User Manual and Spare Parts Catalogue

TP 175 MOBILE

DESIGNED
+
MANUFACTURED
DENMARK

RELIABLE CHIPPING

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1 Introduction

Congratulations on your new TP wood chipper.

Linddana produces TP wood chippers of the finest quality by using the most modern production technologies, such as laser cutting, CNC technology and robot technology in bright and open production facilities.

For safety reasons and in order to get the maximum benefit from your wood chipper, it is important you read the user manual before use.

The user manual provides an explanation of safety, use and maintenance, to ensure working with the wood chipper will be safe and profitable.

Linddana A/S

Jørgen Due Jensen, CEO

Your local dealer is always available with spare parts, advice and guidance.

Dealer stamp

2 EU DECLARATION OF CONFORMITY

Manufacturer:

LINDDANA A/S, Ølholm Bygade 70, Ølholm, DK-7160 Tørring, Denmark
hereby declares that

Wood chipper:

_____

is in conformity with the requirements of the Machinery Directive (Directive 06/42/EC) and with the national legislation which translates this directive;

furthermore, is in conformity with the following EC Directives:
2000/14/EC

Furthermore it is stated that
EN 13525 (harmonised standard), has been applied.

Title: CEO
Name: Jørgen Due Jensen

Ølholm, 24. April 2015

3 Contents

4 Use

The TP 175 mobile wood chipper is specially designed as a **stationary** wood chipper, which chips wood in the form of branches, bushes and waste wood from windbreaks, parks, roadside trees, etc.

The machine must **not** be used for materials containing stone, metal or other foreign bodies. These foreign bodies are likely to blunt the knives or in the worst cases, break the machine. The knives and counterknives can break if stone or metal gets in between them.

The machine must **not** be used for chipping wood containing nails, screws, reinforcements, etc.

Always stand at the side of the feeding hopper when feeding branches into the machine (see Figure 1).
The branches may be thrown around when the feed rollers grip them.
When feeding logs into the wood chipper, stand at the rear of the log and push the log in (see Figure 2).

Figure 1 Feeding with branches

Figure 2 Feeding with logs

NB: Keep **knives** and **counterknives** sharp. This makes feeding in wood easier, improves woodchip quality and reduces fuel consumption significantly.

The machine must be inspected daily, which means the disc housing must be opened and the disc, knives, counterknives etc. must be inspected. This will prevent unexpected stoppages and prolong the life of the machine.

The wood chipper must be safely parked with the brakes engaged during the work.

The machine must **not**:

- Be used for materials other than wood
- Be used to push trees, stubs, etc.

Equipment like forest chains, axes, chain saws etc. must **not** be placed or transported in the feeding hopper.

5 Fitting instructions

5.1 Before use

The machine has three lifting points, which must be used whenever it is lifted by a crane or other lifting gear (with hooks) (see Figure 3). The machine is mainly transported on the trailer wheels, but it can also be lifted by a fork lift truck (see Figure 4).

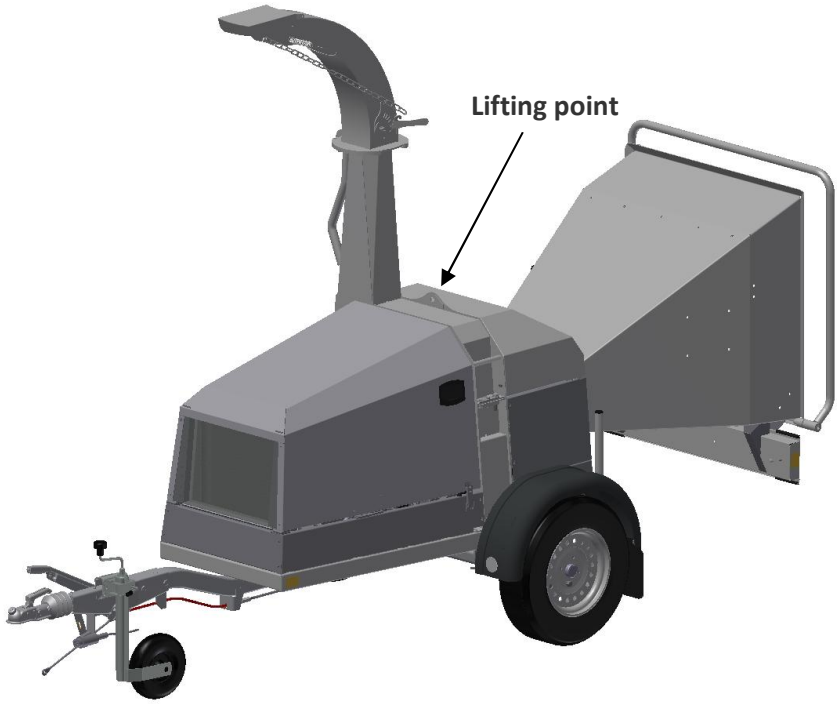


Figure 3 Lifting points on the machine

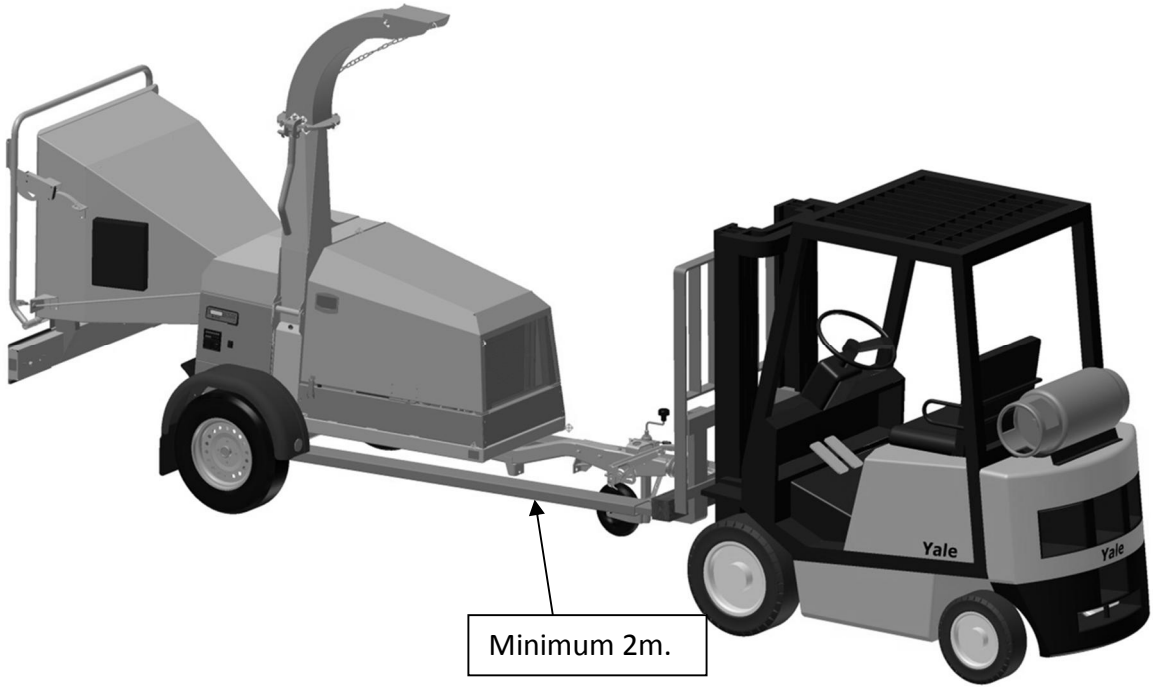


Figure 4 Lifting with a forklift truck

Before start-up, ensure that the wood chipper is free of foreign bodies. The key **must** be removed from the ignition when opening up for the disc. Ensure that the disc is at a complete standstill. Turn the ejector spout so it faces the opposite direction of the disc housing (see Figure 5). Loosen the bolts that hold the upper and lower disc housing together. Lift the top part of the disc housing up until the ejector spout rests on its own. Turn the disc a few times by hand. Remove any foreign bodies.

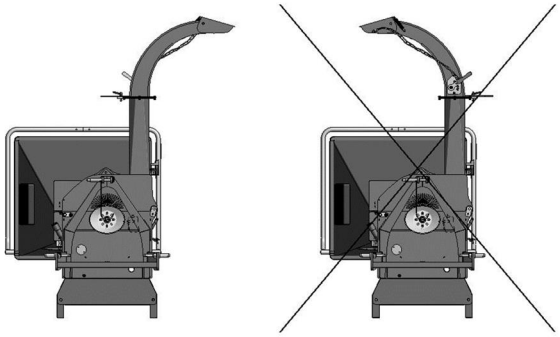


Figure 5

Position of the ejector spout when opening disc

Ensure that the distance between the knives and counterknives is correct **= 1.5 mm**. The knives have a fixed position: **TP 175: knife position = 12 mm.** Ensure that the knives run clear of the counterknives.

Lift the top part of the disc housing back into place and tighten the bolts.

Ensure that all bolts, nuts and screws are tightened securely.

NB: Lubricate all of the lubrication points (see maintenance schedule, page 14).

Old hydraulic oil and motor oil and used oil filters and air filters must be disposed of at an approved waste disposal station.

6 Safety instructions

6.1 Safety regulations

- Use hearing protectors, safety goggles or similar eye protection, close fitting safety clothing and safety shoes.
- When working near roads it is advisable to wear a road safety vest which reflects the light and makes the wearer more visible to other road-users. Displaying of signs must comply with the Road Traffic Act.
- Minimum age for users of the machine is 18, however anyone aged 16 or over may use the machine for training purposes under the supervision of an adult.
- Keep all body parts away from the feeding funnel and any moveable parts of the machine at all times during operation.
- **No** attempt must be made to remove by hand any material that is trapped between the feed rollers before the spring has been removed and the roller part opened.
- Always stand at the side of the feeding hopper when feeding material into the machine. Always be observant of terrain conditions around the machine. Falling down in the vicinity of the machine is hazardous!
- Before starting the machine check that the safety devices are working properly. Especially the stop and return functions on the operation bar.
- The machine must **not** be started if the ejector spout is not fitted to the machine.
- **Never** use the machine in an enclosed or poorly ventilated space, because of the danger of carbon monoxide poisoning.
- The top part of the machine and all other guards must **not** be opened or removed before the disc is completely still and the tractor's motor has stopped.
- **Always** stop the machine and remove the key from the ignition during inspections, service or repairs.
- **Always** remove the ignition key from the machine before leaving it.
- After maintenance and repair work, all bolts must be tightened and all safety devices must be fitted before the machine may be started.

- The maximum rpm for the machine (1625 rpm) must **not** be exceeded.

- The ejector spout must **not** point in the same direction as people or at an area where people move around in. A safe distance of 20 m must be maintained in the direction of where the woodchips are ejected.

- During use, the machine must stand on a secure and level surface and be safely parked at all times (see Figure 6).

Figure 6 - TP 175 MOBILE handbrake

- **<u>IN CASE OF POTENTIAL HAZARDS:</u> SET THE OPERATION BAR TO NEUTRAL (see Figure 9 and Figure 10)**

- **FIXED FUNNEL**: During operation set the machine height to max. 600 mm above the terrain (see Figure 7). If this height is not maintained the operation/safety bar will not function as intended and may lead to the risk of severe personal injury due to crushing.

