next generation

Binderberger
Maschinenbau GmbH
Made in Austria

Operating Manual

Firewood Processor SSP450

Carefully read through this OPERATING MANUAL prior to commissioning this machine!

2010-08

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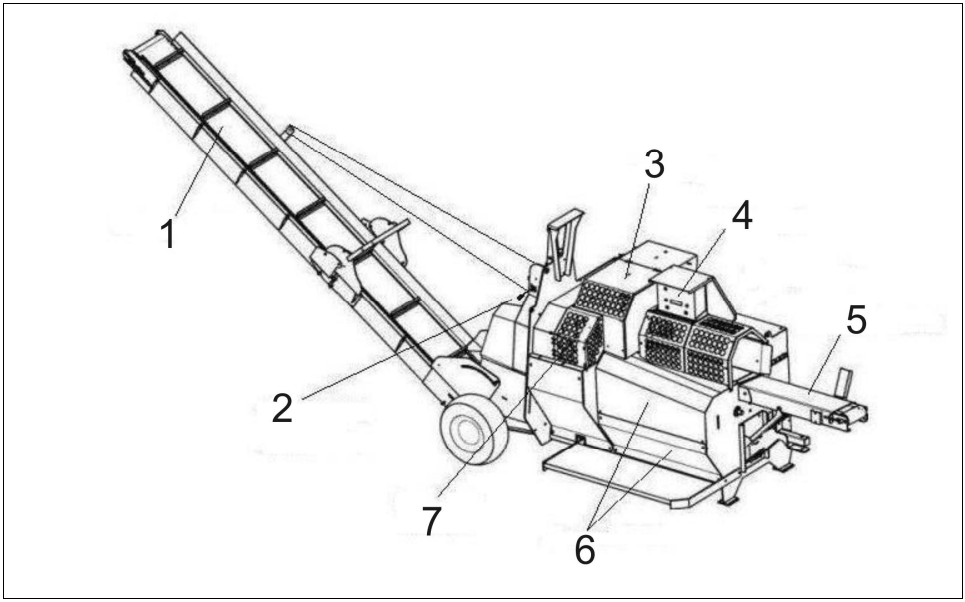
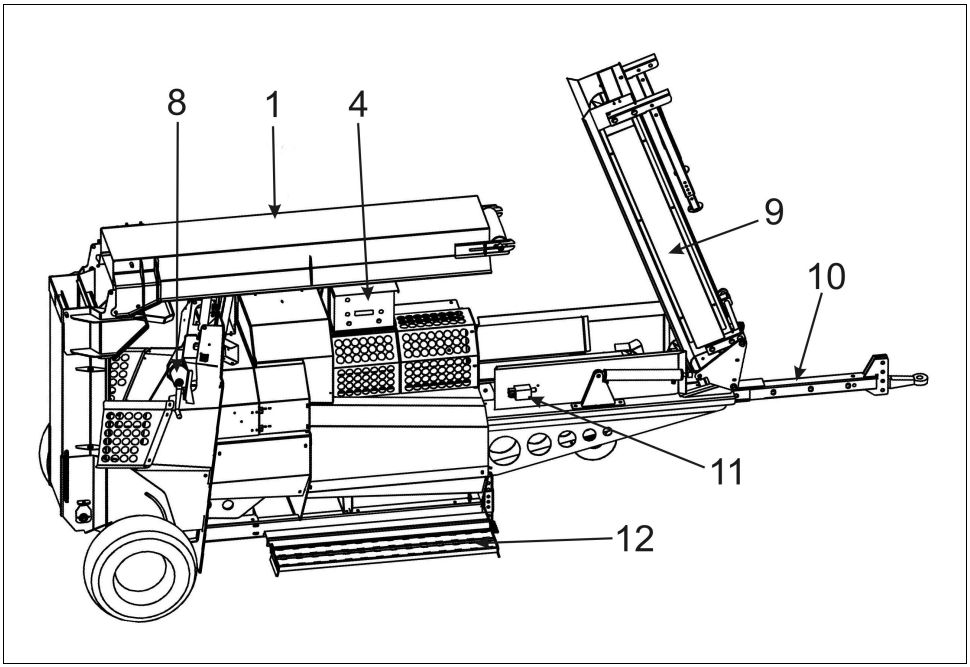
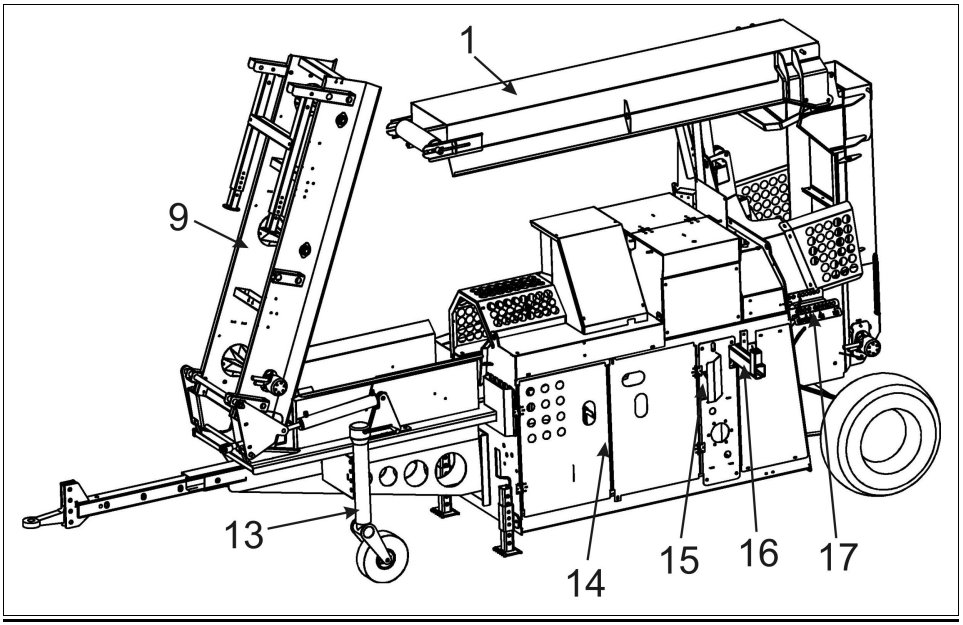
Product Overview







Explanation

Number	Component
1	Removal conveyor belt
2	Joystick for adjusting belt height
3	Protective casing
4	Operator panel
5	Feeder (can be manually folded)
6	Guard plate
7	Protective casing for splitting area
8	Crank for removal conveyor belt
9	Hydraulically foldable feeder (only available with extended tow shaft)
10	Drawbar eye (only available with extended tow shaft)
11	Feeder control device (only available with extended tow shaft)
12	Platform step
13	Drawbar jack castor wheel (only available with extended tow shaft)
14	Folding door (access to hydraulic tank, valve block, filter…)
15	Chip ejector
16	Slider
17	Setting stop for log length setting

Intended Use

The firewood processor is solely designed for sawing and splitting wood up to 45 cm in diameter. Any use of the processor beyond 45 cm is considered improper use. The operator – and not the manufacturer – shall be held responsible for all personal and material damages arising from improper use!

The reading of this operating manual and adherence with all instructions contained herein – in particular the safety instructions – are both considered requirements for compliance with intended use. In addition, all inspection and maintenance work must be performed within the designated time intervals.

Mode of Operation

The firewood processor is hydraulically driven. The hydraulic loop is driven by a PTO pump, a diesel engine or an electric motor.

The chapter "Installation" details how to set up and commission the machine. Once installation is finished, the log length and splitting cross are adjusted in accordance with the diameter of the wood. Subsequently, the logs are to be placed on to the feeding deck.

The operating procedure may now begin. The firewood processor may be operated in a fully or semi-automatic mode. In semi-automatic mode, a joystick is used to manually feed, saw and split the logs. In fully automatic mode these functions are performed automatically.

The first step is to feed the log into the sawing area until the wood is ran up to the setting stop, thus triggering the signal for further processing. The sawing process will now begin. As the first work step of this process, the wood is fastened into place before it is subsequently cut apart by the hydraulic chainsaw.

