splitting groove contains the components of the input conveyor's additional roller (parts according to Figure 4 in Section 2.4), the lifting winch for the splitting blade as well as more than one splitting blade as possible additional accessories.

Check that the processor has not sustained any damage during transit, and ensure that all necessary parts are included in the package. If you encounter defects or damage, contact the retailer immediately.

2.2. Lifting and moving the machine

When moving the machine, make sure that the moving and lifting capacity of your tractor or forklift is sufficient for the machine's weight. Only lift the processor by the indicated lifting points or with the lifting equipment of a tractor.

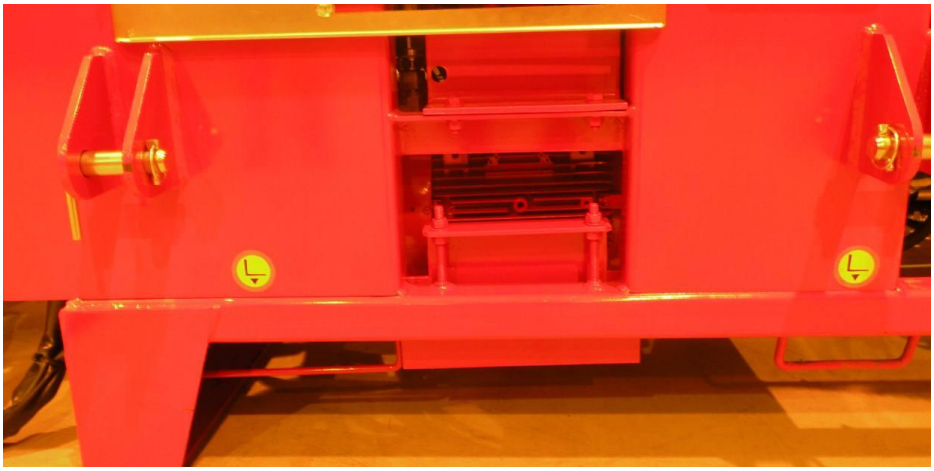


Figure 1. Lifting points

Note! If you move the machine with a forklift, detach the working platform.

When connecting the machine to a tractor's lifting equipment, the tractor cabin must be free of people in order to prevent any accidental contact with the controls. Check all connecting devices of the tractor and log processor before connecting them. Never use faulty equipment. The pins that are used to connect the pushbars and drawbars to the log processor must be of the correct size, and the appropriate locking pins must be used to ensure that they remain secure.

The processor must be placed in the transport position if it is to be moved more than 5 metres. Exercise extreme caution when moving the machine in the operating position. Lower the machine to the ground when you stop.

Note! Incorrect lifting may cause a hazardous situation or damage the machine.

2.3. Main components of the machine

The Hakki Pilke 50 is a firewood processor with fully hydraulic controls. In other words, all of the machine's functions are controlled hydraulically with operating levers on the machine's control panel. The guard of the cutting and splitting section is interlocked to the machine's operation: opening the guard stops all functions.

A. Input conveyor
B. Cutting and splitting unit
C. Control unit
D. Output conveyor

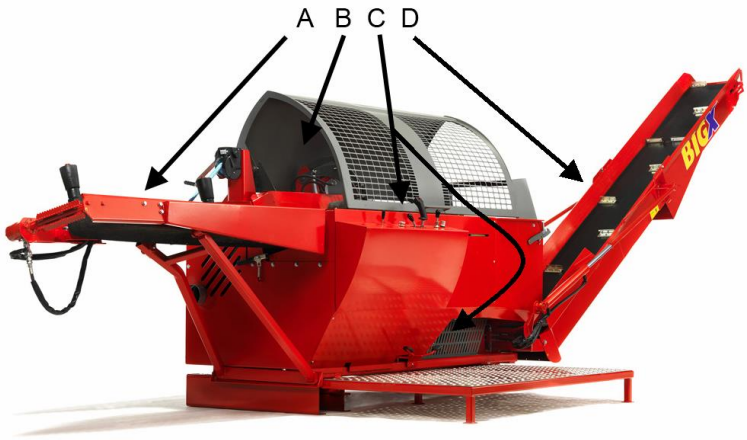


Figure 2. Main components of the machine.

2.4. Preparing the machine for operation

1. Connect the lifting winch of the splitting blade to the link bushing on the side of the splitting groove, as shown in Figure 3.
2. Install the input conveyor's auxiliary roller according to the instructions below.
3. Finally, ensure that the splitting groove is free of any extraneous items or debris.

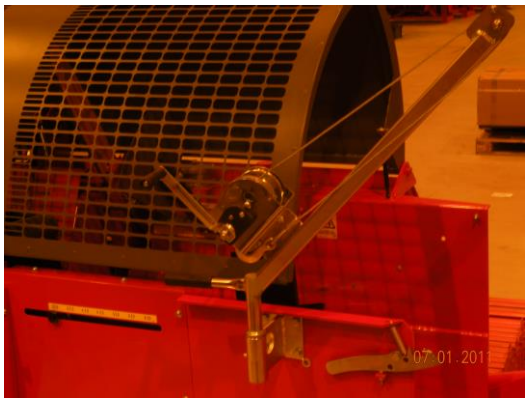


Figure 3. Installing the lifting winch for the splitting blade

Figure 4. Installing the auxiliary input roller

1. Install the motor flange on the frame of the conveyor, as shown in the figure, and lock it in place with three bolts.	2. Check that the motor's bayonet contact is firmly attached. Note! The bayonet contact supplies hydraulic power to the input conveyor extension, if one is installed.	3. Install the auxiliary roller and its fastening flange on the shaft of the hydraulic motor.	4. Lock the flange and roller on the conveyor frame with three bolts.

3. Control functions and preparation

3.1. Arranging the machine for operation and transport

Before arranging the machine for transport, ensure that the operating conditions detailed in Section 1.4 are met and review the safety instructions in Section 1.5.

Note! Inspect and clean the machine according to Sections 4.3 and 5.8 before arranging it for transport.

3.1.1. Placing the input conveyor in the operating or transport position

Place the input conveyor in the operating position as follows:

1. Ensure that sufficient room is available to lower the input conveyor (approx. 2 m).
2. Release approx. 15 cm of lifting strap from the winch A.
3. Release the conveyor lock B and push the conveyor down until the lifting strap tightens.
4. Use the winch to lower the input conveyor down onto its support C. The support must fit into the intended slot D in the frame.

When placing the input conveyor in the transport position, use the winch to lift the conveyor up, and ensure that the locking latch locks it in place.

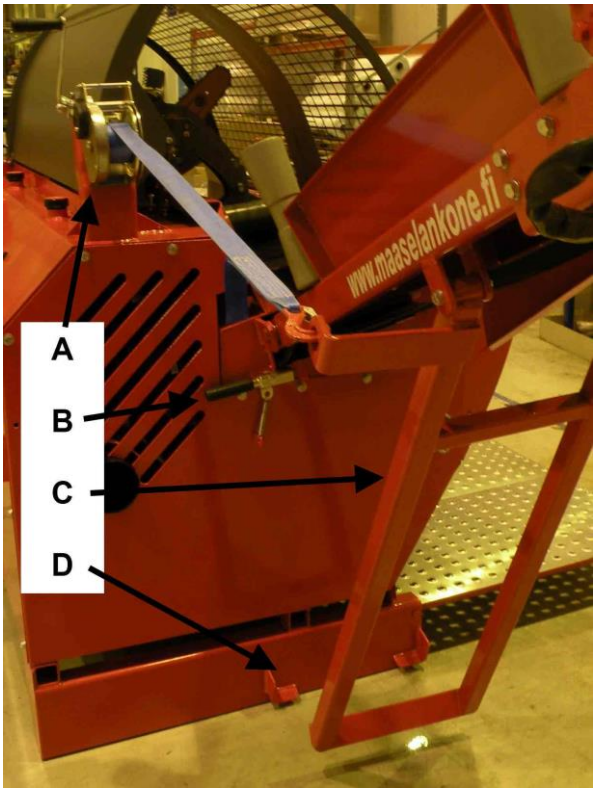


Figure 5. Lowering the input conveyor

3.1.2. Placing the output conveyor in the operating or transport position

Place the output conveyor in the operating position as follows:

Note! Two people are required to turn the conveyor.

1. Ensure that sufficient room is available to lower the output conveyor.
2. Use the control H in Figure 9 of Section 3.2 (anti-clockwise) to make sure that the conveyor is stopped, and start the machine.
3. Keep the lock A open, and move the control E in Figure 9 of Section 3.2 to the right to hydraulically lower the output conveyor to its lowest position.
4. Turn the upper section of the conveyor to the operating position with the handles C at the upper end. Two people are required to turn the conveyor.
5. Turn the output conveyor's support bar B to the side.
6. Lift the conveyor hydraulically, and use the lock D on the bottom of the conveyor to lock the upper section of the output conveyor in the operating position.

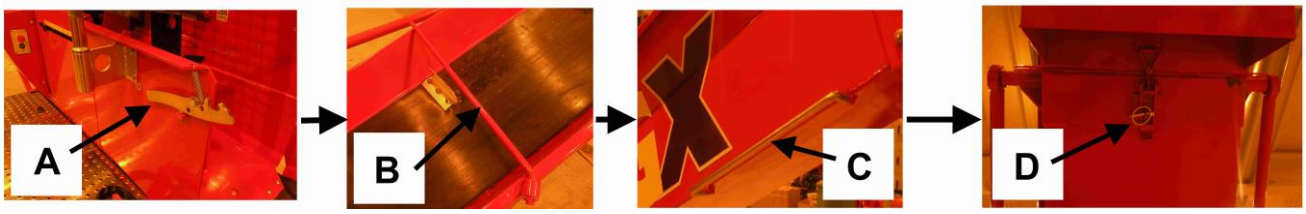


Figure 6. Placing the conveyor in the operating or transport position

Place the output conveyor in the transport position as follows:

1. Use the control H in Figure 9 of Section 3.2 to stop the conveyor.
2. Release the lock D holding the upper section of the conveyor in place, and hydraulically lower the conveyor to the lowest position with the operating lever E in Figure 9.
3. Position the support bar B over the belt, and fold the upper section of the conveyor onto the lower section with the handle C.
4. Turn the conveyor to the middle position.

Use the control lever to hydraulically lift the conveyor until it locks into the raised position. Ensure that the lock A connects firmly.

3.1.3. Placing the working platform in the operating or transport position

1. Ensure that there is sufficient room for the working platform, and that the ground is sufficiently even under the legs of the platform.
2. Pull the platform to the working position.

Note! Once the working platform is installed, the processor can only be transported by means of three-point attachment.

