



**User Manual
&
Spare Parts Catalogue
for TP 250 PTO K wood chipper in
the Park Series**



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.

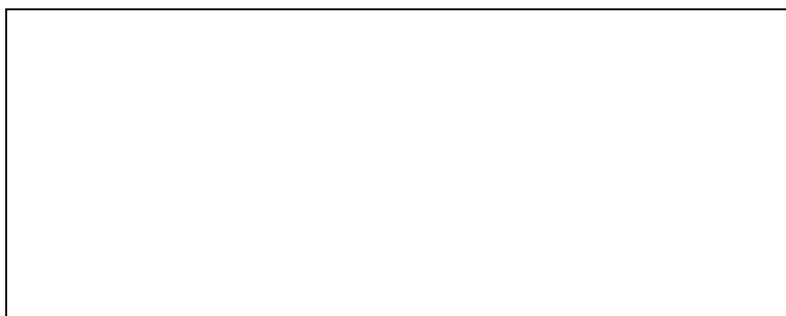
Originally written in Danish, the user manual provides an explanation of safety, use and maintenance, to ensure working with the wood chipper will be safe and profitable.

Linddana A/S



Hans Anker Holm, CEO

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



Dealer stamp

Applies to Denmark (for all other countries contact the local TP dealer):

Linddana provides a knife sharpening service, so your knives can be sharpened and sent back on the same day as they are received (for more details tel.: +45 76904045).

To keep your wood chipper in top condition and prolong its lifetime, Linddana offers a service contract, under which the wood chipper will be checked once a year by our technician, ideally in collaboration with the user. In addition to a technical check, the user will be given advice on the use and maintenance of the wood chipper.

2 EU DECLARATION OF CONFORMITY



Manufacturer:

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

Wood chipper:

and accompanying extra equipment is in conformity with the requirements of the Machinery Directive (Directive 2006/42/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: Hans Anker Holm

A handwritten signature in dark ink, appearing to read 'Hans Anker Holm', written in a cursive style.

Ølholm, 01 May 2017

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4 Use and safety

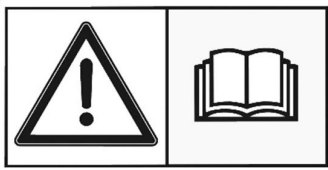
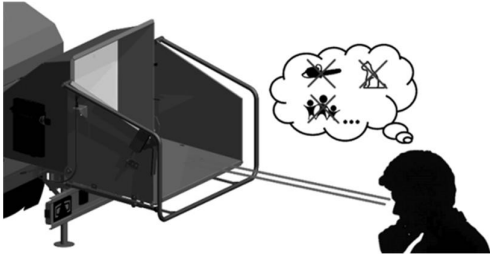
TP 250 PTO K is a crane machine and must not be feeded by hand! During operation, no persons is allowed in the crane work area, there is a security zone of 20 m around the wood chipper.

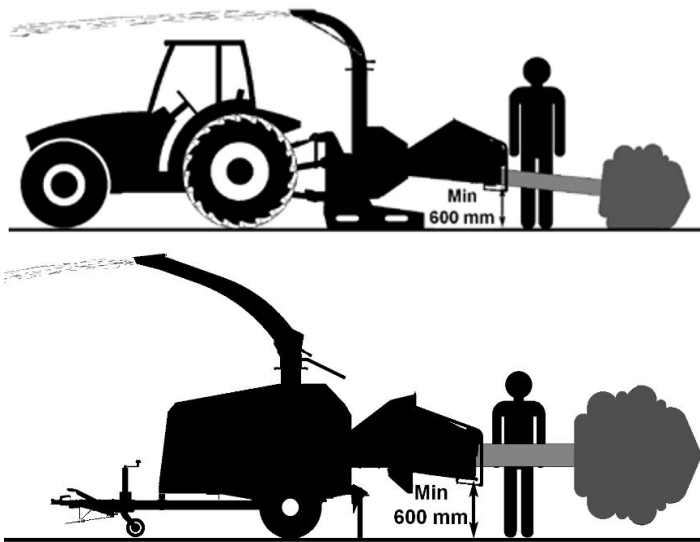
This TP wood chipper is specially designed as a **stationary** wood chipper, which chips wood in the form of branches, bushes and waste wood from windbreaks, parks, roadside trees, etc.

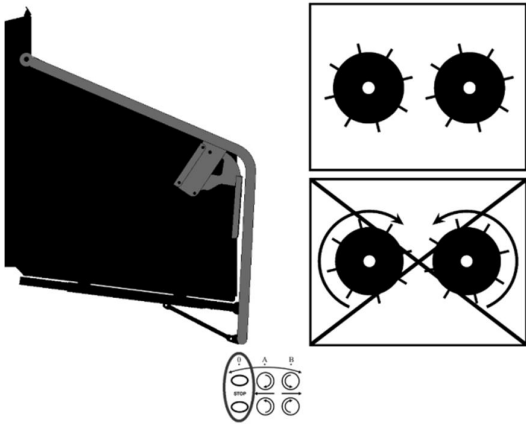
Any modification to the design of the machine is strictly prohibited. In the event that modifications are made, Linddana A/S disclaims all liability.

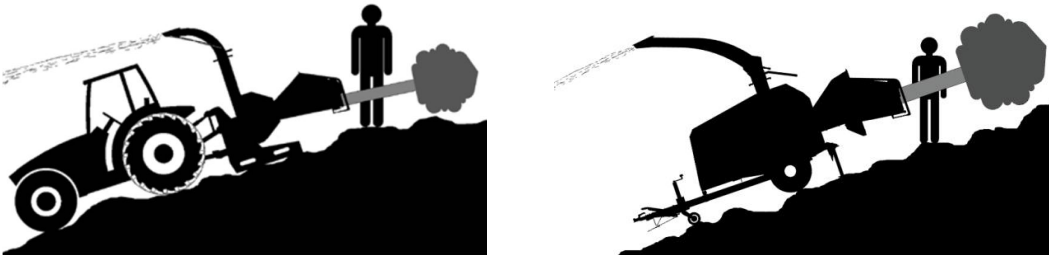
4.1 Mandatory Instructions and Warnings

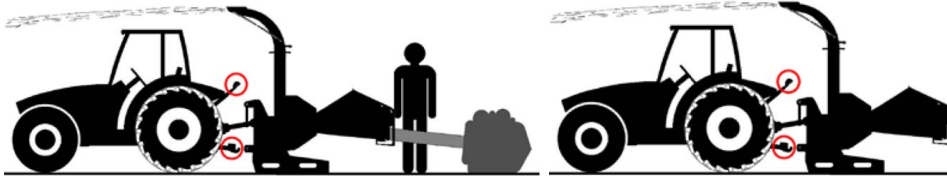
4.1.1 Before use

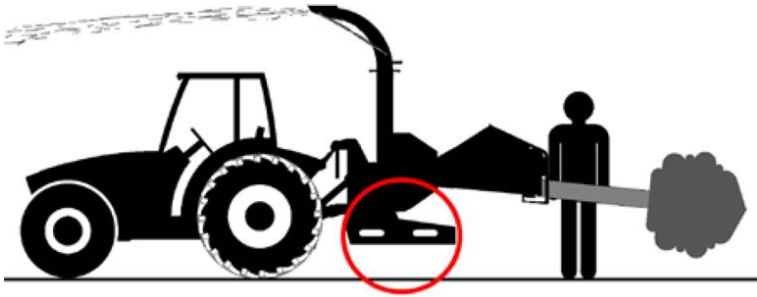
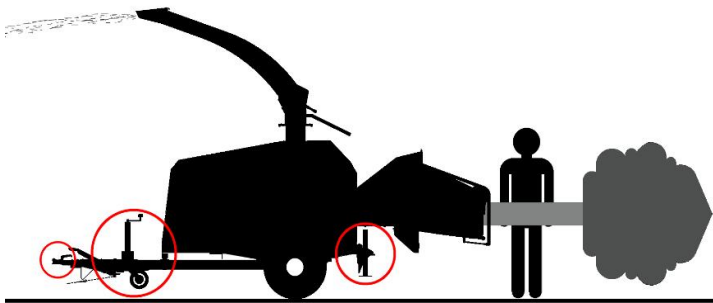
	 ALWAYS read the user manual before using the wood chipper. Remember to store the user manual in the manual box.
	 ALWAYS wear ear defenders, safety goggles, close fitting safety clothing and safety shoes. (applies to the PTO and MOBILE model)
	 ALWAYS ensure that the funnel is free of people, animals and other foreign bodies before starting the wood chipper.