Once the wood is cut, it is then fed into the splitting area where it is subsequently split. While one log is being split, the next log is already being fed into the sawing area for the next cutting procedure.

Finally, the cut pieces of wood are transported away via the conveyor belt.

The firewood processor may only be operated, repaired or maintained by persons who are familiar with both the machine and the risks associated therewith.

Operator Requirements

No special knowledge of mechanical or electrical engineering is required to operate the machine. However, the operator must be at least 18 years of age. Prior to initial operation, the operator must be properly trained and instructed by the machine's owner (see General Safety Instructions). Protective boots and tight-fitting clothing must be worn when operating the machine.

The operator must possess the necessary technical knowledge before performing

any repairs or maintenance work on the machine.

Upon completion of training, operating personnel must be able to perform the following tasks independently:

- Inspection of the safety equipment both before and during operation.
- Remedy of faults for which no professional training is needed in the areas of mechanical or electrical engineering.

Maintenance and Repair Technician Requirements

The present manual contains all information necessary for the maintenance and installation of the machine and is intended for trained personnel assigned with the following tasks:

- Inspection, maintenance and commissioning of the machine.
- Installation and configuration of the machine.
- Inspection of the safety equipment.
- Execution of test runs.
- Remedy of faults for which professional training is needed in the areas of mechanical or electrical engineering.

General Safety Guidelines

The following hazard symbols are used in the present operating manual:

Caution:

Hazard warnings which require particular observance.

The machine may solely be operated by persons who are trained, instructed and authorized to do so. These persons must be familiar with and adhere to the operating manual. The respective authorizations of the operating personnel must be clearly defined.

Still untrained operating personnel may only operate the machine under the supervision of experienced personnel. Successfully completed training should be documented in writing.

Keeping Information Available

This operating manual is to be kept with the machine. Steps must be taken to ensure that all persons who have tasks related to the machine also have the ability to access the operating manual at all times.

All hazard and operating instruction signs on the machine must be kept legible at all times. Damaged or illegible signs should be replaced immediately.

Operator's Duty of Care

The machine is designed and constructed in accordance with the relevant harmonized standards and other technical specification and has undergone a careful

selection process and hazard analysis. They are in accordance with current technological advances and offer a high level of safety.

In addition, in order to guarantee a safe operation, the operator must make sure that:

- the machine is only used as intended (see chapter on “Intended Use”)
- the machine is only operated in a faultless and perfectly functional state and, in particular, the safety equipment is inspected on a frequent basis
- the necessary personal safety gear is available and used by operators, maintenance workers and repair personnel
- the operating manual is always legible, complete and available at the operation site of the machine
- only sufficiently qualified and authorized personnel operate, maintain and repair the machine
- said personnel are instructed as to all relevant questions pertaining to occupational and environmental safety as well as the operating manual and in particular the safety instructions contained therein
- all safety and hazard warnings remain on the machine and legible at all times.

Modifications to the Machine

For safety reasons, no unauthorized modifications may be made to the machine. This includes welding work on supporting parts. All planned modifications require prior written consent from Binderberger.

Only use original replacement parts, original consumables and original accessories as these parts are specially designed for the machine. There is no guarantee that third party parts are designed and manufactured in accordance with necessary stress and safety requirements.

Parts and special equipment not delivered by our company are prohibited from being used on the machine.

Environmental Protection

The regulations regarding waste prevention and proper waste disposal are to be obeyed at all times when working with the machine.

Particularly attention must be paid during installation, maintenance and decommissioning to ensure that groundwater endangering elements such as grease, oil, solvent-containing cleaning liquids, among others, do not damage the soil or enter into the sewage system. These agents must be stored in adequate containers and disposed of properly.

Installation

Safety Instructions for Installation

The following points must be strictly adhered to in order to avoid damages to the machine or life-threatening injuries during installation:

- Prior to installation inspect the machine for any transport damages.
- Make sure that only authorized personnel are present in the work area and that they pose no risk to other persons present in the area of installation.
- Improperly laid cables (e.g. too small of a bend radius) can lead to smouldering or cable fires.
- All machine connections – cables and tubes – must be laid out in such a manner that no one will trip over them.
- Improperly laid or fastened machine parts can fall down or over.
- Live cable ends and components can cause injury through electric current.
- Unfastened parts stacked on top of each other can slip and fall down.
- Leaked grease, solvents, preservatives, etc. could cause chemical burns if they come in contact with the skin.

Pre-Operation Obligations

Perform the following tasks prior to operation:

- The commissioning of the machine may only be performed by authorized personnel and in compliance with the safety instructions.
- Before activating the machine, make sure that no persons or objects are located within the hazard area.
- Inspect the machine for visible damages; immediately remedy any fault or report them to the appropriate personnel – the machine may only be operated when perfectly functional.
- Prior to start up, inspect the electric and hydraulic connections as well as the lubricating oil and hydraulic oil levels (CAUTION: never operate the machine without lubricating oil for the chain).
- Test the safety equipment to ensure proper functionality.
- Safety equipment which cannot be inspected before initiating the work must be inspected during the first cycle!
- Remove all objects from the system area that are not part of the machine or which are not necessary for its operation.
- At ambient temperatures below 0 °C, let the machine run on idle for approx. 10 minutes without activating the

joystick so that the hydraulic system can reach its operating temperature.

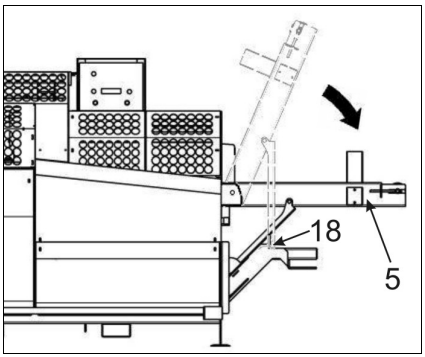
- Inspect the oil cooler for cleanliness so as to ensure adequate cooling. Also inspect the supply line.
- Prior to commissioning, inspect the rotational direction of the electric motor. A false rotation will destroy the pump.
- Inspect to make sure that the machine is on solid, level ground so that it does not fall over.
- On PTO machines, the drive shaft must be fastened in such a manner so as to avoid simultaneous rotation.
- If you have only limited experience with the machine, first become familiarized with:
  - the machine's operating and control devices
  - the machine's equipment
  - the machine's mode of operation
  - the immediate surroundings of the machine
  - the machine's safety equipment
  - safety measures in case of an emergency.

Inspecting the Motor's Rotational Direction

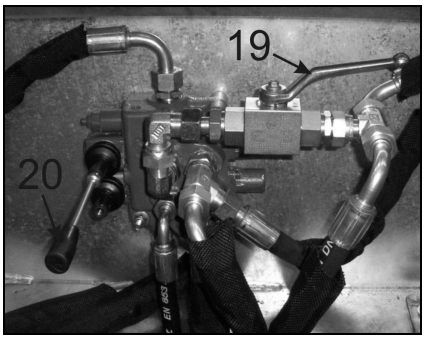
Briefly activate the motor and inspect the rotational direction on the motor's fan vane. Recognize the correct rotational direction by looking at the sticker on the motor's fan cover. In the event the rotational direction is incorrect, unplug the motor and ask an electrician to change the running direction.

Unfolding the Feeding Deck (5, 9)

Release the support plate from the tow coupling. To do so, unscrew the knurled screw (18), fold the plate toward the machine and lower the feeding deck (5).



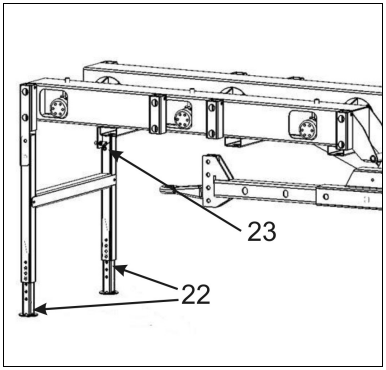
If the SSP 450 is equipped with an extended tow shaft, use the control device (11) located on the left-hand side of the cut splitter to lower the feeding belt (9). In addition:



Turn the stopcock (19) to the right (conducting direction).

