ENGLISH

Hakki Pilke 2XS+ Carry

LOG SPLITTER

- ***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 log splitter!

MAASELÄN KONE OY
Valimotie 1, FI-85800 Haapajärvi, Finland
Tel. +358 (0)8 7727300, Fax +358 (0)8 7727320
info@maaselankone.fi
www.maaselankone.fi

Original Version 1-2011

Table of contents

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.

Before commencing work, operators must also familiarise themselves with the machine's control and safety equipment, and ensure their proper usage.

Additional information on Maaselän Kone Oy's products is available on our website at www.maaselankone.fi.
Store this manual in the immediate vicinity of the machine.

1.2. The machine's purpose of use

The Hakki Pilke 2XS+ Carry log splitter is designed for preparing firewood from pruned wood or logs. The log splitter must not be used to process any treated wood, such as is found in construction waste.

The maximum diameter for wood to be split is 25 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 split logs that exceed the maximum length.

1.3. Basic specifications

Model	2XS+ Carry
Drive	Honda petrol engine
Weight	900 kg
Required power	13 hp
Height/width/length in the transport position	2700/1630/3750 (mm)
Input/output conveyor	2,200/4,000 (mm)
Blade flange Blade chain	13” groove 1.5 mm 56 loops, pitch 0.325”
Max wood diameter	25 cm
Max/min wood length	max 60 cm; min 20 cm

The machine's serial number, manufacturing date, weight, and model are indicated on the type plate located on the body of the machine where the operator stands.

1.4. Operating conditions

- The temperature range within which the machine can be operated is -20 – +30 °C**.** The operator must, particularly in the winter, 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 operated by only one operator. The danger zone around the machine is 10 metres.
- 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 splitter 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 splitter must be arranged for transport whenever it is moved.
- 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 splitter, the operator must ensure that the machine and its shields are intact.
- Before starting up the splitter, the operator must ensure that all the control and safety devices are functional.
- When cleaning or maintaining the machine, the engine must be shut down and the main power switch must be turned to the OFF position.

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**

Read the machine's manual

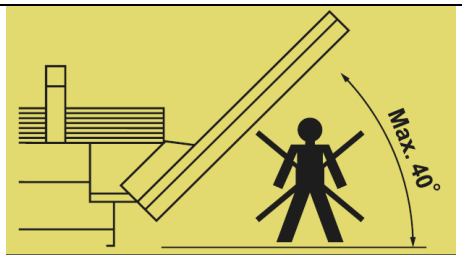
Stay clear of moving parts
The safety distance for the splitter is 10 m

Danger zone

Beware of the blade

Only one person may operate the machine

Lubrication point



The conveyor's maximum operating angle is 40°. Do not go under the conveyor.

Use eye and ear protection as well as a helmet and gloves

2. Reception and main components

2.1.**Reception inspection**

Dispose of the packaging in an environmentally friendly manner, and check that the machine has not been damaged during transit. Also, check that the battery case contains the keys to the machine (main power switch and engine) as well as the operation and maintenance manual of the combustion engine (Honda GX390). If you encounter defects or damage, contact the retailer immediately.

Figure 1.

2.2.**Lifting and moving the machine**

The Hakki Pilke 2XS+ Carry log splitter does not feature separate lifting points for forklifts or lifting hooks.
The machine must always be moved on its own wheels.

2.3. Main components of the machine

The main components of the Hakki Pilke 2XS+ Carry log splitter are presented in Figure 2.

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

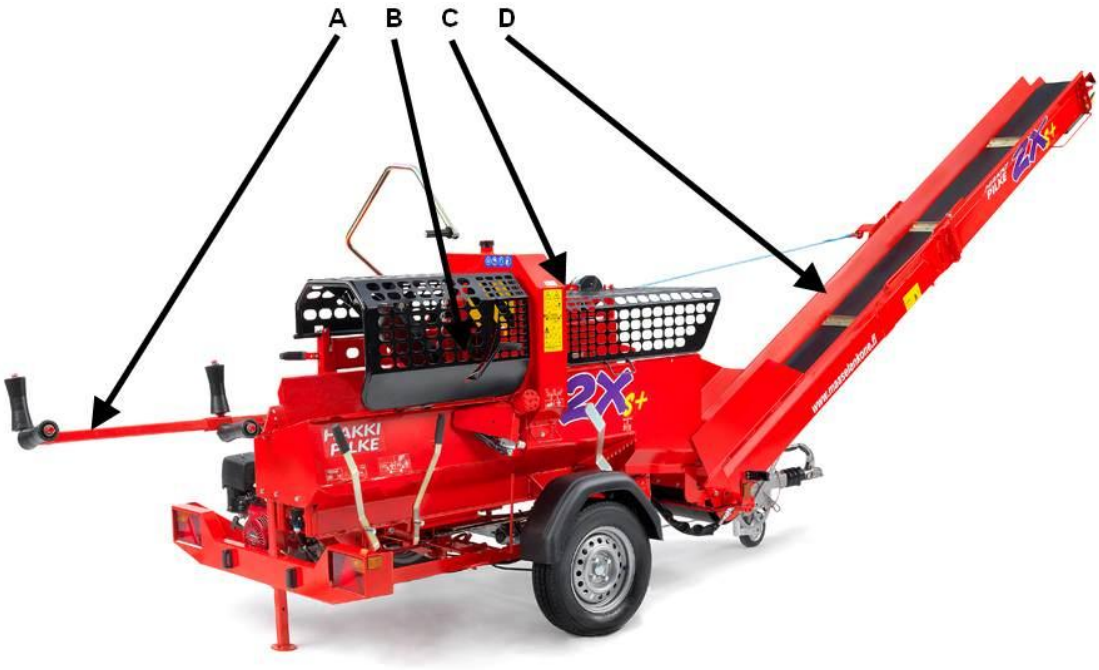


Figure 2.

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 2.1 and 6.5 before arranging it for transport.

3.2.**Placing the body in the operating or transport position**

Place the body of the machine in the operating position as follows:

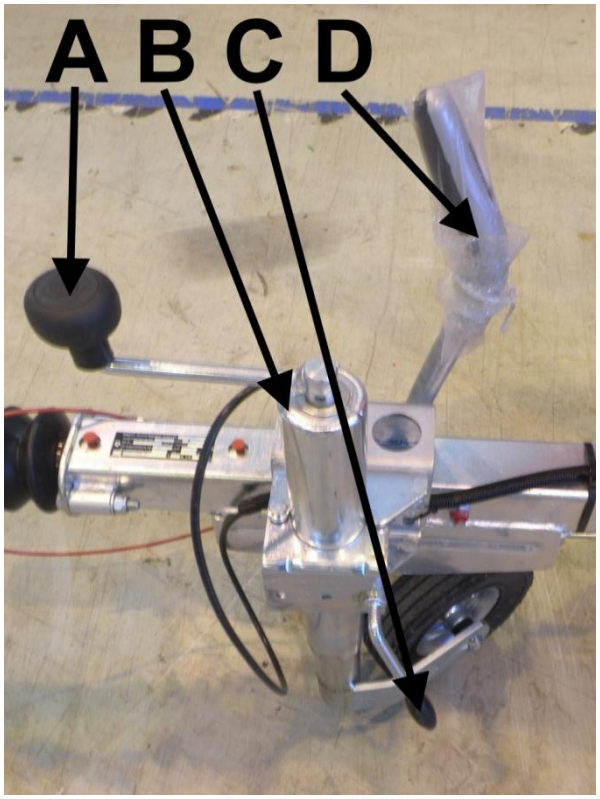


Figure 3.

1. Engage the handbrake by pulling the lever D up.
2. Lower the front wheel B with the fastener C, and tighten the wheel to the lowered position.
3. Press the hook lock button E down and turn the lock handle F to the upper position.
4. At the same time, rotate the crank A anticlockwise, which raises the ball coupling off the connecting hook.
5. Disconnect the safety cable G and electrical cable from the towing vehicle.
6. Adjust the machine to a level position with the crank A, lower the rear support, and lock it with the locking bar G and pin I. Note! If necessary, use the crank A to adjust the front section of the machine up/down in order to lock the support J to a suitable position.

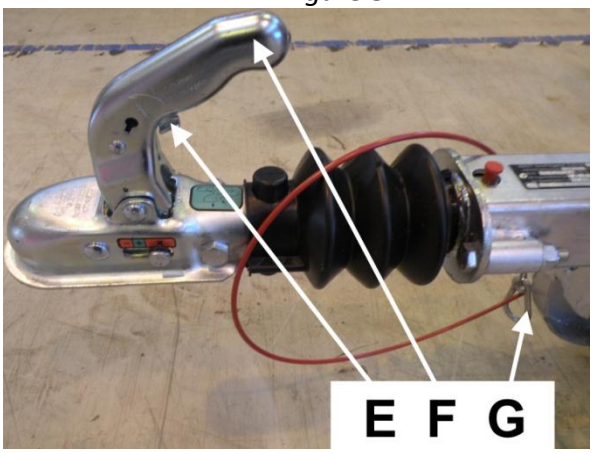


Figure 4.

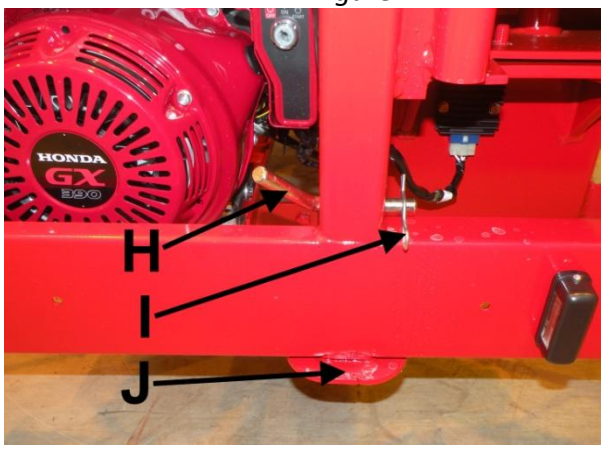


Figure 5.

Place the body of the machine to transport position as follows (when the transport equipment of the machine is positioned appropriately according to Sections 3.3 and 3.5):

1. Lift the support leg J up with the locking bar H and pin I.
2. Lower the ball coupling on the towing vehicle's hook with the crank A (in Figure 3) until the lock's handle F turns to the lowered position automatically (indicator shifts to the green area of the label). This means that the coupling is locked on the hook.
3. Lift the front wheel B to the upper position and tighten it with the fastener C (in Figure 3) so that it will stay firmly in place during transit.
4. Connect the electrical cable and the safety cable G to the appropriate points on the towing vehicle. The safety cable must not be obstructed by anything.
5. Disengage the handbrake by turning the lever D down (in Figure 3).
6. Ensure that all lights are functioning (parking lights, indicator and brake lights).
7. Check the tightness of the wheel bearings by grabbing the wheel and shaking it longitudinally. If there is too much play, tighten the wheel or replace the bearings.