	ALWAYS ensure that all of the guards are securely closed/fitted before starting the wood chipper.
	ALWAYS ensure that the tractor which drives the wood chipper is safely parked before starting the wood chipper (applies to the PTO model). ALWAYS ensure that the wood chipper is safely parked before starting the wood chipper (applies to the MOBILE model).
	 ALWAYS ensure there is more than 600 mm of clearance between the ground and the wood chipper's lowest funnel edge and that it stands on a level surface (applies to both the PTO and MOBILE model). ALWAYS ensure that the wood chipper is fitted to the tractor's three-point suspension (applies to the PTO and PTO K model).

	 ALWAYS ensure that all of the safety devices function correctly before starting the wood chipper. This applies in particular to the safety bar's STOP function. (applies to the PTO and MOBILE model)
	ALWAYS observe the ground conditions around the wood chipper. Falling down in the vicinity of the wood chipper is hazardous. (applies to the PTO and MOBILE model)
	ALWAYS ensure the length of the PTO shaft is suitable for the tractor in accordance with the recommendations from the supplier of the PTO shaft (applies to the PTO and PTO K model).
	ALWAYS ensure that the PTO shaft's tube guard and cover is intact and that the safety chains on the transmission shaft are safely fitted (applies to the PTO and PTO K model).

	 NEVER allow anyone under 18 years of age to operate the wood chipper (however, anyone who is 16 years old and over may do so under the supervision of an adult).
	 NEVER operate the wood chipper if under the influence of alcohol or narcotic substances.
	 NEVER operate the wood chipper on uneven or inclined surfaces. (applies to the PTO and MOBILE model)
	NEVER start the wood chipper without the ejector spout fitted.
	NEVER use the wood chipper in enclosed or poorly ventilated spaces, because of the danger of carbon monoxide poisoning.

	 NEVER point the ejector spout in the same direction as people or at an area that people move around in. A safe distance of 20 m must be maintained in the direction of where the woodchip is ejected.
	 NEVER start or operate the wood chipper before it has been fitted to the tractor's three-point-suspension (applies to the PTO and PTO K model).

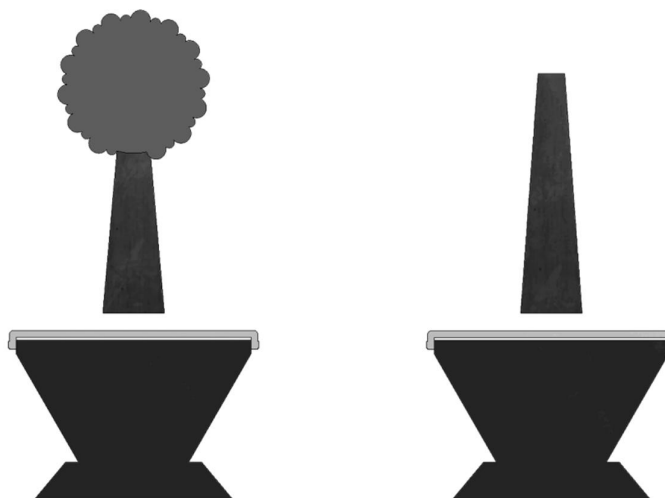
	 NEVER start or operate the wood chipper if it does not stand on the ground (applies to the PTO model).
	 NEVER operate the wood chipper without support from the jack and support leg or from the vehicle's trailer hitch (applies to the MOBILE model).
	NEVER use the wood chipper with material that is not wood.
	NEVER use the wood chipper to push trees, stumps, etc.
	NEVER transport equipment in the funnel, such as forest chains, axes, chainsaws, etc.

4.1.2 During operation

	ALWAYS push the safety bar into the STOP position if a dangerous situation arises (see chapter 8). (applies to the PTO and MOBILE model)
	ALWAYS keep body parts away from the funnel and wood chipper's other moving parts.
	ALWAYS stand at the side of the funnel when the wood chipper is chipping trees that have branches. (applies to the PTO and MOBILE model)
	ALWAYS push logs in from the rear of the log. (applies to the PTO and MOBILE model)

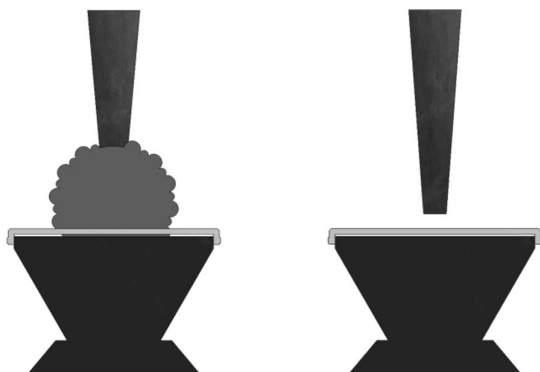


ALWAYS use a rod to push short pieces of tree into the rollers. (applies to the PTO and MOBILE model)

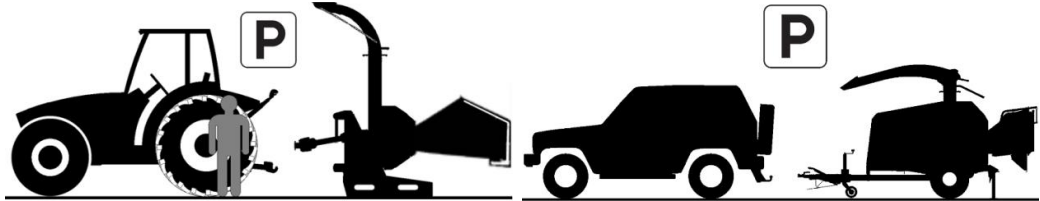


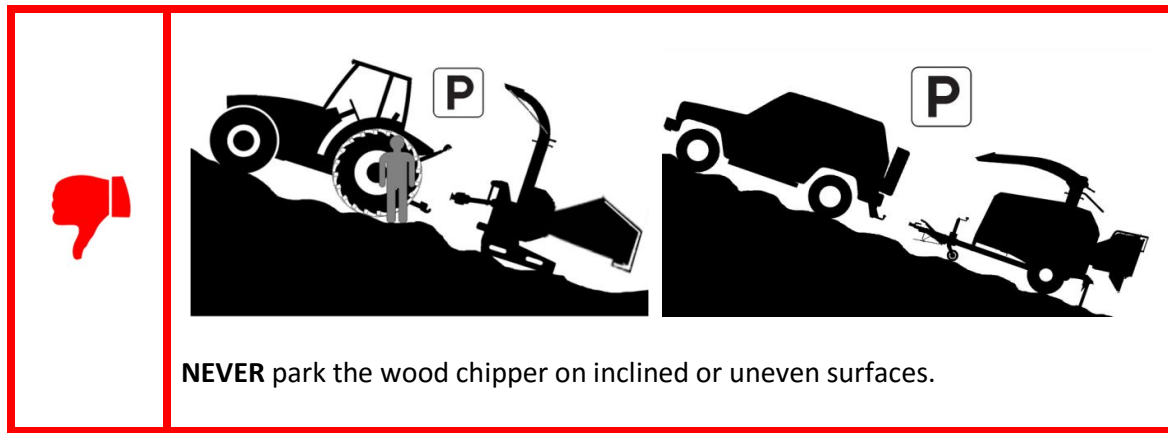
ALWAYS feed the wood chipper with the thick end of the log first.

ALWAYS feed the wood chipper so that the tree crown points away from the funnel.

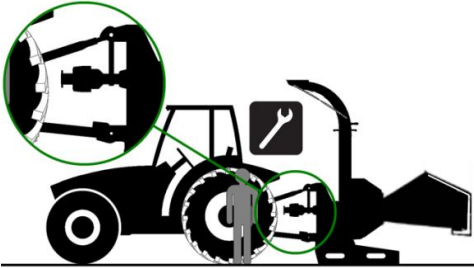
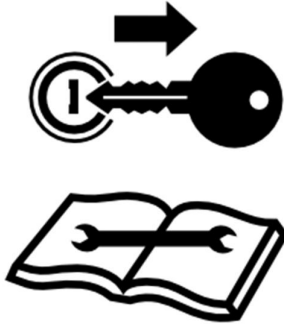
	 NEVER feed the tree crown into the wood chipper first. NEVER feed the wood chipper with the thin end of the log first.
	NEVER exceed the wood chipper's nominal rpm (see chapter 16) (applies to PTO and PTO K model).
	NEVER attempt to remove any trapped material from between the feed rollers before the wood chipper has stopped and the roller console has been opened as described in chapter 9.3.
	 NEVER reach into the funnel to push wood into the rollers. (applies to the PTO and MOBILE model)
	NEVER open or remove the guard while the wood chipper is operating.

4.1.3 Transport and parking

	 ALWAYS park the wood chipper on a level surface.
	ALWAYS keep the ejector spout within the width of the machine during transport. Remember to ensure that the ejector spout is securely fastened.
	ALWAYS keep the PTO shaft in the carrier shackle when removed (applies to PTO and PTO K model).
	ALWAYS place the foldable funnel in the transport position during transport (the funnel must be folded up and locked using the pin).
	ALWAYS ensure that all of the wood chipper lights work correctly before operating (applies to the MOBILE model).
	ALWAYS comply with local public authority regulations when transporting the wood chipper on public roads.