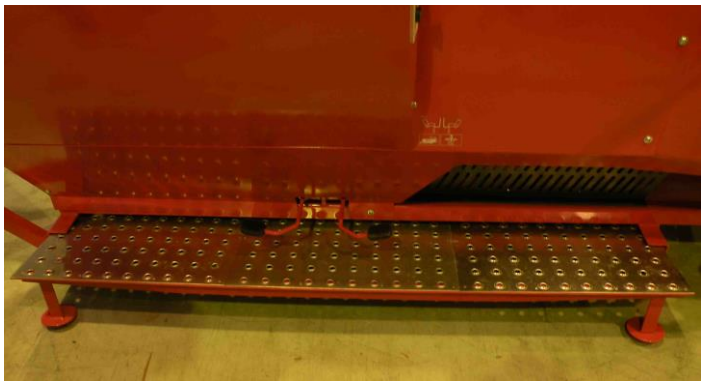


Figure 7. The working platform in the transport position

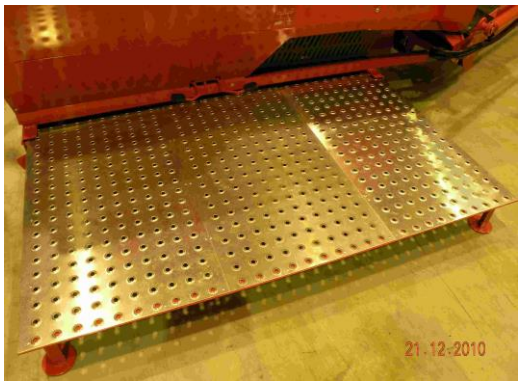


Figure 8. The working platform in the operating position

3.2. Controls

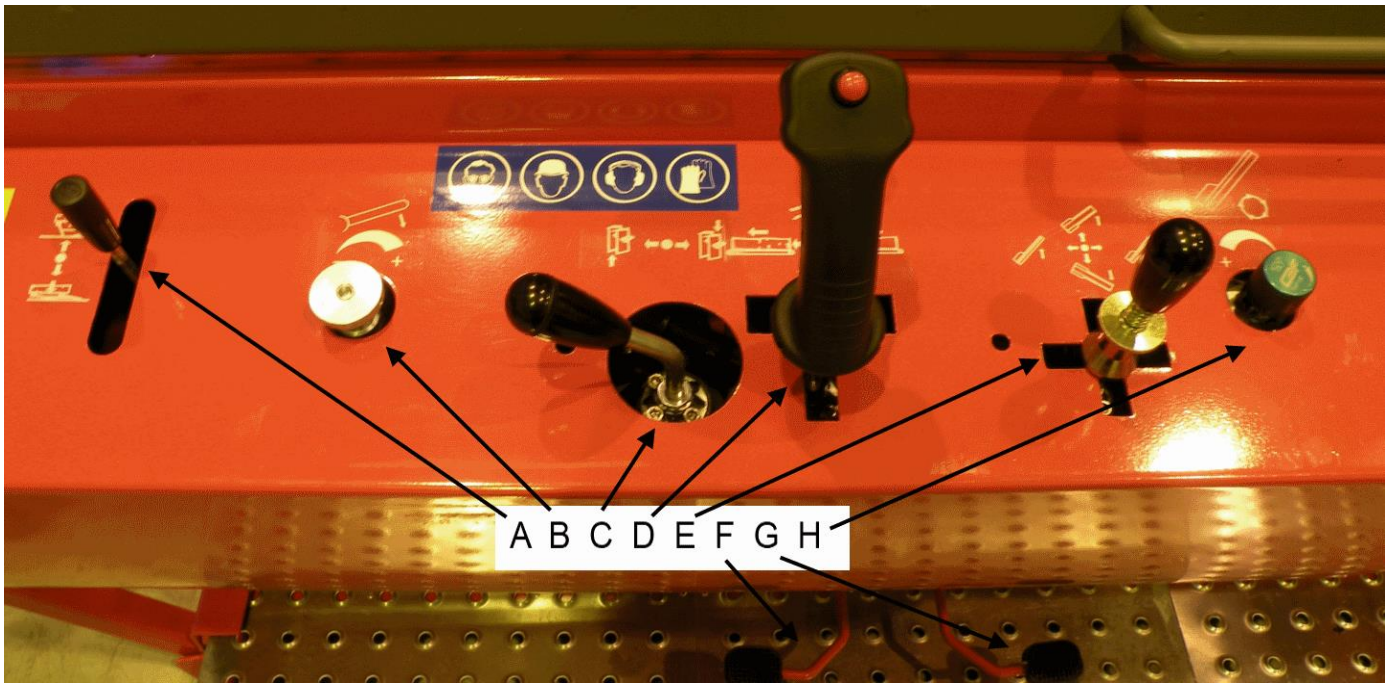


Figure 9. The machine's controls

Names and functions of the controls in Figure 9

A. Control for additional hydraulics. For example, a log holder.
B. Adjustment for the downward pressure of the cutting flange
   - Turning the knob clockwise increases the speed of the motion, and vice versa.
C. Height adjustment for the cutting blade
D. Joystick – control
   - Input conveyor control – upper right and upper left
   - Cutting control – down
   - Splitting – release from the bottom position
   - Wood press: button A in Figure 10
   - Blade chain activation: button B in Figure 10
E. Lifting, lowering and turning the output conveyor
F. Reset pedal for splitting
G. Activation pedal for splitting
H. Adjustment for the running speed of the output conveyor
   - Turning the knob anti-clockwise increases the speed.
   - The conveyor slows down and eventually stops when the knob is turned clockwise.

Figure 10. Joystick

3.2.1. Tractor drive

A tractor-powered processor must be connected to a three-point lifting device and the tractor's cardan shaft. To connect the machine to the cardan shaft, you need to move the protective cover A of the electrical connector and angle transmission into a position where it covers the electrical connector.

Connecting the cardan shaft is a task for only one person. The tractor cabin must be free of people in order to prevent accidental contact with the controls while the firewood processor is being connected to the tractor. Check all connecting devices of the tractor and firewood processor before connecting them. Never use faulty equipment.

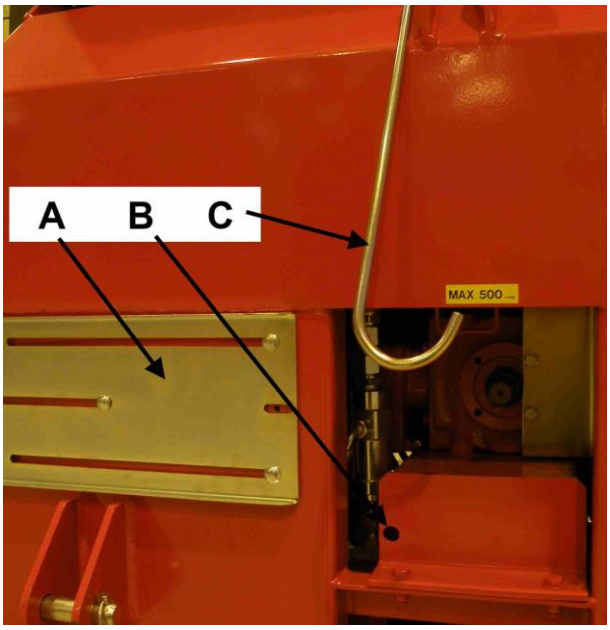


Figure 11. Powering the machine with a tractor

When utilising the cardan shaft, observe any instructions provided by the shaft's manufacturer. The processor requires 15 kW of power, which must be taken into account with regard to the capacity of the cardan shaft. The cardan shaft must be at least a class 5 shaft. Check that the shaft is properly locked to the splined shaft of the angle transmission. The chain that prevents the guard from rotating must be attached to point B of the angle transmission's base. If necessary, the cardan shaft can be suspended from hook C. Finally, ensure that all the connections are safe and secure! Never use a damaged or unprotected cardan shaft.

In a tractor-powered machine, the connector D of the optical measuring device must be connected to the tractor's socket. The connector for the device is located at the back of the processor.

Note! Tractor-powered processors must be attached to the tractor's lifting equipment.
Note! The starter (Figure 14) only functions when the machine is powered by electricity.

3.2.2. Electrical drive

An electrically-powered processor functions with a power of 15 kW. The Electric motor IP-rating is 55. The fuse must be at least 32 A. The electrical cable, in turn, must be at least 5 x 6 mm². In order to connect the cable, move the protective cover B of the electric connector A and angle transmission into a position where it covers the angle transmission.

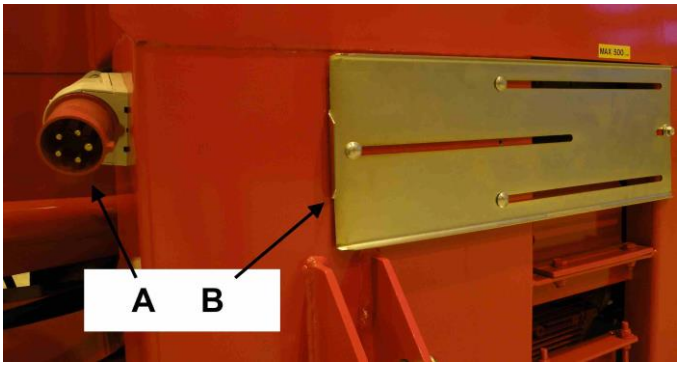


Figure 12. Powering the machine with electricity

In an electrically-powered machine, the connector of the optical measuring device must be connected to the socket on the side of the machine.

The processor can be activated with the starter in the control panel at the front of the machine. If the electric motor rotates in the wrong direction (i.e. the machine makes an abnormal noise and the hydraulic functions are inoperable), the current phase is incorrect. We recommend using an extension cord that allows you to switch the current phase or an adapter that can switch the phase.

Figure 13. Connector of the optical measuring device

Note! If the extension cord does not have a phase switch, the electrical work related to changing the phase must be performed by an electrician.

Figure 14. Starter

Figure 14 b.

3.2.3. Adjusting the wood length with the optical measuring device

The Hakki Pilke 50 firewood processor is equipped with an optical wood measuring device. The device automatically stops the input conveyor when a piece of wood has been fed to the desired length. The sensor of the optical measuring device can be freely adjusted to a position that is 20–60 cm from the cutting flange.

Adjust the log guide to the same measurement as the measuring device. The log guide should be at a distance of approx. 5 cm from the log during cutting.

Note! The error margin for the optical measuring device is +/- 0.75 cm.

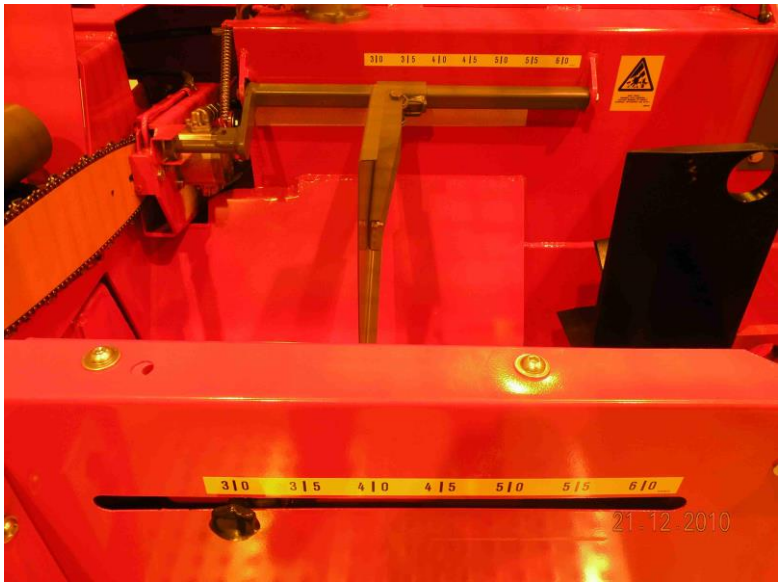


Figure 15. Log length adjustment

3.2.4. Using the output conveyor

The output conveyor can be controlled with the controls E and H in Figure 9. Use the control E to select the direction and elevation of the conveyor. The control H can be used to freely adjust the running speed of the conveyor. The speed can be decreased until the conveyor stops. Always stop the conveyor when placing it in the operating or transport position.