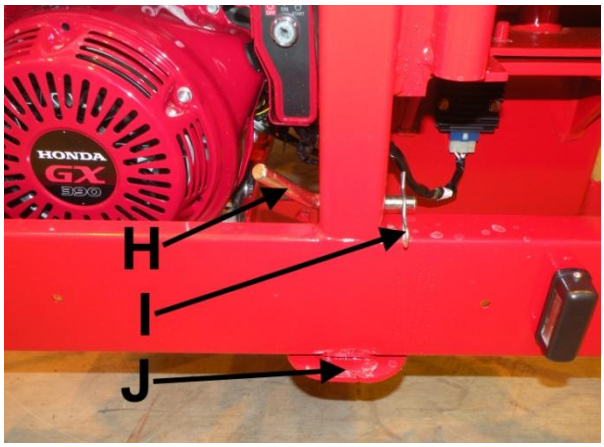


Figure 6.

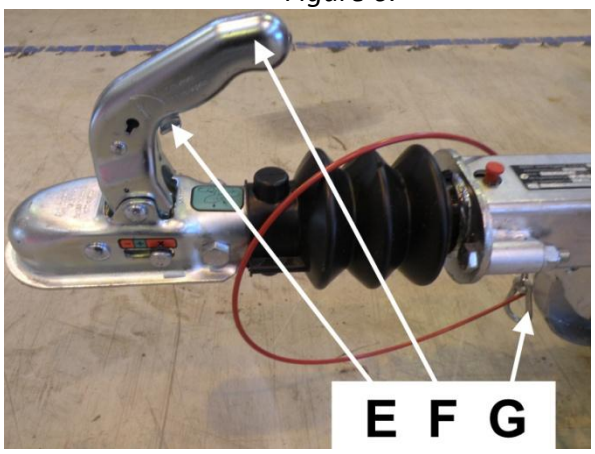


Figure 7.

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

Place the input conveyor in the operating position as follows:

1. Disconnect the pin A and remove the locking bar B from the log holder support.

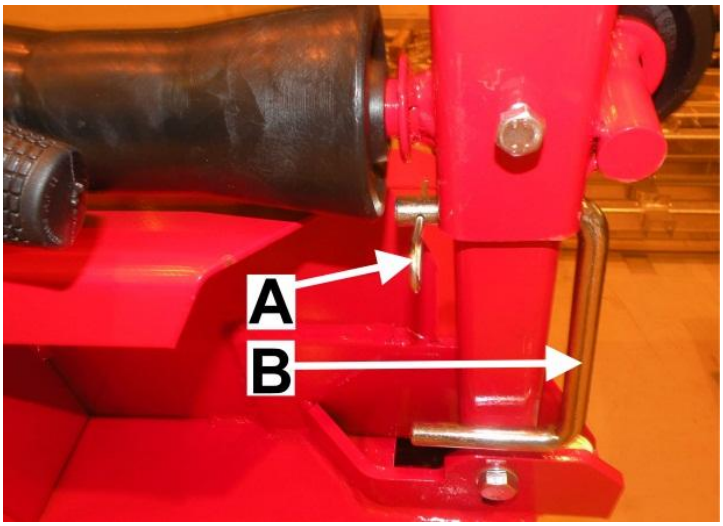


Figure 8.

2. Adjust the log holder support to the suitable angle with the adjustment bolt A and locking nut B. Turn the log holder support against the adjustment bolt A.

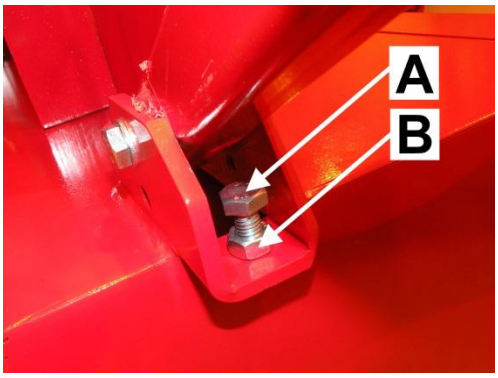


Figure 9.

Figure 10.

3. Fasten the locking bar A and locking pin B to the log holder support. If necessary, adjust the distance of the rollers with the attachment bolt C.

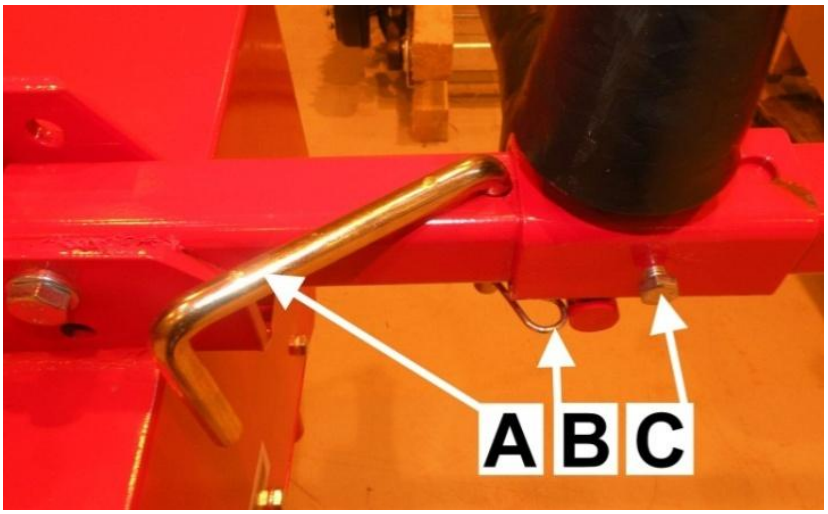


Figure 11.

Place the input conveyor in the transport position as follows:

1. Lift the log holder support up, and lock it in place with the locking bar and pin.

Figure 12.

3.4. Placing the output conveyor in the operating position

1. Use the winch to release approx. 10 cm of the strap by turning the crank C clockwise.

2. Push the conveyor towards the splitter, and release the conveyor lock B from the slot A by lifting the locking mechanism. Lower the conveyor until its weight rests on the winch strap. Note! If necessary, lift the splitting guard up (see Section 4.5).

3. Rotate the winch crank clockwise to lower the conveyor down. Note! The handbrake lever must be in the down position (see Section 3.2).

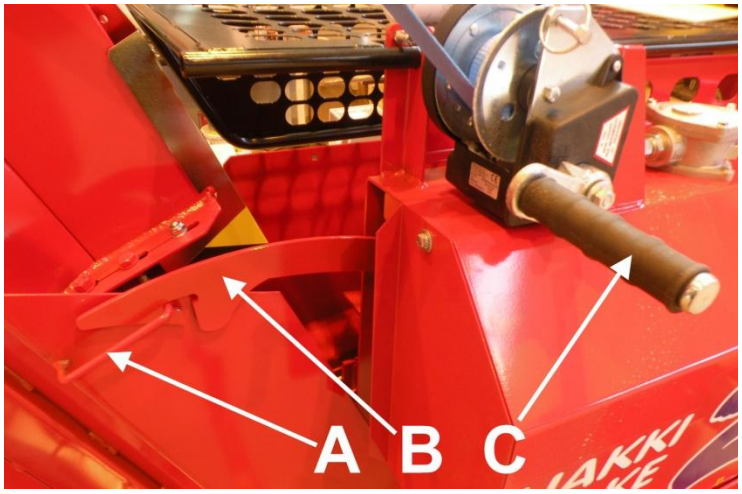


Figure 13.

Figure 14.

4. Extend the conveyor to its full length, as shown in Figure 16, with the crank A (in Figure 15).

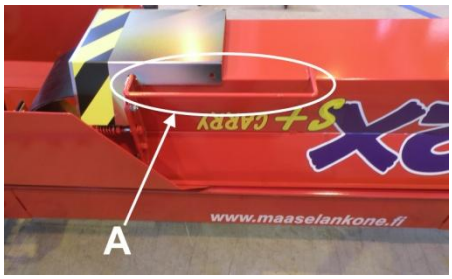


Figure 15.

Figure 16.

5. Use the winch to adjust the conveyor to the desired inclination. Finally, turn the belt holder bar to the operating position (longitudinal), and lock the extension with the lock at the bottom of the conveyor and with a ring pin.

   Note! Do not pass under the conveyor!

Figure 17.

Figure 18.

3.5. Placing the output conveyor in the transport position

Arrange the conveyor for transport by reversing the order of the steps in Section 3.4.

Figure 19.

After placing the conveyor in the transport position, check the locking and loosen the winch strap so that the weight of the conveyor rests on lock B (in Figure 13)!

Note! If lock B does not engage properly as shown in Figure 19, do not move the machine!

3.6. **Activating the machine**

The Hakki Pilke 2XS+ Carry log splitter is powered by a Honda GX390 petrol engine which has 13 hp. The machine can be started up as follows:

1. Use winch A to turn the engine bed B up as shown in Figure 20. This allows the belts of the main shaft to loosen, and the engine can start without undue loading.

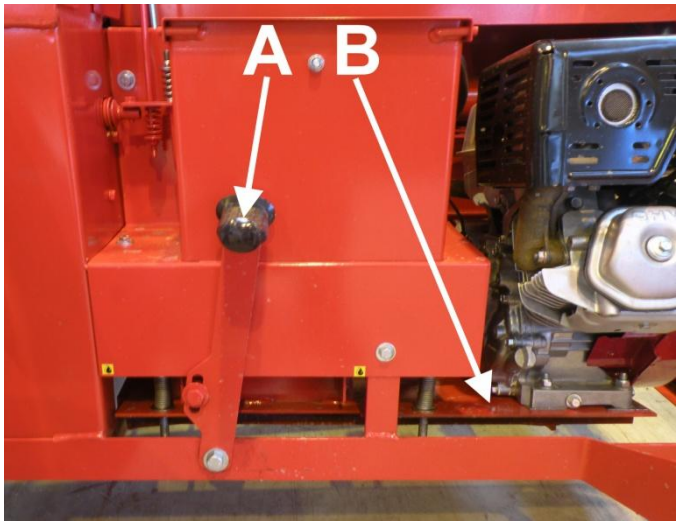


Figure 20.

2. Turn the main power switch D to the OFF position, according to the symbols in label C.

3. Open the petrol valve by turning lever E all the way to the right, and engage the choke by turning lever F all the way to the left.

4. Turn the gas lever H to the maximum position according to the symbols on label G, and turn the ignition key I to the START position. When the machine starts, disengage the choke (lever F all the way to the right).

5. Use lever A to turn the engine to the lower position, and adjust the RPM to the desired level with lever H. For example, when splitting small logs, you can reduce the engine speed slightly to conserve fuel.

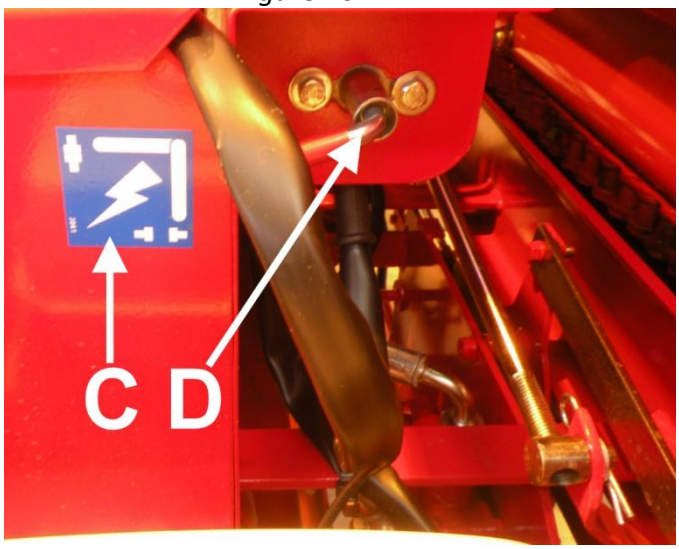


Figure 21.