4.1.4 Service and repairs

	 ALWAYS disconnect the wood chipper from the tractor and ensure the disc has stopped moving before carrying out service or repairs (applies to the PTO and PTO K model).
	 ALWAYS remove the key from the ignition and ensure the disc has stopped moving before carrying out service or repairs (applies to the MOBILE model).
	ALWAYS after service or repair, ensure that all of the wood chipper bolts are fitted and tightened securely and that all of the safety devices are fitted and function properly.
	ALWAYS ensure that the knives, counterknives and rollers are kept sharp. This results in smoother in-feed, higher woodchip quality and less fuel consumption.

	 NEVER carry out service or repairs on the wood chipper while it is connected to the tractor (applies to the PTO and PTO K model).
	NEVER carry out service or repairs on the wood chipper while the key is in the ignition lock (applies to the MOBILE model).
	 NEVER remove or open the guards before the disc has stopped moving and the PTO shaft has been removed (applies to the PTO and PTO K model). NEVER remove or open the guards before the disc has stopped moving. (applies to the MOBILE model).

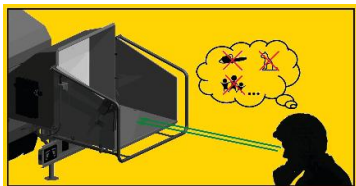
4.1.5 Safety instruction relating to: TP 250 PTO K

- The machine must **not** be fed by hand as it is exclusively designed for feeding by crane.
- There is a 20 m safety zone around the tractor and the wood chipper. During operation **no one** except the driver of the tractor is allowed in this area.
- If people should enter the safety zone by accident, the emergency stop which stops all movement by the crane and feeding into the wood chipper must be activated **immediately**. Similarly, the emergency stop must **always** be activated before the operator leaves the cabin.
- While the funnel is being cleaned to remove, fine chipwood, **THE RETRACTOR ROLLERS MUST BE STOPPED**, and the emergency stop **must** be activated. A broom or the like **must** be used for cleaning.
- Always remove the ignition keys from the machine and/or the tractor before leaving it.
- When working near roads, signs must be displayed in accordance with the Road Traffic Act.
- If the machine with a fitted crane is removed from the tractor, the crane's gripper must be lowered to the ground, next to the machine, so that the crane's weight does not cause the machine to tip over.
- **IN CASE OF POTENTIAL HAZARDS: ACTIVATE THE EMERGENCY STOP IN THE TRACTOR**

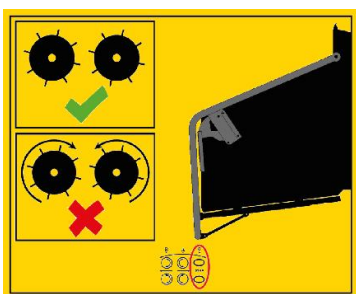
5 Pictograms used

TP 250 PTO and TP 250 MOBILE turntable model:

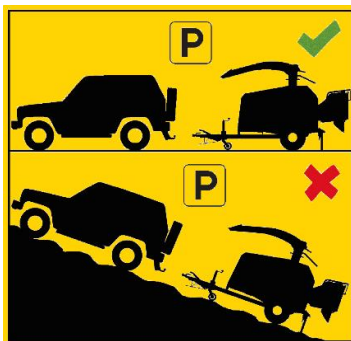
 Warning: Ejected Objects! Warning: Safe distance of 20 m!	 Warning: Rotating knives! Warning: Wait for disc to stop!	 Warning: Crushing hazard! Warning: Rotating rollers!
 Warning: Crushing hazard! Warning: Rotating belts!  Warning: Hot surface! (Fitted on the MOBILE model)	 Warning: Amputation hazard! Warning: Crushing hazard! Warning: Do not step on the funnel! Warning: Do not touch the funnel! Warning: Do not crawl up into the funnel!	 Warning: Read the instruction manual before use!  Warning: Remove the ignition key and read the user manual before service or repairs. (Fitted on the MOBILE model)



Warning: Ensure that the funnel is free of people, animals and other foreign bodies!



Warning: Ensure the safety bar works!

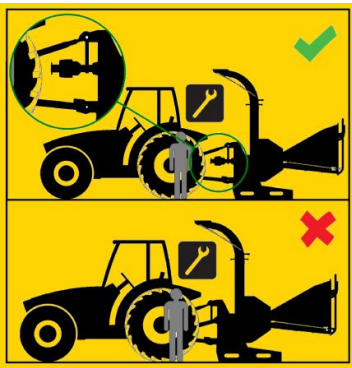
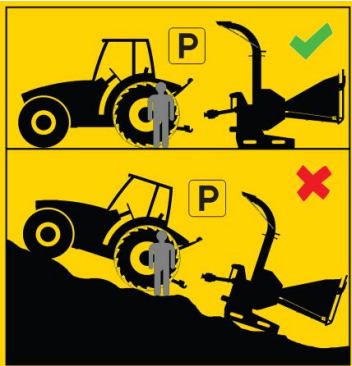
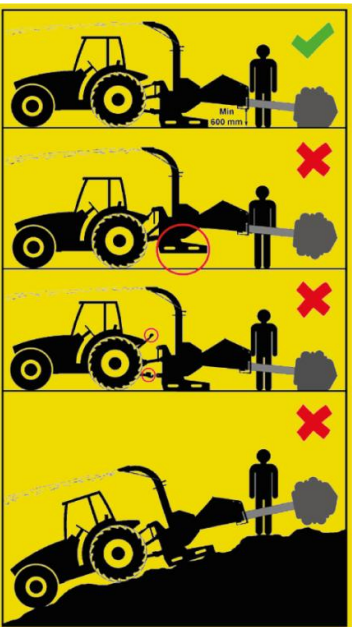


Warning: Do not park on uneven or inclined surfaces!
(Fitted on the MOBILE model)



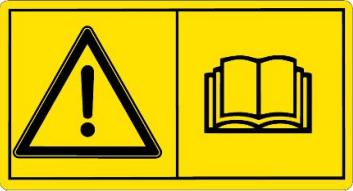
Warning: Do not operate the wood chipper without support from the jack and support leg or from the vehicle's trailer hitch!

Warning: Do not operate the wood chipper on uneven or inclined surfaces!
(Fitted on the MOBILE model)

 Warning: Max 1000 rpm, anti-clockwise direction of rotation! (Fitted on the PTO model)	 Warning: Never carry out service or repairs on the wood chipper while it is connected to the tractor's PTO! (Fitted on the PTO model)  Warning: Do not park on uneven surfaces! (Fitted on the PTO model)	 Warning: Do not operate the wood chipper if it is raised! Warning: Do not operate the wood chipper if it is not fitted to the tractor's three-point-suspension! Warning: Do not operate the wood chipper on uneven or inclined surfaces! (Fitted on the PTO model)
 Lifting point for forklift truck! (Fitted on the PTO model)	 Ear defenders and eye protection mandatory!	 Lifting point for crane!

For safety information and pictograms relating to the engine, see the engine manual.

TP 250 PTO K model:

 Warning: Ejected Objects! Warning: Safe distance of 20 m!	 Warning: Rotating knives! Warning: Wait for disc to stop!	 Warning: Crushing hazard! Warning: Rotating rollers!
 Warning: Crushing hazard! Warning: Rotating belts!	 Warning: Max 1000 rpm, anti-clockwise direction of rotation!	 Warning: Read the instruction manual before use!
 Warning: Must not be hand fed!	 Lifting point for forklift truck!	 Lifting point for crane!

6 Fitting instructions

6.1 Before use

The machine has a lifting point, which must be used whenever it is lifted by a crane or other lifting gear (rigging) (see figure 1). The machine can also be lifted using a forklift truck. This is done by using the holes made for this purpose on both sides of the foot (see figure 2). Make sure that the forks of the forklift truck are inserted all the way through, otherwise the machine can tip over. The TP 250 MOBILE TURNTABLE is mainly transported on the trailer wheels, but it can also be lifted by a forklift truck under the trailer bearers (see figure 3).