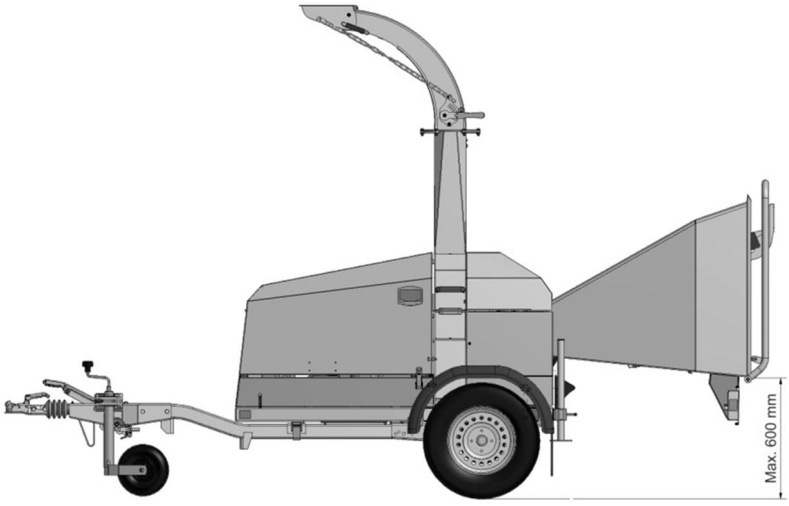


Figure 7 Maximum height above terrain (fixed funnel)

- **FOLDABLE FUNNEL**: During operation set the machine height to min. 600 mm above terrain (see Figure 8). If this height is not maintained the operation/safety bar will not function as intended and may lead to the risk of severe personal injury due to crushing.

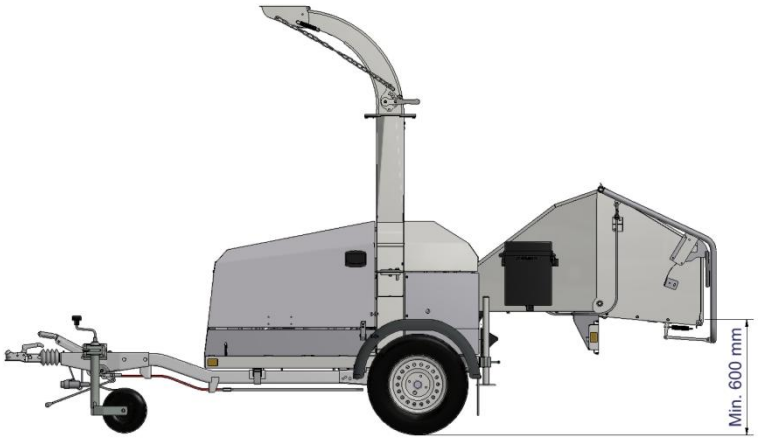
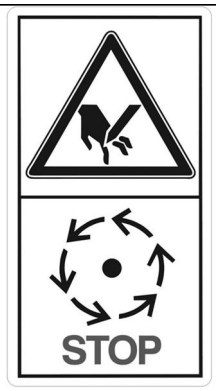
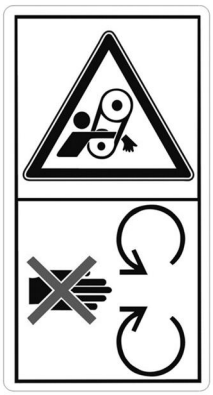
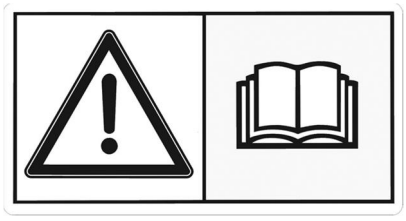


Figure 8 Maximum height above terrain (foldable funnel)

- In case of transport on roads, turn the ejector spout to ensure it is positioned correctly within the width of the machine and securely fasten.
- In case of transport on public roads, local authority regulations must be followed.
- When the bottom of the funnel is being cleaned to remove any fine woodchip, **THE FEED ROLLERS MUST BE STOPPED.**
- A broom or similar **must** be used for cleaning. Never touch the inside of the funnel when the machine is operating.

6.2 Pictograms used

		
Warning: Ejected Objects! Safe distance of 20 m!	Warning: Rotating knives! Wait for disc to stop!	Warning: Rotating rollers!
		
Warning: Rotating belts!	Warning: Crushing hazard! Do not touch the funnel!	Warning: Crushing hazard! Do not step on the funnel!
		
Read the instruction manual before use!	Ear and eye protection mandatory!	Lifting point for crane!
		
Lifting point for fork lift truck!		

6.2.1 Noise level

The sound output level and the sound pressure level from the TP 175 MOBILE have been measured during use with 1625 rpm on the disc, powered by the Lombardini LDW 1404 engine.

The measurements have been conducted in accordance with testing provisions
Directive 2000/14/EC, 3 July 2000
EN ISO 3744, 1995
ISO 11201, 1995
ISO 4871, 19 March 1997
EN 13525, 17 February 2005

The guaranteed sound output level which must be stated by the manufacturer in accordance with Directive 2000/14/EC is as follows:

TP 175 MOBILE, Lombardini: 124 dB (A) relative to 1 pW

The machine's sound pressure level at the operator's seat is measured in accordance with ISO 11201 and measured as:

TP 175 MOBILE, Lombardini: 103 dB (A)

The values stated above are subject to the common uncertainty of the measuring method and the estimated variation in a product series for the type of machine. Detailed information about the measurements and results and estimation of uncertainty are found in a detailed report which can be supplied on request.

As a result of the actual sound levels, the wearing of ear protectors is mandatory when using the machine.

6.3 Environmental instructions

When changing hydraulic oil or engine oil, oil and used oil filters and air filters must be disposed of at an approved waste disposal station.

Oil spillage must be avoided as far as possible. Should oil spillage occur, the spilled oil must be cleaned up and disposed of at an approved waste disposal station.

Worn out parts must be disposed of for recycling.
When the machine is worn out it must be disposed of responsibly. Hydraulic oil and engine oil must be drained and disposed of along with oil filters and air filters at an approved waste disposal station.
The rest of the machine must be disposed of at an approved recycling centre.

7 Operation of the machine

The wood chipper is equipped with two hydraulic rollers, a pressure compensated flow valve, a control valve and an operation bar with a reset handle (see Figure 9 and Figure 10).

The operation bar must be in the stop position (0) during start-up (see Figure 11). After start-up, release the "reset handle" and pull the operation bar into the middle position (A) and the rollers will turn. The material is now pulled into the machine.

By pulling the operation bar towards you (B), the flow of oil in the control valve is turned, which puts the rollers into reverse and the material is now pushed out of the machine.

When the machine stops (0), the "reset handle" will mechanically stop the operation bar. The "reset handle" must now be released before the operation bar can be moved into the middle position (A) and the rollers can pull the material into the machine.
This "reset handle" is a safety measure to ensure you cannot unintentionally start the rollers which would otherwise cause material to be unintentionally pulled into the machine.

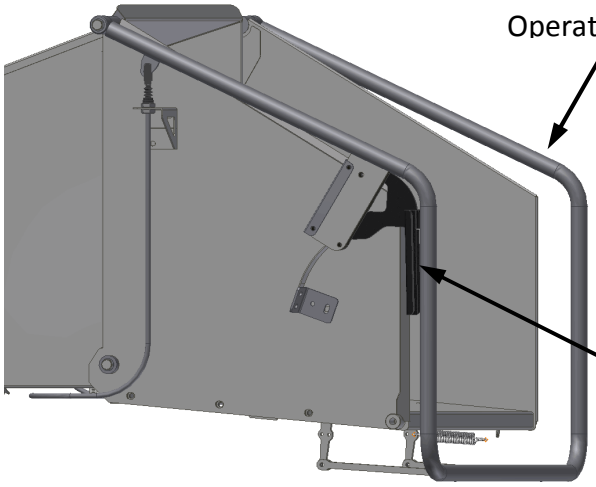


Figure 9

Foldable funnel.

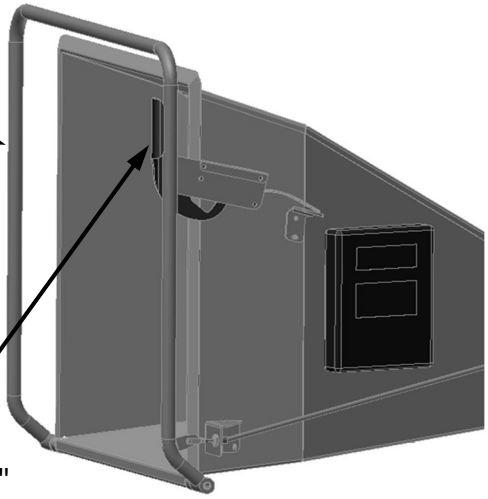


Figure 10

Fixed funnel.

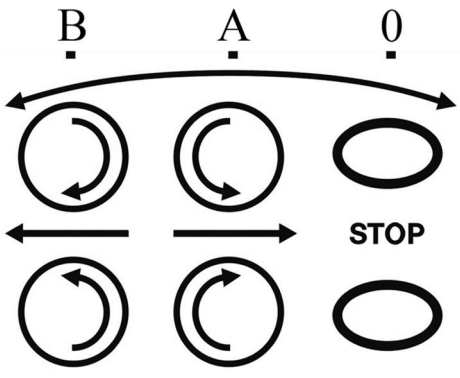


Figure 11

Operation bar instructions.

Turn the adjusting screw on the flow valve to find the correct rpm. Never operate too quickly with the rollers because the wood will act like a brake if the pressure on the disc is too great with the ensuing increase in use of fuel. Branches may become wrapped around the rollers if the rpm is too high.

The table shown below (Table 1) provides the recommended rpm of the feed rollers with the respective desired woodchip length. The speeds vary with the number of revolutions on the disc. The woodchip length can be regulated on the flow-regulation valve on the wood chipper

7.1 Table 1 Setting feed rollers rpm

Woodchip length **Model**	**Disc rpm**	**4 mm**	**6 mm**	**8 mm**	**10 mm**	**12 mm**
TP 175 MOBILE	1625	12	18	24	30	36

8 Instructions for wood chipper

TP 175 MOBILE is a trailer-fitted wood chipper, consisting of a trailer on which a wood chipper with its own engine is fitted and is registered as a trailer tool. The trailer can be fitted to a vehicle with a ball and socket head as a coupling without requiring inspection. When fitting, the 13-pole connector and the safety chain must be fitted to the vehicle and the support leg must be raised. Release the handbrake before driving.
Check that lights, brake lights and turn signal lights work before driving.

	TP 175 MOBILE
Trailer width:	1416 mm
Trailer length incl. ball and socket coupling	3724 mm
Tire assembly:	155/80R13
Tire pressure:	4.5 bar = 65 psi
Engine type:	Lombardini LDW 1404

To avoid destroying the electrical system, the following points must be followed:

1. Battery connections must be clean.

2. When using a battery charger, the earth cable on the battery must be removed.

In case of transport on roads, the ejector spout must be turned to ensure it is positioned correctly within the width of the machine and securely fastened.

When detaching the TP 175 MOBILE, the machine must be placed on level ground and both support legs must be screwed down.

WARNING:
Always stop the engine before carrying out service of the wood chipper or the engine. Always remove the ignition key from the machine before carrying out service and repairs. When replacing knives, the bonnet must be lifted first, and then the bolts which hold the top of the machine can be loosened.
A safety switch ensures that the engine cannot be started when the bonnet is lifted. The switch will stop the engine if the bonnet is opened before the engine has been switched off.
If the safety switch is defective, it must be changed immediately.

Wood chipper maintenance and service instructions: See section 9.