3.2.5. Adjusting the splitting blade

The splitting blade can be controlled hydraulically by moving the control lever C in Figure 9 up or down. Logs should always be as centred as possible when passing the blade in order to keep the size of the firewood consistent.

When wood is stuck on the blade, the blade can be lowered in increments of approx. 1–2 cm. The blade can be driven to the lowest position by raising the blade and clearing the space under the blade. The machine must be shut down and disconnected from its power source for the duration of the cleaning.

3.2.6. Using the dust collector

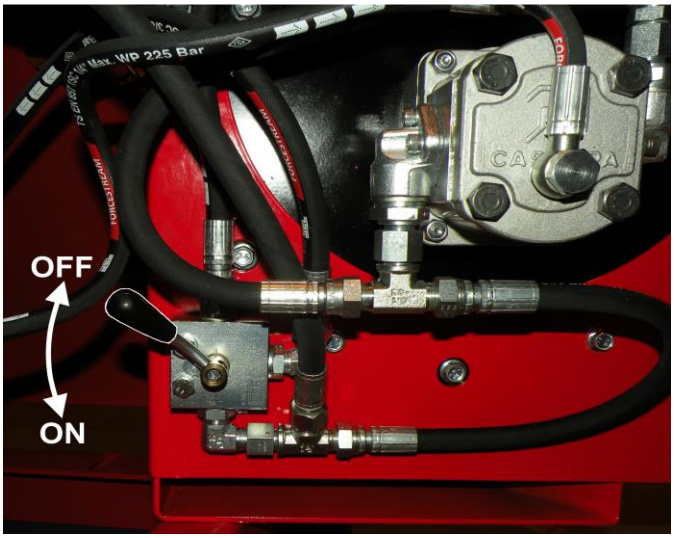
The standard equipment of the processor includes a hydraulic dust collector. It allows you to collect sawdust for any purposes you may wish to use it. The dust collector activates automatically when the machine starts up.

If you are not using a dust pipe with the dust collector, make sure that the safety grill is in front of the pipe, as indicated in the figure.

When using a dust pipe, attach the safety grill with only one bolt and turn it to a horizontal position as shown in the figure.

You can disable the dust collector as follows:

1. *Remove the cover plate and turn the dust collector to the maintenance position as shown in the figure.*



3. *Turn the lever in the figure to the OFF position to stop the dust collector motor.*

2. Turn the dust collector back to the working position and reattach the cover plate.

4. Remove the dust plate and install the safety grill as indicated in the figure.

4. Operating the machine

4.1. Test running the machine

The machine must not be used before carrying out a test run and testing all the functions. Both the test run and testing can only be performed by a person who has studied the machine's manual.

Before the test run, all the components of the firewood processor must be checked. If any faults or wear that may affect the safe use of the machine are discovered, the log splitter must not be used until the faulty or worn component is replaced and safe use can be ensured.

1. Check that the guard of the firewood processor's cutting and splitting section is down.
2. Check that the input and output conveyors are in the operating position.
3. Ensure that the splitting groove is empty.
4. Make sure that you are familiar with the functions of the processor's controls. If necessary, refer to Section 3.2.
5. Activation
    a. Tractor-powered: Insert the connector of the optical measuring device into the tractor's electrical socket. Start the tractor and connect the output, starting with a slow speed and increasing the speed to a maximum of 500 rpm.
    b. Electrically-powered: Connect a cable to the firewood processor's socket, start the processor by pressing the start button and wait a moment. This activates the electric motor at full speed.
6. Start the cutting motion with the joystick D in Figure 9. The cutting motion must be normal when the blade returns up.

7. Do the following to ensure that the blade chain lubrication functions automatically: (If necessary, see Section 5.6.1)
    a. Use the joystick D in Figure 9 to perform a few sawing motions without sawing any actual wood.
    b. Shut down the processor and disconnect it from its power source.
    c. Open the guard and see if the blade chain has been supplied with oil.
8. In especially cold weather, the cutting motion can be slow at first. If this is the case, repeat the motion with the splitting pedal (Figure 9, pedal G), until the oil warms up and the speed returns to normal.
9. Ensure that pressing the button A of the joystick in Figure 10 releases the wood press and that pressing the button B of the joystick starts the blade chain.
10. Start the splitting motion with the splitting pedal (Figure 9, pedal G), and stop it by opening the guard of the cutting and splitting section.
11. Ensure that the splitting beam returns to the initial position by holding down the pedal F (Figure 9).
12. Start the splitting motion by briefly pressing the pedal G (Figure 9).
13. Test run the input conveyor's feed and return motion with the joystick D in Figure 9.
14. Test run the lifting motion of the hydraulic wood press by moving the joystick D in Figure 9 forward and, at the same time, pressing the joystick button A (Figure 10).
15. Start the output conveyor by using the control H in Figure 9 to adjust the speed to an appropriate level.

If the machine presents a fault during the test run, determine the reason and take remedial action as necessary. The machine must be shut down and disconnected from the power source for the duration of the diagnostics and repairs.

4.2. Placing wood on a log holder

We recommend auxiliary devices, such as a HakkiFeed 471 or HakkiFeed 472 log table. If a log table is not attached to the processor, the maximum allowed log length is 4.5 m. Always lift and place wood on the input table in a safe manner that does not endanger the operator.

Note! Placing logs directly on the input table with a loader is strictly prohibited.
Note! Ensure that the log's centre of gravity stays on the conveyor.

4.3. Feeding and sawing wood

The input conveyor feeds the woodinto the processor. Push the joystick D in Figure 9 of Section 3.2 to the upper right to feed wood into the machine. The feed can be cancelled by pushing the joystick to the upper left.

When feeding wood, ensure that the log does not present a risk of getting caught between the log and the machine, for example due to the shape of the wood. Do not use your hand to guide the log into the cutting section. Adjust the optical measuring device to the desired measurement and start the output conveyor.

1. Choose the log to process. Note that the maximum log diameter is 47 cm. The knottiness and shape of the wood increase the diameter.
2. Raise the hydraulic wood press by pressing down the button A (Figure 10) of the joystick D (Figure 9) and by pushing the control lever forwards. Use the joystick D to feed wood into the machine with the input conveyor. Moving the joystick to the upper right activates the feed. The optical measuring device stops the conveyor when the desired length has been fed.
3. When the log stops, lock it in place with the wood press. The wood press is activated automatically when you lower the cutting flange with the joystick D in Figure 9 (also in Figure 10).

4. Cut the log by pressing the button B (Figure 10) of the joystick D. The button activates the blade chain. Then, lower the cutting flange by moving the joystick D backwards.
5. Return the cutting flange to the raised position by pushing the joystick D forwards, which automatically stops the splitting function.

Note! Ensure that the wood being fed does not collide with a lowered wood press or flange.

4.3.1. Blade jamming

Ensure that the cutting flange's downward motion has not been adjusted (flow valve B in Figure 9 of Section 3.2) to be too fast in proportion to the size of the wood.

If the cutting blade is jammed in the wood, stop sawing and try again in another position. If the cut is misaligned because the flange drags to one side, the sharpness of the blade chain must be checked. A chain that is not evenly sharp always drags to the duller side, which makes cutting a thicker log impossible. On the other hand, sawing with an evenly dull chain is inefficient, and the chain must be sharpened or replaced (see Section 5.1.1).

4.3.2. Sawing the last log

When sawing wood, the second to last piece should be sawed in such a way that the remaining piece is of a sufficient length. This ensures that the wood will stay firmly under the hydraulic wood press and that the sawing will be steady and safe.
Drive the last wood piece directly into the splitting section, and start the splitting process with the pedal G in Figure 9.

4.4. Splitting wood

The splitting beam performs the splitting motion automatically whenever the cutting flange is lowered all the way down (control D in Figure 9 of Section 3.2 up/down) and raised back up again.

You can also start the splitting motion with the pedal (G in Figure 9) by briefly pressing it. Do not keep the pedal pressed for long – about one second is enough. The foot pedal is primarily intended for splitting the last piece of wood. By using the pedal, the operator has no need to unnecessarily lower the cutting flange. Instead, the splitting can be activated more quickly and easily with the pedal.

If there is a problem with splitting and the splitting beam must be prematurely returned to the initial position, open the guard of the cutting and splitting section, which stops the splitting function. Then, press the pedal F in Figure 9 down and hold it down until the beam has fully returned to the initial position.

4.4.1. Jamming wood on the splitting blade

If a piece of wood gets jammed on the splitting blade in a situation where the splitting force is insufficient to push the piece past the blade, do the following:

1. Restore the splitting beam to the initial position with the reverse pedal (pedal F in Figure 9).
2. Lift the splitting blade to the highest possible position (control C in Figure 9).
3. Cut a sufficiently thick piece of wood (approx. 20–25 cm) into the splitting groove, and activate the splitting process with the pedal (G in Figure 9). The new piece will then push the jammed piece past the blade.
4. Lower the blade by approx. 10 cm and repeat step 3. Repeat step 4 until the jammed wood has passed the blade piece by piece.

4.4.2. Re-splitting or splitting without cutting

1. Raise the guard of the cutting and splitting section.
2. Place the log you want to split in the splitting groove.
3. Close the guard of the cutting and splitting section.
4. Start the splitting process with the activation pedal (G in Figure 19).

As necessary, the above procedure can be used to split wood without cutting it.

4.4.3. Replacing the splitting blade

Exercise extreme caution when handling the blade, and use protective gloves. The blade is sharp and weighs approx. 85 kilos. Ensure that the lifting winch for the splitting blade has been installed according to Section 2.4.

1. Lower the splitting blade all the way down, which releases it from the adjusting joint.
2. Shut down the processor and disconnect it from its power source.
3. Open the protective mesh and move the cover plate A aside.
4. Turn the winch frame onto the splitting blade, and release wire from the winch.
5. Attach the lifting hook to the lifting point B.
6. Use the winch to lift up the splitting blade, and lock the winch reel.
7. Turn the winch so that you can lower the splitting blade on the ground, next to the machine.
8. Release the winch lock, and use the winch to lower the blade.
9. Install a new splitting blade by reversing the above steps.