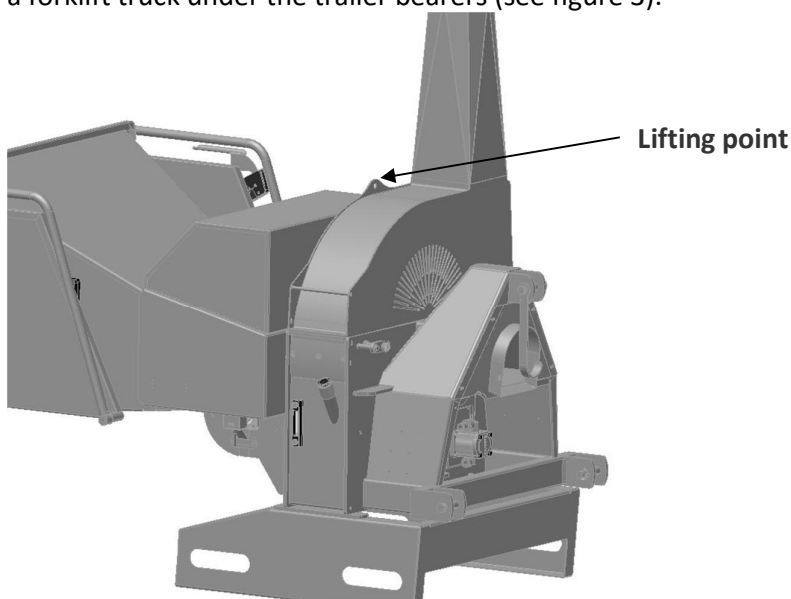


Figure 1 Lifting point on the machine



Figure 2 Lifting the machine using a forklift truck

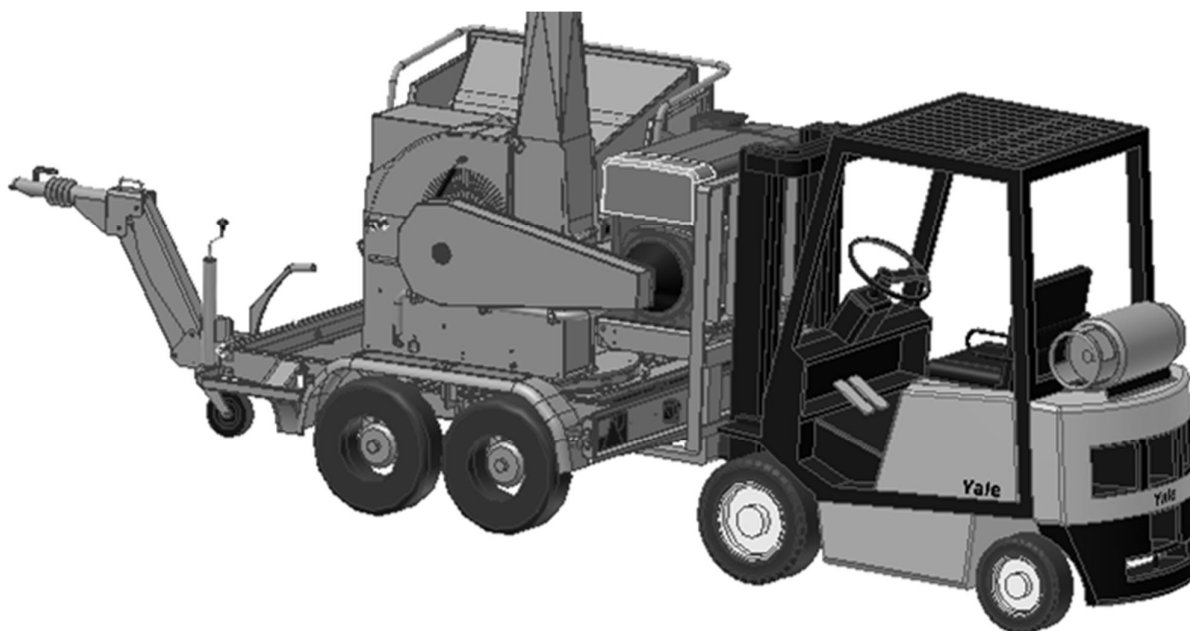


Figure 3 Lifting the machine using a forklift truck

Store the user manual for the PTO shaft with this user manual in the manual box on the machine.

Before start-up, ensure that the wood chipper is free of foreign bodies. The machine **must** be disconnected from the tractor PTO, and for MOBILE models, 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 (figure 4). 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.

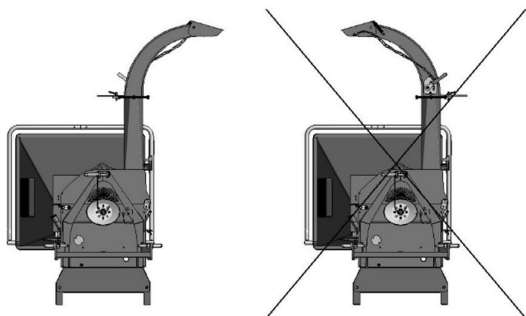


Figure 4

**Position of the ejector spout
when opening disc housing**

Ensure that the distance between the knives and counterknives is correct = **0.7 mm**. The knives have a fixed position of **13 mm**. Check that the knives run clear of the counterknife.

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 30).

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

6.2 Fitting instructions

The machine is designed to be fitted to a tractor three-point-suspension or fitted to a trailer with its own engine.

Machines that shall be fitted to a tractor three-point-suspension are delivered with a PTO shaft with either 1 3/8" - 6 splines or 1 3/8" - 21 splines.

At 1000 rpm, some tractor types must use a PTO shaft with 1 3/8" - 21 splines.

The PTO shaft **must** have free running fitted on the machine side.

Linddana uses Walterscheid 2400 with free running which comes with the machine.

The length of the PTO shaft must be adapted to the tractor in accordance with the instructions from the PTO shaft supplier. See attached PTO shaft user manual.

The machine must stand on a secure and a level surface during use and tractor-fitted machines must be attached to the tractor three-point-suspension (see figure 5). The tractor brakes must be properly activated.

Trailer-fitted machines must also have their brakes activated (see figure 6).

When starting the machine: Attach only when the motor is running at idle speed or at as few revolutions as possible to avoid overloading the PTO shaft, gearbox, tractor or wood chipper.

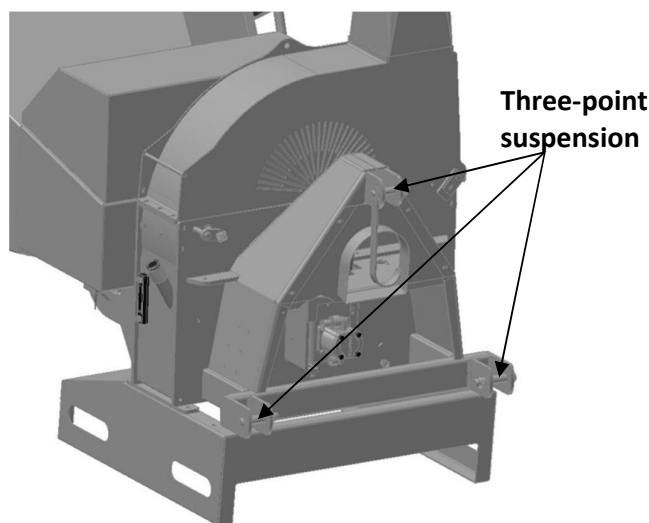


Figure 5 TP 250 PTO three-point suspension

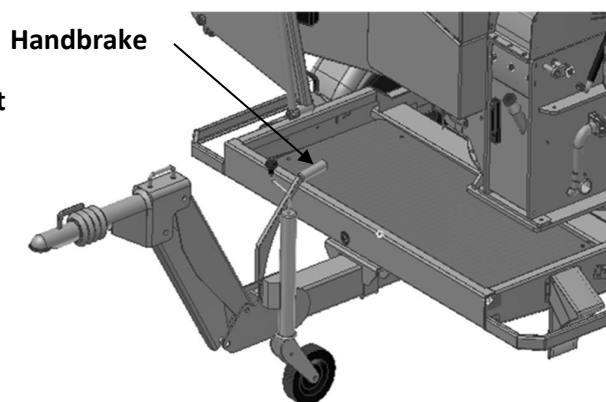


Figure 6 TP 250 MOBILE handbrake

7 Noise level

The sound output level and the sound pressure level from the TP 250 PTO have been measured during use with the disc running at 1000 rpm, powered by a tractor.

The sound output level and the sound pressure level from the TP 250 MOBILE have been measured during use with 930 rpm on the disc, powered by a Hatz 4L41C 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 250 PTO: 127 dB (A) relative to 1 pW

TP 250 PTO K: 127 dB (A) relative to 1 pW

TP 250 MOBILE: 127 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 250 PTO: 110 dB (A)

TP 250 PTO K: 110 dB (A)

TP 250 MOBILE: 109 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 defenders is mandatory when using the machine.

7.1 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 reaches the end of its operating life, 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.

8 Operation of the machine

The wood chipper is equipped with two hydraulic rollers, a pressure compensated flow valve, a control valve, a safety bar with a reset handle and a funnel lever on the feeding funnel (see figure 7).

The feeding funnel is foldable.

To make it easier to open and close the foldable feeding funnel, use the funnel lever, which is pulled out. After the feeding funnel has been opened or closed, push the funnel lever back again.