Now you can use the joystick (20) to tilt the feeding belt. However, do not completely place the conveyor belt in its horizontal position as you must first unfold the support legs. To unfold the legs, turn the fastening bolt (23) a half rotation until it is completely removed and clicks into place. Rotate the legs by 90° and use the fastening bolts to fasten them back into place.

Then, place the conveyor belt in the horizontal position.



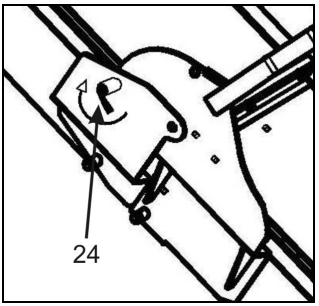
The feet can be adjusted to the subsurface using the two adjustable feet (22). Always make sure that both support legs rest solidly on the ground.

Finally, the stopcock (19) must be closed again so as to impede unintentional operation.

Unfolding the Removal Conveyor Belt (1)

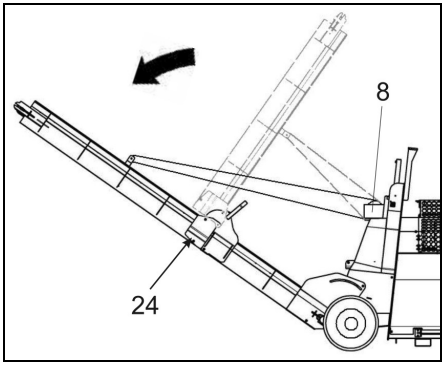
Use the winch (8) to let out a little cord. Finally, manually pull back the entire conveyor belt (1) until the cord is once again tight.

Now use the winch handle to lower the conveyor belt. Thereafter, unlock the locking pin (24) located in the middle of the conveyor belt.

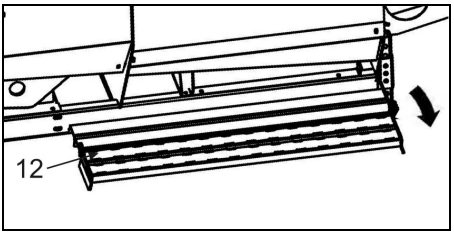


Now once again loosen the cord a little and manually fold the upper part back until the cord is tight.

It is now possible to use the winch handle (8) to fold back the upper part until the locking pin (24) clicks back into place.

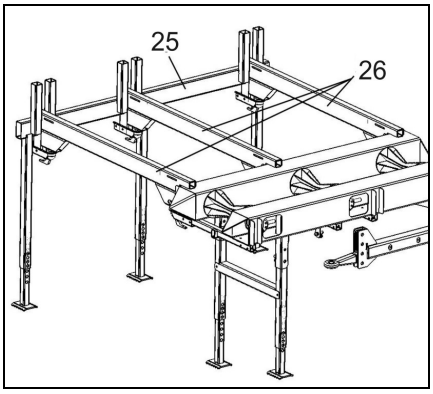


Folding down the Platform Step (12)



Assembly of the Feed Deck

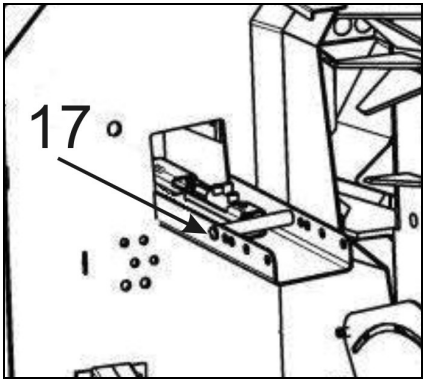
The feed deck is comprised of the H-shaped support structure (25) and the three transversal tubes (26). To assemble the feed deck, hang the first transversal tube with the ball into the tray of the feeder. Now place the H-shaped support structure alongside the feeder and hang the transversal tube here into the tray as well. Both ball sockets can now be locked into place. Proceed with the two other transversal tubes in the same exact manner. Finally, place the feet of the H-shaped support structure so that the transversal tubes are horizontal.



Using the Setting Stop (17) to Configure the Splitting Length

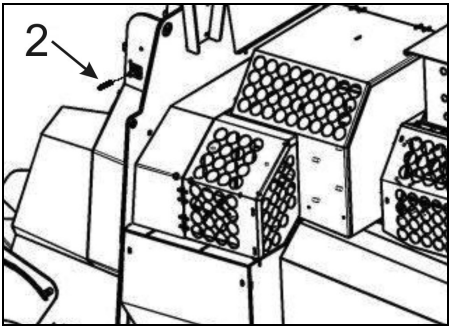
The splitting length can be adjusted in stages at a range of 25 to 50 cm.

The splitting length is adjusted on the back right-hand side. To adjust remove safety clip and lift pin out, push log stop to desired position refit pin and safety clip.



Height Setting of the Splitting Cross

The height of the splitting knife is hydraulically adjustable.
For this purpose, the control lever (2) is located on the left-side, close to the winch handle for the lowering conveyor belt crank.



Always set the splitting knife at the centre of the wood.

During operation, if the splitting knife needs to be adjusted lower, the machine **MUST** first be stopped from the control panel (4) and the split wood removed from underneath the splitting cross.

Initial Operation Considerations:

- At very low ambient temperatures (below 0 °C), the machine must first run on idle for approx. 10 minutes so that the hydraulic system can reach its operating temperature. Similarly, the oil cooler should also be in the off position.
- Inspect the hydraulic oil level and lubrication of the chain (**never** operate the machine without chain lubrication).
- Inspect the power supply as well as the oil cooler for cleanliness so as to ensure adequate cooling.

Operation

Safety Instructions for Operation

It is imperative that the following safety instructions are adhered to when operating the machine so as to avoid life-threatening injuries to persons as well as to machine or other material damage.

- The machine may only be operated in accordance with its intended use. Non-compliant types of use could lead to life-threatening injuries or damage to the machine.
- The firewood processor with electric drive should never be used in the rain.
- Ensure that there is sufficient lighting at the operation site.

- Keep the work area free from wood splits and shavings. (risk of tripping and falling)
- The drive must be in the off position before removing any wood pieces from the drive.
- The operating personnel must make sure that no unauthorized persons are present in the area of operation.
- Inadequate or insufficient use of personal protective equipment could lead to serious bodily injuries.
- The improper response to faults could result in serious damages to persons or material. Make sure that you are sufficiently familiar with how to react in the event of a fault.
- Prior to activating the machine, make sure you are well informed as to the correct response to faults.
- Prior to activating the machine, be sure to perform all the tasks listed in "Pre-start checks."
- The work steps listed in the following chapter on "Shutdown" must always be performed prior to shutting down the machine.

If the machine is to remain inactive and unsupervised for a longer period of time then it must also be secured against unauthorized activation.

The Control Panel (4)

Manual operation

1. Set joystick (27) to manual.
2. Set the joystick (28) to the home position (removal conveyor belt starts up)
3. In the feed position, the wood is fed forwards until the end switch of the stop setting (17) activates
4. During the sawing process, the joystick must be held down until the wood has been cut. If you release the joystick then the bar will stop in place.
5. Thereafter, the splitting cycle must be activated. Only a brief splitting movement is necessary.
6. Once the splitting process is finished you may start again with the 2nd point.

Automatic operation:

1. Set joystick (27) to automatic.
2. Set the joystick (28) to the home position (removal conveyor belt starts up)

The machine will now proceed through the individual process steps fully automatically.

Nevertheless, always remain close to the machine so that it may be switched off in an emergency. This could be the case:

<u>when the cut wood does not fall straight into the splitting area:</u>

Several possibilities exist to stop the machine:

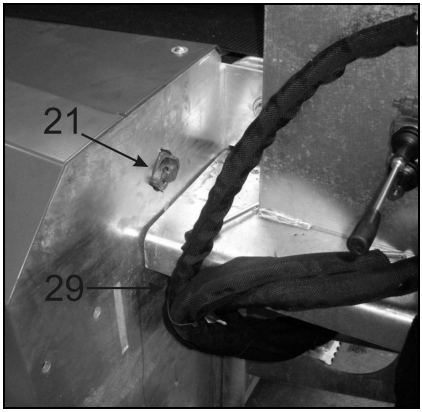
1. Press the emergency-off switch on the control panel
2. Move the joystick (27) to the neutral position.
3. Open the protective door of the splitting area (7).