TP 175 MOBILE is equipped with a 26 kW (35hp) Lombardini engine.
See the operating instructions for the engine.

When registering for repairs you must register if it is a warranty matter. Doing this ensures that we can write a report and keep and test the parts in accordance with the factory's instructions.

It is too late to claim warranty after repairs have been carried out.

The factory warranty is valid for one year from the date of purchase.
See current sales and delivery terms.

When ordering spare parts:
NB: Ensure you state: Model, year of manufacture and spare part number.

NB: Failure to use original parts renders the warranty void.

Warnings:
EXERCISE CAUTION, if you are going to touch an engine that is running or has recently stopped. Different components – especially the exhaust system can be red hot even though you cannot see it.

The oil dipstick may only be removed from the engine to check the oil or to fill new oil in the engine.

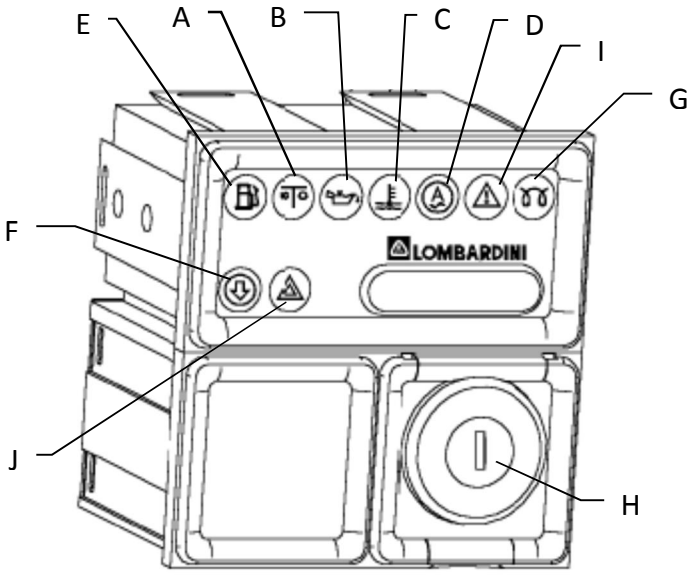
The filler cap on the cooler may only be removed when checking the fluid level or when filling the cooler with new coolant. Only remove the filler cap when the engine is cold. When the engine is hot, the cooling system is pressurised and loosening the cap is hazardous because there is a risk you may become scalded.
The cooling system draining plug may only be removed when draining liquid. After draining, ensure the plug has been put back.

When filling up with fuel you must avoid open flames.

Never let the engine run in closed, poorly ventilated spaces.

Before start-up, electrical wiring, connections and insulation must be checked.

Start box



A = Normal operation
B = Oil light
C = Temperature
D = Charging light
I = Warning light (not used)

E = Fuel indicator (not used)
F = Air filter indicator, lights up when air filter is clogged
G = Heater plug/preheat
H = Ignition key
J = Warning light (not used)

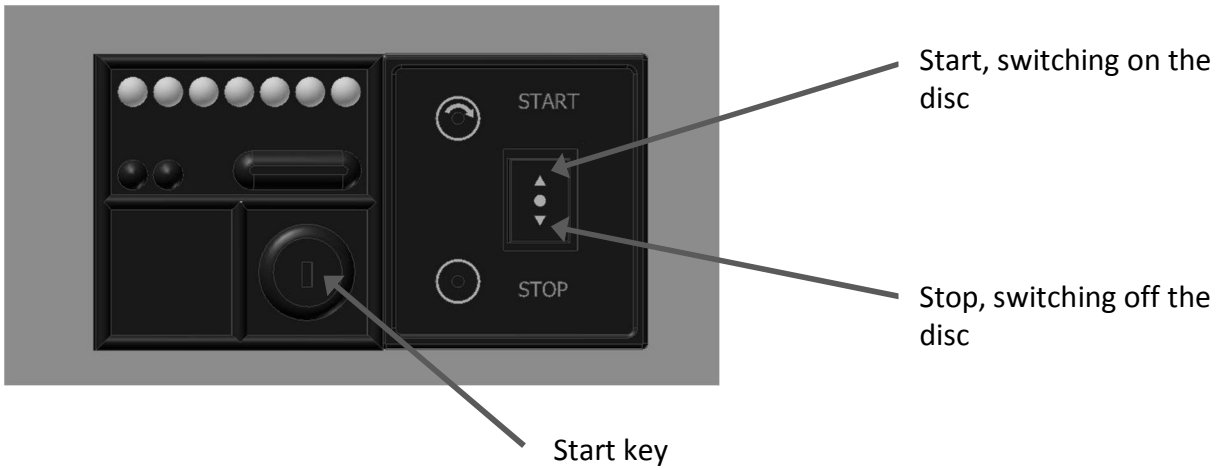
Start:
The key is turned clockwise and the light for preheat lights up. When the light turns off the engine can be started.
NB: All warning lights must be turned off during operation.
If the engine does not start after 20 seconds then wait for one minute and try again.
If the engine does not start after two attempts, then start troubleshooting and use the troubleshooting table.

When the engine has started, it must run idle in order to heat up completely.

-20°C and under	approx. five minutes
-20°C to -10°C	approx. two minutes
-10°C to +5°C	approx. one minute
Above +5°C	approx. 20 seconds

During the first 50 hours of work the engine must not be run at more than 70% of its maximum performance.

TP STARTER®



Starting the wood chipper:

Start the engine with the key and let it run idle for a few minutes.
Next, press the top of the switch (Start), TP STARTER® will now automatically cut in the disc and at the same time the engine revolutions are increased to the max. engine rpm. The wood chipper is now ready for operation.

Stop:

Stop feeding material into the wood chipper and wait until nothing comes out of the ejector spout.
Next, press the bottom of the switch (Stop), TP STARTER® will now automatically uncouple the rotor, and at the same time the engine revolutions are slowed to idle running.
The engine must run idle for a few minutes before it is stopped.
Stop the engine by turning the start key counter-clockwise.

If the engine is switched off with the key before TP STARTER® has uncoupled completely, the motor cannot be started.
Turn the key so that the power is on and press the switch (Stop). This ensures complete uncoupling and the motor can now be started.

Cleaning the filter in front of the radiator

There is a fitted filter in front of the radiator that collects particles that are too big to pass through the actual radiator.
Cleaning procedure:
Stop the wood chipper and the motor. Open the bonnet and lift the filter out of the “track”. Filter cleaning procedure:

- Knock the dust off carefully by hitting the frame of the filter on the ground or on a piece of wood.
- Clean using compressed air from the "cooling side".
- Clean using a high-pressure cleaner. Only used for extreme clogging and must be dried before starting the wood chipper.

In general, fewer stoppages occur by ensuring the wind does not blow dust from the ejector spout directly into the radiator.

9 Maintenance

For all maintenance and repair work, the machine and the driving power must be at a complete standstill before any work can be carried out.

9.1 Maintenance schedule

Interval=> hours	**8 ⌛**	**50 ⌛**	**100 ⌛**	**200 ⌛**	**500 ⌛**	**1000 ⌛**	**1000 m^3**	**10,000 m^3**
Check knives and counterknives	X							
Tighten all bolts and nuts[1]	(X)	X						
Lubricate disc main bearings[2].			X					
Lubricate roller bearings[3]				X				
Replace hydraulic pump return filter[4]		(X)				X		
Change hydraulic oil[5]						X		
Reverse/replace counterknife[6]						X		
Replace facing plate in top disc housing[7]						X		
Reverse/replace triangle and square scrapers[8]							X	
Grind carrier on feed roller[9]							X	
Check V-belts[10]		X						
Check ejector wings for wear						X		
Check casing for wear and tear								X

[1] Tighten bolts and nuts, the first time after eight hours and then at intervals of 50 hours.
[2] Lubricate two lubrication nipples with Uniway Li62 or equivalent lubricant.
[3] Lubricate two lubrication nipples with Uniway Li62 or equivalent lubricant.
[4] Change for the first time after 50 hours and then every 1000 hours.
[5] Drain the hydraulic oil and fill with new oil using 15 litres of **Hydraway HVXA 46** or an oil that has the equivalent specifications. The interval between changing oil can be extended by using biodegradable hydraulic oil, such as the type **Hydraway SE 46 HP** and taking oil samples on an ongoing basis.
[6] Reverse/change counterknife when necessary.
[7] If fitted, change the facing plate in the top disc housing, as necessary.
[8] Reverse/replace the triangle scrapers in the disc housing. Reverse/replace the square scraper on the disc .
[9] Grind sharp the carrier on the bottom feed roller.
[10] Check tensioning of the pump V-belts.

9.1.1 Lubrication and oil

The Wood Chipper is as standard, factory-filled with minerals oils based hydraulic oil of the type **Hydraway HVXA 46**. When replacing the oil, use the same type of oil or an oil with equivalent specifications. Do not mix oils of different types/brands.

As an accessory, the Wood Chipper can be delivered factory-filled with biodegradable oil of the type saturated ester, **Hydraway SE 46 HP**.
When replacing the oil, use the same type of oil or an oil with equivalent specifications. Do not mix oils of different types/brands.

Old hydraulic oil and engine oil as well as used oil filters and air filters must be disposed of at the municipal waste disposal station.

Lubricate the nipples according to the maintenance schedule using Statoil **Uniway Li62** or equivalent product that can be mixed with Uniway Li62.

The machine is equipped with a hydraulic oil tank which is integrated in the disc housing. The tank is equipped with a filler neck, a bleeder valve, a level glass, a drain plug and a return filter.

When changing the hydraulic oil, open the drain plug (see Figure 12).
Unscrew the drain plug. Drain the oil into a suitable disposal container. When the tank is almost empty, suck the tank empty using an oil suction device. Screw the drain plug back on and slowly fill up with new hydraulic oil (15 litres for TP 175).
Fill the oil until the oil level is at the middle of the level glass.

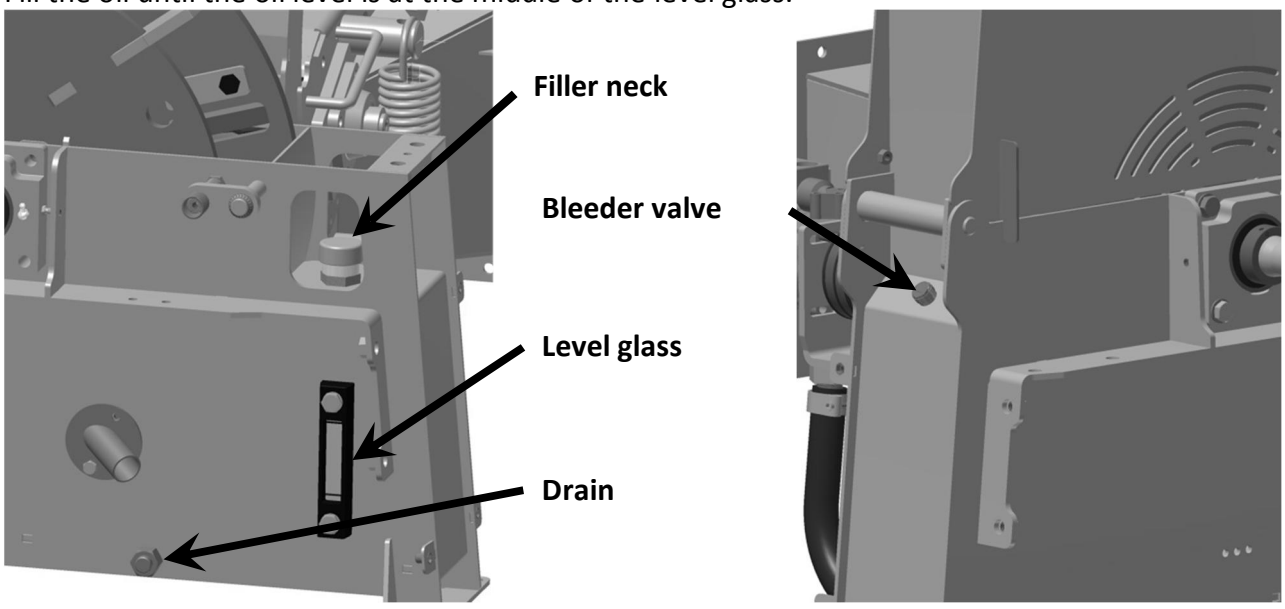


Figure 12 Refilling with hydraulic oil

9.2 Maintenance of the feed rollers

The feed rollers draw material into the disc and the knives.