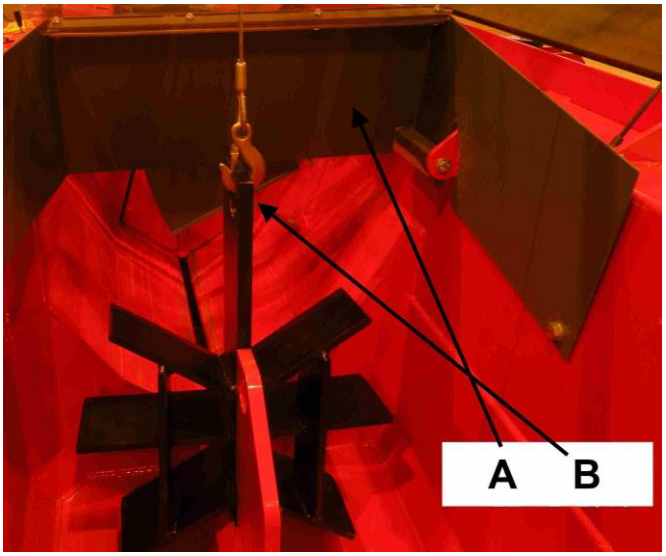


Figure 16. Replacing the splitting blade

4.4.4. Adjusting the length of the splitting motion

You can freely adjust the stroke length of the splitting beam by moving the adjustment sleeves in Figure 18. The adjustment sleeves are located under the cover plate A in Figure 17.

Note! The covers and guards must be reattached after maintenance.

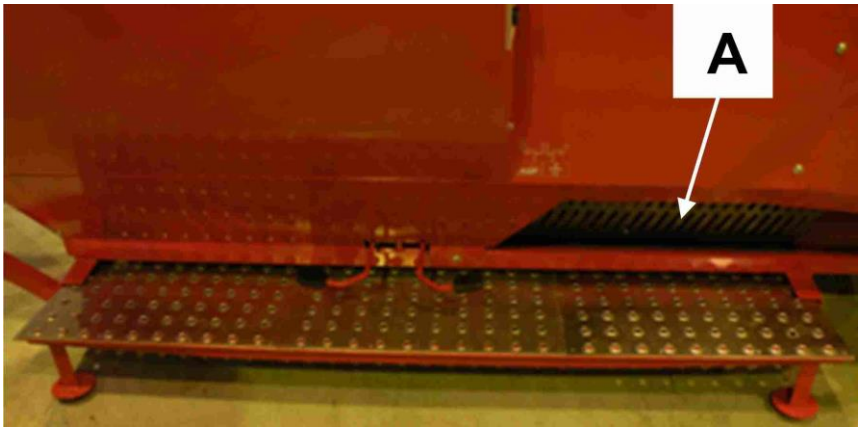


Figure 17. Cover plate for the stroke length adjustments

If the splitting beam does not return all the way to the initial position, preventing cut wood from falling into the splitting groove, the adjustment sleeve must be moved. For example, if the beam stops 5 cm too early, loosen the locking screws A of the adjustment sleeve (2 pcs/sleeve) and move the sleeve B approx. 5 cm to the left.

The position of the adjustment sleeve C determines the point at which the splitting beam's splitting motion stops and the return motion begins. Even though the adjustment sleeves B and C are carefully positioned in conjunction with the machine's final testing, the sleeves may gradually move as a result of numerous strokes. Therefore, the stroke length adjustment should be regularly checked to ensure that the cylinder stroke is not too deep, in which case the splitting motion takes needlessly long.

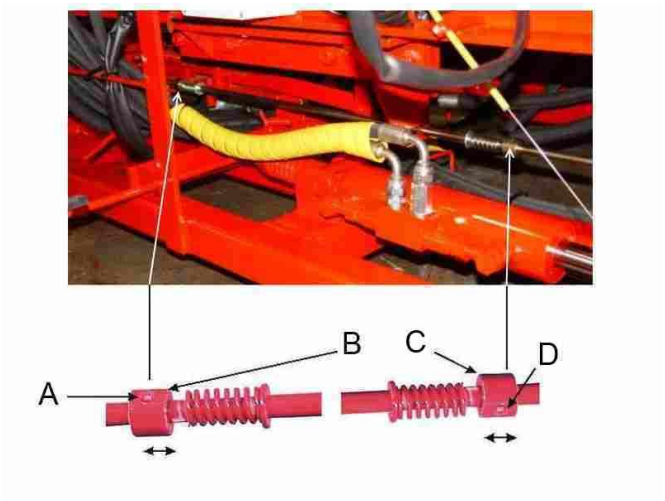


Figure 18. Stroke length adjustment sleeves

4.5. Using the output conveyor

The output conveyor can be controlled horizontally and vertically. The safety zone for the output conveyor is 10 metres. When operating the machine, the maximum permitted angle of the output conveyor is 40°. The running speed of the output conveyor can be freely adjusted with the processor's controls. If the conveyor is jammed for any reason, its running speed must be set to zero and the processor must be shut down before removing the cause. There must be at least 50 cm between the end of the output conveyor and the pile of processed firewood.

The standard equipment of the output conveyor includes a debris removal device. It separates smaller debris and sawdust from the processed firewood. Due to its lower kinetic energy and smaller size, this waste material does not fly over the separation plate A with the split wood. Instead, it falls to the bottom of the conveyor, after which it is led to the middle section of the conveyor and expelled through the discharge opening.

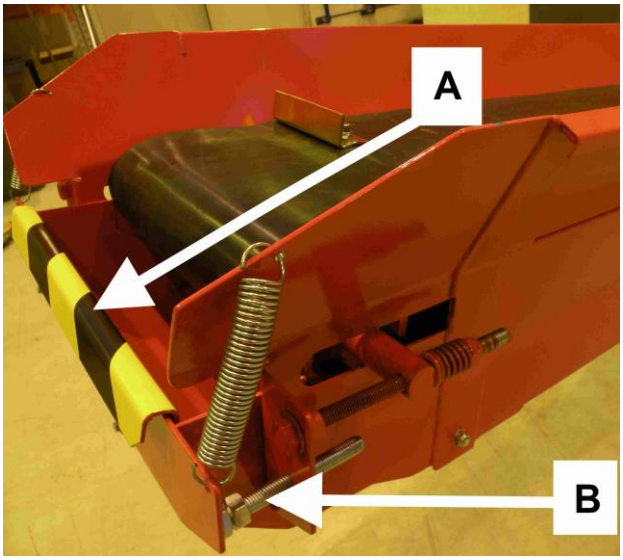


Figure 19. Adjustment of the debris removal device

The following things significantly affect the operation of the debris removal device: the angle of the discharge conveyor, the speed of the belt and the distance of the separation plate A from the upper roller of the conveyor. In other words, the debris separation result is better the steeper the angle (however, no more than 40 degrees), the lower the speed and the longer the distance between the separation plate A and the upper roller. The distance of the separation plate A is optimised at the factory in conjunction with the machine's testing. However, the adjustment can be changed, if necessary. The optimal running speed for the belt can be determined by trying different settings. The split wood should only just pass over the plate. The adjustment plate can be adjusted with the separation plate screws B.

The operator must ensure that the distance between the debris discharge opening and the pile of debris that accumulates under it is at least 20 cm.

4.6. After use

1. After you have finished making firewood, stop the output conveyor, shut down the machine and remove the firewood from the splitting groove and conveyor.
2. Ensure that the machine has not been damaged.
3. Place the output conveyor into a position that allows the conveyor and firewood processor to be moved safely off the processed firewood.
4. Clean the firewood processor.

If you will not be using the processor for a while, do the following:

5. As necessary, use your tractor's hydraulics or a forklift to hoist the firewood processor and carefully move it to a location where you can place the input and output conveyors as well as the working platform into their transport and storage positions.
6. Place the conveyors into the transport and storage position.
7. Clean and maintain the machine.
8. Store the processor according to the instructions in Section 10.

5. Maintaining the machine

The processor must be disconnected from its power source before maintenance, adjustment, replacement or cleaning procedures. Only use spare parts supplied by the manufacturer or your retailer. If the guards of the machine need to be removed for maintenance, they must always be reattached before activating the machine. After maintenance and adjustment measures, the processor must be test run according to the instructions in Section 4.1.

5.1. Cutting blade and drive end

If the machine's cutting blade does not properly penetrate the wood or the cut is skewed, the blade chain is most likely dull. It is a good idea to keep a replacement chain handy so that you do not need to interrupt your work for sharpening the chain.

5.1.1. Replacing and tightening the blade chain

Replace the blade chain as follows:

1. Shut down the processor and disconnect it from its power source.
2. Open the guard.
3. Put on protective gloves and manually press the drive end down, as show in the figure. Discharge pressure by lowering the drive with the controls.
4. Loosen the flange bolts B (2xM12).
5. Fully loosen the adjustment screw A for blade chain tension.
6. Remove the old blade chain.
7. Install the new blade chain, and ensure that the cutting teeth come first in relation to the rotating direction.
8. Lift the flange from the front section to tighten the chain as you are attaching the flange bolts.
9. Use the adjustment screw A to tighten the chain.

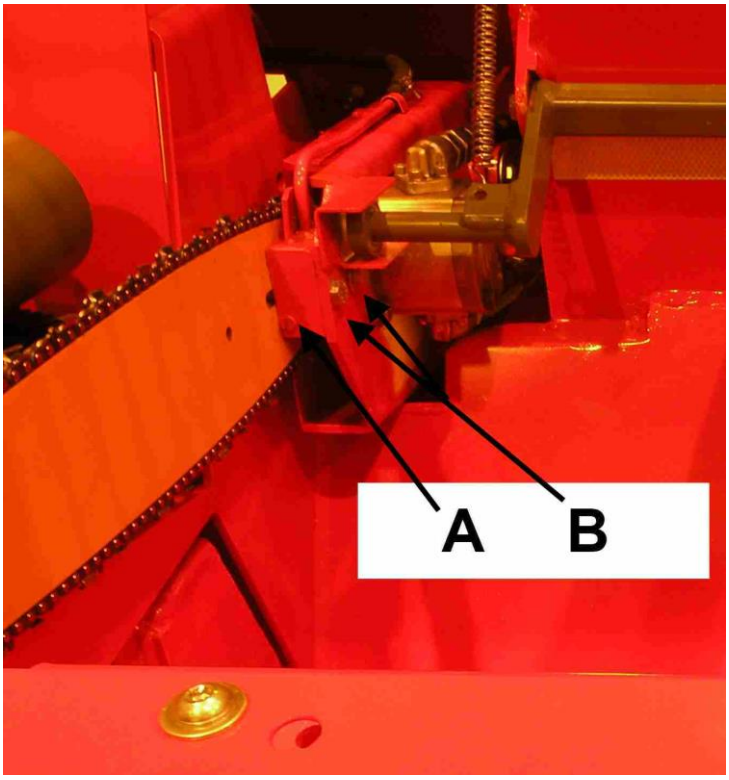


Figure 20. Replacing and tightening the blade chain

To check the tension of the blade chain, wear protective gloves and pull the lower edge of the chain. The tension is correct if you can pull out three teeth by applying moderate force.

5.1.2. Replacing the blade flange

Replace the blade flange as follows:

1. Remove the blade chain according to steps 1–6 of Section 5.1.1.
2. Remove the flange bolts (2 x M12), and detach the fastening plate A on the other side of the flange.
3. Remove the flange from the groove.
4. Place the new flange against the gear wheel C, twist it into the groove and loosely attach the flange bolts and the fastening plate A.
5. Install and tighten the blade chain according to steps 7–9 of Section 5.1.1.