You will then be able to place the wood piece correctly into place and continue with the splitting process. The machine remembers at which point it was interrupted and starts again at the exact same work step.

As a matter of principle, you should set the stop setting to a length that is greater than or the same as the diameter of the wood.

<u>when problems arise while feeding wood (5.9):</u>

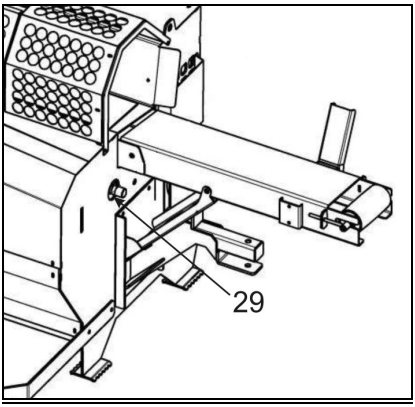
The possibility exists to reverse the rotational direction of the feed. This is necessary if the wood gets caught during the feed.



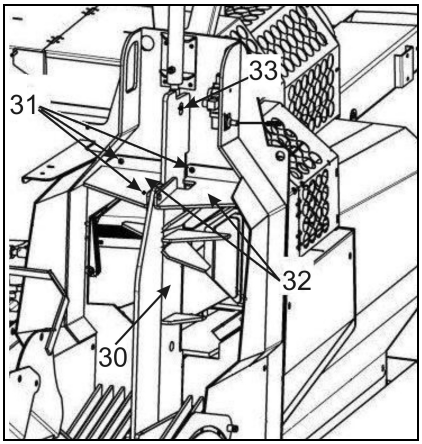
The lever for the rotational direction reversal (21) is located on the left side of the machine next to the feeder (5)

Changing the Velocity of the Feeding Belt (5,9):

The speed of the feeding belt is infinitely variable. To do so you are only required to adjust the position of the flow divider (29) for the feed conveyor.



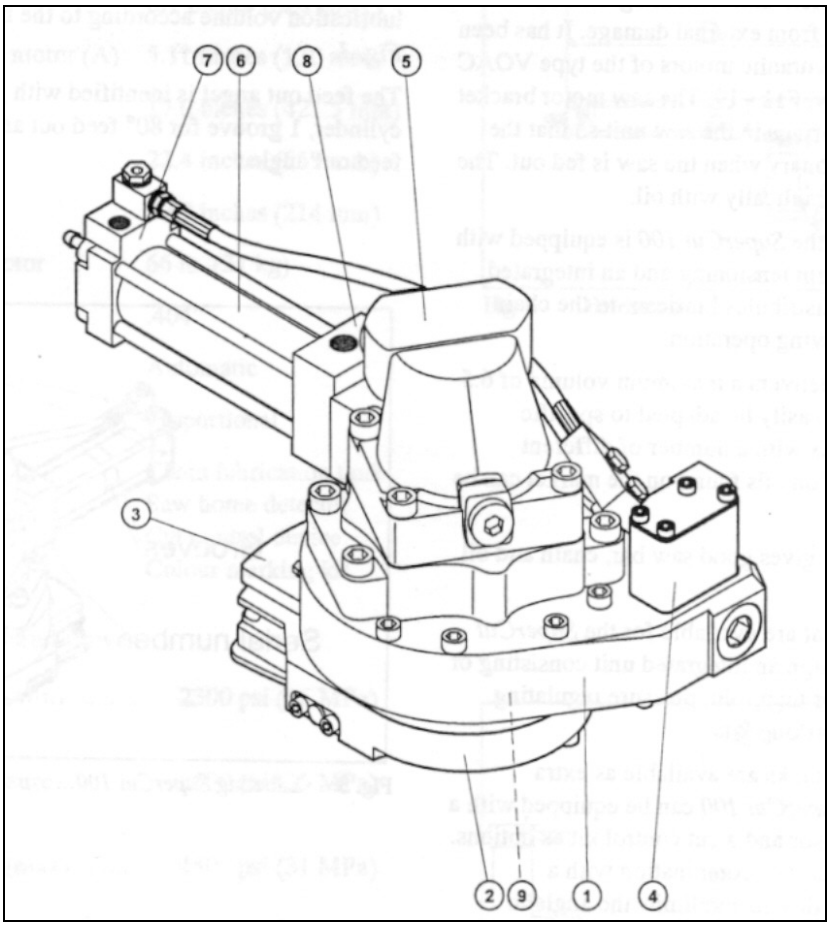
Changing the Splitting Cross (30):



1. Use the control panel lever (2) to move the splitting cross (30) upwards.
2. Stop the machine.
3. Thread the belt or chain at the hole above and, for example, secure it with a front loader.
4. Unscrew the three screws (31) of the side plate of the splitting cross and remove the two plates (32).
5. Unscrew the screws (33) from the knife and fold the cylinder upwards for more space.
6. Remove the splitting cross by simultaneously turning it upwards and to the left
7. Set the new splitting cross into place
8. Fasten the splitting cross to the cylinder (33).
9. Mount the side plate (32) of the splitting cross and once again tightly fasten all screws (31, 33).

Hultdins Chainsaw

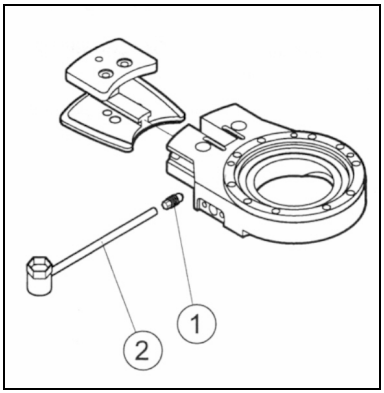
- Always wear protective gloves when working with the chain. Remove the chain for servicing or adjustment work.
- Never adjust the pressure of the hydraulic system without the help of a pressure gauge.
- Always close all connections in order to avoid unnecessary oil loss.
- The chainsaw has sharp grooves and edges. Therefore, always use the appropriate crescent wrenches and protective gloves when working on the device.



1	Saw support	6	Feed cylinder
2	Tensionner	7	Lubrication oil pump
3	Bar support	8	Clamping collar
4	Sensor cover	9	Drive motor with cover
5	Saw motor		

Bleeding the Chain's Tensioning System

Caution! Only qualified personnel or authorized repair shops may service or repair the machine.



1. Remove the saw's chain (see the chapter on "Changing the Chain")
2. Start the machine and leave it idle
3. Tilt the unit so far backwards that the exhaust valve is as high as possible above the tensioning piston.
4. Open the exhaust valve by 1-2 rotations. In doing so, use the enclosed tool (shown in the illustration).
5. Shut the exhaust valve as soon as the escaping oil has been properly bled.
6. Put the chain back into place.
7. Repeat this procedure after approx. 30 minutes of operation.

Setting the Chain's Locking Pressure

If whilst sawing the chain springs from the bar, there is either air in the tensioning system or the locking pressure is too low.

To remedy this problem, bleed the system. (see previous chapter on "Bleeding the Chain's Tensioning System")

If the problem remains unresolved you will need to reset the locking pressure. The locking pressure can be measured at the pressure gauge located in front of the pressure-relief valve.

In case of a reset, adhere to the following steps:

1. Remove the saw's chain (see the chapter on "Changing the Chain")
2. Attach a pressure gauge to the pressure gauge point for the chain's tensioning circuit.
3. Start the machine and leave it idle. If no chain is attached, the bar will move to the outer position where it will remain.
4. Inspect the dynamic pressure.
5. Adjust the dynamic pressure from 20-25 bar on the pressure-relief valve.
6. Important! Never adjust the pressure without a pressure gauge!
7. Remove the pressure gauge.
8. Put the chain back into place.

Setting the Saw Feed

Proceed as follows when inspecting the feed pressure:

1. Remove the saw chain.
2. Attach a pressure gauge to the pressure gauge point for the chain's tensioning circuit.
3. Start the machine and the saw (first shut the protective cover)
4. Inspect the feed pressure (max. 80 bar)
5. Remove the pressure gauge
6. Put the chain back into place.