The carriers on the bottom feed roller must be kept sharp in order to maintain the retraction force.

Procedure:
Stop the machine and remove the key from the ignition. Check that the disc has stopped **completely**. Turn the ejector spout so that it faces away from the disc housing (see Figure 5). Loosen the bolts that hold the disc housing parts together and open the disc housing. Loosen the bolts that hold the stop bushing of the roller housing and remove the stop bushing. Lift the spring from the top feed rollers using multigrip pliers or similar**.**
Grip the handle and lift the roller housing and push the locking pawl into the lock in the side plate (see Figure 13). Next, secure the roller housing by letting it fall.
Now the carrier on the bottom feed roller can be sharpened with an angle grinder.

Carefully turn the disc using the operation bar in a forward or reverse position. By doing this, the feed roller is turned so all the carriers can be sharpened.

NB: The welding seams must not be ground away.

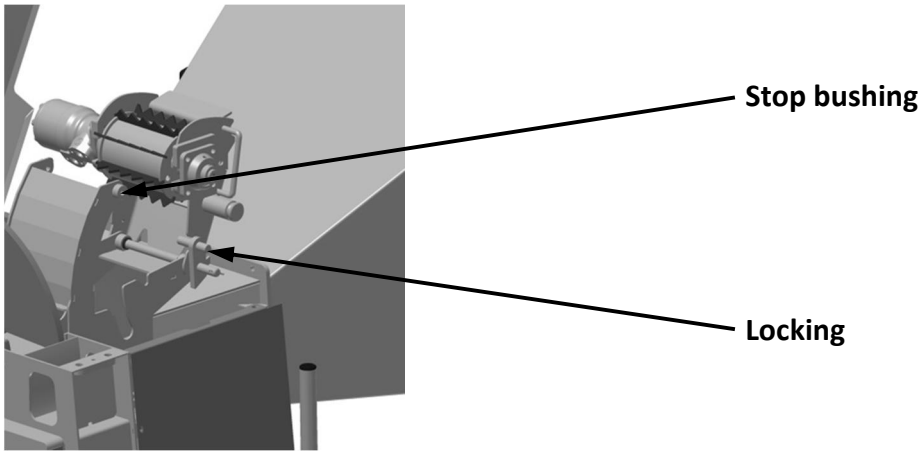


Figure 13 Securing using the locking pawl

When the roller has been grounded, lower the top feed roller back in place. Put the spring back using multigrip pliers. Fit the stop bushing for the roller housing and tighten the bolts. Close the disc housing and tighten the bolts

9.3 Replacement of wearing parts

9.3.1 Counterknives

The counterknives in the machine are used by the knives to cut the wood. The counterknives must have a sharp edge otherwise the wood will bend and the cutting face become frayed. The machine is equipped with one horizontal counterknife with two cutters and a perpendicular counterknife. The horizontal counterknife can be reversed.

Procedure:
Stop the machine and remove the key from the ignition. Check that the disc has stopped **completely**. Turn the ejector spout so it faces the opposite direction of the disc housing (see Figure 5). Loosen the bolts that hold the disc housing parts together and open the disc housing. Loosen the bolts that hold the stop bushing of the roller housing and remove the stop bushing. Using multigrip pliers, lift the spring off the top feed roller and lift the feed roller housing. Next, secure the roller housing using the locking pawl (see Figure 13).

Remove the bolts that hold the horizontal counterknife in place. Take out the counterknife and reverse/replace. Carefully clean both the counterknife and the contact surface before reinserting the counterknife. The distance between the knife edge and the counterknife must be **1.5 mm** (see Figure 14). Use a precision feeler gauge. The bolts in the horizontal counterknife must be tightened to **100 Nm / 10 KPm** (extra equipment: the tool kit comes with a torque wrench).

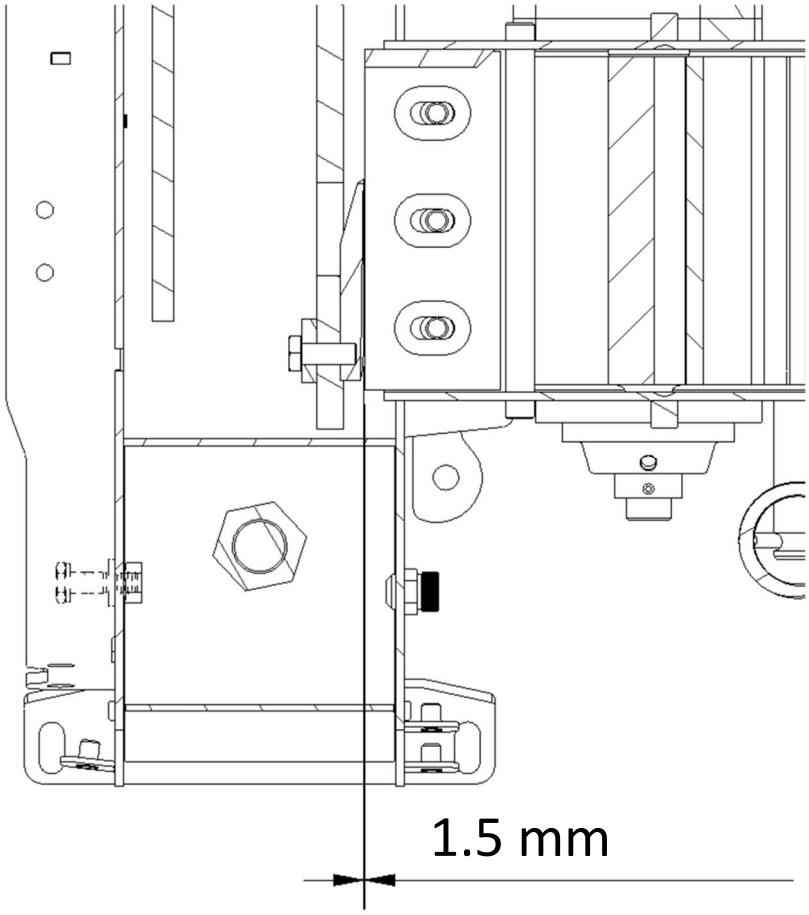


Figure 14 Distance between counterknife and knife

Unscrew the vertical counterknife and remove it from the inside. Before a new one is inserted, the counterknife and the contact surface must be cleaned carefully. Set the counterknife to a distance of **1.5 mm** from the knives. Use a precision feeler gauge. Tighten the bolts on the vertical counterknife to **50 Nm / 5 KPm** (extra equipment: the tool kit comes with a torque wrench).

When the counterknives have been reversed or replaced and all the bolts are tightened, lower the roller housing into place using the top feed roller. Put the spring back using multigrip pliers. Fit the stop bushing for the roller housing and tighten the bolts.

Turn the disc a few times to make sure that there are no objects in the disc housing. Close the disc housing and tighten the bolts (see Figure 15).

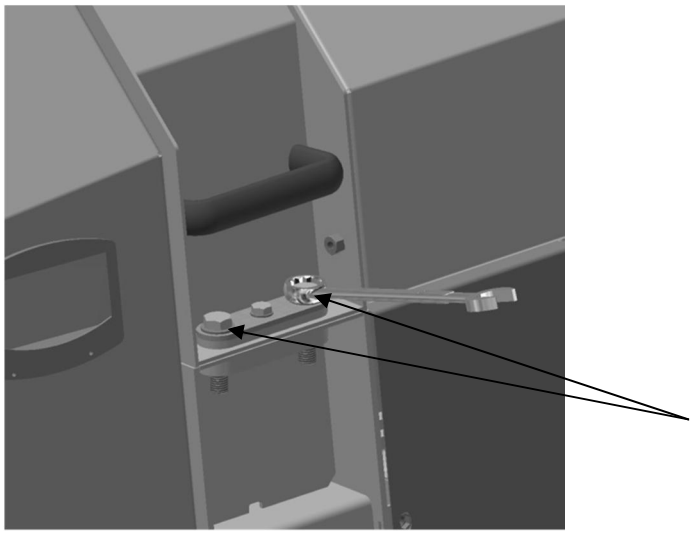


Figure 15 Tightening bolts in disc housing

9.3.2 Knives

The machine is fitted with two knives.

The knives must always be changed in sets. The knives belong together in sets, also when they are ground so that they are always of equal width. If the knives are not of equal width, the disc will be out of balance which will lead to unnecessary strain on the bearings and vibrations in the whole machine.

Always store the knives in the wooden box provided for that purpose (see Figure 16).

Figure 16 Wooden box for storing knives

Procedure:
Stop the machine and remove the key from the ignition. Check that the disc has stopped **completely**. Turn the ejector spout so that it faces away from the disc housing (see Figure 5). Loosen the bolts that hold the disc housing parts together and open the disc housing.

Turn the disc until the disc lock can go into one of the holes on the disc. The disc is now locked (see Figure 17). Keep fingers away from the knives when the disc is being turned.

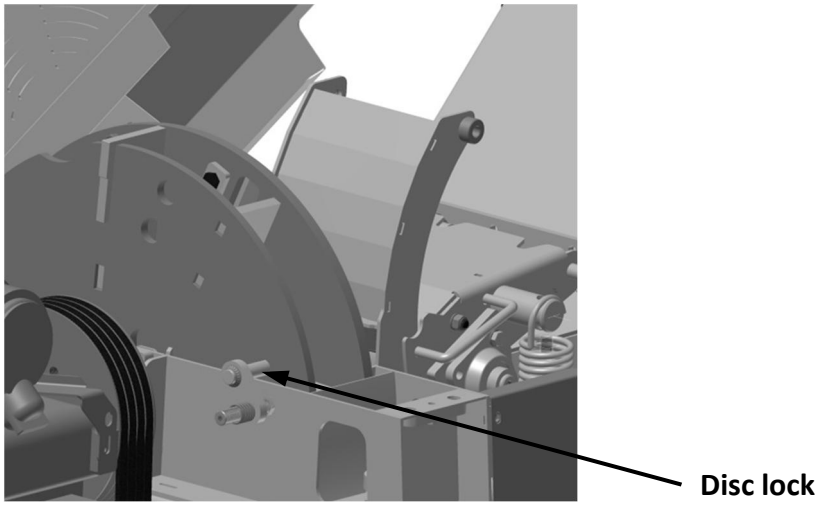


Figure 17 Disc lock

Remove the bolts that hold the knife and tighten the plate securely to the disc. Remove the knife. The bearing surfaces on the chipping disc and the knife must be cleaned properly before fitting the knives.
When fitted, the bolts **must** be lightly oiled (μ=0.125) which means light oil, WD 40 or a similar product. Do **not** use copper grease, MoS_2 or similar low friction grease.