The operation bar must be in the stop position (0) during start-up (see figure 8). After start-up, release the reset handle and pull the safety bar into the middle position (A) and the rollers will turn. The material is now pulled into the machine.

By pulling the safety 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) or reverses (B), the reset handle will mechanically stop the safety bar. The reset handle must now be released before the safety 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.

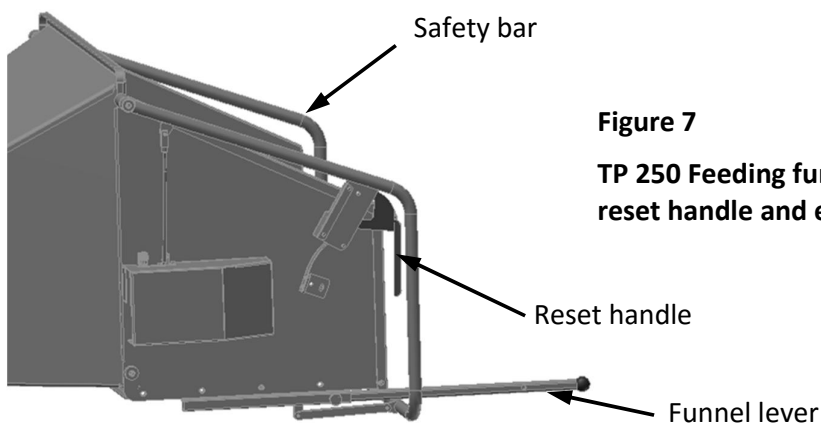
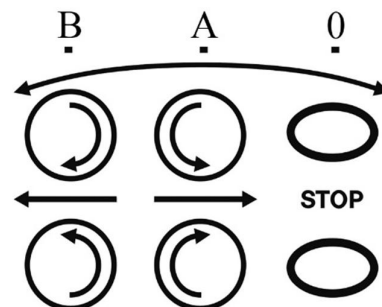


Figure 7

TP 250 Feeding funnel with safety bar, reset handle and extended funnel lever.

Figure 8

Safety bar instructions



During start-up, the safety bar must always be in position 0.

IN CASE OF POTENTIAL HAZARDS: PUSH THE SAFETY BAR INTO THE STOP POSITION (position 0).

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 desired woodchip length. The speeds vary with the number of revolutions on the PTO shaft. The woodchip length can be regulated on the flow-regulation valve on the wood chipper for smaller woodchip lengths than indicated in the table.

8.1 Table 1 Setting the rpm monitor for feed rollers

Woodchip length Model	Disc rpm	4 mm	6 mm	8 mm	10 mm	13 mm
TP 250 PTO	1000	17	26	35	44	56
TP 250 MOBILE TURNTABLE	900	16	24	31	39	51

9 Maintenance

In the case of all maintenance and repair work, the machine and the drive must be at a complete standstill before any work can be carried out. Tractor-fitted machines must be placed on a secure and level surface and must be uncoupled from the tractor PTO.

9.1 Maintenance schedule

Interval=> hours	8 ⌚	50 ⌚	100 ⌚	200 ⌚	1000 ⌚	1000 m ³	10,000 m ³
Lubricate the PTO shaft ¹	X						
Check knives and counterknives	X						
Tighten all bolts and nuts ²	(X)	X					
Lubricate disc main bearings ³			X				
Clean/lubricate tube connection for PTO shaft ⁴				X			
Lubricate roller bearings ⁵				X			
Replace hydraulic pump return filter ⁶		(X)			X		
Change hydraulic oil ⁷					X		
Reverse/replace counterknife ⁸					X		
Replace facing plate in top disc housing ⁹					X		
Reverse/replace triangle and square scrapers ¹⁰						X	
Grind carriers on feed rollers ¹¹						X	
Check V-belts ¹²		X					
Check ejector wings for wear					X		
Check casing for wear and tear							X

¹ Remove the PTO shaft and lubricate the four lubrication nipples using Uniway Li62 or equivalent lubricant.

² Tighten bolts and nuts, the first time after eight hours and then at intervals of 50 hours.

³ Lubricate two lubrication nipples with Uniway Li62 or equivalent lubricant.

⁴ Remove the PTO shaft and pull apart the tube connection, clean and lubricate it.

⁵ Lubricate two lubrication nipples with Uniway Li62 or equivalent lubricant.

⁶ Change for the first time after 50 hours and then every 1000 hours.

⁷ Drain the hydraulic oil and fill with new oil using 25 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.

⁸ Reverse/change the counterknife when necessary.

⁹ If fitted, change the facing plate in the top disc housing, as necessary.

¹⁰ Reverse/replace the triangle scrapers in the disc housing. Reverse/replace the square scraper on the disc.

¹¹ Grind the feed rollers sharp.

¹² Check the tensioning of the V-belts.

9.2 Lubrication and oil

The wood chipper is as standard, factory-filled with mineral-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, Statoil **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 in accordance with the maintenance schedule with Statoil **Uniway Li62** or a similar product.

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 9).

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 (25 litres for TP 250).

Fill the oil until the oil level is at the middle of the level glass.

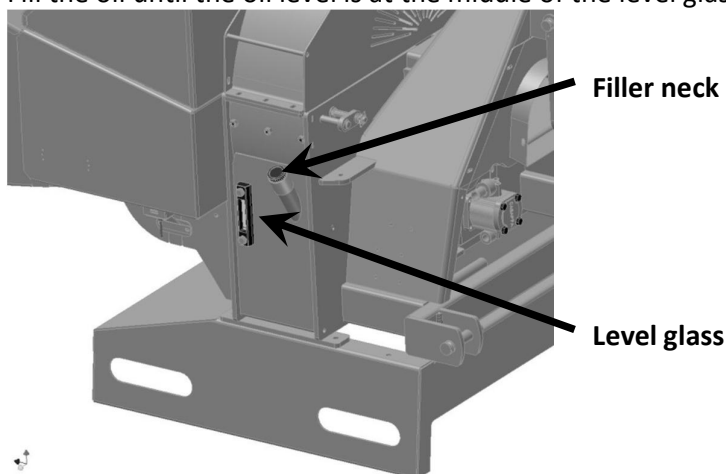


Figure 9 Refilling with hydraulic oil

9.3 Maintenance of the feed rollers

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

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

Procedure:

Stop the machine and the drive. Uncouple the tractor PTO. Ensure that the disc is at a **complete** standstill. Turn the ejector spout so that it faces away from the disc housing (figure 4). Loosen the bolts that hold the two parts of the disc housing together and open the disc housing. Using multigrip pliers or similar, lift the spring from the top feed roller.

Grip the handle and lift the roller housing and push the locking pawl into the lock in the side plate (figure 10). Next, secure the roller housing by letting it fall.

Now the carriers on the bottom feed roller can be sharpened with an angle grinder.

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

NB: The weld seams must not to be ground away!

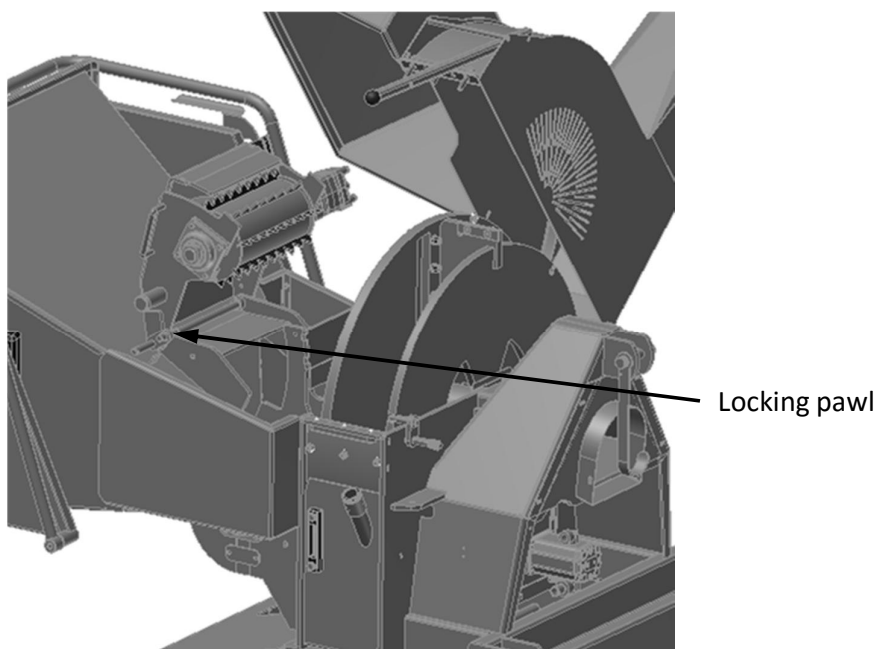


Figure 10 Securing using the locking pawl

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

9.4 Replacement of wearing parts

9.4.1 Counterknife

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 the drive. Uncouple the tractor PTO. Ensure that the disc is at a **complete** standstill. Turn the ejector spout so that it faces in the opposite direction to the end of the disc housing (figure 4). Loosen the bolts that hold the two parts of the disc housing together and open the disc housing. Using multigrip pliers, lift the spring of the top feed rollers and lift the feed roller housing. Next, secure the roller housing using the locking pawl (see figure 10).