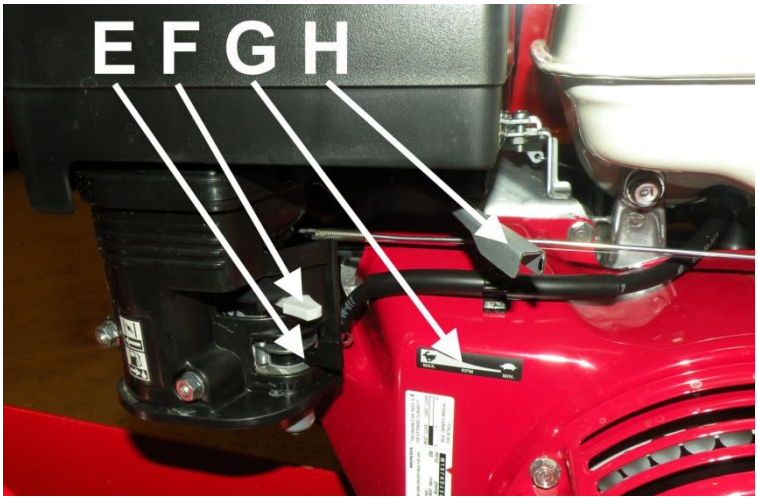


Figure 22.

Figure 23.

4. Controls

The control devices of the Hakki Pilke 2XS+ Carry log splitter are presented in Figure 24. The names and functions of the control devices are as follows:

A. Operating lever for the splitting mechanism (manual control)
B. Operating lever for the cutting flange, which also controls the feed motion of the input roller
C. Guard locking lever
D. Reverse pedal for the input roller
E. Activation lever for the splitting mechanism (manual control)
F. Height adjustment lever for the splitting blade
G. Wood press handle
H. Speed adjuster for the output conveyor belt

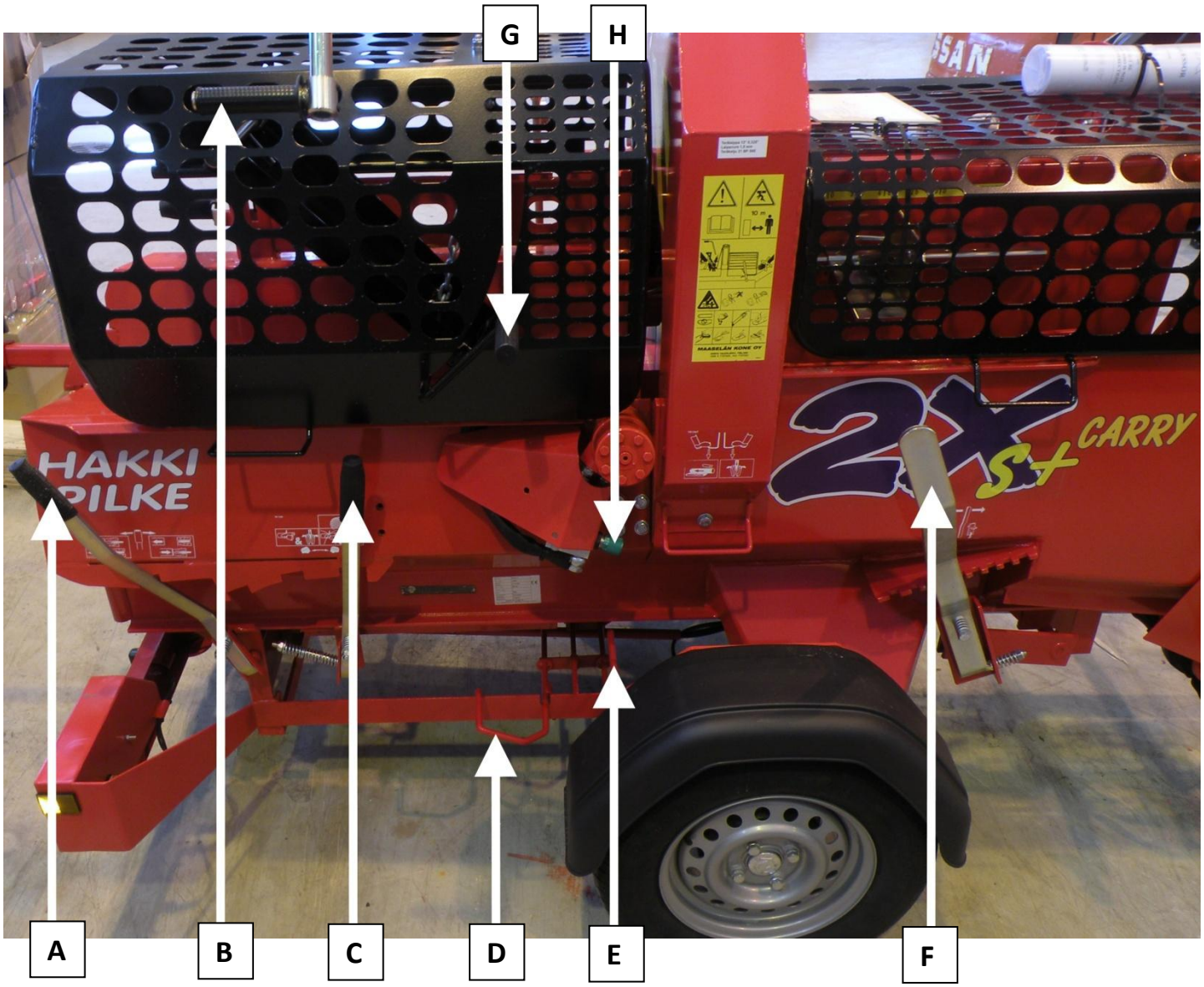


Figure 24.

4.1. Adjusting wood length and splitting blade height

The Hakki Pilke 2SX+ Carry is equipped with a mechanical log measurement device with an incremented adjustment range of 20–60 cm.

1. Place the guard lock lever C (in Figure 24) into the STOP position, and open the splitting blade guard.
2. When the wood limiter is in the splitting position, set it to the desired length by removing the cotter pin B in the limiter's locking pin and by pulling out the locking pin A. Lock the limiter plate C in the desired position. Re-insert the locking pin A and the cotter pin B.

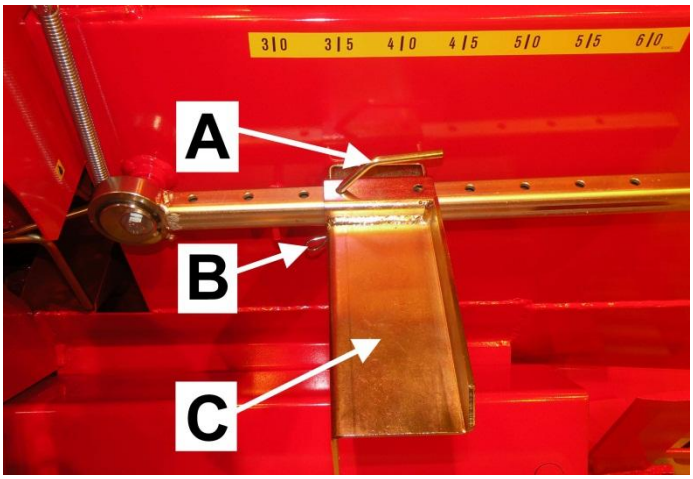


Figure 25.

Note! If necessary, turn the limiter plate to the correct position according to the wood's thickness. (See FIgures 26 and 27).


Figure 26. Limiter plate position for small logs.

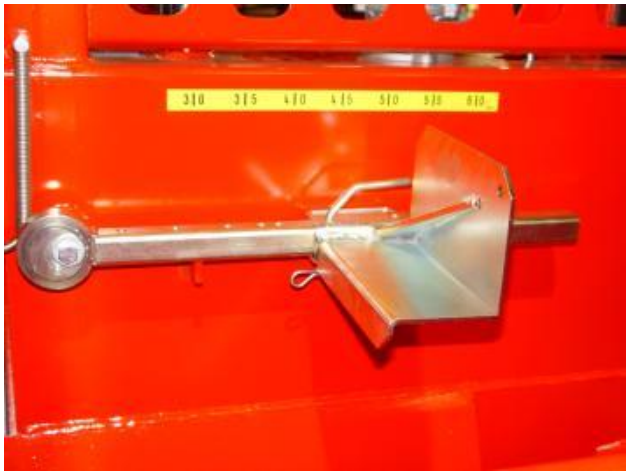


Figure 27. Limiter plate position for large logs (diameter over 20 cm).

3. Lower the splitter guard back down, and turn the guard lock lever C back to the RUN position.

Adjust the splitting blade to the desired height with lever F (in Figure 24). The blade is in the highest position when the lever is all the way to the left and in the lowest position when the lever is all the way to the right.

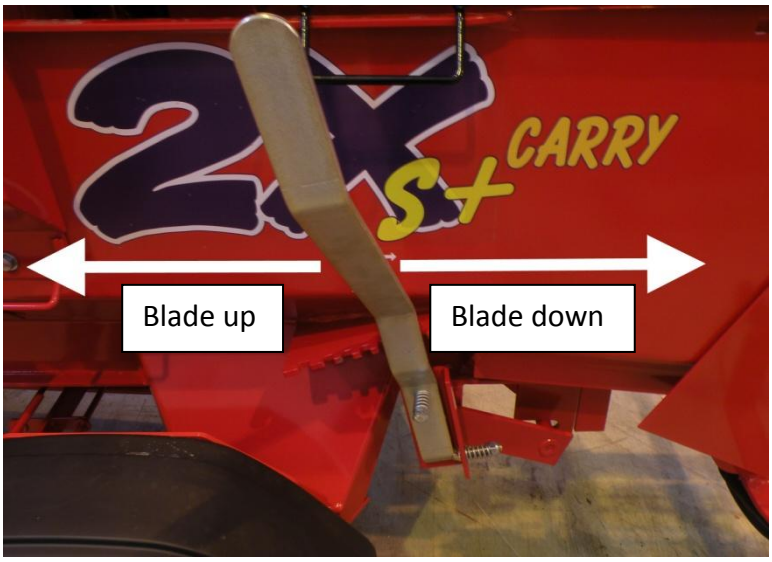


Figure 28.

The splitting blade can be removed as follows:

1. Turn the splitting blade all the way to the right, as shown in the picture, so that shaft A will exit slot B.
2. Shut down the splitter and disconnect it from its power source.
3. Open the splitter guard and lift the splitting blade out of its slot.

Note! Always use protective gloves when handling the sharp splitting blade!