Check that the distance between the knife edge and the counterknife is set correctly at **1.5 mm**

Tighten the bolts to **110 Nm / 11 KPm** (use a torque wrench which is included in the tool kit for this purpose. It can also be purchased as an accessory).

When the knives have been replaced, turn the disc a few times to make sure that there are no objects in the disc housing. Close the disc housing and tighten the bolts (see Figure 15).

9.3.3 Square scrapers and facing plate

The machine is equipped with two square scrapers on the disc, a triangle scraper in the disc housing and as an accessory, a facing plate in the ejector spout (see Figure 18).

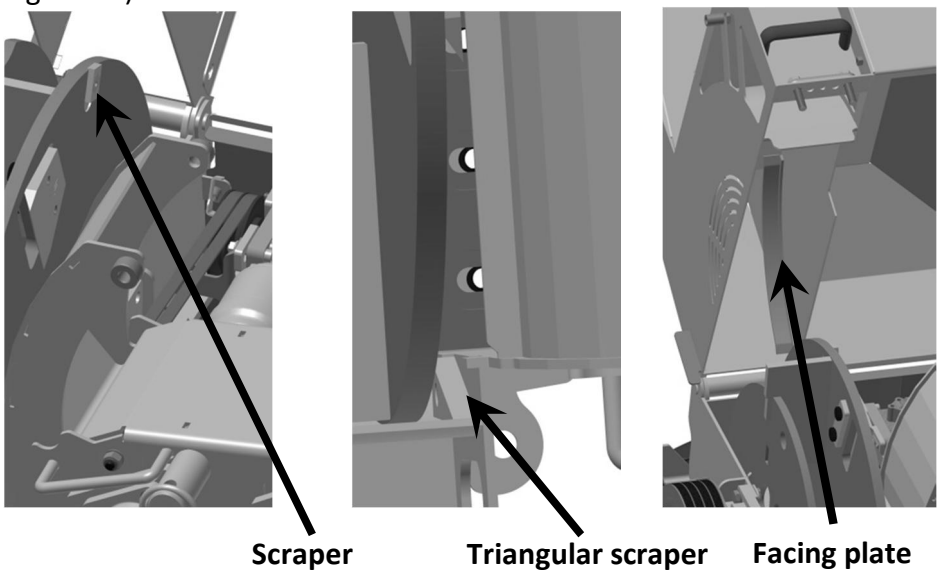


Figure 18 Positions of scrapers and facing plate

The purpose of the scrapers is to remove material that can get stuck to the knives.
At the same time the square scraper on the disc removes material which falls off in front of the chipping disc.
This reduces the wear on the casing and reduces the consumption of fuel.
The square scrapers can be reversed once before being replaced, while the triangle scraper and the facing plate should always be replaced when they are worn.

Procedure:
Turn the disc until the disc lock can go into one of the holes on the disc. The disc is now locked (see Figure 17). Keep fingers away from the knives when the disc is being turned.

Remove the countersunk bolts which hold the square scraper on the disc. Turn the square so that a sharp corner points up. Clean the block and the bearing surface. Re-fit the square scraper. If it is worn on two corners, the square scraper must be replaced. If the disc is equipped with two square scrapers, always replace the square scrapers as a set. Replace the triangle scraper when it is worn.

The facing plate is fitted in the top part of the disc housing and can easily be replaced by removing the three bolts on the outside of the disc housing. If woodchip quality is not an important factor, it is a good idea to remove the facing plate in the ejector spout. This will increase the capacity of the machine and save fuel. The facing plate must be removed when chipping wet conifer wood that has a lot of needles. This ensures good ejection.

When the scrapers have been reversed or changed, turn the disc a few times to make sure that there are no objects in the disc housing. Close the disc housing and fit the bolts (see Figure 15).

9.3.4 Adjusting the V-belts

Pump transmission

The feed rollers are driven hydraulically. The hydraulic pump for the feed rollers is driven by V-belts. The V-belts must be checked regularly or whenever the belts are suspected of being slack.

Procedure:
Stop the machine and remove the key from the ignition. Check that the disc has stopped **completely**. Turn the ejector spout so that it faces away from the disc housing (see Figure 5). Loosen the bolts that hold the disc housing parts together and open the disc housing.

Loosen the four screws which hold the hydraulic pump in place and adjust the tension by turning the adjusting screw. Used belts may yield by 5.5 mm when they are pressed down with 20 N (2 kg). For new belts the figure is 23 N (2.3 kg) (see Figure 19). The belts' tension can be measured with a suitable gauge, which can be purchased as an accessory.

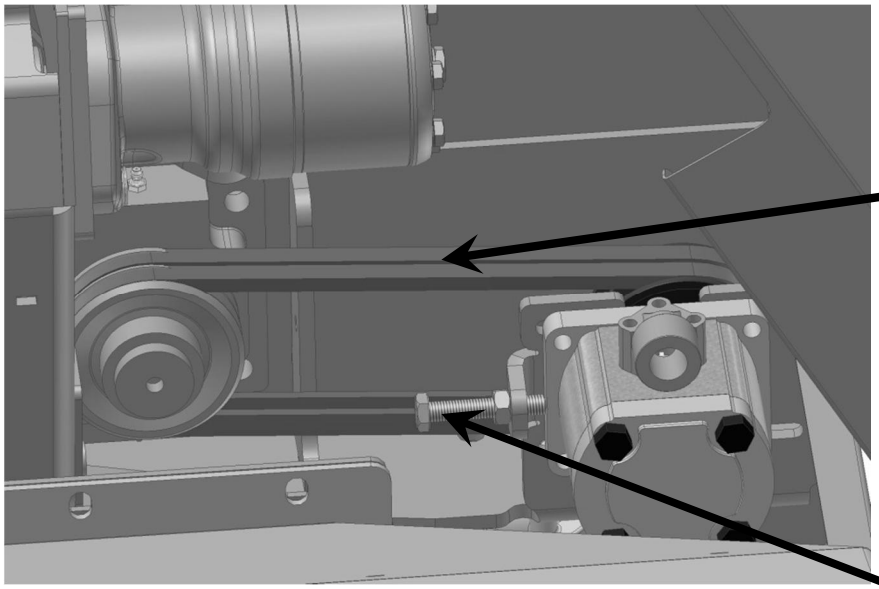


Figure 19 Adjusting belt tension

When the belts have been tightened, turn the disc a few times to make sure that there are no objects in the disc housing. Close the disc housing and fit the bolts (see Figure 15).

9.4 Sharpening knives

It is very important for the quality of woodchips that the knives are sharp. They must be checked at least once a day. The grinding interval of the knives can be prolonged by grinding them regularly with a carborundum stone.

The grinding process must be **wet grinding** with a header (see Figure 20.) **Never** use an angle grinder or a similar tool for grinding the knives.

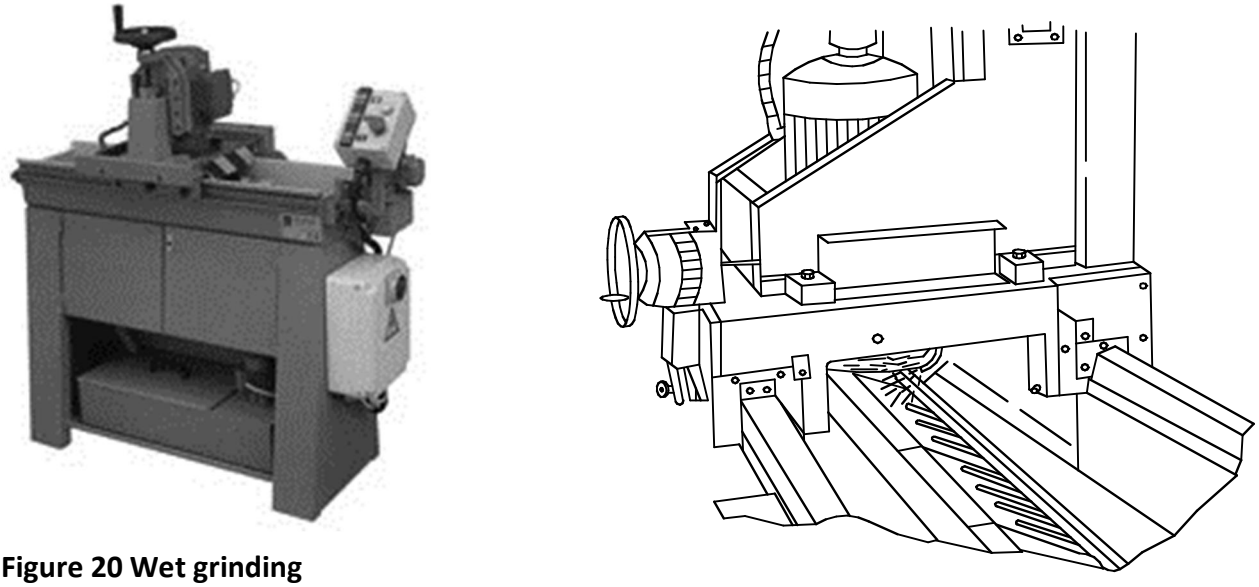


Figure 20 Wet grinding

When grinding knives ensure that the width of the knives in the set are uniform. Their widths must be the same to keep the disc in balance. This means that the knives must always to be ground in sets. The knives must not be ground down to a width of less than 75 mm (see Figure 21). After that they must be discarded.

The edge of the knives must be ground at an angle of 30° (see Figure 21).