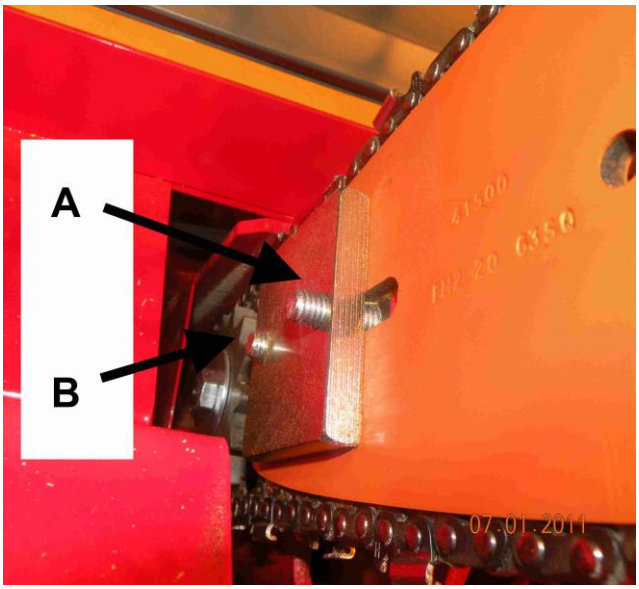


Figure 21. Replacing the blade flange

5.2. Splitting mechanism

5.2.1. Operation of the splitting mechanism

1. Initially, the valve's jointed lever A is in the middle position, and the spring pushes it to the right. (Figure 22.)
2. As the cutting blade rises from the bottom position, the trigger lever B lifts up the trigger rod C. Once the trigger rod C is up, the spring presses the jointed lever D to the right, thus enabling the splitting motion to begin. (Figure 23.)
3. When the trigger rod is close to the splitting blade, the valve lever E turns to the right, whereupon the spring pushes the jointed lever A to the left stopping the splitting motion and returning the splitting beam. (Figure 24.)
4. When the jointed lever A is on the left, the trigger lever B and trigger rod C are lowered to the initial position. (Figure 24.)
5. Once the splitting beam returns to the initial position, the valve lever E turns to the left and the spring presses the jointed lever A to the right. The returned trigger rod C stops the jointed lever A in the middle position halting the splitting motion. (Figure 25.)

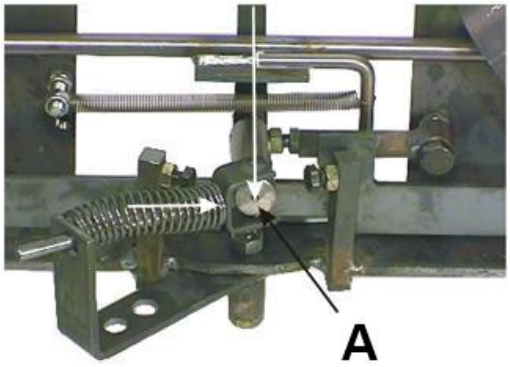


Figure 22. The splitting mechanism in the initial position

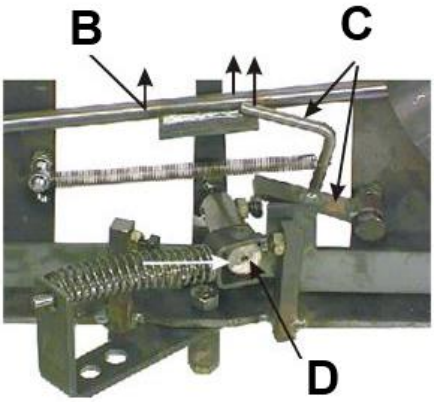


Figure 23. The triggering of the splitting mechanism

A new splitting motion begins when the cutting blade rises from the bottom position and the above phases are repeated.

5.2.2. Maintaining the splitting mechanism

Problem: The splitting beam does not stay in the initial position and is constantly pushed slowly down.
Fault: The valve's jointed lever A is not in the middle position.
How to fix: Adjust the bolt that centres the jointed lever A. It rests against the trigger rod C.

Problem: The machine performs the splitting motion on its own.
Fault: The head of the trigger rod C or the bolt in the jointed rod A has rounded and can no longer hold the jointed lever A in the middle position.
How to fix: Even out the contact surfaces of the rod and bolt with a file, for example. Then, adjust the jointed lever A to the middle position, as in the previous paragraph.

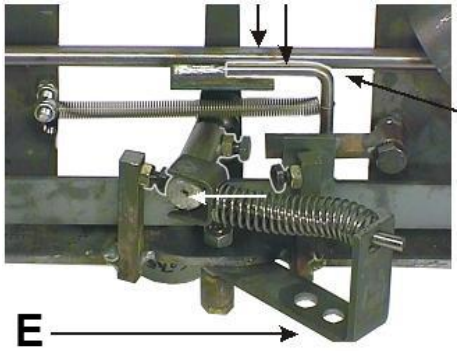


Figure 24. The splitting mechanism returns

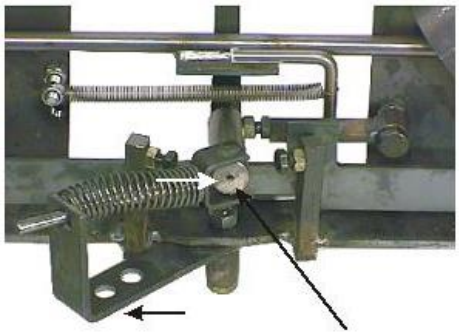


Figure 25. The splitting mechanism back in the initial position

5.3. Replacing and tightening the V-belts

Replace the V-belts as follows:

1. Shut down the processor and disconnect it from its power sources.
2. If necessary, slide the cover of the electrical connector and angle transmission into a position where the angle transmission is visible.
3. Remove the belt guard attached to the angle transmission. (2 x M12)
4. Lift the motor bed B enough to slip out the V-belts A by first loosening the tightening nuts and, then, turning the lifting nuts. (4 x M12)
5. Remove the old V-belts (4 pcs).
6. Install the new V-belts.
7. Lower the electric motor far enough to tighten the V-belts.

The V-belts are at the correct tension when they give approximately 20 mm when the belt is pressed down at a moderate force.

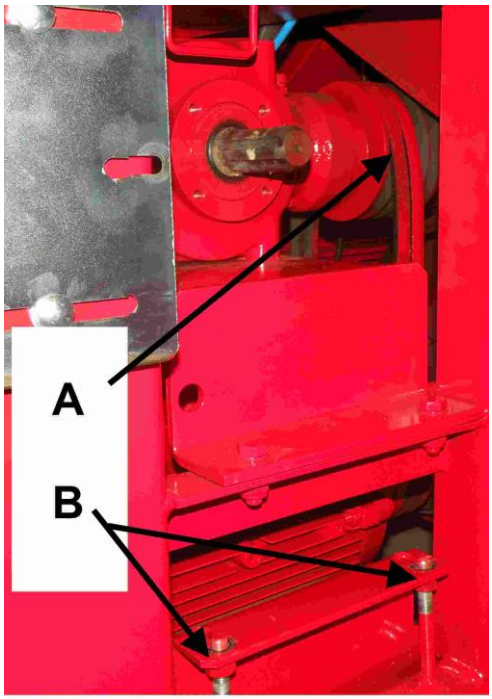


Figure 26. Replacing the V-belts

5.4. Changing the oil of the processor

Change the hydraulic oil of the processor as follows:

1. Shut down the processor and disconnect it from its power sources.
2. Open the filler cap of the hydraulic oil tank (this will allow the oil to drain more easily).
3. Open the drain hose plug B and drain the oil through the hose A into a suitable container.
4. Change the filter cartridge for the hydraulics.
5. Tighten the plug B firmly in the hose, and fill the tank with fresh oil (approx. 125 litres).
6. Finally, ensure that the oil level settles between the maximum and minimum limits indicated on the dipstick.

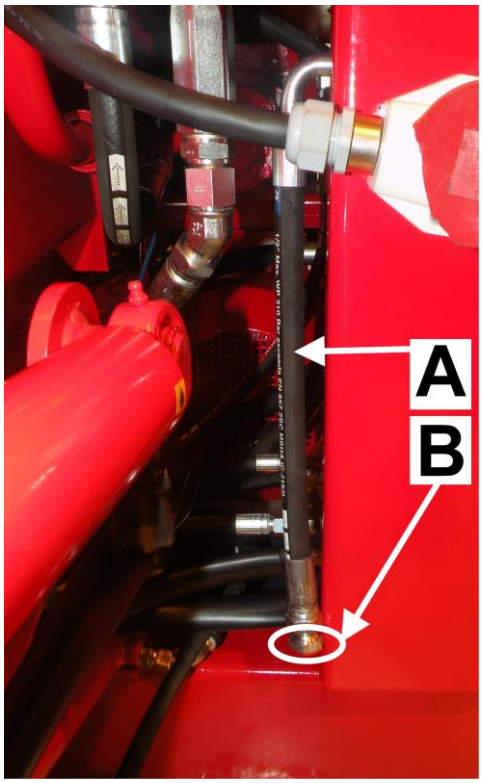


Figure 27. Changing the oil

5.5. Changing the oil of the angle transmission

When replacing the angle transmission, do the following:

1. Remove the V-belts according to steps 1–5 of Section 5.2.
2. Disconnect the angle transmission from the pump on its left side (4 x 8 mm hex socket bolts).
3. Lower the motor bed to the lowest possible position in order to have sufficient room to open the fastening bolts on the bottom of the angle transmission (4 x M12 bolts).
4. Turn the angle transmission so that it can be removed, and pull it out.

Note! The angle transmission weighs approx. 20 kg.

Figure 23. Replacing the angle transmission

5. Open the angle transmission's drain opening D (hex socket 8 mm), and drain the oil from the angle transmission (1,2 l) into a suitable container. Close the drain opening.
6. Open the filler opening B and the oil check opening C, and add oil through the filler opening until the oil level reaches the oil check opening C. Close both openings.
7. Remove the angle transmission's breather A, and ensure that it functions properly by moving the spring plate inside it with a screwdriver, for example.
8. Re-attach the breather to the angle transmission, and make sure that the angle transmission does not leak oil
9. Re-install the angle transmission.
10. Install and tighten the V-belts according to steps 6 and 7 of Section 5.2.