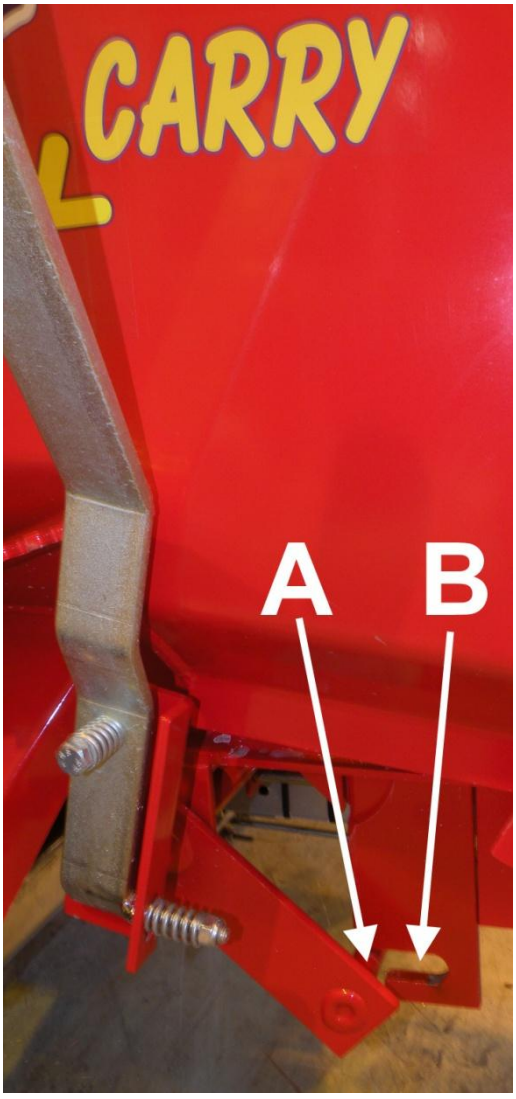


Figure 29.

4.2. Operating and adjusting the output conveyor

The belt of the Hakki Pilke 2XS+ Carry log splitter's output conveyor is driven by a hydraulic motor, which means that the belt speed can be adjusted with the adjuster knob H (in Figure 24). To increase belt speed, screw the adjuster open (anticlockwise). To decrease belt speed, screw the adjuster closed (clockwise). If necessary, you can also stop the belt entirely by closing the adjuster G all the way.

Figure 30.

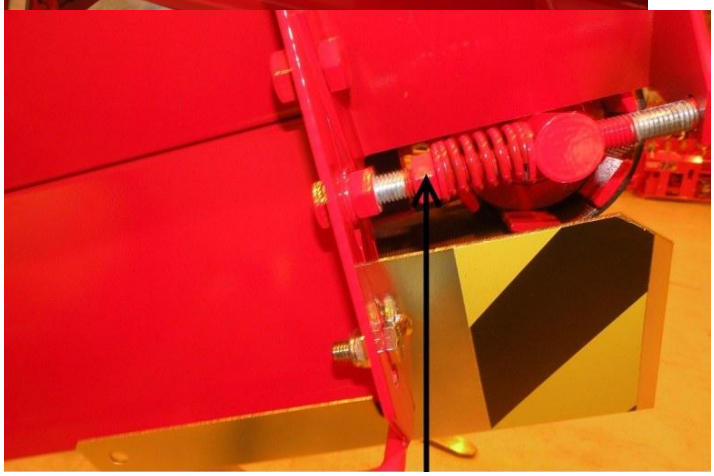


Figure 31.

The tension of the output conveyor's belt can be adjusted with the adjustment nuts in the figure (2 pcs/conveyor). These nuts also adjust the alignment of the conveyor belt.

4.3. Using the blade chain's oil adjuster

The amount of oil that is fed to the blade chain can be adjusted with the valve as seen in the above figure. Closing the valve (clockwise) reduces the oil flow and opening it (anticlockwise) increases the flow. In the summer, the correct adjustment is approx. 1.5 rotations while, in the winter, the adjustment should be 2–2.5 rotations. Monitor the oil flow to the blade chain when there are changes in the weather. In warmer weather, the oil is more viscous and flows considerably smoother than in cold conditions.

NOTE! The blade chain lubrication opens or closes automatically when the splitter is activated or shut down. The adjustment valve only changes the rate of the flow.

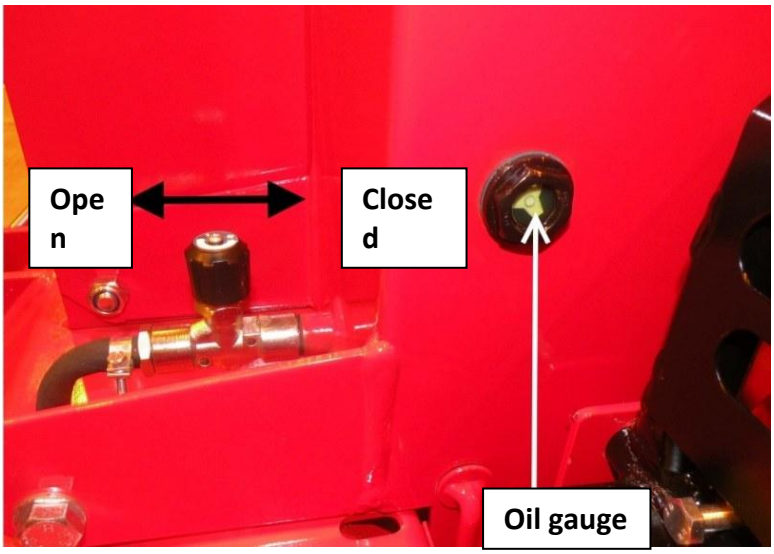


Figure 32.

The oil gauge in Figure 32 indicates when some blade chain oil must be added. When the gauge is an oily brown, the oil level is sufficient, but when the gauge is clear, oil must be added immediately.

4.4. Operating and adjusting the input conveyor

The Hakki Pilke 2XS+ Carry log splitter pushes logs forward by means of a spiked roller driven by a hydraulic motor. You should also adjust the log holder extension to the optimal angle as instructed in step 2 of Section 3.3. The necessary angle depends on how crooked the wood is: for more crooked wood, the log holder support must be extended so that the log stays in contact with both the spiked roller and support rollers as much as possible.

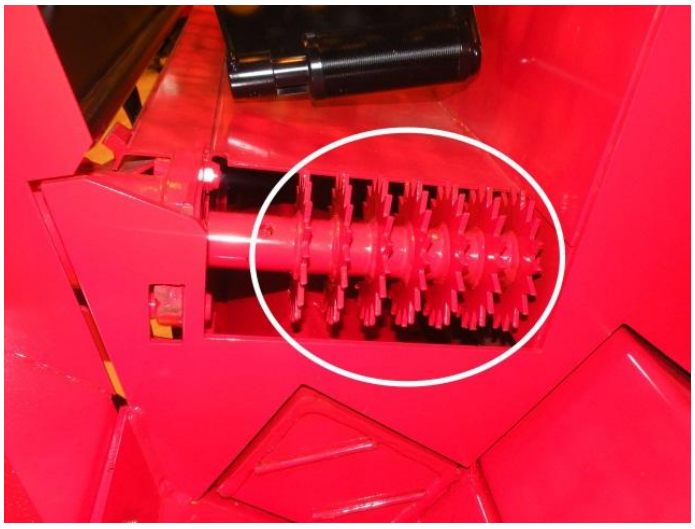


Figure 33.

The input conveyor roller is activated when the cutting lever is moved up from its initial position.

The roller stops when the cutting lever is lowered to the initial position or when wood is cut by pushing the lever downwards.

To reverse the input conveyor roller, press the reverse pedal D in Figure 24.

Figure 34.

The sensitivity of the input conveyor's movement can be adjusted with the lever mechanism of the valve controlling the conveyor.

The adjustments for lever movement are located behind the valve cover.

Figure 35.

Figure 36.

Figure 37.

4.5. Using the input conveyor guard and wood press

The wood press keeps the logs in place when they are being sawed. If necessary, aid the wood press by pressing down lever G (Figure 24), which helps to keep the log firmly in place during sawing.

Do not put your hand between the wood press roller A and the input conveyor roller B!

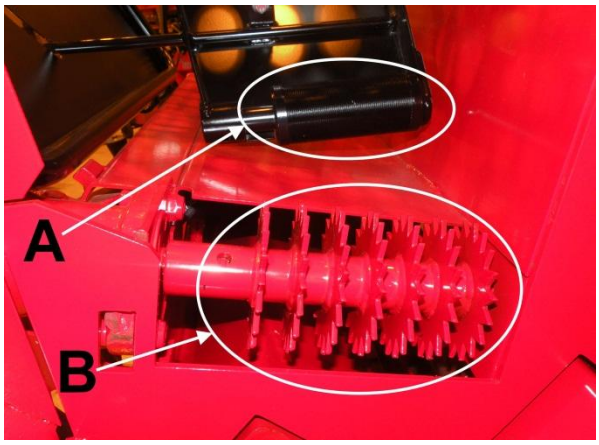


Figure 38.

When opening the input conveyor guard:

1. Place the guard lock lever C to the STOP position, which releases the lock.

Figure 39.

In the STOP position, the locking latch in the figure prevents the cutting flange from lowering. The activation of the splitting mechanism is also prevented.

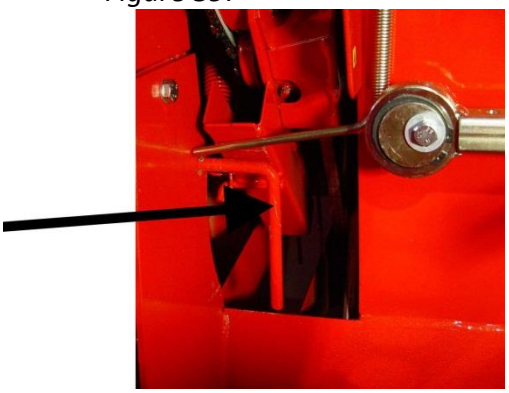


Figure 40.

2. Lift the guard. Always hold the lever when lifting or lowering the input conveyor guard!

Figure 41.

3. Ensure that the locking lever A locks guard in the raised position! (in Figure 43)

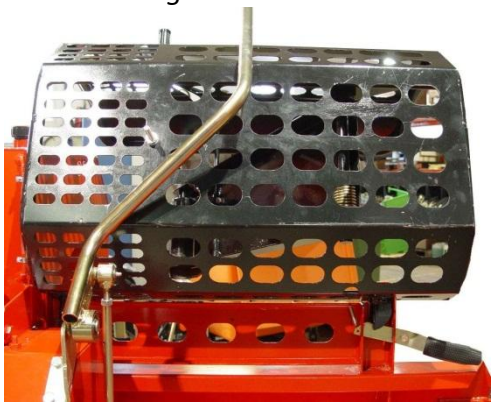


Figure 42.

4. To close the input conveyor guard, do the following: push the guard back, release the guard lock handle A and lower the guard. **DO NOT DROP IT!**

DO NOT REMOVE THE GUARDS!