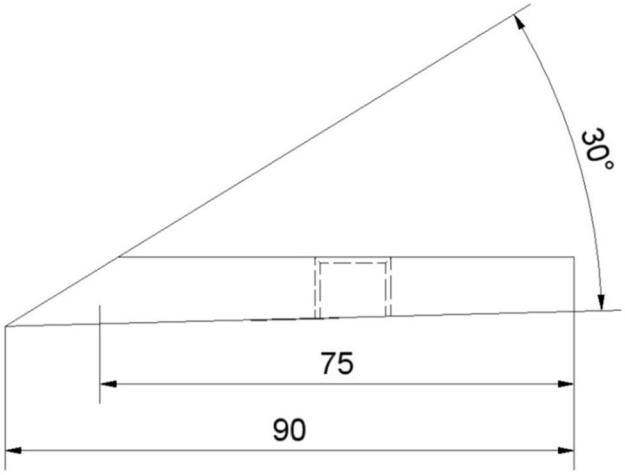
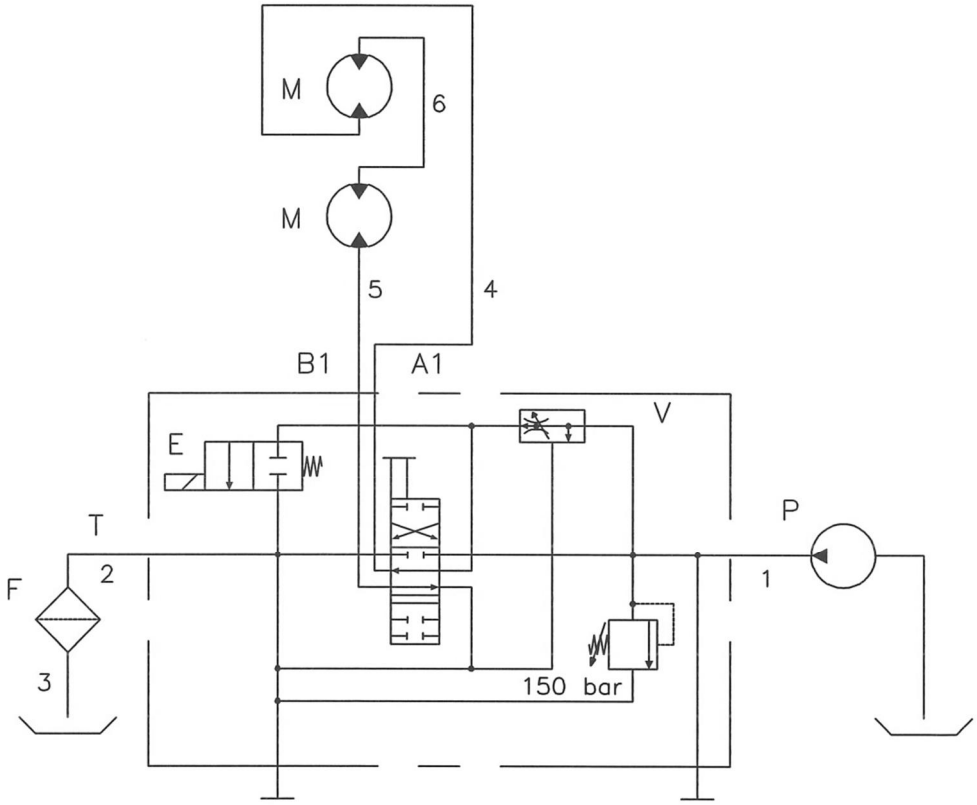
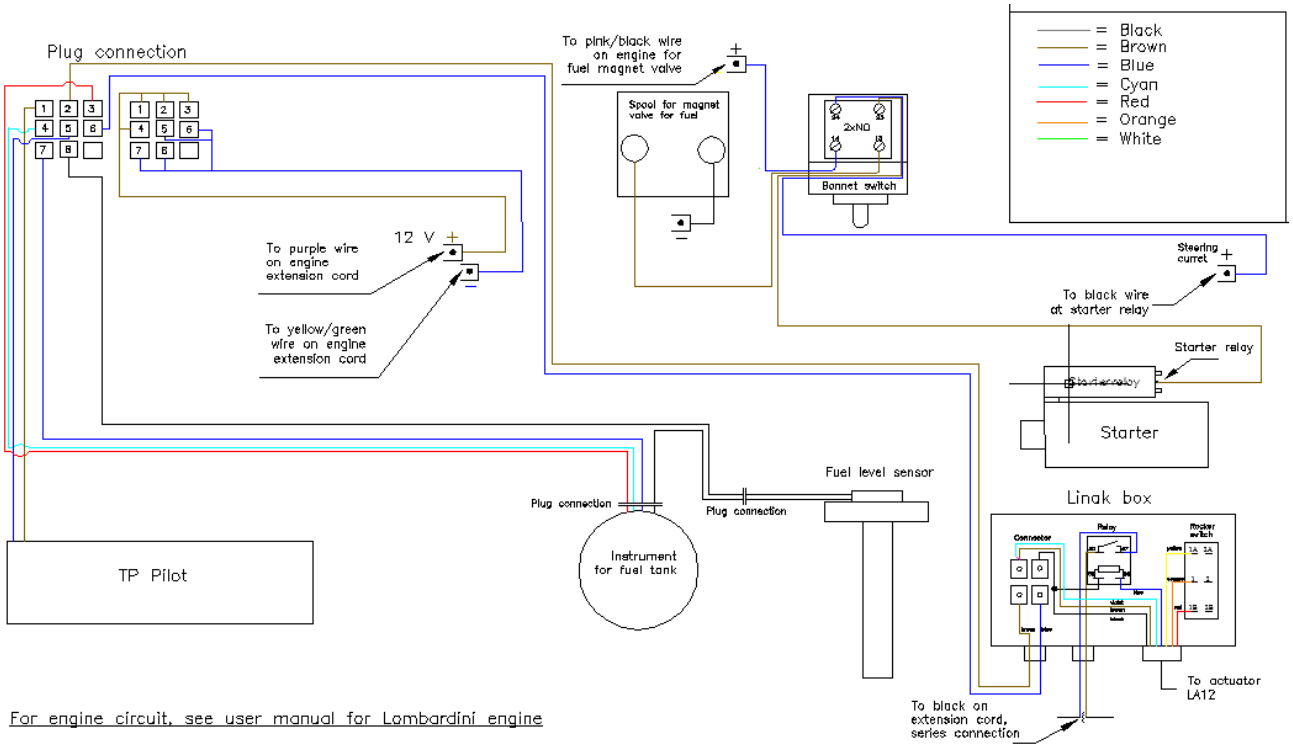


Figure 21 Grinding angle and minimum blade width for the chipping blade

10 Hydraulic diagram, TP 175 MOBILE



11 Electrical diagram, TP 175 MOBILE



12 Instructions for revolutions monitor TP PILOT 01

12.1 Overall operation

The TP Pilot allows you to monitor the revolutions of the engine and feed rollers and sounds an alarm when low or high limit values are exceeded. TP Pilot is pre-programmed for 26 machine types. The parameters for limit values may be changed by entering a code, applicable from version 816.14, see the set-up table for machine types.

Different functions and display indications

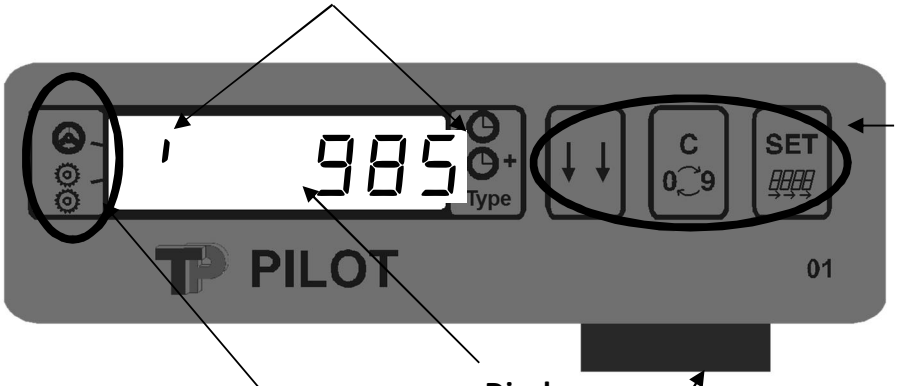
The following functions are included in the computer:

Symbol:	Term:	Limit value:
	Programmable revolutions monitor **Disc** (used with sensor for disc rpm)	1 – 9999 rpm (in practice not under 12 rpm)
	Programmable revolutions monitor **Roller** (used with sensor for roller rpm)	1 – 9999 rpm (in practice not under 12 rpm)
	Work time	0:0 – 99:59 hours: minutes 9999 whole hours
+	Work time total	0:0 – 99:59 hours: minutes 9999 whole hours
Type	Choice of machine type	1–26

Overview of the monitor

Marker

- Display marker (vertical or horizontal) at the sides of the display indicates which function is shown at the moment



Operation keys

- Change between display indications
- Starting changes to the marked value
- Programming of new numerical values and resetting.

Display indications

- Shows the possible functions (values) which can be shown in the display

Display

Connector

- Inputs to enclosed sensors and any outputs

Explanation for operation keys

- Key

Press the key to change between the different display indications (seen in the window at the left end of the display) and through that the different functions of the monitor. With every press of the key, the position of the marker/display indication changes one step. The marker starts in the top left corner and then moves "down".

The key is also used to exit the change menu (see next section).

- Key

Use the SET key for programming (change/delete) values in the computer, e.g. entering alarm values for high or low rpm.

- Key

Press the C key to change or delete the values that shall be programmed (must first flash by using the SET key).

The computer is equipped with an internal memory which saves all values when the power is cut.

12.2 Programming

The following parameters can be finely-adjusted, as needed.

Parameter	Meaning	Comment
L(ow)	Lowest rpm	Deviation from normal rpm. If the machine is loaded to under "lowest rpm", the feeding is uncoupled so that the machine has the possibility of reaching normal rpm, at which point the rollers are re-coupled.
H(igh)	Normal rpm	Normal rpm, which the disc must maintain and at which point the feeding in starts.
T(ype)	Machine type	According to the set-up table for machine types

Triggers an alarm on the feed roller. If the rpm on the feed roller exceeds the upper limit value (Roller flashes) the display will blink between **the rpm value** and **high**.
Adjust the roller speed by turning the manual regulation of the oil quantity for the oil engines.
When the roller speed falls below the limit value again, the current rpm is displayed.

12.2.1

Entering code

When changing parameters and machine type, the code **1001** must be entered. Procedure for entering code: Use the  key to select what is required to be changed on the display. Press the  key for one second until _c0000 flashes. Use the  key to enter the first digit of the code number. Press the  key to move the marker to the next digit in the number and so on, until all the digits are changed/programmed. Finally, press the key once to exit the menu. 
The code must be entered with every change.

Shown below is an example of the programming of limit values on the disc.

Example of changing low limit value to 850 rpm and high limit value to 1025 rpm		
Press the key:	**The display shows:**	**Explanation:**
↓↓	0	Find the revolution monitor for the disc by pushing the key repeatedly.
SET	L X800	Press the key for one second and **enter the access code.** L lights up on the left and the first digit (four digits in total) flashes.
C	L _800	Press the key until the digit has the correct value. NB: Zero is shown as _ in this position.
SET	L _X00	Press to set/change the next digit (the second digit will flash).
C	L _800	Press the key until the desired digit is correct.
SET	L _8X0	Press to set/change the next digit (the third digit will flash).
C	L _850	Press the key until the desired digit is correct.
SET	L _85X	Press to set/change the last digit.
C	L _850	Press the key until the desired digit is correct.
↓↓	h X000	Press the "arrow" key and "h" (high) will light up to the left and the first digit (of four) will flash.
C	h 1000	Press the key until the desired digit is correct. NB: Zero is shown as _ in this position.
SET	h 1X00	Press to set/change the next digit (the second digit will now flash).
C	h 1000	Press the key until the desired digit is correct.
SET	h 10X0	Press to set/change the next digit (the third digit will now flash).
C	h 1020	Press the key until the desired digit is correct.
SET	h 102X	Press to set/change the last digit.
C	h 1025	Press the key until the desired digit is correct.
↓↓		Press to exit the programming menu.

When an alarm limit on the disc is exceeded, the current rpm is still shown while the feed rollers are stopped. If the disc has been under the lower limit value, the feed rollers will start when the disc's rpm is above the set upper limit value 'h' (e.g. 1000 rpm).

Set-up table for included machine types.

Model	Disc rpm	rpm 1 L	rpm 1 h	Type No.
TP 175	*1625*	1500	1625	14

Table for the rollers rpm based on blade position

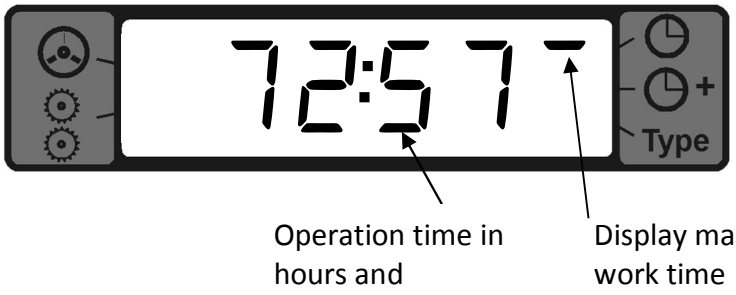
Blade position / Model	Disc rpm	4 mm rpm	6 mm rpm	8 mm rpm	10 mm rpm	12 mm rpm
TP 175	*1625*	12	18	24	30	36

From the above table the roller's rpm can be seen for the current position of the blades.
The rpm is set by means of the regulation screw on the control valve.