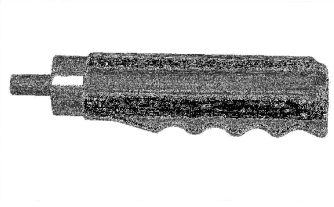
Changing the Chain

The first sign of a dull blade are very long saw times and blue smoke emanating from the cut. Adhere to the following instructions if you want to change the chain:

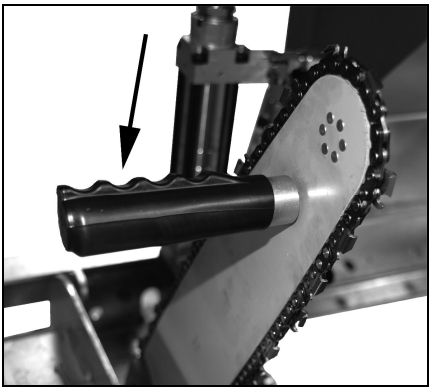
- Prior to installation, new chains must be left overnight in clean chain lubrication oil. This permits the chain oil to penetrate all chain links.

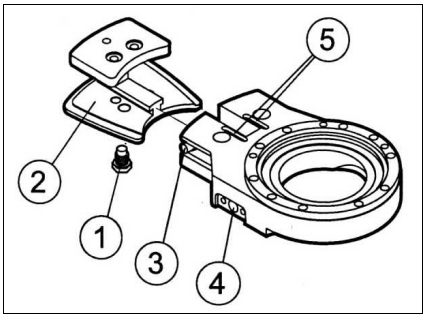
Before changing the chain, the machine must be switched off and disconnected from the towing vehicle or power supply.

1. Remove the tension from the chain tensioner – press control valve No. 4
2. Feed the handle for the bar feedback into the hole of the saw bar and press the bar back towards the Harvester (the chain becomes loose)
3. Secure the chain tensioner by pressing the mechanical locking device.
4. Remove the chain.
5. With the help of the handle, press the bar back against the Harvester. This once again releases the mechanical locking device.
6. Operate the saw with caution at first in order to build up the pressure in the chain's tensioning system. In the event the new chain suddenly springs out of the bar after being changed, you will need to bleed the system.
7. A dirty chain or dirty parts within the lubrication ports could cause problems when changing the chain. Dirty parts can inhibit the movement of the bar. If this happens, the bar support must be taken apart and cleaned.



Bar feedback handle

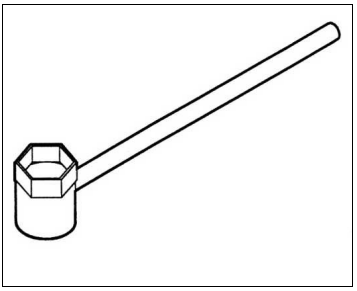




1 Guide bolt
2 Bar support
3 Locking device
4 Control valve
5 Lubrication port

Replacing the Bar

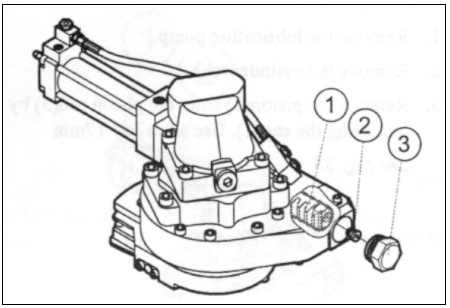
1. Remove the chain.
2. Use the enclosed tool to loosen the guide bolts and extract the bar.
3. Set the bar into place and tighten the guide bolts.
4. Put the chain back into place.



Bleeding the Chain's Lubrication System

The lubricating oil pump circulates oil during the entire swivelling procedure.

1. Remove the chain.
2. Use a 37 mm spanner to open the end screw as illustrated in the following figure.
3. Use a 5 mm Allen wrench to open the lock screw.
4. Close the lock screw just as soon as the piston rod is free of air.
5. Fasten the end screw.
6. Put the chain back into place.



1 Piston rod
2 Lock screw
3 End screw

Shutdown

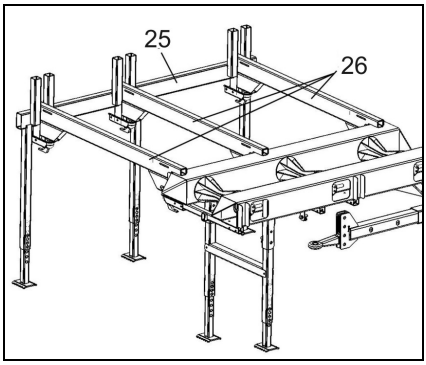
Safety Instructions for Shutdown

The following points must be strictly adhered to in order to avoid damages to the machine or life-threatening injuries during shutdown:

- Once the machine has been powered off, the operating personnel must first wait until all moveable parts are no longer moving before abandoning the machine.
- It is mandatory that all process steps for shutting down the machine are performed in the sequence described herein.
- Also refer to the chapter on "General Safety Instructions."

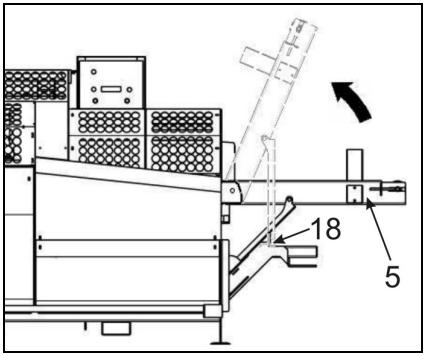
Disassembly of the Feed Deck

In order to disassemble the feed deck, open both latches of the ball sockets on the first transversal tube (26). Now you can remove the first transversal tube. Proceed in the same manner with the two others. When removing the last tube, first lift the transversal tube from the H-shaped support (25) and lay it on the ground. Only then can you remove the transversal tube.



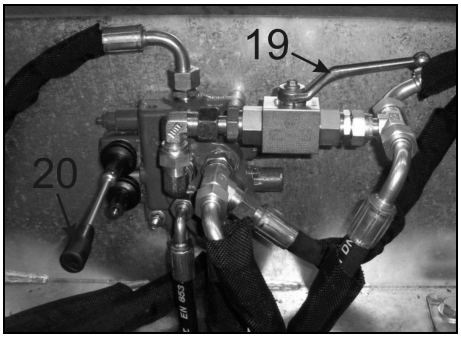
Folding the Feeding Deck

First manually fold the feeding deck (5) upwards. Then lean the support plate against the tow coupling and fasten it with the knurled screw.

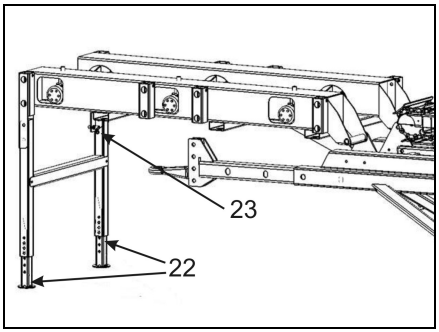


If the SSP 450 is equipped with an extended tow shaft, use the control device located on the left-hand side of the cut splitter to lift the feeding band. In addition:

Turn the stopcock (19) to the right (conducting direction).



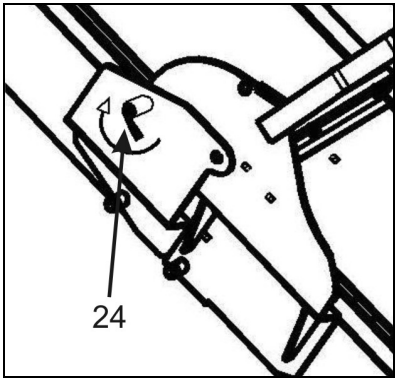
Now you can use the joystick (20) to slightly lift the feeding band. Put the feet (22) in and fold both support legs upwards. To unfold the legs, turn the fastening bolt (23) a half rotation until it is completely removed and clicks into place. Rotate the legs by 90° in the direction of the feeding belt and fasten them back into place using the fastening bolts.