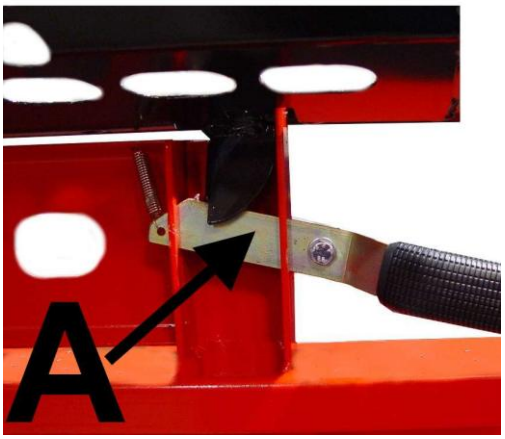


Figure 43.

5. Operating the machine

5.1. 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 log splitter 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. Ensure that the guards of the input conveyor and the splitting section are lowered and that the guard lock lever is in the RUN position.
2. Check that the input and output conveyors are in the operating position.
3. Ensure that the splitting grooves are empty.
4. Start the machine as instructed in Section 3.6.
5. Ensure that the blade chain's oil valve is sufficiently open. If necessary, see Section 4.3.
6. Use the splitter's controls to perform a cutting motion, and ensure that the motion is normal as the cutting flange returns up.
7. In extremely cold weather, repeat the cutting motion with the activation lever F (in Figure 24) to warm up the oil until the motion is performed at normal speed.
8. Activate the cutting motion and stop it by turning the guard lock lever C (in Figure 24) to the STOP position. Note! The cutting flange must be in the raised position.
9. Ensure that the splitting beam returns to the initial position by turning the operating lever C to the right – which reverses the splitting beam – or to the left, depending on which splitting beam is in use.
10. Test run the input conveyor's input motion with the operating lever B and the return motion with the reverse pedal D (in Figure 24).
11. Ensure that the path of the wood press is normal by using the wood press handle G as seen in Figure 24.
12. Make sure that the input conveyor runs normally and does not chafe against the walls.

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

5.2. Placing wood in a log holder

We recommend auxiliary devices, such as a Woodran 421/Woodran 422 log holder. If a log holder is not attached to the splitter, the maximum allowed log length is 4.0 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.

5.3. Feeding and sawing wood

The input conveyor feeds the wood to be processed into the splitter. To drive a log into the machine, use the lever B in Figure 24 of Section 4. To reverse the feed, use the reverse pedal D.

When feeding wood, ensure that the log does not present a risk of getting caught with the machine, for example due to the shape of the wood. Adjust the mechanical wood limiter to the desired measurement.

1. Choose the log to process. Note that the maximum log diameter is 25 cm. The knottiness and shape of the wood increase the diameter.
2. Close the splitter guards and place the log, butt end first, on the input roller.

3. Lift the lever B (in Figure 24) to start feeding the log into the machine. Continue until the log hits the measurement plate, at which point the input motion must be stopped.

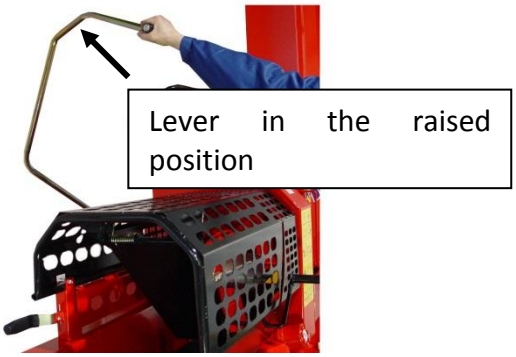


Figure 44.

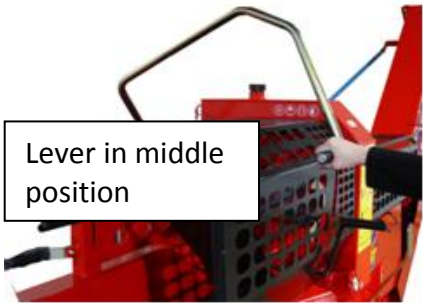


Figure 45.

4. Cut the log by lightly pressing down the lever B (do not strike the lever down).
5. Once the log has been cut and the cut wood has fallen into the splitting groove, hold the cutting lever down and check the position of the fallen wood in the groove. If the piece is straight, lift the cutting lever to the middle position, which automatically activates the splitting process.

Note! If the wood piece is not straight in the splitting groove and it is likely that it will jam the splitting blade, do the following:

Raise the cutting blade. Move the guard lock lever C to the STOP position before the splitting beam pushes the wood against the splitting blade. Return the splitting beam to the initial position by moving the splitter's operating lever A all the way to the left or right (depending on the splitting beam).

When the guard lock lever C is in the STOP position, lift the guard of the splitting groove and straighten the misaligned piece of wood.

Lower the guard, place the guard lock lever C to the RUN position and re-activate the splitting process with the activation pedal F (in Figure 24).

5.4. Jamming the cutting blade

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 6.1.1).

Note! A dull or unevenly sharp blade must not be forcefully pressed into wood!

5.5. 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. In this way, the wood will stay firmly under the wood press. The sawing will be steady and safe when you help the wood press by pressing it against the wood with the handle G (in Figure 24).
Drive the last wood piece directly into the splitting section, and start the splitting process with the pedal.

5.6.**Splitting wood**

The Hakki Pilke 2XS+ Carry log splitter contains a so-called double splitting system where one splitting beam is pulled back with a chain when the other is pushed forward.

The splitting system also includes a selection valve, which can be used to halve the splitting speed (the output of the second hydraulic pump is not channelled to the splitting cylinder) when the pressure of the splitting cylinder increases above 120 bars. This allows the 13 hp combustion engine to increase the splitting pressure sufficiently high. If necessary, you can adjust the valve's limit value with the locking nut A and adjustment screw B in Figure 46.

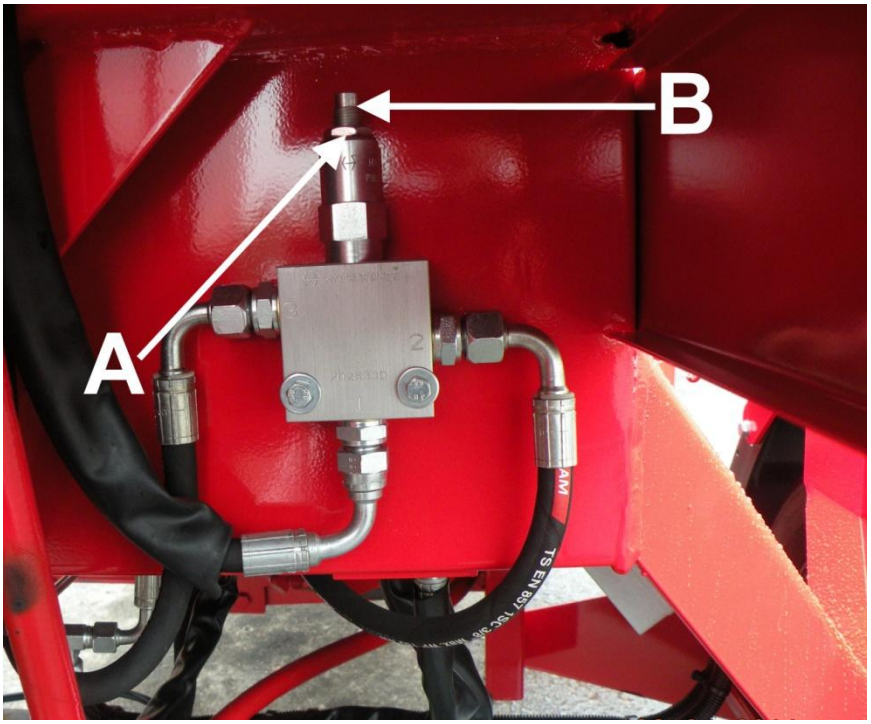


Figure 46.

Perform the splitting motion as follows:

1. Move the guard lock lever C to the RUN position. (The splitter's guards must be closed).

Figure 47.

2. Press the lever A to the lower position and then let it return to the initial position.

3. Ensure that the left-hand splitting beam moves near the splitting blade and stops. Repeat step 2 and ensure that the left-hand beam is restored to the initial position (while the right-hand beam goes through the reverse motions), i.e. that the splitting motion works.

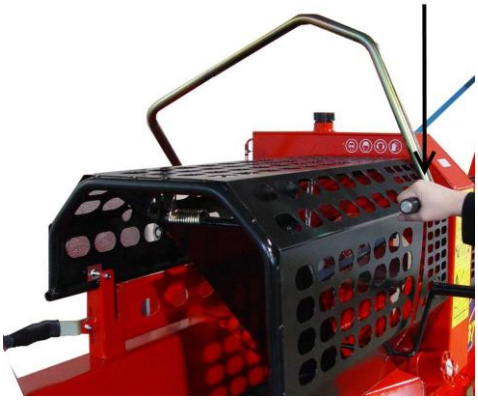


Figure 48.

Figure 49.

Figure 50.

You can also start the splitting motion with the lever E (in Figure 24) by briefly pushing the lever to the far right.
Do not keep the lever in the end position for long – about one second is enough. The lever is primarily intended for splitting the last piece of wood. By using the lever, the operator has no need to unnecessarily lower the cutting flange. Instead, the splitting can be activated more quickly and easily with the lever.

If there is a problem with splitting and the splitting beam must be prematurely returned to the initial position, do the following:

Move the splitter's operating lever A to the position that reverses the splitting beam motion (far right or far left position, depending on the beam) and keep it there until the mechanism is restored to the initial position.

Figure 51.

IMPORTANT! Using the machine is strictly prohibited if the splitter's operating lever is in the RUN position and the guard of the splitting section can be opened! The faulty locking mechanism must be repaired immediately. It should only be possible to open the guard of the splitting section if the guard lock lever is in the STOP position.

Figure 52.

NEVER PUT YOUR HAND IN THE CUTTING OPENING IF THE SPLITTER IS RUNNING. STOP THE MACHINE FOR MAINTENANCE!

5.7.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. Return the splitting beam to the initial position by holding the splitter's operating lever A (in Figure 24) to the far right or left (depending on the beam) until the splitting beam is restored to the initial position.
2. Lift the splitting blade to the highest possible position with the operating lever F (in Figure 24).
3. Cut a sufficiently thick piece of wood (approx. 15 cm) into the splitting groove, and activate the splitting process. The new piece will then push the jammed piece past the blade.
4. Lower the blade by approx. 5 cm and repeat step 3. Repeat step 4 until the jammed wood has passed the blade piece by piece.

5.8.Re-splitting or splitting without cutting

1. Turn the guard lock lever C to the STOP position, and lift the splitting groove guard to the raised position.
2. Place the log you want to split in the splitting groove.
3. Close the guard of the cutting and splitting section, and turn the lever C to the splitting position.
4. Activate the splitting process (lever E Figure 24).

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

5.9.Adjusting the length of the splitting motion

In the Hakki Pilke 2XS+ Carry log splitter, the length of the splitting motion can be freely adjusted. Even though the splitting adjustments are optimised in conjunction with the final testing, the adjustments can change as a result of numerous splitting motions. Therefore, the adjustments should be regularly checked to ensure that the motion of the splitting cylinder is not excessively long. The next page details how to adjust stroke length.