Working time on the machine:

Resetting the rotation time on the machine.

In this display indication, the middle horizontal marker is activated on the right side. The complete rotation time will be shown as illustrated in the following figure.



- Over 99:59 hours/minutes, only whole hours are shown.

Resetting the rotation time on the machine

Resetting the rotation time (operation time) on the machine can be done at any time. First, press the ↓↓ key until the display for work time appears. Next, enter the following:

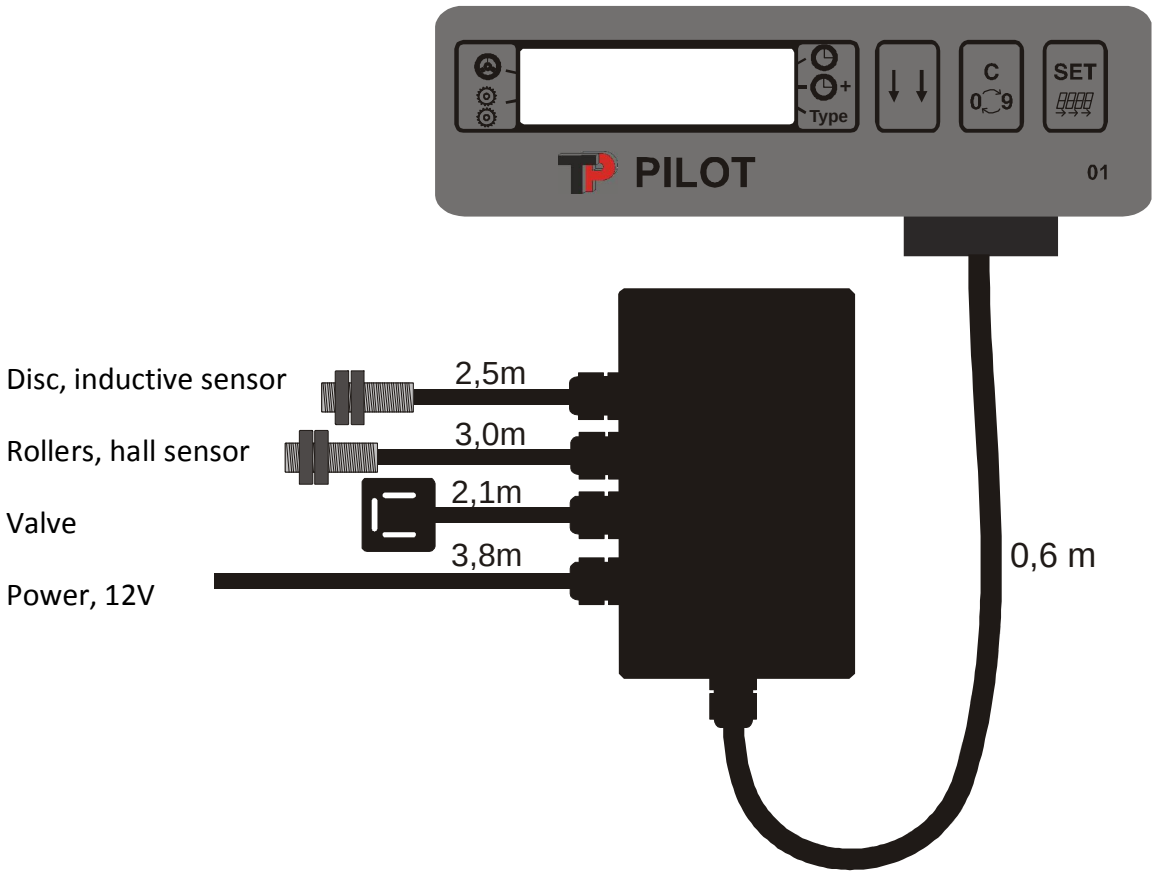
Press the key:	The display shows:	Explanation:
↓↓	72:57 (example)	Find job hours by repeatedly pressing the key.
SET	72:57	Press the key for five seconds until the number blinks.
↓↓	00:00	Press the key to reset the rotation time.

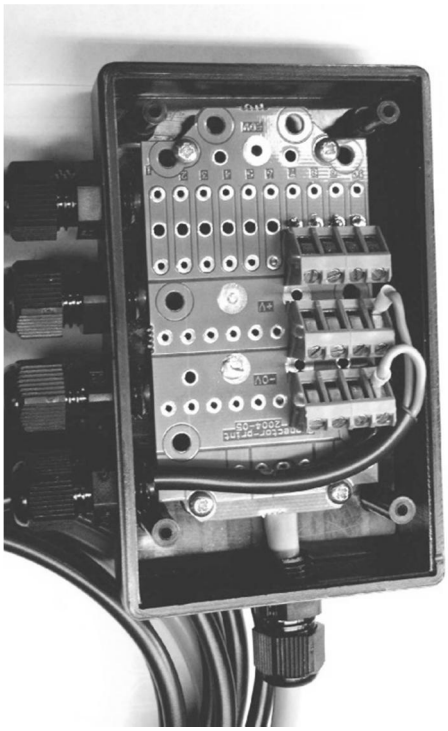
NB: Total hour counter (bottom vertical marker) cannot be reset. It is used for registering the machine's total work time.

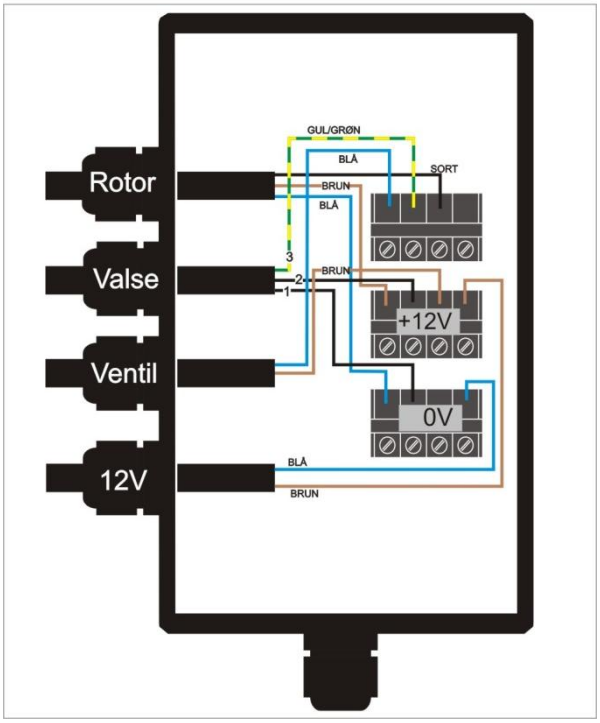
12.3 Installation

Mechanical set-up and installation diagram

Installation diagram when using electronic sensors (hall or inductive sensors):







12.4 Technical data

Display: Six digits

Power supply: 12 VDC / 1.24 A

Temperature ranges: TP Pilot is fully operational in the temperature range -10 to +70 °C.

Pulse signals from sensor: Max. 225 pulses/second

NB:

The control/monitoring system has been designed for use in connection with the functions described. Any other use of the control/monitor system may be associated with significant hazards and exempts the supplier of the control system from liability.

13 Troubleshooting for the wood chipper TP 175 MOBILE

Check possible causes before contacting the supplier.

Problem/Possible cause	Solution
The rollers are not turning round satisfactorily:	
Not enough oil in the hydraulics system	Fill up with hydraulic oil
The flow valve is screwed out too far	Turn up the flow
The stationary roller is blocked	Clean under and behind the roller
The bypass valve is dirty	Clean the bypass valve
The revolutions monitor is blocking operation	Increase the rpm on the disc
The operation bar is in the 0 position	Put the operation bar in position A
The rollers are not pulling satisfactorily:	
Not enough flow	Screw out further the flow valve (opened)
The V-belts are too slack	Tighten the V-belts
The hydraulic oil is becoming too hot	Let the machine cool down while checking why Change the hydraulic oil
Poor viscosity of the hydraulic oil	Replace the hydraulic filter
The hydraulic filter is clogged	Replace the hydraulic pump
The oil pump is worn or damaged	Replace the oil engine
The oil engine is defective	Clean the pressure control valve
The pressure control valve in the control valve is dirty	
Unsatisfactory woodchip quality:	
The knives are blunt	Sharpen the knives
The counterknife is worn	Reverse/replace counterknife
The knives are worn too far down	Replace the knives
The distance between knife and counterknife is too big	Adjust the distance between the blades and counterknife
Sliver breaker not mounted or worn	Fit or replace the sliver breaker
Poor ejection of woodchips:	
Not enough drive	Not enough power
Square scrapers are worn	Replace the square scrapers
The facing plate in the top part	Remove the facing plate from the top part
Too low rpm on the machine	Increase speed to maximum revolutions

14 Warranty obligation for wood chipper

The warranty is valid for 12 months from date of purchase and covers any identifiable defects in materials or manufacturing defects. The warranty covers faulty components, which will be repaired or replaced.

Transport costs and labour costs involved in replacements are the responsibility of the customer.

When any claims are made, the replaced parts must be sent to Linddana for examination.

Linddana alone decides whether the claim can be approved.

The following is an excerpt from Linddana's Terms of Sales and Delivery (items 4 and 5).

Claims

Any risk related to the goods shall pass to the customer when the goods are delivered. Any claims related to a delivery must be made in writing to LINDDANA as soon as possible, and not later than eight days after the goods are received. If LINDDANA has not received the claim within the stated time limit, the buyer's objections about quality or quantity is rendered void.

LINDDANA shall not be liable for defects other than those mentioned in this clause. This applies to any losses that may be caused by the defect, including operational losses, or loss of earnings and other consequential financial losses.

Warranty terms

LINDDANA provides a 12-month warranty that covers any repairs of faults or defects in construction, materials or manufacturing. This warranty shall not cover defects or faults due to inadequate maintenance, incorrect installation, alterations made by the buyer or incorrect use of the product. If non-original parts are used, the warranty is void.

Furthermore, the warranty shall not cover normal wear and tear. LINDDANA's obligations under the warranty shall be conditional on the buyer's documentation that any ascertained defect or fault has not been caused by circumstances excluded from the warranty; cf. above.

LINDDANA shall be entitled and under an obligation to remedy all defects caused by faults of design, materials or production. LINDDANA alone shall decide whether remedial action shall be in the form of repair or replacement of the defective part or parts. Where repairs are carried out, the buyer shall be obliged to deliver the item sold to a workshop indicated by LINDDANA, and collect it, at no cost to LINDDANA. When the defective part or parts are replaced, the buyer shall be obliged to send the defective parts to LINDDANA at no cost to LINDDANA. LINDDANA shall be entitled to deliver a substitute product to replace defective products.

The buyer shall inform LINDDANA of faults or defects in the product sold, not later than eight days after the defect is discovered or should have been discovered by the buyer. If the buyer does not inform LINDDANA before this time limit has expired and before the warranty period has expired, the buyer shall forfeit the right to make any claims arising from the defect or deficiency.

LINDDANA assumes no other liability for such defects. This applies to any losses that may be caused by the defect, including operational losses, or loss of earnings and other consequential financial losses.

LINDDANA is entitled and obligated to remedy any faults which are covered by a warranty granted by LINDDANA. LINDDANA alone decides whether the remedy shall take the form of repairs or replacement of the defective parts, everything under the terms stipulated in item 4.