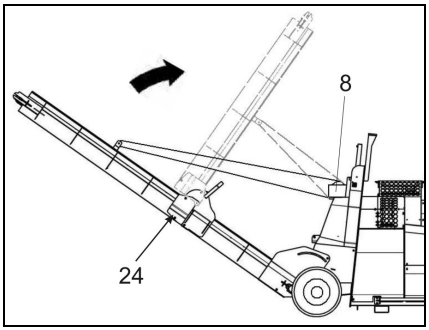
Thereafter you may place the conveyor belt in the transport position.

Finally, the stopcock (19) must be closed again so as to impede unintentional activation.

Unfolding the Removal Conveyor Belt (1)



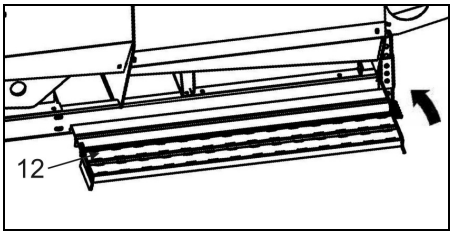
First turn the spring bolt (24) a half a rotation until it locks into place. With the help of the winch handle (8), now the upper part of the conveyor belt can be pulled forward until the spring bolt locks back into place.



By turning the winch handle, the entire conveyor belt can then be pulled further forward.

If the conveyor does not rest properly on the support the belt must be pushed forward manually until it rests on the support. Finally the cable must be tightened, using the handle, so that the belt can no longer move.

Folding up the Platform Step (12)



Transport

Safety Instructions for Transport

The following points must be strictly adhered to in order to avoid damages to the machine or life-threatening injuries during transport:

- The machine may only be lifted at the specified hold points.
- Protrusive sharp corners could cause cutting damages.
- Strict adherence to the prescribed length for transport of the machine is mandatory.
- Floating loads can fall over thus creating a life-threatening situation – never stand underneath floating loads!
- In the event other load lifting points are used, serious damages could result to the machine.
- Steep tilting positions during transport could lead to leakage of lubricating oil which, upon direct contact with the skin, could cause chemical burns.

Transport of the Firewood Processor

- The transport vehicle must be capable of carrying the entire weight and support load of the machine.
- The machine must be carefully attached and fastened to the hitch of the towing vehicle
- All laws (reverse lights, speed limits, etc.) must be obeyed if the machine is to be transported along public streets.

Maintenance

Safety Instructions for Maintenance

All maintenance work – installation, cleaning, lubrication, maintenance, inspections, etc. – as described in the present operating manual must be adhered to in due time.

The following points must be observed before performing any maintenance work on the machine:

For electric drives

Shut off the central power supply via the main switch, lock the main switch and place a sign warning against resetting

For PTO machines

Turn off the towing vehicle, remove the key and place a sign warning against resetting.

For diesel drives

Turn off the diesel drive and remove the key.

Serious bodily harm and damage to the machine itself can result from activating the machine whilst performing maintenance work.

Additional Safety Instructions

- Ensure that all machine parts have cooled off to the ambient temperature
- Make sure that adequate lifting and load-resistant equipment is available when replacing large machine parts
- Unauthorized personnel are strictly prohibited from entering into the area of the machine! Unauthorized persons are all persons who are not authorized to work with the machine
- Replace any faulty machine parts immediately
- Only use original replacement parts
- Make sure that appropriate containers are available for the disposal of all groundwater endangering agents (oils, antifreeze, etc.)
- It is mandatory that all process steps for servicing the machine are performed in the sequence described herein.
- Depressurize all pressure units.
- Only use the prescribed operating fluids.
- Only authorized technicians may perform any repair work under observance of accident prevention regulations.
- As a matter of principle, only qualified electricians may ever work on the machine's electrical equipment.

- Self-locking screws and nuts must always be replaced.
- All operating fluids, lubricating oils and auxiliary substances must be disposed of in an environmentally friendly manner.
- Serious damage can result to the machine through the integration of incorrect replacement or wear parts.
- A danger of fire exists during welding. Keep a fire extinguisher available.
- Improperly laid cables (e.g. too small of a bend radius) can lead to smouldering or cable fires.
- Leaked grease, solvents, preservatives, etc. could cause chemical burns if they come into contact with the skin.
- Inspect the motor's rotational direction. A false running direction will destroy the pump.
- Never release the machine for operation without providing the prescribed on-site safety installations.
- It is strictly forbidden to remove the safety warnings located on the machine.
- Always adhere to the warning signs located on the machine. They help to avoid dangers.
- Do not perform any repair work unless you possess the necessary qualifications to do so.
- Wear tight fitting work clothes so that your clothes do not get caught up in moveable parts.
- Always wear insulated safety boots with thick crepe soles.
- Unsafe manual operation leads to an increased risk of injury.
- Shut down all electric supplies and safeguard them against unintentional resetting.
- A danger of crushing exists at various parts of the machine due to movable or rotating components. Subsequently, always remain a safe distance away during test runs.
- Never touch any live parts. Electric shocks can lead to serious bodily injury or death.
- Immediately repair any damaged cable.
- Immediately replace any faulty or damaged pressure lines. Otherwise these can lead to serious bodily injury.
- Never exceed the technical values prescribed for normal operation.
- Ensure that there is always the prescribed operating fluids in the machine
- Also refer to the chapter on "General Safety Instructions."

Instructions for Working on Electrical Equipment:

As a matter of principle, only qualified electricians may ever work on the machine's electrical equipment.

Regularly inspect electrical equipment: Fasten any loose connections – immediately replace any damaged lines or cables…

A second person must always be present to turn off the main switch in case of an emergency when any work is performed on live machine parts or cables.

Never clean electric installations with water or any other similar liquid.

Instructions for Working on Hydraulic Equipment:

As a matter of principle, only qualified technicians may ever work on the machine's hydraulic equipment.

Depressurize all hydraulic systems and system parts before working on the equipment.

Before beginning, make sure that appropriate containers are available for the disposal of all groundwater endangering agents (oils, antifreeze, etc.)

Obligations Upon End of Work

The following points must be observed after the termination of maintenance work and prior to starting the machine:

- Prepare the inspection and activity protocols, among others.
- Inspect all previously loosened bolt connections to make sure they are tightly fastened.
- Ensure that all previously removed protective equipment, covers, containers lids, etc. are properly in place.
- Make sure that all tools, materials and other used equipment are removed from the work area.
- Clean the work area and remove any possibly leaked liquids or other similar substances.
- Ensure that all the machine's safety equipment is perfectly functional.
- Inspect the functioning of the safety equipment. If any faults are found, do not release the machine for further operation.
- Mount and secure any removed safety equipment.
- Remove any tools, foreign parts or operating liquid still lying around.
- Perform a test run with function tests of any repaired components.
- Secure the machine against unauthorized activation when you have not yet finished with your work.
- Open flames and smoking are strictly forbidden.

Maintenance

During the first month, all bolts should be inspected each week to make sure they are tightly fastened.

Daily Maintenance Work

Make sure that:

- no abnormalities are found on the mounting parts and the hydraulic tubes of the saw unit.
- no damages or cracks are present on the saw unit.
- No leakages are present.
- You begin work with a sharp saw chain.

Maintenance Work ever 250 Hours

Make sure that:

- no support brackets or fasteners are missing.
- the hydraulic tubes are not damaged.
- no damage or cracks are present on the saw unit.
- no leakages are present.

All damaged or worn parts must be either repaired or replaced.

Changing the Oil

The oil must be changed every 1,000 operating hours or once a year. HVI 46 or an equivalent oil must be used as hydraulic oil. Ensure that a sufficiently large collecting vessel is available.

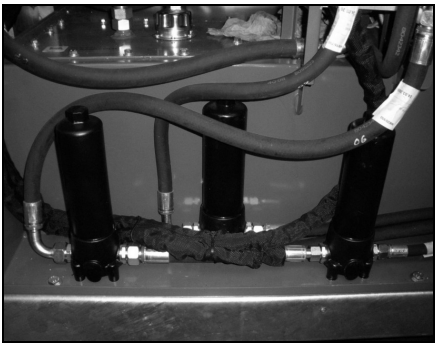
Open the drain cover on the tank to drain the hydraulic oil. Once the oil has been drained from the tank, tightly close back the tank. Fill the tank once again with oil. An inspection glass is found on the tank for controlling the filling level.