5.10. After use

1. After you have finished making firewood, shut down the machine by turning the ignition key I (in Figure 23), close the fuel valve (in Figure 22) and switch the main power switch D (in Figure 21) off. Remove firewood from the splitting groove and the conveyor.
2. Ensure that the machine has not been damaged.
3. Place the output conveyor into a position that allows the conveyor and log splitter to be moved safely away from the processed firewood.
4. Disengage the handbrake and use the front wheel to tilt the machine to an angle that allows you to turn the output conveyor away from the pile of firewood, so that you can place the output and input conveyors into the transport and storage position. (If necessary, see Sections 3.2, 3.3 and 3.5).
5. Place the conveyors into the transport and storage position.
6. Clean and maintain the machine.

6. Maintaining the machine

The main power switch must be turned off 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 splitter must have a test run according to the instructions in Section 5.1.

6.1. 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.

6.1.1. Replacing and tightening the blade chain

A. Replacing the blade chain:

WEAR GLOVES WHEN HANDLING THE BLADE CHAIN!
Always shut down the splitter when preparing for blade sharpening.

Figure 53.

Figure 54.

1. Move the guard lock lever C to the STOP position.

2. Open the splitting groove

3. Lift the input conveyor guard with the lever in Figure 61, and ensure that the guard is locked in the raised position.

Figure 55.

4. Open the cover of the blade housing

5. Turn the cover of the blade opening to the back position. Ensure that the cover support locks into place!

Beware of the cutting blade! Use protective gloves!

Figure 56.

Figure 57.

6. Loosen the two fastening bolts of the blade flange and the chain tensioning screw in order to remove the chain.

Figure 58.

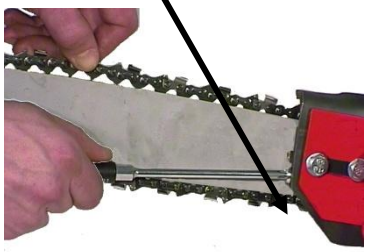


Figure 59.

7. Replace the dull blade by reversing the above steps or sharpen the blade by filing it in a vice or sharpening device.

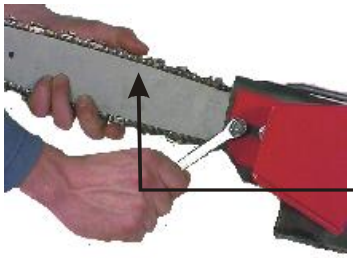
B. Tightening the blade chain

8. Loosen the two fastening bolts of the blade flange, and use the chain adjustment screw to adjust the chain tension.

Figure 60.

9. Use the adjustment screw to adjust the blade chain. The chain is at the correct tension when pulling the chain fully displays three of the lower teeth.

Figure 61.



10. Lift the flange and tighten the fastening bolts. Then, lower the guards and lock them in place.

Figure 62.

Do not use the machine if the cutting blade is visible through the cutting opening and the blade is not completely raised inside the guard!

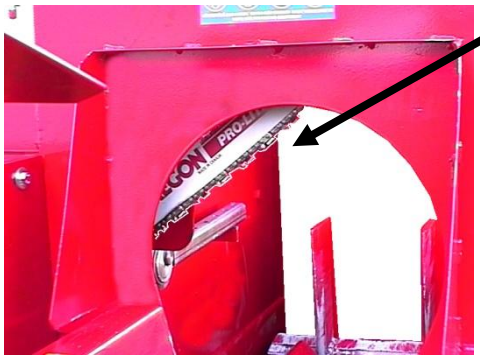


Figure 63.

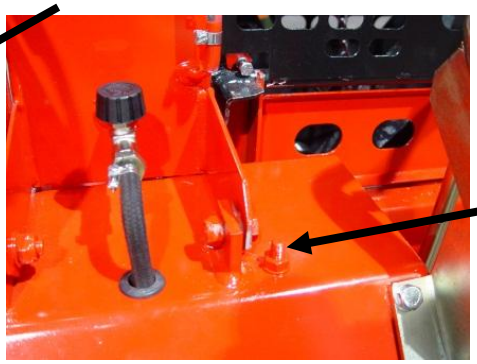


Figure 64.

If the blade is not completely raised, tighten the spring pulling the blade by turning its adjustment nut. If the adjustment is not enough, replace the spring.

6.1.2. Replacing the cutting flange

Replace the blade flange as follows:

1. Remove the blade chain according to steps 1–6 of Section 6.1.
2. Remove the flange bolts A, and detach the fastening plate B 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 A and the fastening plate B.
5. Install and tighten the blade chain according to steps 8–10 of Section 6.1.1.

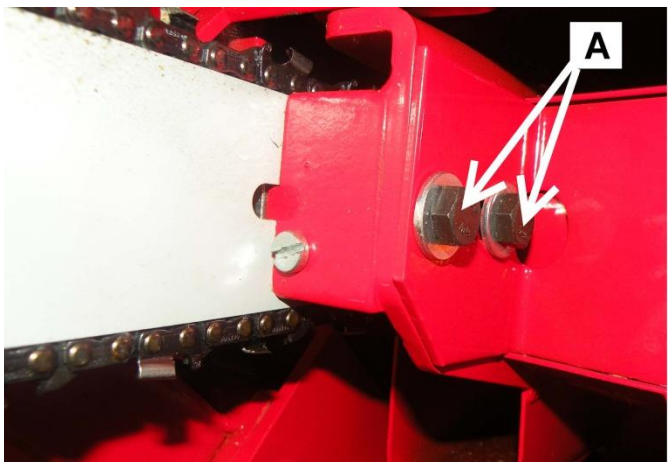


Figure 65.

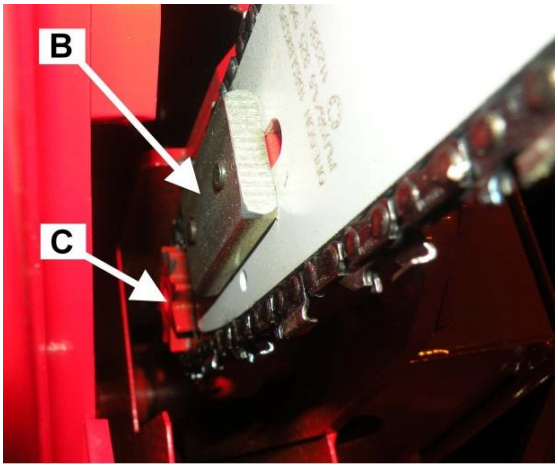


Figure 66.

6.2. Replacing and tightening the V-belts

6.2.1. Replacing and tightening the blade chain belt

1. Shut down the splitter and turn the main power switch off.

2. Raise the guard according to steps 1–5 of Section 6.1.1.

3. Loosen the fastening bolts of the cutting flange, and pull off the cover of the blade chain belt as shown in Figure 67.

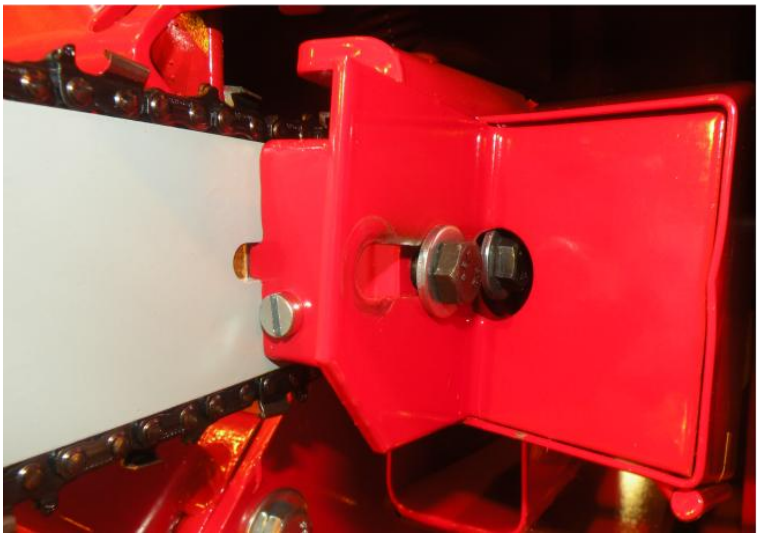


Figure 67.

4. Loosen the fastening bolts A of the drive end. Then, loosen the belt sufficiently to remove it from the belt pulley. Note! If necessary, remove bolt C.

5. Install a new belt.
6. Use the adjustment bolt B to tighten the belt to the correct tension, and tighten the fastening bolt A.

7. Re-install the belt cover as shown in Figure 67, and tighten the fastening bolts of the cutting flange.

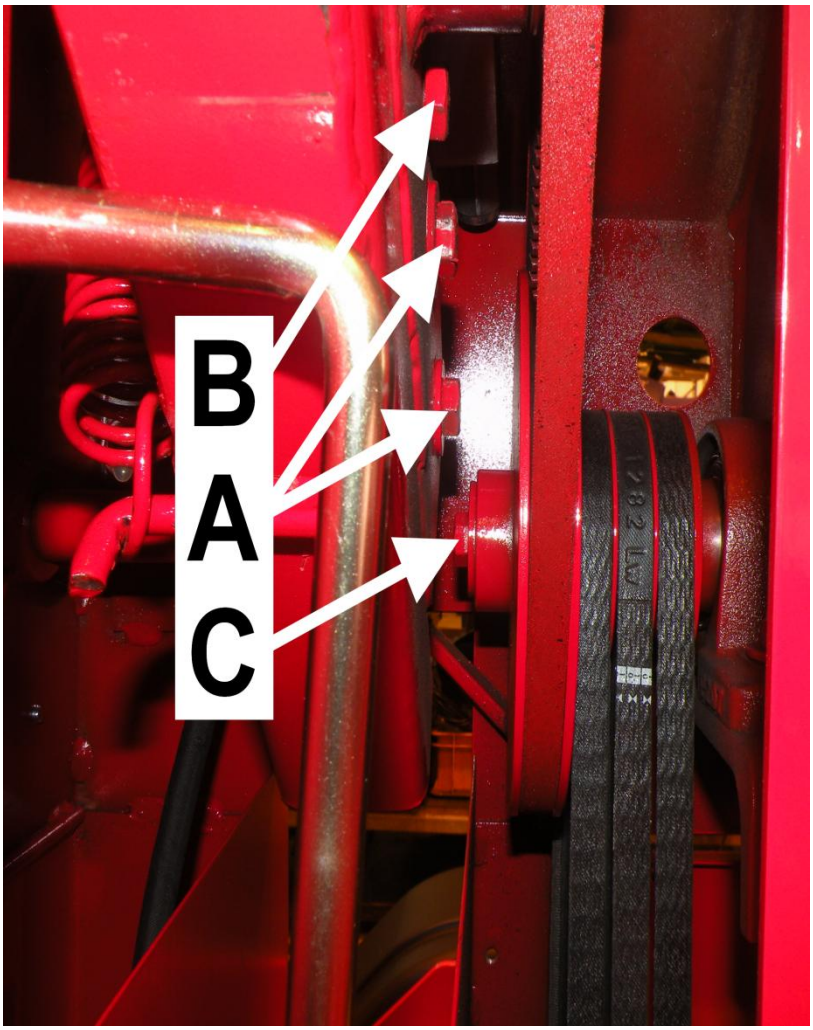


Figure 68.