LINDDANA has no other liability for those defects. This applies to any losses that may be caused by the defect, including operational losses, or loss of earnings and other consequential financial losses.

The warranty does not cover:

- Defects that can justifiably be attributed to inappropriate use.
- Use of non-original spare parts, including wearing parts.
- Incorrect adjustment or use of the machine.
- Use of wrong lubricant or hydraulic oil.
- Tightening spring for rollers.
- V-belts
- Knives and counterknives which break because of foreign bodies in the machine.

15 Technical data wood chipper

Type	TP 175 MOBILE
Chipping principle	Disc chipper
Disc diameter, mm	599
Disc rpm*	1625
Total number of knives	2
Power, kW/(HP)	26/(35)
Max. Wood diameter, mm	175
Max. woodchip length, mm	12
Weight, kg	739
Height, mm	2440
Width, mm	1416
Length, mm	3724

We reserve the right to make changes to the design and specifications without notice.

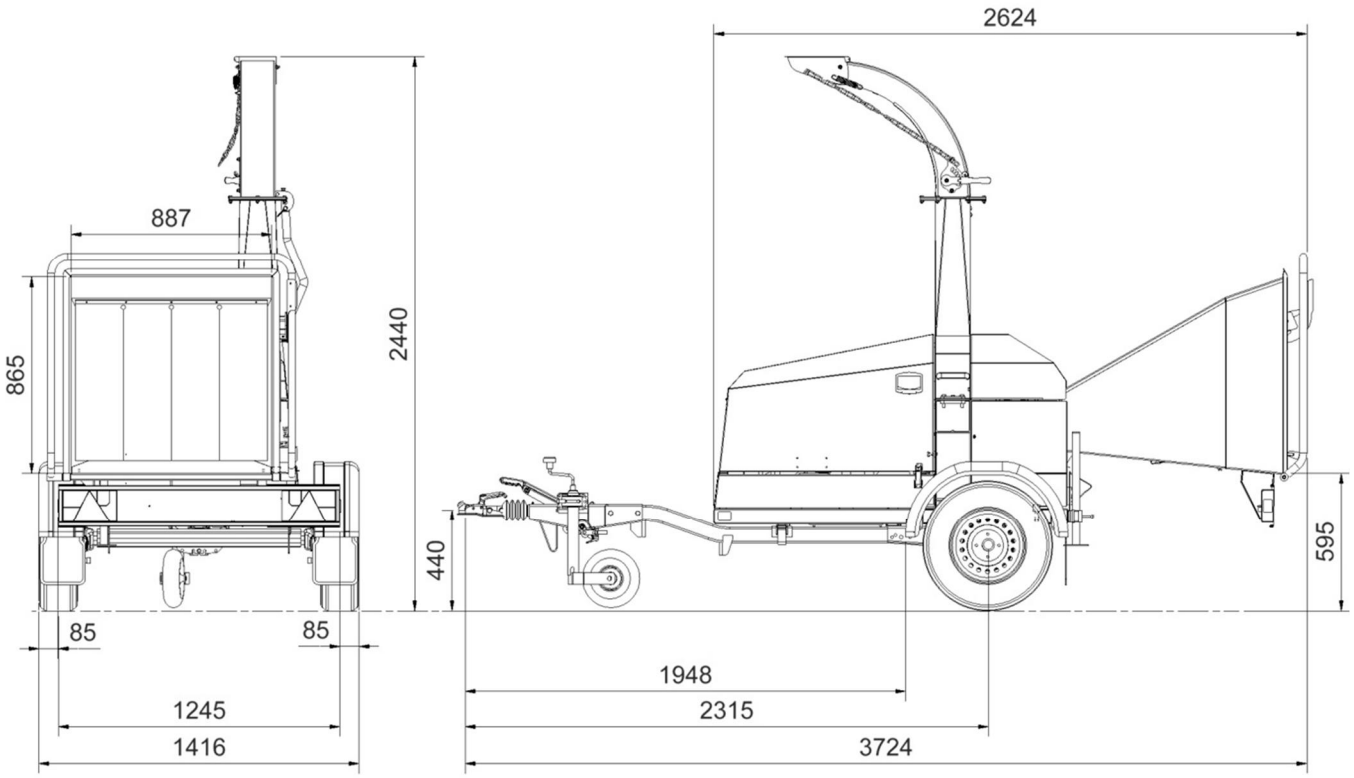


Figure 22 Dimensioned sketch for TP 175 MOBILE with fixed funnel

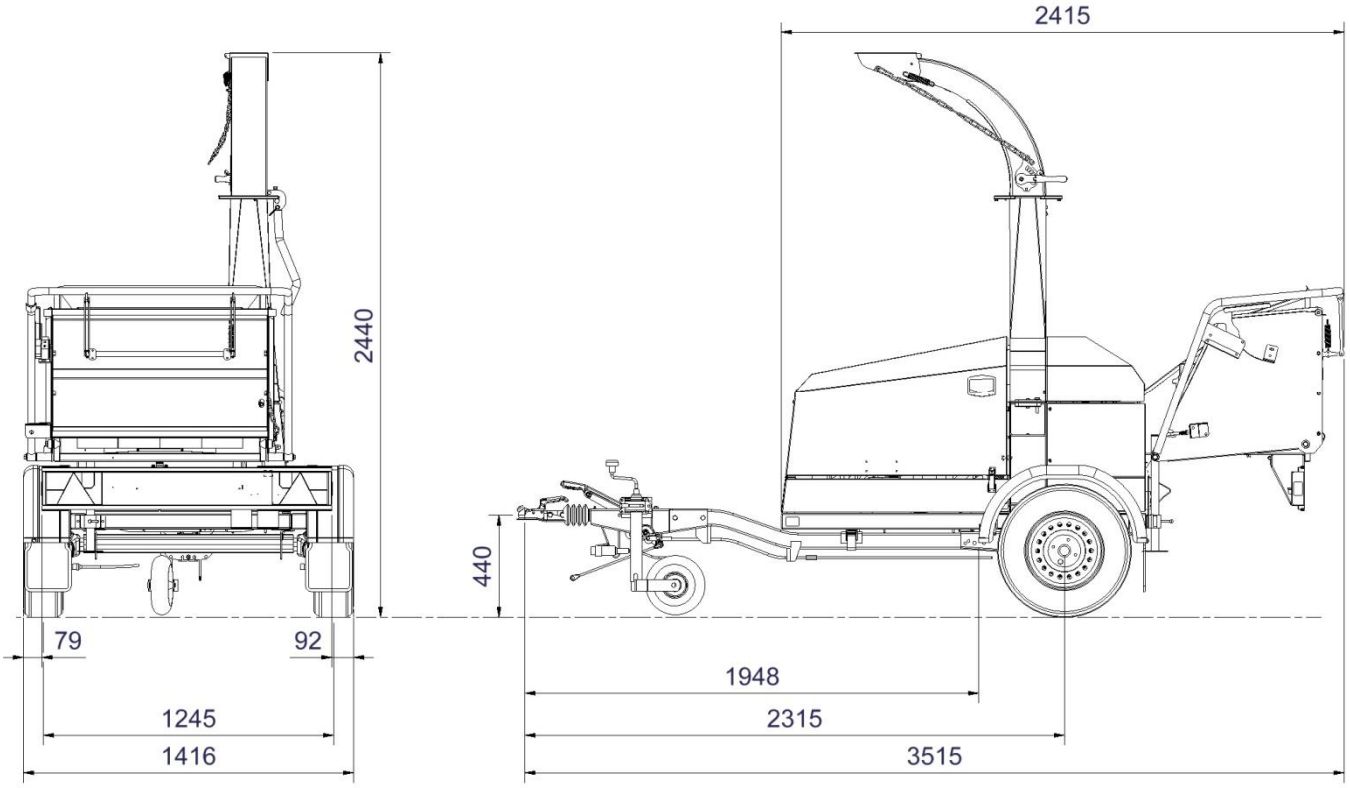


Figure 23 Dimensioned sketch for TP 175 MOBILE with foldable funnel (funnel folded up)

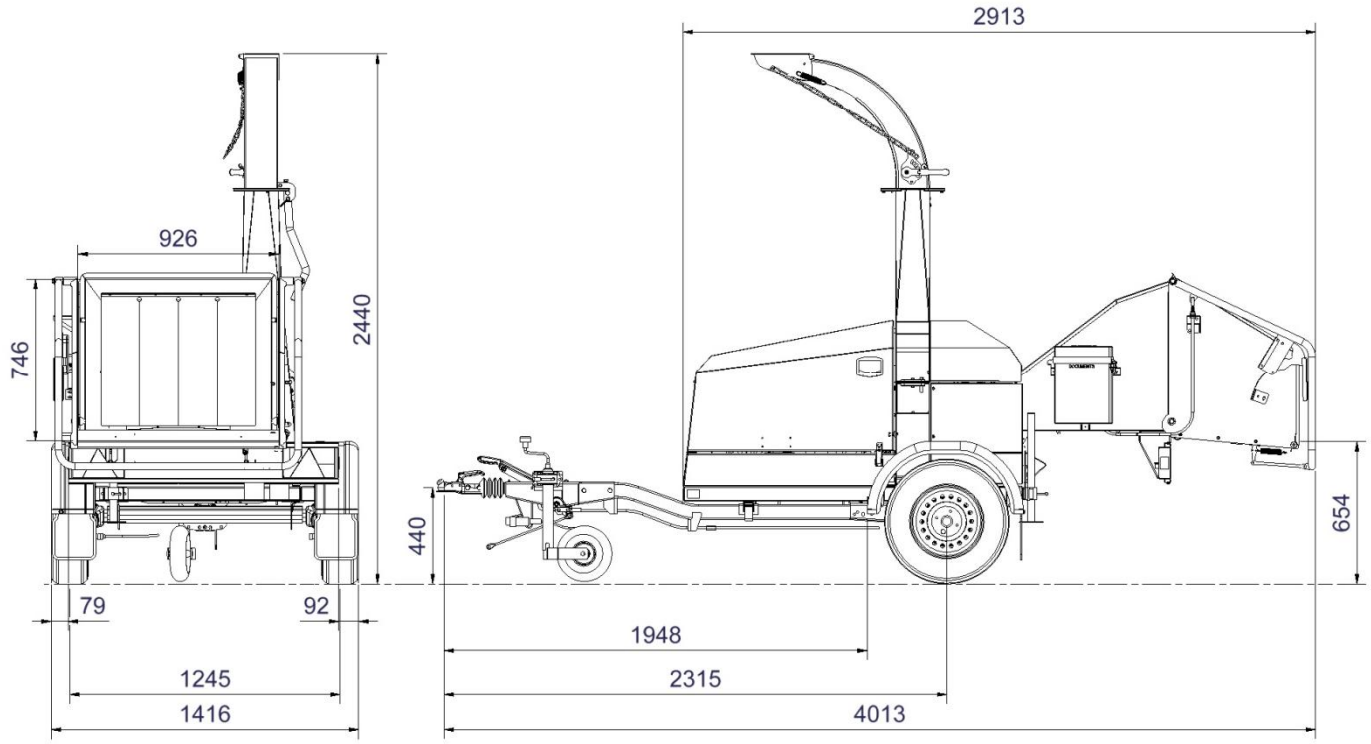


Figure 24 Dimensioned sketch for TP 175 MOBILE with foldable funnel (funnel folded down)

16 Extra equipment

- Tool kit including torque spanner
- Lock for socket coupling
- Foldable funnel
- Sliver breaker

17 Spare parts catalogue