Remove the three bolts which hold the horizontal counterknife. This is done from the outside and from below. Take out the counterknife and reverse/replace. Carefully clean both the counterknife and the contact surface before reinserting the counterknife. The distance between the edge of the knife and the counterknife must be **0.5–0.9 mm**. 0.5 mm with new knives (see figure 11). The bolts in the horizontal counterknife must be tightened to **200 Nm / 20 Kpm**. (Extra equipment: the tool kit comes with a torque wrench).

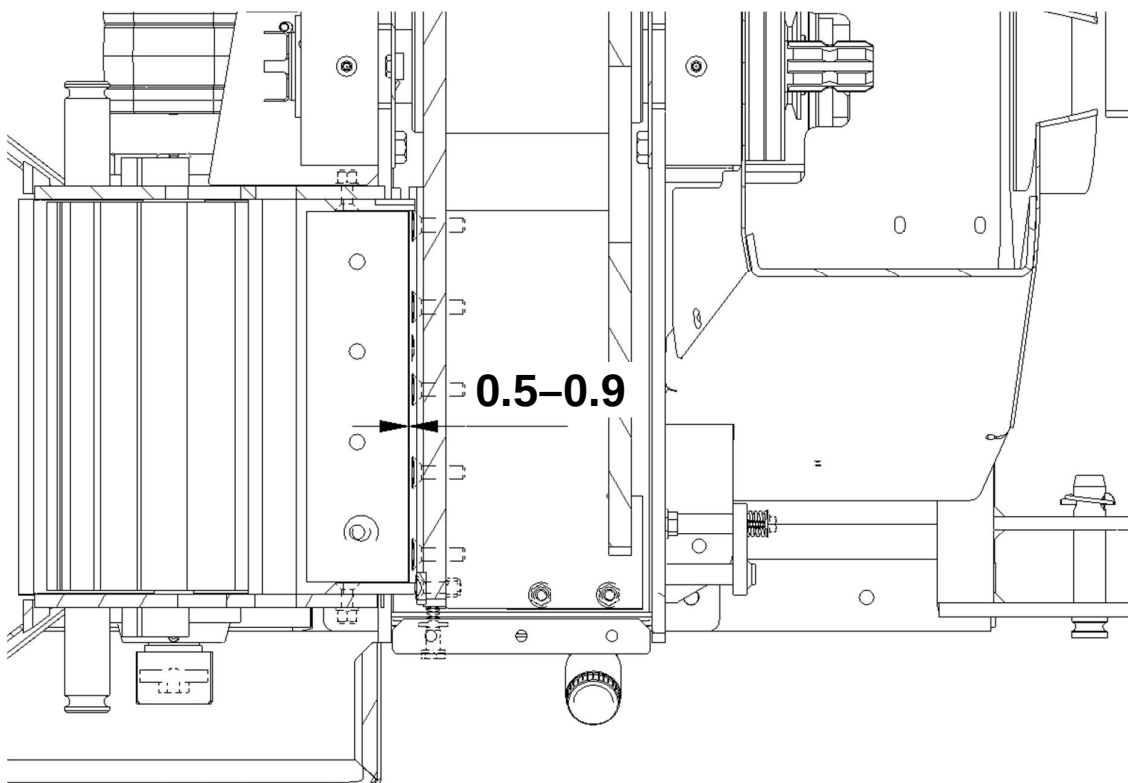


Figure 11 Distance between counterknife and knife

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 distance to the knives to **0.5–0.9 mm**. Use a precision feeler gauge. Tighten the bolts on the vertical counterknife to **50 Nm/5 KPm**.

When the counterknives have been reversed or replaced and all the bolts are tightened, pull the feed roller into position again. Put the spring back using multigrip pliers (see figure 10).

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 12).

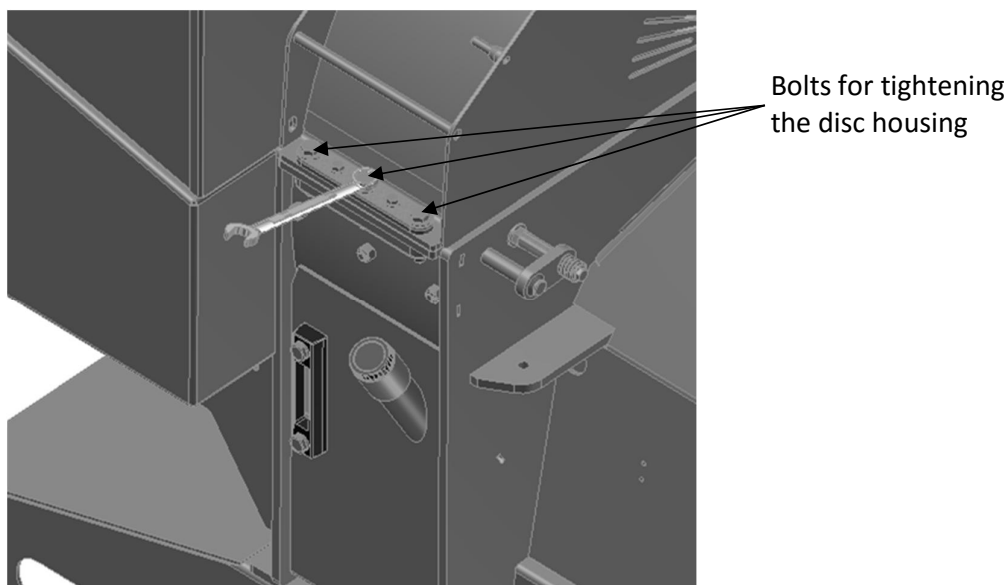


Figure 12 Tightening bolts in disc housing

9.4.2 Knives

The machine is fitted with three knives.

The knives must always be changed as a set. 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.

Procedure:

Stop the machine and the drive. Disconnect the machine from the tractor PTO. Check that the disc has stopped **completely** by looking between the rollers. Turn the ejector spout so that it faces away from the disc housing (figure 4). Loosen the bolts that hold the two parts of the disc housing 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 13). Keep fingers away from the knives when turning the disc around.

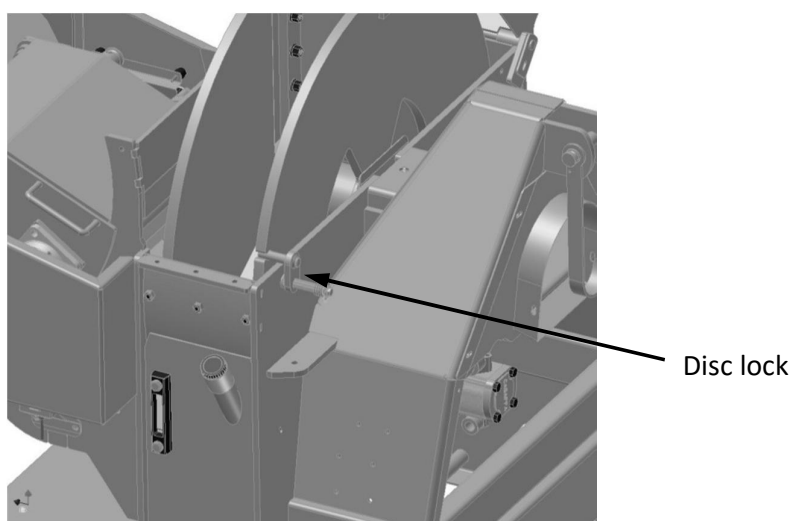


Figure 13 Locking the disc using the disc lock

Remove the four bolts which hold the knife 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 fitting, the nuts **must** be lightly oiled ($\mu = 0.125$), i.e. light oil, WD 40 or a similar product. Do **not** use copper grease, MoS₂ or similar low friction grease.

Check that the distance between the knife's edge and the counterknife is set correctly to **0.5–0.9 mm**.

Tighten the bolts to **95 Nm/9.5 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 12).

9.4.3 Scrapers and facing plate

The machine is equipped with three square scrapers on the disc, a triangle scrapers in the disc housing and a facing plate in the ejector spout (see figure 14).