6.2.2. Replacing the main shaft belts

1. Perform steps 1–2 of Section 6.2.1.
2. Lift the bed of the combustion engine with lever A shown in Figure 20 (the belts are loosened). This enables you to slip the belts (3 pcs) off the engine shaft pulley.
3. Remove the blade chain belt according to steps 3–4 of Section 6.2.1.
4. Remove the belt pulley bolt C in Figure 69, and slip the belts (3 pcs, A 38) off the upper belt pulley.
5. Install the new belts, and re-attach the fastening bolt C in Figure 69.
6. Put the blade chain belt in place according to steps 5–8 of Section 6.2.1.
7. The belts are tightened to the correct tension when the combustion engine is lowered with lever A shown in Figure 20.

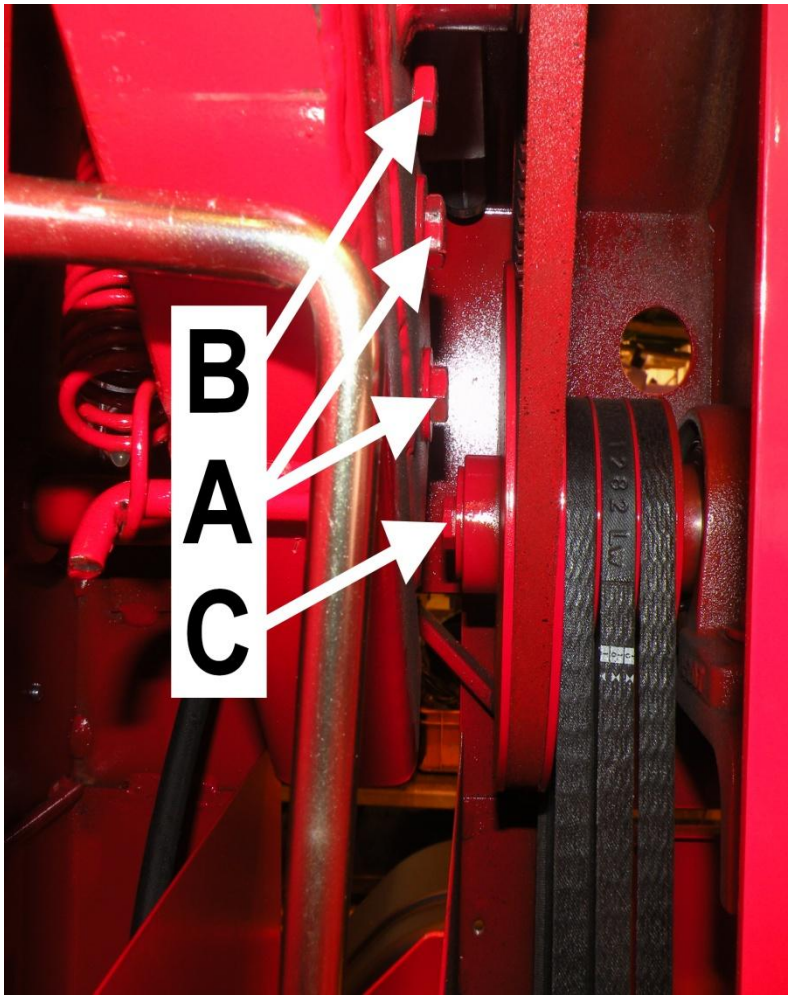


Figure 69.

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

6.3. Conveyor maintenance

6.3.1. Adjusting the pressure of the input conveyor's motor

The pressure of the input conveyor's motor can be adjusted directly with the valve that controls the motor. The design value is 180 bar. This limit must not be exceeded. Adjust the pressure as follows:

1. Remove the adjustment rod B by detaching the locking rings. (2 pcs).
2. Unscrew the three bolts A fastening the cover, and remove the cover.
3. Use the hex socket screw C to adjust the control valve pressure.

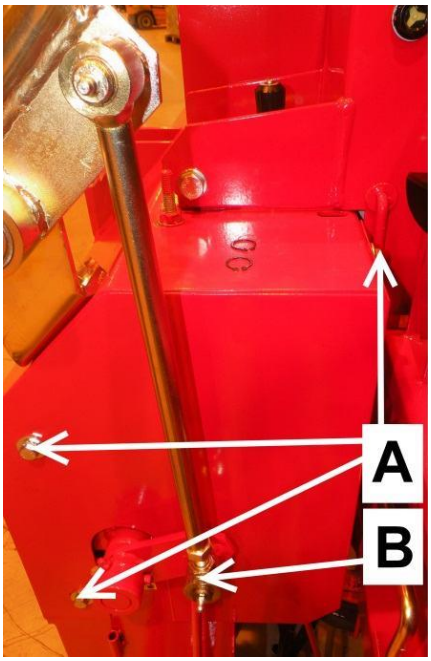


Figure 70.

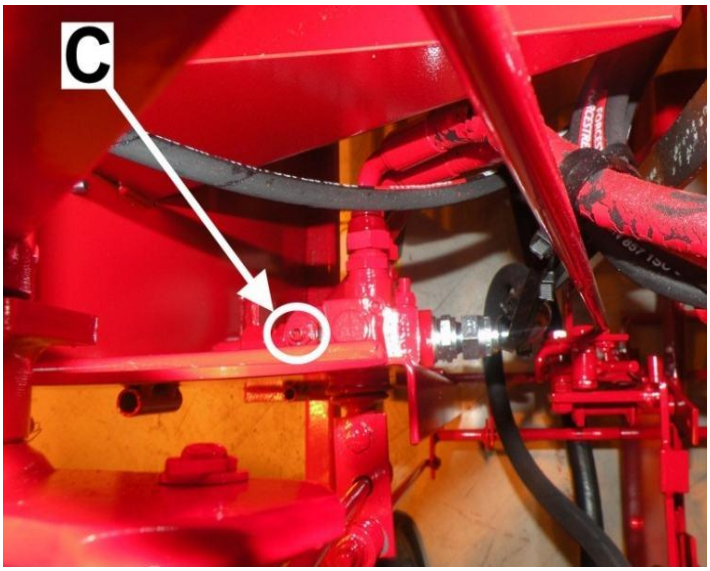


Figure 71.

6.3.2. Replacing and tightening the belt of the output conveyor

Replace the belt of the output conveyor as follows:

1. Pull out the pin locking the conveyor in place, and lower the conveyor to the ground.
2. Shut down the splitter 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.
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. If the belt slips, it is too loose.

6.3.3. Replacing the plates of the output conveyor

The plates of the output conveyor can be replaced by disconnecting the bolt joints (3 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.

6.4. Oil change and lubrication

6.4.1. Grease nipples

1. Blade drive shaft nipple
2. Grease nipple for the wood measuring mechanism
3. Nipple for the main shaft bearing (pump side)
6. Nipple for the feed roller bearing
7. Nipple for the main shaft bearing (saw side)
8. Upper nipple for the cutting lever's adjustment rod
9. Outer nipple for the drive end shaft
10. Lower nipple for the cutting lever's adjustment rod
11. Inner nipple for the drive end shaft

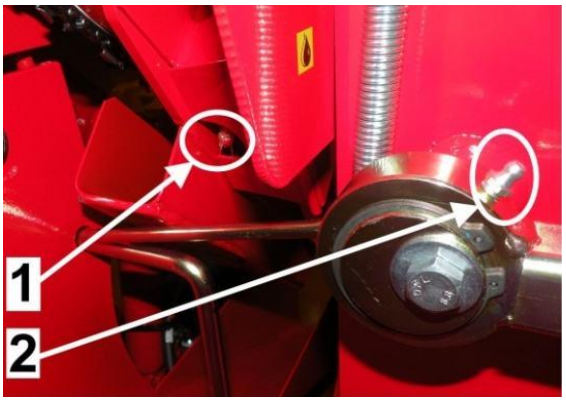


Figure 72.

Figure 73.

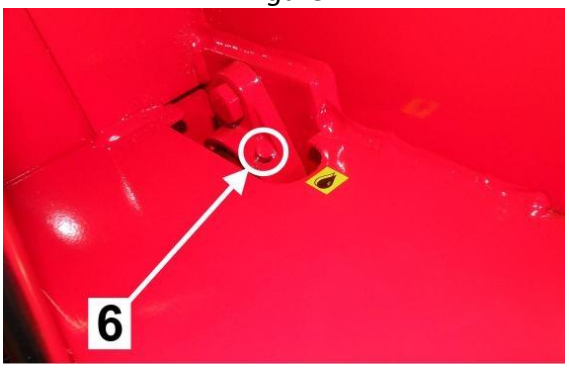


Figure 74.

Figure 75.

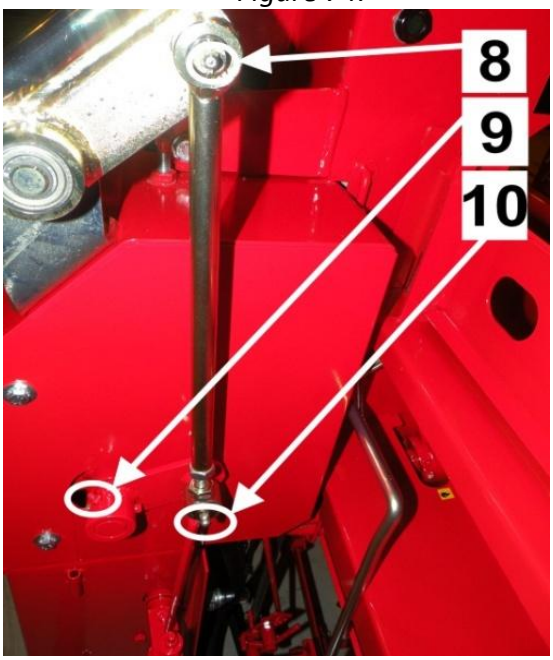


Figure 76.

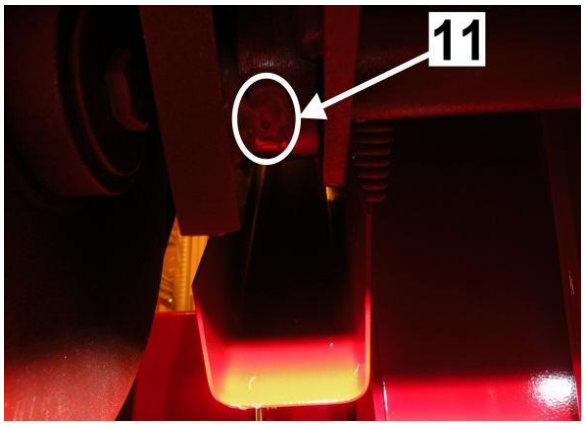


Figure 77.