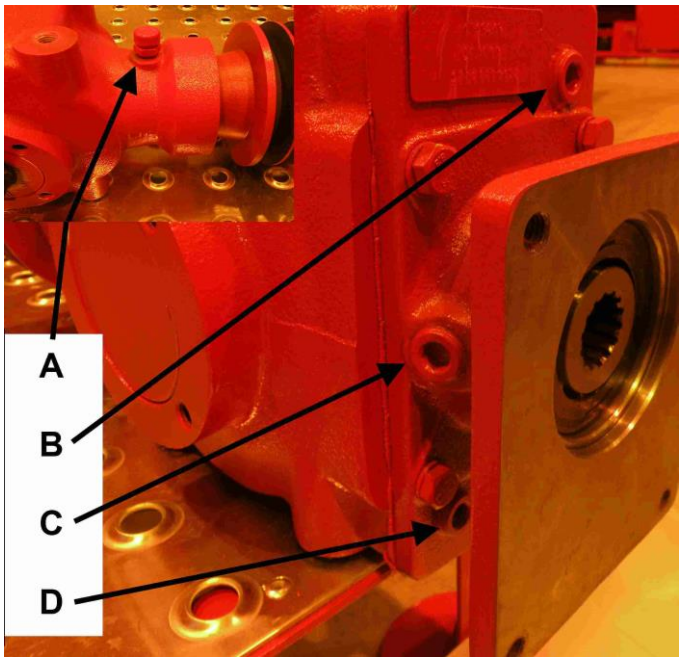


Figure 24. Changing the oil of the angle transmission

5.6. Conveyor maintenance

5.6.1. Replacing and tightening the belt of the input conveyor

Replace the belt of the input conveyor as follows:

1. Shut down the processor and disconnect it from its power sources.
2. Raise and lock the input conveyor into the transport position.
3. Move the belt joint to a suitable height.
4. Disconnect the joint by using, for example, pliers to pull out the pin (A) holding the joint together.
5. Remove the old belt.
6. Slide the new belt under the table (B) from the side of the drive end until you can pull the belt out from the other end.
7. Lead the rest of the belt under the wood press, above the feed roller and, finally, behind the conveyor.
8. Connect the joint by inserting the pin A in the joint.
9. Turn the conveyor back to the operating position and tighten the belt.

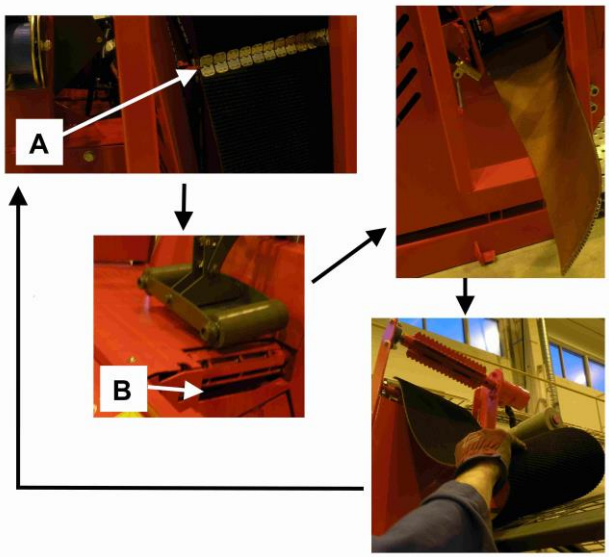


Figure 25. Replacing the belt of the input conveyor

The belt is at the correct tension when its middle section is raised approx. 5 cm when the conveyor is in the operating position. An excessively tight belt may be damaged more easily, and it places unnecessary strain on the conveyor's bearings.

5.6.2. Replacing and tightening the belt of the output conveyor

Replace the belt of the input conveyor as follows:

1. Pull out the pin locking the conveyor in place, and lower the conveyor to the ground.
2. Shut down the processor and disconnect it from its power sources.
3. Move the belt joint to the beginning of the conveyor.
4. Fold the conveyor, but do not place the belt support in the transport position. This will allow the belt to hang loose.
5. Disconnect the joint by opening the bolts (4 x M8).
6. Remove the old belt.
7. First, insert the new belt under the folded conveyor (bottom opening) from the end of the conveyor with the plates facing down. Feed the belt in until you can pull it out from the other end of the conveyor. Pull out a length of approx 60 cm.
8. Push the other end of the belt into the upper section of the folded conveyor (top opening) from the end of the conveyor. Feed it in until you can connect the joint.
9. Pull the excess belt to the beginning of the conveyor.
10. Lower the conveyor back to the operating position and tighten the belt.

The belt is at the correct tension when its middle section is raised approx. 15 cm when the conveyor is in the operating position. An excessively tight belt may be damaged more easily, and it places unnecessary strain on the conveyor's bearings. On the other hand, a belt that is too loose does not run properly at higher loads.

5.6.3. Replacing the plates of the output conveyor

The plates of the output conveyor can be replaced by disconnecting the bolt joints (2 x M8) fastening the plates and replacing the plates with new ones. It is recommended to move the belt into a position that puts the plate to be replaced above the conveyor. Shut down the machine and disconnect it from the power source for the duration of the procedure.

6 Lubrication

All of the firewood processor's lubrication points, which require vaseline, have been labelled. The lubrication must be performed every 10 hours. There are 22 lubrication points in total.

The lubrication points are located in the following places:

1. The drive end: in the drive end opening (2 points)
2. The wood press: on the wood press (6 points).
3. The input conveyor: on both ends of the conveyor (2 points in total)
4. The lifting mechanism of the splitting blade: behind the cover under the splitting groove (2 points)
5. The turning mechanism of the output conveyor: on both side of the conveyor (2 points)
6. The lifting cylinders of the output conveyor: on both sides of the conveyor (2 x 2, 4 points in total)
7. The hinges of the guard interlocked with the processor's operation: behind the machine (2 points)
8. The grease nipples of the cutting flange's lifting cylinder: behind the processor's rear cover (2 points)

7 Blade chain lubrication

The blade chain is automatically lubricated whenever the cutting flange is pressed down. As the oil is fed to the blade chain by means of pressure, the same amount of oil is supplied regardless of the temperature. Therefore, the processor is not equipped with a separate valve for adjusting the amount.

Add blade chain oil through the filler cap A. The oil level gauge B indicates the proper time to add oil. When the gauge B is light brown, the oil level is sufficient, but when the gauge is clear, oil must be added.

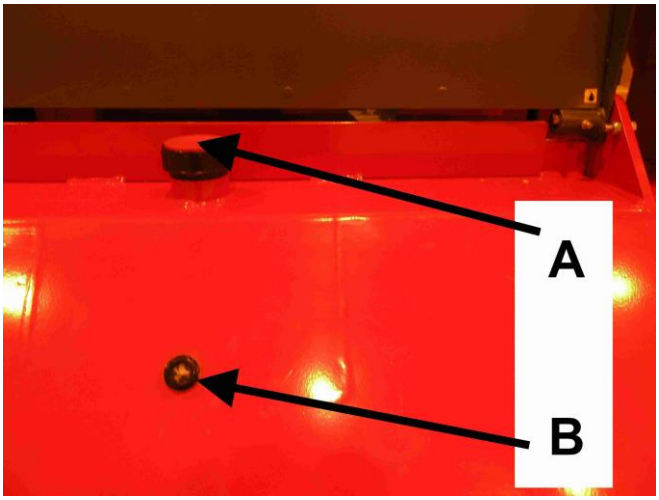


Figure 26. Blade chain lubrication

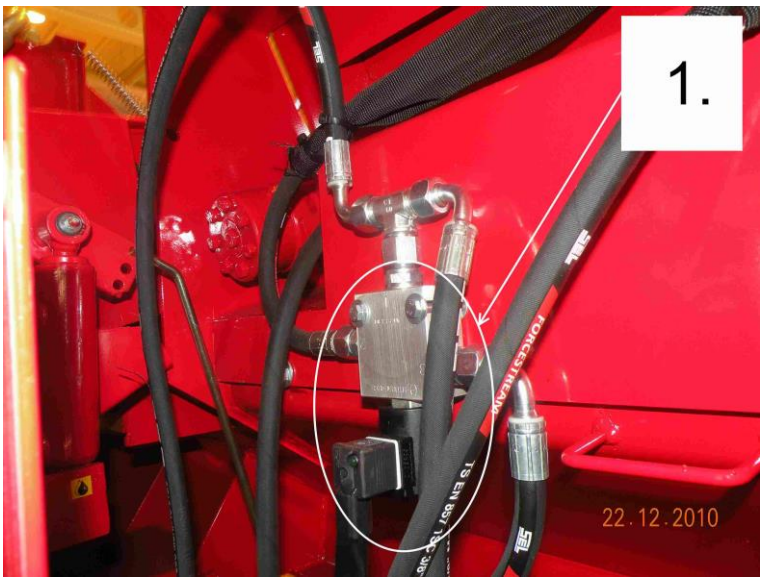
8 Solenoid and pressure regulating valves

The pressure regulating valves are adjusted to the correct settings at the factory. The processor's guarantee becomes void if the factory adjustments are changed. If you need to change the adjustments, first contact the

manufacturer or retailer and follow their instructions carefully. Changing the valve settings incorrectly may damage the machine or render it hazardous to operate. The relief valve adjustments can be changed as follows: loosen the locking nut and rotate the hex socket screw clockwise or anti-clockwise (when turning screw clockwise, the pressure increases and vice versa). Finish by tightening the locking screw. The locations of the relief/solenoid valves are indicated in the following figures.

1. **Wood press solenoid valve**

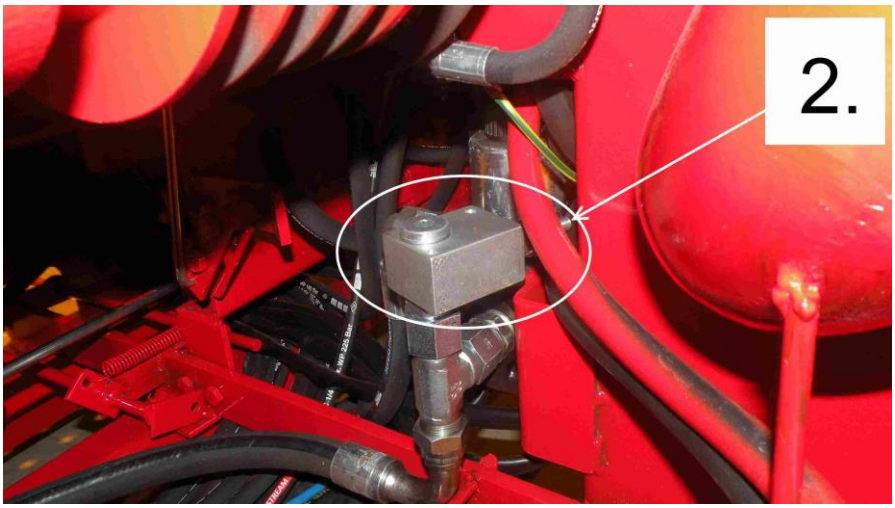
The valve is used to control the lifting motion of the wood press with the button on the joystick. Not adjustable?
The valve is located next to the input conveyor's hydraulic motor.