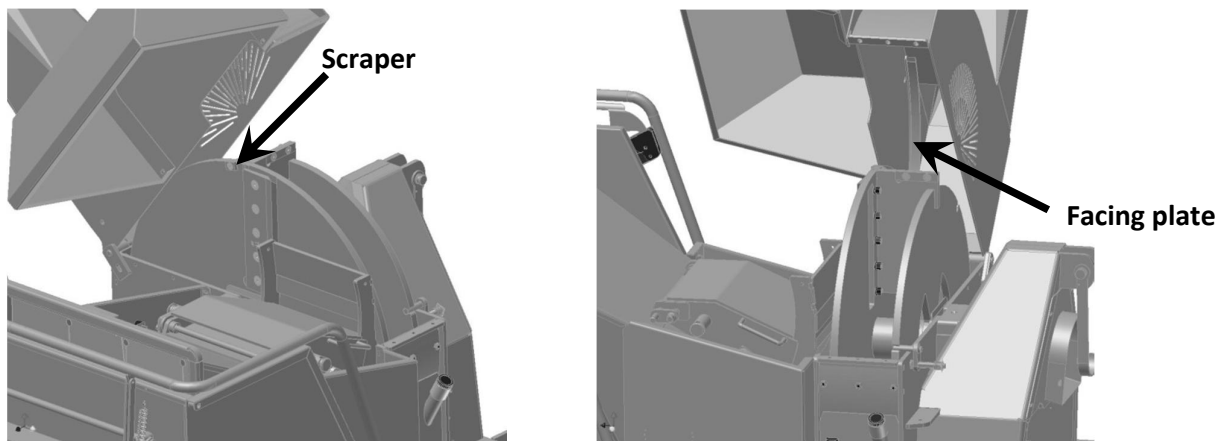


Figure 14 Positions of scrapers and facing plate

The purpose of the scrapers is to remove material that can become 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 fuel consumption and wear on the casing.

The square scrapers can be turned 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 10). Keep fingers away from the knives when turning the disc around.

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. Always change the square scraper on the disc in sets. Replace the triangle scraper when it is worn.

The facing plate is mounted 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 12).

9.4.4 Casing

The TP 250 is equipped with an interchangeable casing at the bottom of the disc housing. The casing absorbs the wear and tear which would normally occur at the bottom of the disc housing.

Procedure:

Stop the machine and the drive. Uncouple the tractor PTO. Ensure that the disc is at a **complete** standstill. Turn the ejector spout so that it faces away from the disc housing (see figure 4). Loosen the bolts that hold the two parts of the disc housing together and open the disc housing. Remove the top part of the disc housing.

Remove the six bolts and nuts which attach the casing to the bottom part of the disc housing (see figure 15).

Using a hammer, hit the part of the casing which sticks up above the edge of the rotor housing at the hinge side to loosen the casing. The casing can now be removed.

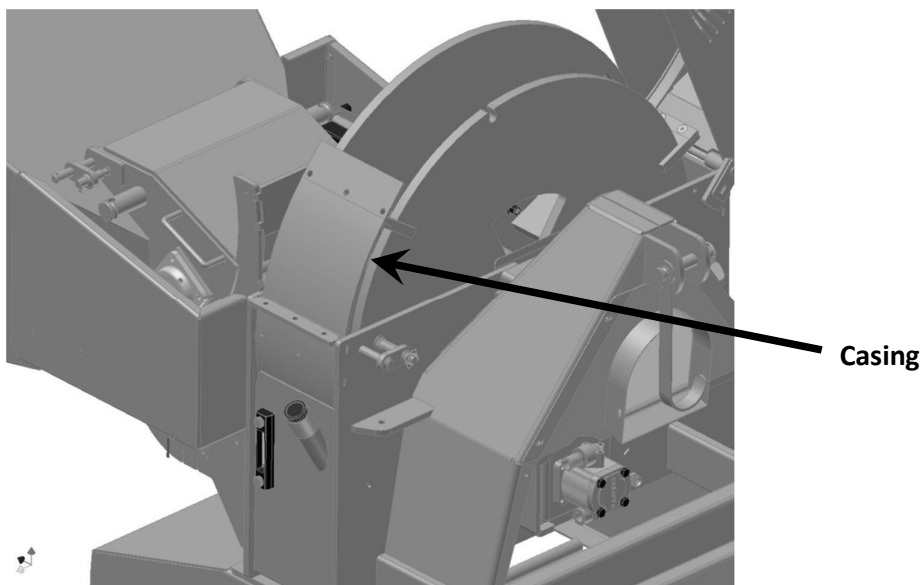


Figure 15 Replacing the casing

Before fitting a new casing, rust and dirt must be cleaned away from the bottom of the wood chipper. Mount the new casing with six bolts. Replace the top part of the disc housing.

When the casing has been 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 12).

9.4.5 Adjusting the V-belts

Pump transmission

The feed rollers drive the hydraulics. 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 the drive. Uncouple the tractor PTO. Ensure that the disc is at a **complete** standstill. Turn the ejector spout so that it faces away from the disc housing (figure 4). Loosen the bolts that hold the two parts of the disc housing 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 5.87 mm when they are pressed down with 50–54 N (5–5.4 kg). For new belts the figure is 57–61 N (5.7–6.1 kg) (see figure 16). The belts' tension can be measured with a suitable gauge, which can be purchased as an accessory.

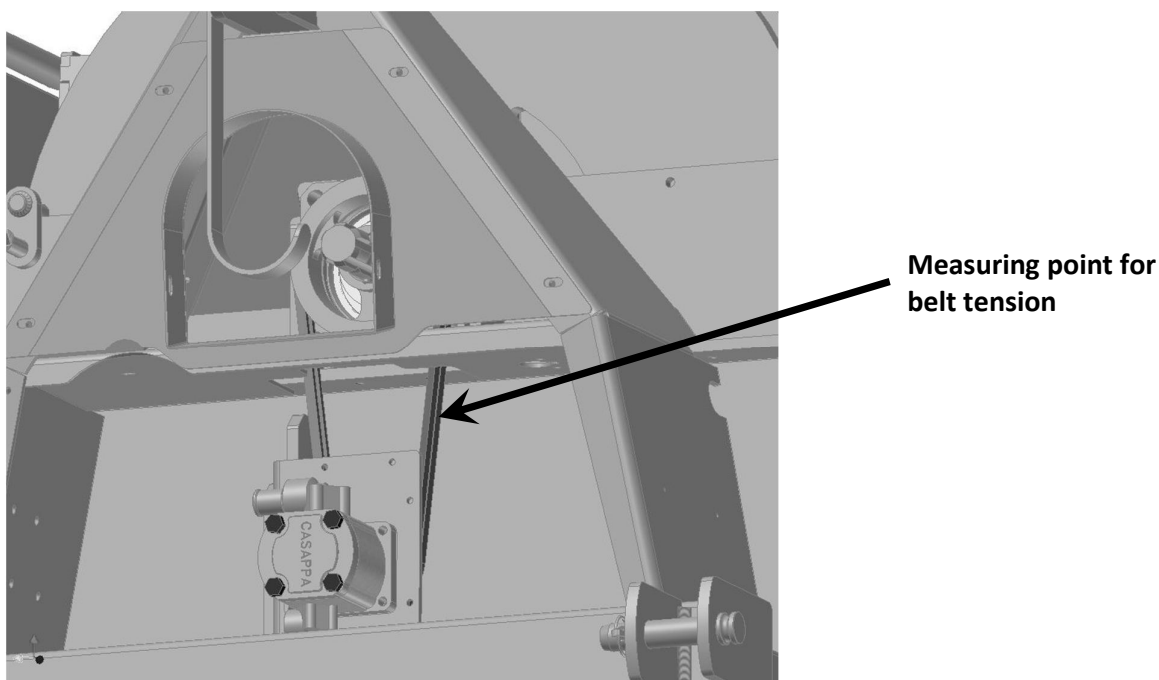


Figure 16 Adjusting belt tension

When the V-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 12).

9.5 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 by **wet grinding** using a header (see figure 17). **Never** use an angle grinder or a similar tool for grinding the knives.

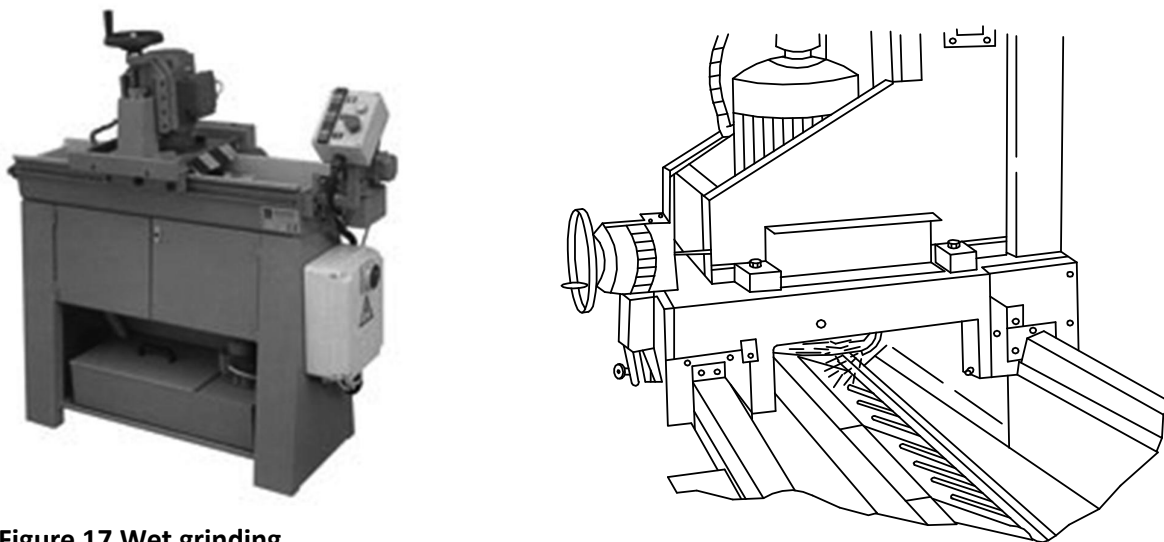


Figure 17 Wet grinding

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 90 mm (see figure 18). After that they must be discarded.