12. Nipples for the engine shaft (2 pcs).

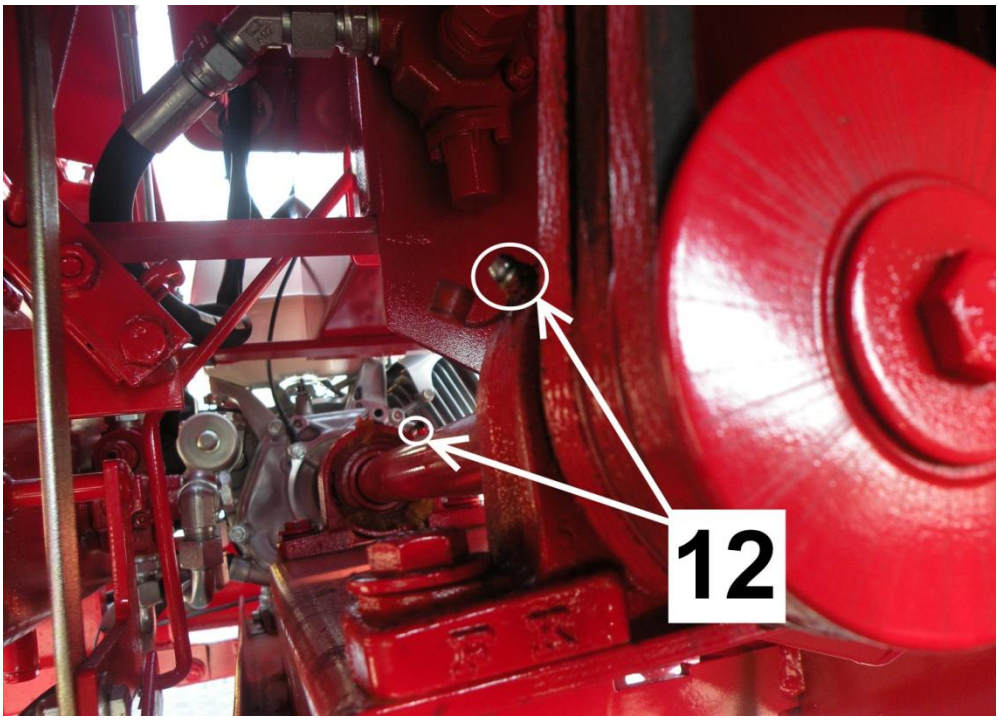


Figure 78.

There are a total 11 lubrication points. All of the points must be lubricated with vaseline roughly every 10 operating hours.

6.4.2. **Changing the hydraulic oil**

1. Shut down the splitter and turn the main power switch off.

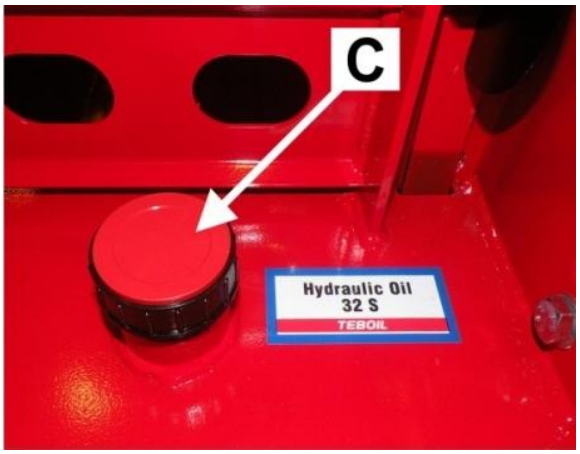


Figure 79.

2. Open the filler cap C. This will allow the oil to drain more easily. The filler cap is located on the oil tank in the middle section of the splitter.

3. Remove the cover B and open the discharge plug A (behind the cover). Drain the oil into a suitable container.

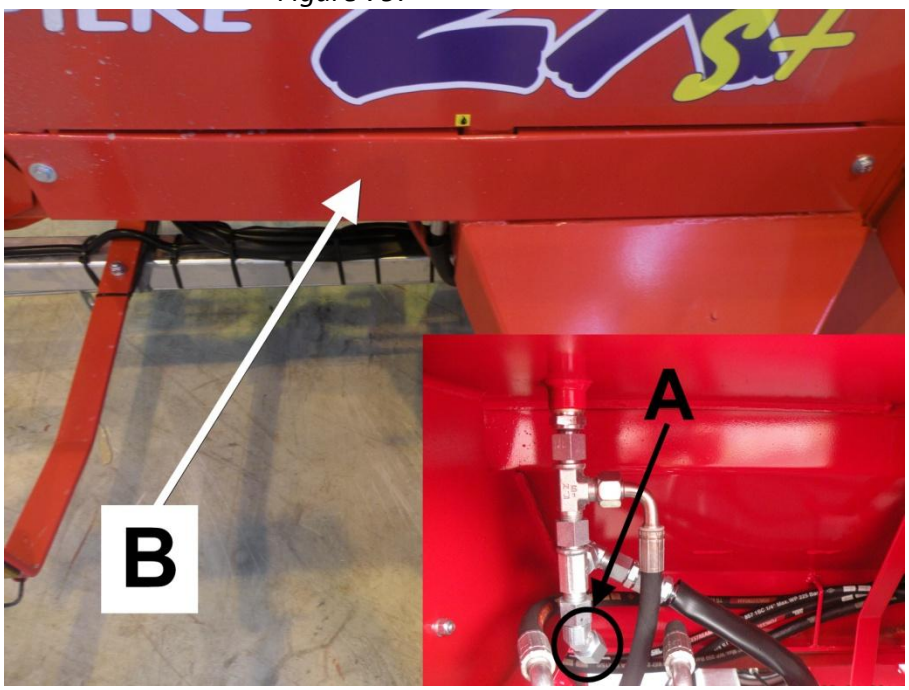


Figure 80.

4. Unscrew the bolts D to open the filter cover, and replace the old filter with a new one (CR-50).

5. Close the drain plug A, and fill the tank with fresh oil (approx. 42 litres).

Finally, ensure that the oil level settles between the minimum and maximum limits, E and F.

Figure 81.

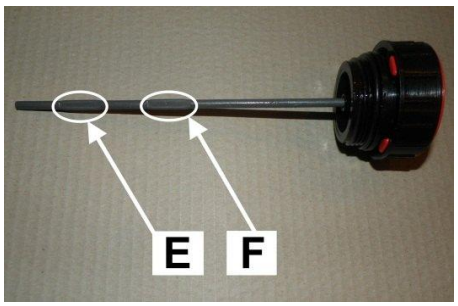


Figure 82.

6.5. Washing and cleaning

During the machine's operation, some sawdust and loose debris always accumulates in the splitting groove and under the machine. 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 splitter 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 splitter. The machine must always be cleaned after use. Wash the machine as necessary but always in conjunction with prolonged storage. After washing, the splitter must be lubricated according to the instructions in Section 6.5.

6.6. Storage

Although the splitter 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 6.5 and lubricated according to Section 6.4.1.

7. Maintenance table

Target	**Task**	**Daily**	**Interval 100 h**	**Interval 500 h**	**Interval 1,000 h**	**Substance/accessory item**
Hydraulic oil Normal conditions	Check 1st change 2nd change		X	X	X	Amount 42 l E.g. Teboil S 32 Neste Hydraulic 32
Oil filter	Always when changing oil					CR-50
Valve **mechanism**	Lubrication	X				Lubrication oil, spray
V-belts	Check, tension (XPA 85) and replace as necessary					SPA 1285, XPA850
Cutting blade	Sharpen as necessary					Chain:56 loops, pitch 0.325" Flange: 13", 1.5 mm groove
Machine	Clean	X				
	Wash	In conjunction with storage				
Electric motor	Clean	X				
Electrical equipment	Clean	X				

8. Failures and remedial measures

Failure	Cause	Remedial measure
The splitting force is insufficient to split the wood.	1. The V-belts are too worn. 2. The valve that halves the splitting speed is incorrectly adjusted or broken (see Section 5.6).	1. Replace the V-belts. 2. Adjust the valve to the correct value (120 bars) or replace the valve.
The output conveyor does not move.	1. The belt is too loose. 2. There is debris or dirt in the relief valve of the output conveyor's motor, or the pressure setting is too low. 3. The flow valve of the output conveyor is closed.	1. Tighten the belt according to the instructions. 2. Clean the relief valve and/or increase the pressure. 3. Open the flow valve by turning it anticlockwise.
The cutting motion does not fully cut the log.	1. The path of the cutting flange is incorrectly adjusted.	1. Lower the path of the cutting flange.
The blade chain does not properly sink into the wood.	1. The blade chain is dull. 2. The cutting flange is crooked.	1. Sharpen or replace the blade chain. 2. File the flange.
The machine performs an extra splitting motion when the splitting mechanism is operated.	1. There is debris or dirt in the splitter's control mechanism. 2. The adjustments of the splitter's control mechanism are incorrect. 3. The heads of the "stopper bolts" in the splitting mechanism have become rounded (see Section 5.10).	1. Clean the mechanism with pressurised air and lubricate as necessary. 2. Adjust the mechanism according to Section 5.10. 3. Replace the stopper bolts.
3The cutting blade does not move downwards.	1. The guard lock lever C is in the STOP position.	1. Close the splitting groove guard and turn the lever to the RUN position.
The combustion engine does not start.	1. The engine is in the lower position.	1. Lift the engine to the upper position so that the splitter is not loaded.

9. Guarantee terms and declaration of conformity

We grant a guarantee for our machines with the following conditions:

1. This guarantee covers such defects that are caused by manufacturing or material failures, except for those that are the components classified as parts that sustain wear.
2. The guarantee is valid for the original buyer starting from the day of purchase for one (1) year, but for no more than 1,000 operating hours.
3. The guarantee becomes void if
    a. the instruction manual is not observed when using the machine
    b. the machine is used for a purpose other than that defined by the manufacturer
    c. modifications are made to the machine's operation
    d. parts that are not original spare parts are used in the machine
    e. the maintenance procedures defined in the instructions are neglected.
4. A guarantee demand has to be issued **immediately** upon the discovery of a defect to the seller or manufacturer. Repair under guarantee requires that the customer can reliably prove that the guarantee is valid.
5. The guarantee does not include standard adjustments, user guidance, care, maintenance or cleaning procedures.
6. Repair under guarantee requires that no attempts have been made to fix the machine or a part of it before a written notification of the defect has been issued to the seller, manufacturer or importer.
7. Only a serviceman authorised by **the manufacturer or importer** is allowed to carry out repairs under guarantee. The guarantee does not cover washing, cleaning, or oil or fuel changes done while carrying out the above-mentioned repair work.
8. The repair work hours are compensated according to the standard rates as defined by the manufacturer.
9. The manufacturer of the machine is not liable to compensate for any possible travelling costs resulting from the repair work.
10. A spare part will be delivered free of charge when delivered by the usual means for the part in question and to a normal schedule.
11. The receiver is liable for costs occurring from special deliveries, such as express mail.

10. 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: Juha Autio Address: Valimotie 1, FI-85800 Haapajärvi, Finland

The above person assures that

Hakki Pilke 2XS+ Carry Serial number: ……

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

Place and time: Haapajärvi 7 September 2010

Signature:

Tuomo Tiitto
Managing Director