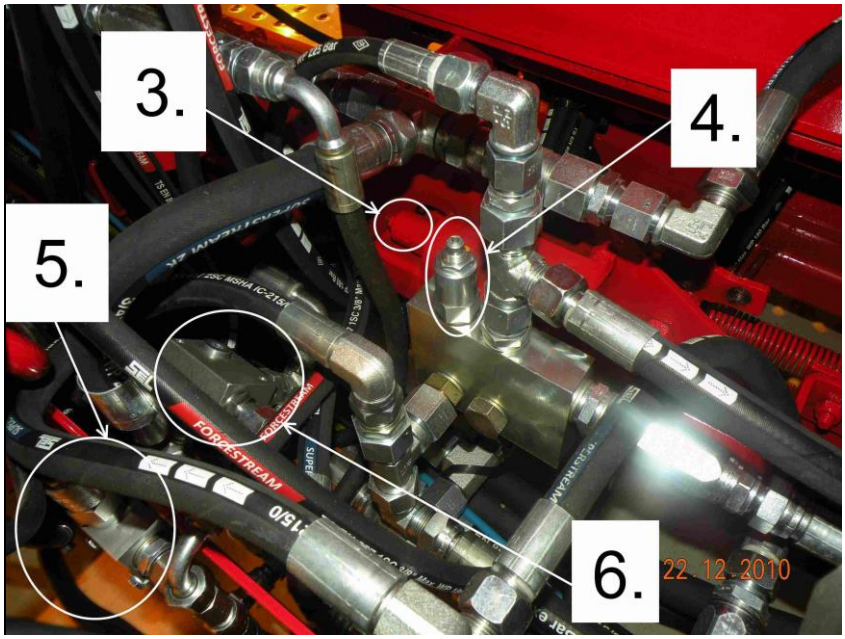


2. **Main relief valve**

Design value 225 bars
Relief valve for the hydraulic system

The valve is located near the hydraulic pumps on the same side as the output conveyor.





3. **Pressure regulation valve for the splitting valve**

Design value 185 bars

4. **Pressure regulation valve for the acceleration valve**

Design value 120 bars

When the pressure in the splitting cylinder increases beyond this pressure, the acceleration valve ceases to accelerate the motion and the cylinder piston moves at normal speed.

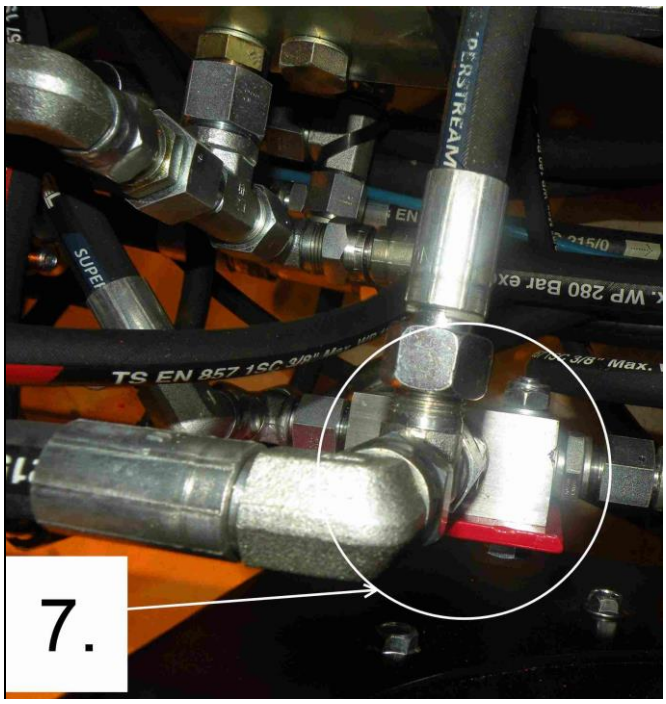
5. **Relief valve for the wood press cylinder**

Design value 50 bars

Determines the pressure at which the wood press presses logs against the table.

6. **Relief valve for the saw's hydraulic motor**

Design value 190 bars



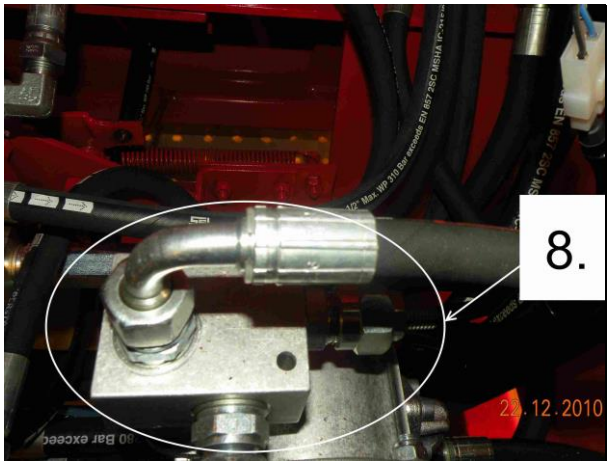
7. **Control valve for the auxiliary cylinder of the splitting mechanism**

Design value 150 bars

If the pressure in the splitting cylinder is higher than the set level, the system begins using the auxiliary cylinder for splitting.

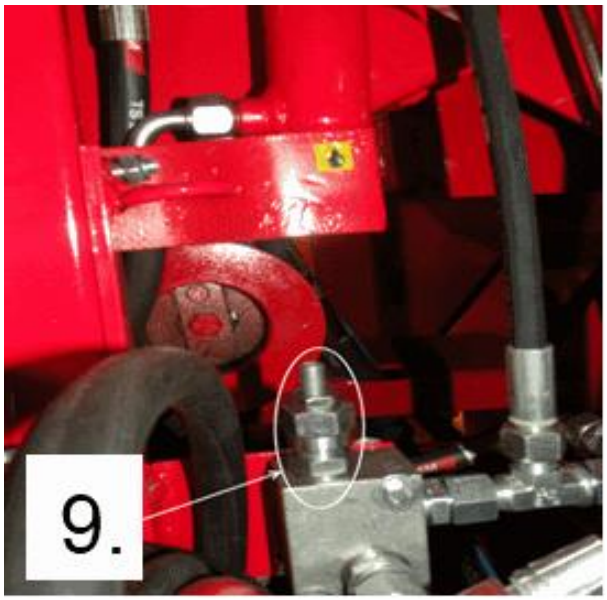
8. **Relief valve for the dust collector's motor**

Design value 85 bars



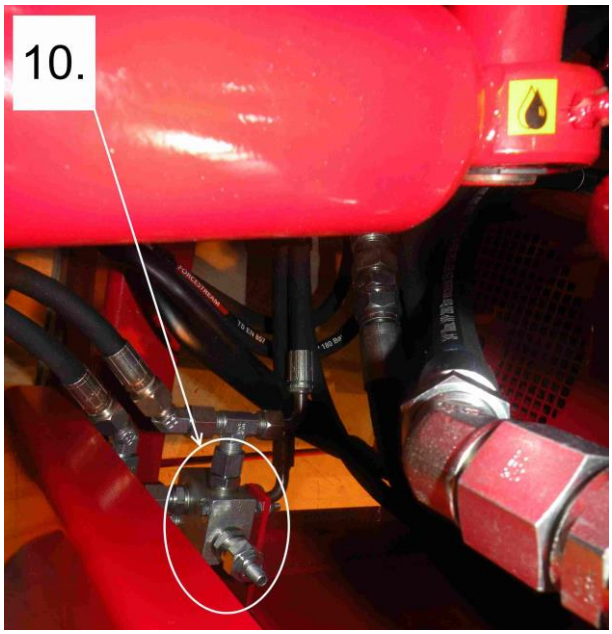
9. **Relief valve for the input conveyor motor and cutting flange cylinder (lifting motion)**

Design value 60 bars



10. **Relief valve for the hydraulic motor of the output conveyor**

Design value 70 bars



9 Washing and cleaning

Even though the firewood processor is equipped with a hydraulic dust collector, some sawdust and loose debris always accumulates in the splitting groove and under the machine during operation. Therefore, it is necessary to regularly clean the machine, and the splitting mechanism in particular, in order to ensure uninterrupted operation. Cleaning is especially important in the winter, because dirt and debris can freeze on the processor and cause malfunctions. Loose debris and sawdust can be cleaned from the machine with pressurised air, for example. The machine can also be washed with a pressure washer, as long as the water jet is not aimed directly at the bearings or electrical equipment.

Always ensure that the machine and the working area are sufficiently clean when operating the processor. The machine must always be cleaned after use. Wash the machine as necessary but always in conjunction with prolonged storage. After washing, the processor must be lubricated according to the instructions in Section 5.7.

10 Storage

Although the processor is intended for outdoor use, it should be covered up and stored in a sheltered location or indoors. Before prolonged storage, the machine must first be cleaned, then washed according to Section 5.8 and lubricated according to Section 5.7.