Once the tank has been filled with oil, put the firewood processor back into operation and run a cycle without wood. Inspect the oil level again through the inspection glass and add more hydraulic oil, if necessary. Likewise, it may be necessary to bleed the chain's tensioning system (see the chapter on "Bleeding the Chain's Tensioning System").

Procedure:

1. Elevate the machine
2. Place a 200 l container underneath the splitter.
3. Open the drain plug located on the underside of the tank
4. Then, using a new seal, fasten the drain plug back on.
5. Lower the machine back into position.
6. Fill the tank with 120 l of HVI 46 hydraulic oil.

Changing the Oil Filter:



The three oil filters should be changed every 250 operating hours. In addition:

1. Open the back folding door (14).
2. Unscrew the outer filter cartridge
3. Change out the filter cartridge
4. Tightly fasten back the filter cartridge

Lubrication of the transmission

(for firewood processors driven by PTO drivers and electric motors) The transmission fluid should be changed after the first 100 operating hours. It should be changed every 1,500 operating hours or once a year thereafter. 1.8 l of viscosity grade SAE 90 transmission oil is required.

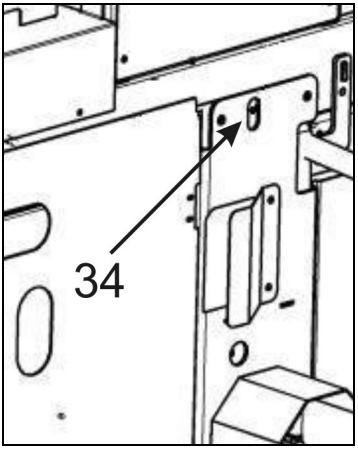
A drain plug is located on the underside of the transmission. Open this plug and bleed the fluid. Be careful when fastening the plug back on that it is not too tight, because otherwise the screw thread in the aluminium casing could be stripped.

For refilling, remove the ventilation located on top of the transmission. While filling, monitor the oil level via the inspection glass. Once filling is completed, carefully tighten this plug back as well.

Lubricating the Harvester Saw

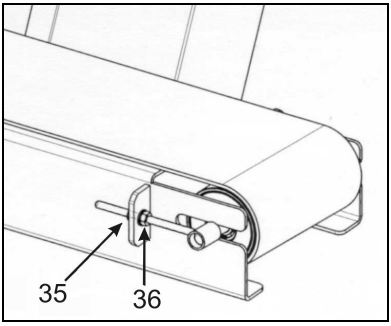
Depending on the operating conditions, the saw must be lubricated every 250 hours. When you open the back cover you will find the grease nipple (as illustrated in the drawing) directly attached to the Harvester.

Caution! Use anhydrous grease with lithium or silicon additives. The grease should be water resistant, prevent rust, have a high level of lubrication as well as mechanical stability.



Tensioning the Feeding Deck (5)

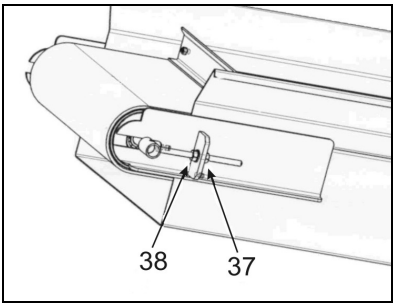
For this purpose, the feeding deck must be in operating position.



1. Loosen screw (35) to the left and right and turn it back a little.
2. Do the same thing with screw (36) until the conveyor belt is properly torqued.
3. Tightly fasten screw (35) while simultaneously holding on to screw (36) so that they do not become loose.

Tensioning the Removal Conveyor Belt (1)

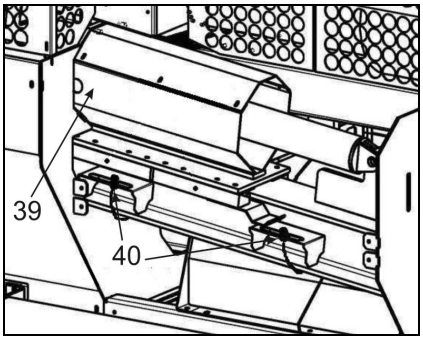
The removal conveyor belt must be in operating position and be pivoted completely downwards.



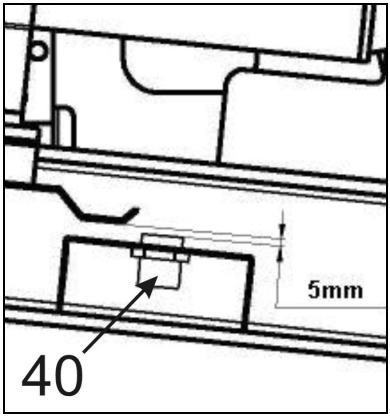
1. Loosen screw (37) to the left and right and turn it back a little.
2. Do the same thing with screw (38) until the conveyor belt is properly torqued.
3. Tightly fasten screw (37) while simultaneously holding on to screw (38) so that they do not become loose.

Setting the Pressure Sensors (40)

1. Open the protective casing.
2. Unscrew the screws on the guard plate (6).
3. Remove the guard plate.



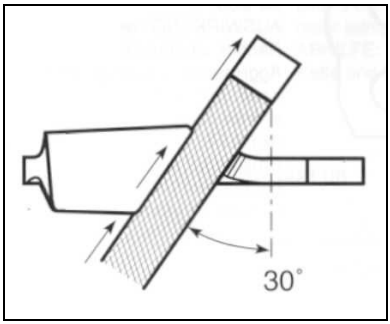
Two sensors (40) are located on the I-support that determine the in-feed and out-feed positions. The counter piece is located on the handle (39), a bent plate located on the front right. This must move past 5 mm above the sensors.



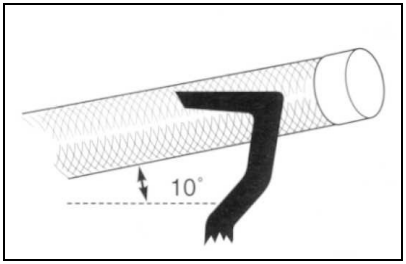
4. Move the sensors in such a manner that the handle slides completely in and out without reaching over-pressure yet.
5. Tightly fasten the sensors so that they do not come loose by themselves.
6. Now close the coverings. For this, proceed as described in points 1-4, only backwards.

Sharpening the Chain

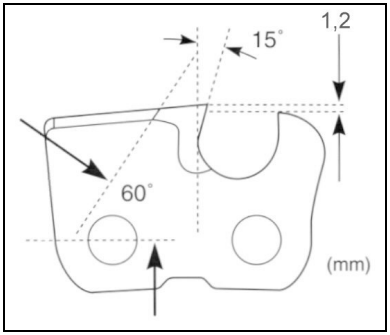
The following indications on sharpening the chain refer to the original Oregon 18H chain.



So that the chain is not uneven and jagged, the sharp angle must be the same for all chain teeth. This leads to increased wear.



- When sharpening, the file must be at a ten degree angle to the ground.
- It is advantageous to have a file holder on hand while sharpening.
-



- When the sharpening is exact, the above-mentioned angle presents itself automatically.
- The depth limiter determines the depth of the cut. For optimal cuts, this should amount to 1.2 mm.
- The depth limit distance must be inspected using a filing gauge. If the depth limiter protrudes over the filing gauge then this must be filed using a flat or triangular file flush to the gauge.