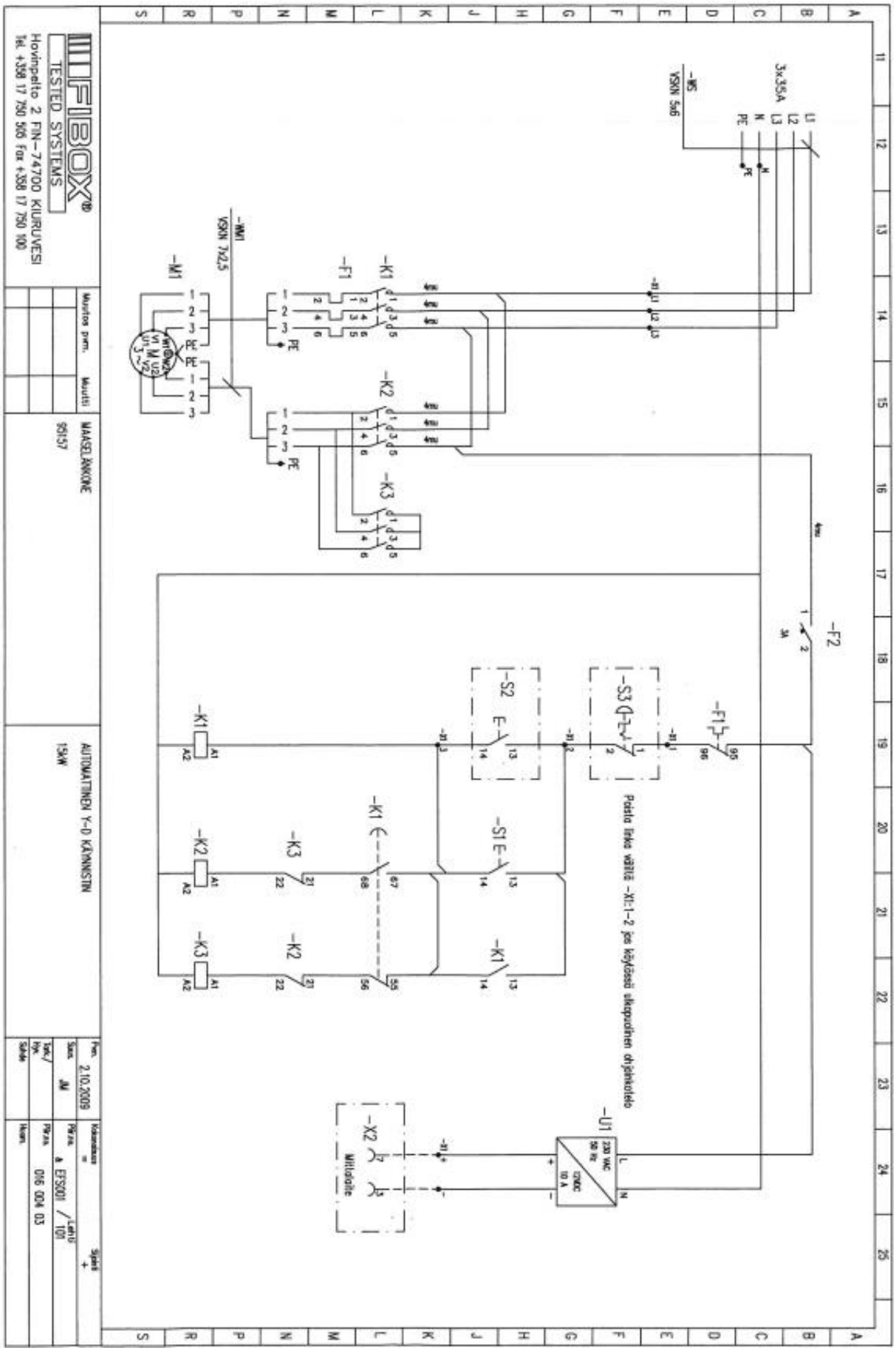
11 Maintenance table

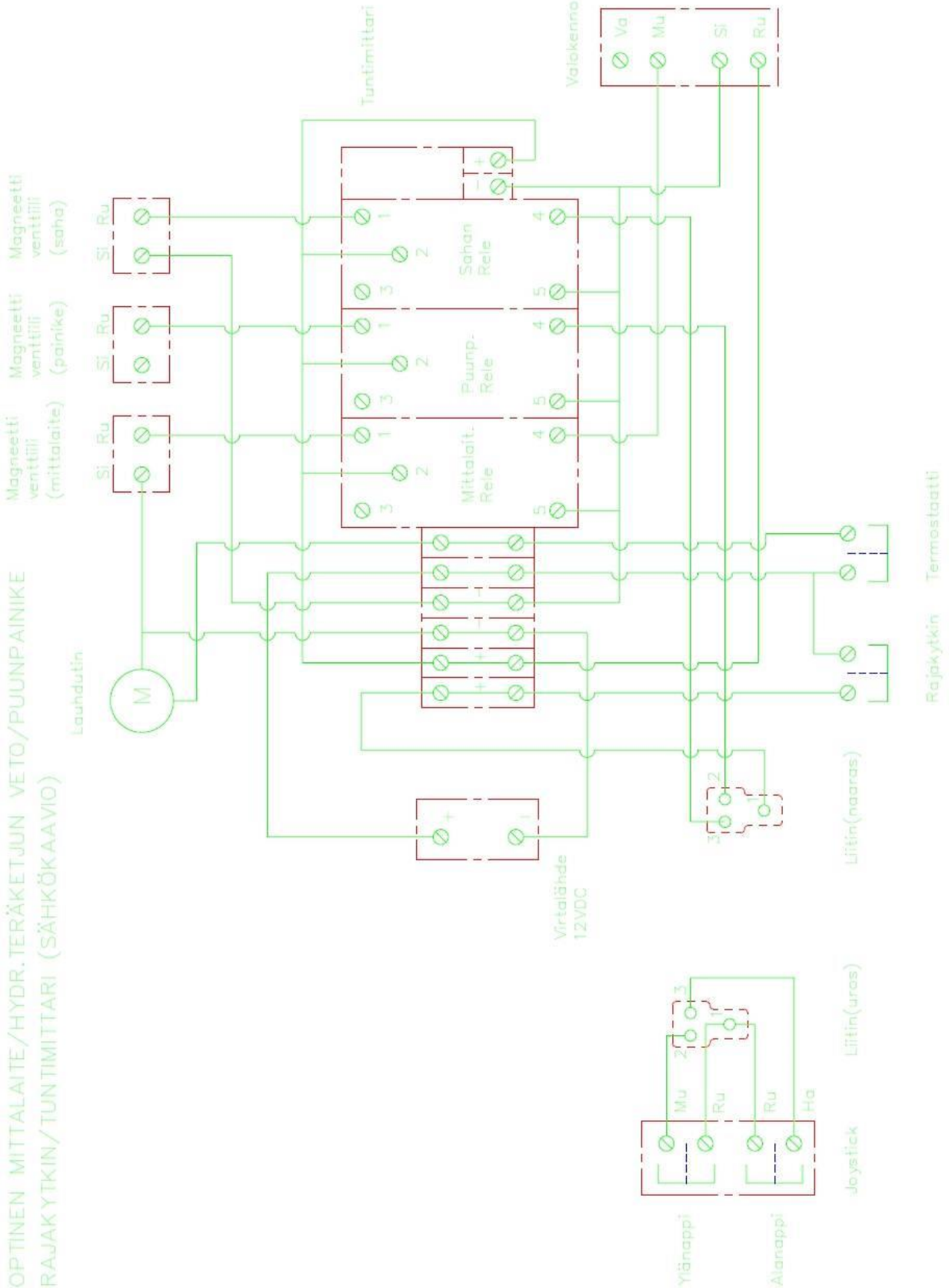
Target	Task	Daily	Interval 100 h	Interval 500 h	Interval 1,000 h	Substance/accessory item
Angle transmission oil	Check 1st change Following		X X	 X		SAE 80/90 1,2 l
Hydraulic oil Normal conditions	Check 1st change Following		X	 X	 X	Amount 125 l E.g. Teboil S 32
Oil filter	Always when changing oil					HEK02-20.201-AS-RP025-VM-B17-B
Valve mechanism	Lubrication		X			Lubrication oil, spray
All levers	Lubrication		X			Lubrication oil
V-belts Angle transmission	Check and replace as necessary	X				B42.5 2061
Cutting blade Control	Sharpen as necessary	X				0,404” 71/1,6
Machine	Clean	X				
	Wash	In conjunction with storage				
Electric motor	Clean	X				
Electrical equipment	Clean	X				

12 Failures and remedial measures

Failure	Cause	Remedial measure
The splitting force is insufficient to split the wood.	1. The outer check valve of the acceleration valve is leaking (no. 4). 2. The control valve for the auxiliary cylinder of the splitting mechanism (no. 7) is leaking.	1. Clean or replace the outer check valve. 2. Clean the pressure regulating valve of the control valve or replace the control valve, as necessary.
The belt of the input conveyor does not move.	1. The belt is too loose. 2. The input conveyor's relief valve is leaking (no. 9). 3. The eye of the optical measuring device is dirty, which blocks the ray.	1. Tighten the belt according to the instructions in Section 5.4.1. 2. Clean the relief valve or replace it as necessary. 3. Clean the eye of the measuring device.
The output conveyor does not move.	1. The belt is too loose. 2. The output conveyor's relief valve is leaking (no. 10).	1. Tighten the belt according to the instructions in Section 5.4.2. 2. Clean the relief valve or replace it as necessary.
The cutting motion does not fully cut the log.	1. The path of the cutting flange is incorrectly adjusted.	1. Lower the path of cutting flange.
The blade chain does not properly sink into the wood.	1. The blade chain is dull. 2. The pressure of the flange's downward motion is too low. 3. The cutting flange is crooked.	1. Sharpen or replace the blade chain. 2. Increase the pressure with the pressure adjustment screw (Figure 9 of Section 3.2). 3. File the flange.
The machine performs an extra splitting motion when the splitting mechanism is operated.		
The machine starts but all functions are inoperable. The machine makes an abnormal noise.	1. The electric motor runs in the wrong direction.	1. See Section 3.2.2.
The electric motor does not start.	1. The emergency stop button is engaged. 2. The machine makes a loud noise but does not start. 3. The input cable is faulty.	1. Release the emergency stop switch. 2. The fuse has burnt. Replace it. 3. Replace the cable.
The motor tends to stop, and the thermal relay is easily triggered.	1. The blade is dull. 2. The thermal relay is incorrectly installed.	1. Sharpen the blade. 2. Contact the retailer of the electric motor.
The processor makes a whining sound during sawing or the splitting of a large log, and the rotation speed decreases at the same time.	1. The belts are loose or worn.	1. Tighten or replace the belts.
The cutting blade does not move downwards.	The splitting groove guard is open.	Close the splitting groove guard.

13 Electric maps




OPTINEN MITTALAITE/HYDR.TERÄKETJUN VETO/PUUNPAINIKE
RAJAKYTKIN/TUNTIMITTARI (SÄHKÖKAAVIO)
Tuntimittari
Valokenno
Va
Mu
Si
Ru
Magneetti venttiili (saha)
Magneetti venttiili (painike)
Magneetti venttiili (mittalaite)
Sahan Rele
Puunp. Rele
Mittalait. Rele
Lauhdutin
M
Termostaatti
Rajakytkin
Liitin(naaras)
Liitin(uros)
Virtalähde 12VDC
Joystick
Ha
Ylänappi
Alanappi

14 Guarantee terms

“Guarantee terms come into force when you register your customership in the extranet service found on our website.”

The guarantee is valid for the original buyer for 12 months, starting from the date of purchase, but for no more than 1 000 operating hours.
In guarantee matters, always contact the machine’s seller before undertaking any procedures.

A guarantee demand has to be issued to the seller **immediately** upon discovery of a defect. If the defect concerns a damaged part or component, please send a photograph of the damaged part or component to the seller, if possible, so the fault can be identified. When submitting a guarantee claim, the buyer must always include the type and serial number of the machine and present a receipt that includes the date of purchase. Guarantee claims must be submitted to an authorised retailer.

The guarantee covers

- Parts damaged in normal use due to faults in material or manufacture.
- Reasonable expenses caused by repairing a fault in accordance with the agreement between the seller or buyer and manufacturer. Faulty parts will be replaced with new ones. A faulty part or parts replaced due to a material fault should be returned to the manufacturer through the retailer.

The guarantee does not cover

- Damages caused by normal wear and tear (for example blades, mats and belts), improper use or use contrary to the instruction manual
- Damages caused by negligence of maintenance or storage procedures detailed in the instruction manual
- Damages caused during transport
- Cutting blades, V-belts and oil, and normal adjustment, care, maintenance or cleaning procedures
- Defects in a machine to which the buyer has carried out or commissioned structural or functional changes to the degree that the machine can no longer be considered equivalent to the original machine
- Other potential costs or financial obligations resulting from the procedures mentioned above
- Indirect costs
- Travel costs resulting from guarantee repairs
- The guarantee for parts replaced during the guarantee period of the machine expires at the same time as the machine’s guarantee
- The guarantee is void if the ownership of the machine is transferred to a third party during the guarantee period
- The guarantee is void if any of the machine’s seals have been broken

If a fault or defect reported by the customer is found to not be covered by the guarantee, the manufacturer has the right to charge the customer for the pinpointing and possible repair of the fault or defect in accordance with the manufacturer's current price list.

This guarantee certificate indicates our responsibilities and obligations in full and it excludes all other responsibilities.

EU Declaration of Conformity for the machine

(Machinery Directive 2006/42/EC, Appendix II A)

Manufacturer: Maaselän Kone Oy
Address: Valimotie 1, FI-85800 Haapajärvi, Finland

Name and address of person who is authorised to compile the technical file:

Name: Timo Jussila Address: Valimotie 1, FI-85800 Haapajärvi, Finland

The above person assures that

Hakki Pilke 50 S Easy Serial number: ……

- is compliant with the applicable regulations of the Machinery Directive (2006/42/EC).

Place and time: Haapajärvi 1.1.2017

Signature:

Anssi Westerlund
Managing Director