- Use a special chain file with ø 5.5mm to sharpen the chain teeth.
- The cutting must always be filed from in to out.
- File continuously. Remember that the file only removes material in the forward direction. The file must be lifted for the backward movement.
- The file should always be continuously turned to avoid one-sided wear.
- Caution: The connection and drive links may never be filed.
- The chain teeth must all have the same length. Different lengths can result in deviating teeth height. If they are not the same height then the chain will not run smoothly and could even develop cracks.
- The first step is to determine the shortest tooth. This is first sharpened and then the other teeth are filed back to this size.
- All cutting teeth are sharpened on one side before they are sharpened on the other.
- Frequently inspect the chain for cracks and damaged riveting.
- Damaged chain parts must be replaced.
- The new chain parts must be filed down to the same size as the other chain links.
- It is better to sharpen frequently so that not as much filing is necessary. Generally passing the file 2-3 times over a tooth is sufficient.
- Once the sharpening is finished, alcohol or another solvent must be used to remove all shavings from the chain.
- Thereafter, lubricate the chain again in an oil bath.
- During extended work stoppages, the chain should be removed and placed in an oil bath.

Troubleshooting Faults

Safety Instructions in the Event of Faults

The following points must be strictly adhered to in order to avoid damages to the machine or life-threatening injuries when troubleshooting faults:

- As a matter of principle, only qualified electricians may ever work on the machine's electrical equipment.
- Unsupervised activation of the machine can lead to serious bodily harm and damage to the machine. Secure the machine against unintentional resetting by, in the case of electric drives, removing the machine from the power supply or, in the case of PTO machines and towing hydraulics, separating the machine from the towing device.
- For the remedy of faults, strictly adhere to the respective sequence of prescribed work steps.
- Only remedy a fault when you possess the required qualifications.
- Chemical burns can result from contact with leaked fluids (such as hydraulic fluid).
- An unsafe manual operation leads to an increased risk of injury through crushing, being cut, unintentionally pulled into the machine, etc.
- Also refer to the chapter on "General Safety Instructions."

Troubleshooting

Fault	Cause	Remedy
Saw chain springs out of place	Chain's tensioning pressure is too low	Adjust the chain's tensioning pressure
	Air in the chain's tensioning system	Bleed the chain's tensioning system
	Leaky return valve	Inspect the return valve, clean or replace as necessary
Saw chain does not lubricate	Lubricating oil tank is empty	Fill the tank with chainsaw oil
	Leakage on the return valve of the lubricating oil pump	Inspect the return valve, clean or replace as necessary
	Air in the lubrication system	Bleed the system
	Hydraulic tube of the lubrication system is defect	Replace the hydraulic tube
	Leaky pressure valve	Inspect the pressure valve, clean or replace as necessary

Hydraulic fluid becomes very hot	Oil cooler doesn't cool properly	If the fan vane doesn't rotate, inspect the power supply; check cleanliness
	Oil filter is clogged or very dirty	Inspect the oil filter and change as necessary
	Too little hydraulic fluid in the system	Check the oil level
Leaky hydraulic cylinder	Worn out seal sleeve	Change the seal sleeve
Long sawing times	Chain is dull	Sharpen the chain
Conveyor belt doesn't run or jerks	Too little hydraulic fluid in the system	Check the oil level
Splitting cylinder does not retract	End switch does not trip Magnet valve does not trip	Check the end switch Check magnet valves 2.2 and 3.3
Splitting cylinder does not move forward	End switch does not trip	Check the end switch
	Magnet valve does not trip	Check magnet valves 3.2 and 2.1
Splitting cylinder does not move forward and does not turn off	End switch does not trip	Check the end switch
Splitting cylinder does not reverse and does not turn off	End switch does not trip	Check the end switch
Feeding belt does not run	End switch is tripped	Inspect the end switch
	Flow divider falsely configured	Configure the flow divider
Conveyor belt does not shut down	End switch does not shut down	Check the end switch
Chainsaw does not lower	Misaligned saw sensor on saw unit	Reset saw sensor
	End switch on the chainsaw has activated	Inspect the end switch
	Magnet valve does not trip	Check magnet valve No. 5.1
Chainsaw does not elevate	Misaligned saw sensor on saw unit	Reset saw sensor
	End switch on the chainsaw has activated	Inspect the end switch
	Magnet valve does not trip	Check magnet valve No. 5.1
Saw motor does not run	Magnet valve does not trip	Check magnet valves 3.1

		and 2.1
Removal conveyor belt does not run	Magnet valve does not trip	Check magnet valve No. 9.2
Wood holder does not deploy	Magnet valve does not trip	Check magnet valve No. 5.3
Wood holder does not retract	Magnet valve does not trip	Check magnet valve No. 9.1
Slider does not move forward	Magnet valve does not trip	Check magnet valve No. 5.2
Slider does not retract	Magnet valve does not trip	Check magnet valve No. 9.1

Please contact your retailer if the faults cannot be resolved performing the above-mentioned remedies!

They will provide you with further assistance.

Warranty

A warranty period of 24 months is provided for the wood splitter beginning at the date of invoice (please keep your invoice!) The warranty claim covers all material and/or manufacturing defects. Defective parts will be replaced at no cost – they may only be replaced by a specialist. Please request and replace any damaged stickers.

No warranty is provided for:

- Damage arising from improper handling or application.
- Transport damage – these must be reported to the delivery agent immediately upon receipt of shipment.
- Reconstructions or modifications to the machine or when original replacement parts or standard parts are not used for maintenance work.

How to Act in Emergencies

- Frequently refresh yourself as to what first-aid possibilities are available.
- Once first-aid has been applied to the injured party, immediately inform your supervisors in the event of accidents involving persons, devices or the building structure.
- When calling emergency services, inform them as to the severity of damages to persons or objects.
- Immediately abandon the machines in the case of an emergency (fire).

Techincal Data

Type	SSP450 Z	SSP450 E	SSP450 EZ	SSP450 D
Chainsaw	Oregon 40HX86			
Guide bar	Oregon EV 59752-4			
Rating	45kW	22kW + 9kW	30 kW	34 kW
Rotational speed rpm	450	1450	1450/ 450	1450
Fuse protection	---	64 A + 32 A	64 A + 32 A	---
Splitting force	16 t			
Wood length	25-50cm			
Max. wood diameter in semi-automatic mode	45 cm			
Max. wood diameter in fully automatic mode	42 cm			
Hydraulic fluid	120 l HVI 46			
Locking pressure of chain	20 bar	20 bar	20 bar	20 bar
L x W x H (transport size)	180 x 300 x 255 cm			

Accessory Equipment

We would like to provide you with the following information to give you some ideas as to how you may get even more use out of your machine/product.

Article No.	**Accessory**
H0SSPFB4	4 m loading conveyor belt, w = 40 cm
HSSPFB46	4.6 m loading conveyor belt, w = 40 cm
H0SSPFB5	5 m loading conveyor belt, w = 40 cm, non-foldable, on separate on wheels
H0SSPFB6	6 m loading conveyor belt, w = 40 cm, non-foldable, on separate on wheels
H00SSPZB	2 m feeding deck
H00FWBLP	Road lighting kit
H000DAZB	Extended tow shaft with adapter for connecting feeder block
H00SSPQF	Transverse chain live deck
H0SSPTFW	40 km/h road vehicle for tractor transport
H0SSPSFW	80 km/h road vehicle, incl. typification
HSSPK246	2-4-6-way splitting knife
H00SPK12	12-way splitting knife
ZAG00106	Harvester bar
ZAG00105	Saw chain

H0000TUE	Transport and training
Z00000GW	800 mm drive shaft

EC Declaration of Conformity

We hereby declare that, in all its different versions, the machine is in compliance with the standards for machinery as set out in Directive 2006/42/EC of the EN 609-1 “Safety of Log Splitters” as well as with the other associated standards.

The respective safety instructions and operating manuals are valid for these machines.

The machines may not be modified. This declaration shall lose its validity if any unauthorised modification is made to the machine.

It is forbidden to operate the machines without the respective safety equipment. Otherwise, they will no longer be in compliance with the CE standards and the risk of injury will increase.

The subsequently named body:

- has performed a design check.
- has certified that the documents as per Annex VI are in accordance with the standards.
- is responsible for the safekeeping of the documents as per Annex Vi.

PZ.LSV Inspection and Certification Office of the
Central Association of Rural Social Security
Weißensteinstraße 70-72
Kassel, Germany, 34131
Register Number: 2157

The following name and address is of the person granted with the power to assembly the technical documentation.

St. Georgen am Fillmannsbach, 2009

Karl Binderberger
Managing Director

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