The edge of the knives must be ground at an angle of 28° (see figure 18).

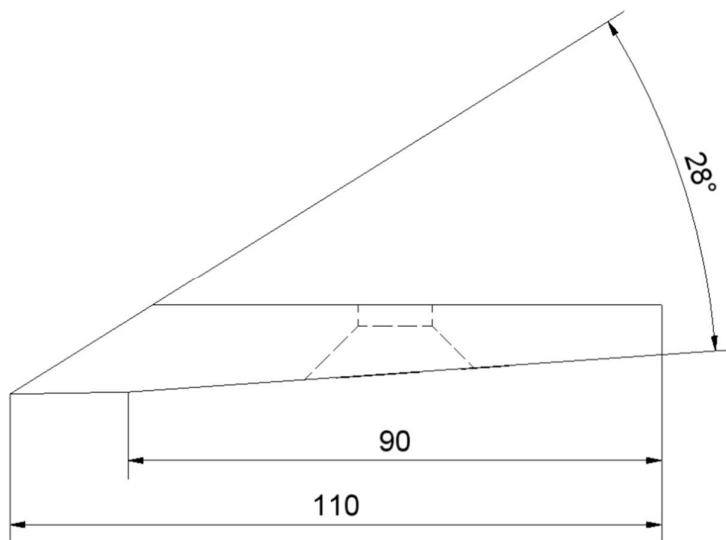


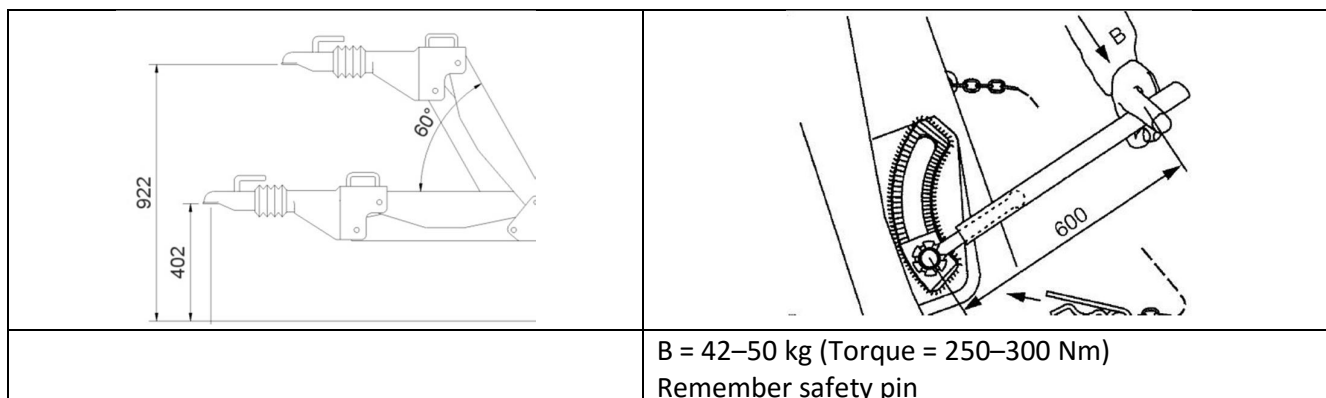
Figure 18 Grinding angle and minimum blade width for the chipping blade

10 Special instructions for TP 250 MOBILE TURNTABLE

TP 250 MOBILE TURNTABLE 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 vehicle can be registered without requiring coupling inspection. The trailer can be fitted to a vehicle with a ball and socket head.

As extra equipment, the ball and socket head can be replaced with a towing eye.

The coupling height is adjustable from 402 mm to 922 mm.



After adjusting the height, the position must be secured by tightening the screw connection with the above-stated torque. Remember to secure the screw connection using the safety pin!

Transport on public roads

During transport on public roads, the ejector spout has to be turned to point backwards in relation to the driving direction and secured against rotation.

During operation, the lock on the turntable must be inserted and made secure using the linchpin.

Pos. A = Transport

Pos. B = Working position

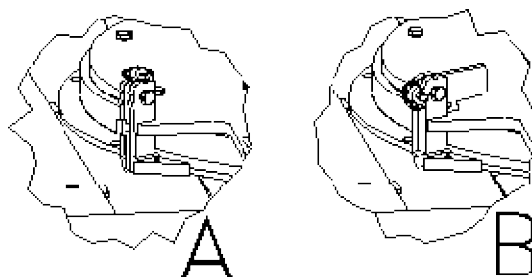
The foldable funnel must also be folded up and secured using a linchpin.

When coupling, the 7/13-pole connector and the safety wire must be fitted to the vehicle.

The supporting leg must be raised up.

Release the handbrake before driving.

Check that lights, brake lights work before driving.



Trailer dimensions: Width 2200 mm. Length 4200 mm. Height 3200 mm

Tyre assembly: 165R13C/8

Tyre pressure (cold), max.: 450 kPa = 65 psi = 4.5 bar

To avoid irreparable damage to the electrical system, the following points must be followed:

1. Start key must never be in the neutral position when machine is operating.
2. Frame connections must be clean.
3. When charging the battery, the ground cable on the battery must be removed.

Instructions for wood chipper: See TP 250 PTO

Service and maintenance of engine: See the separate service sheet at www.hatz.com

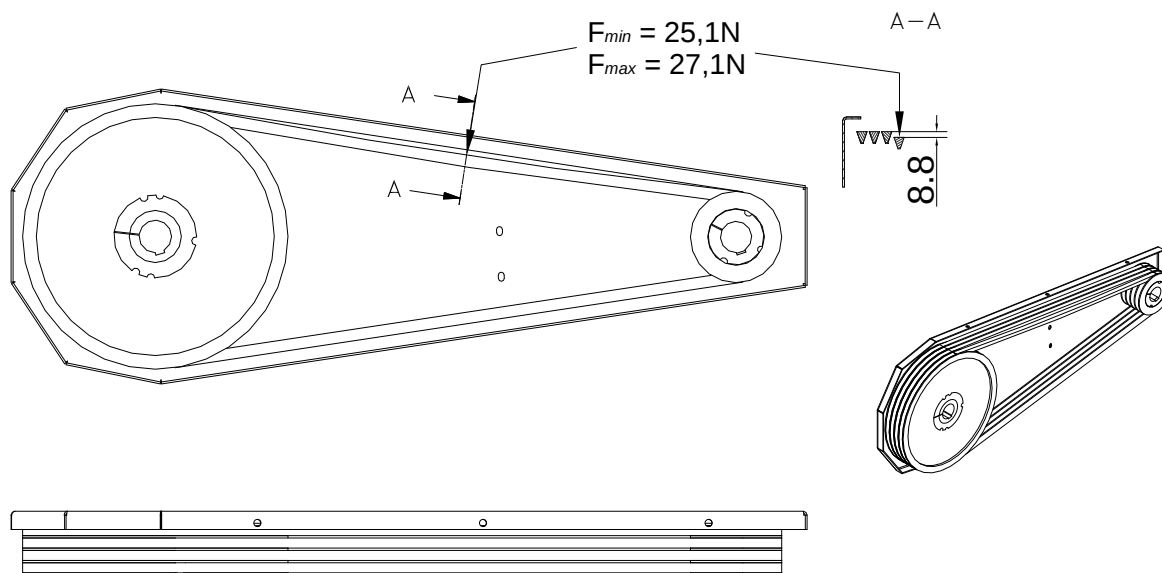
Activating the wood chipper.

In the case of a cold start: Start the engine. Set the throttle so that the engine runs evenly at low rpm. Let the engine run 30–60 seconds, dependent on the temperature. Next, engage the wood chipper slowly and increase the engine rpm until working speed is at its “full throttle”.

In the case of a warm start: The same procedure is followed. However, it is not necessary to let the engine warm up before activating the wood chipper.

The wood chipper must not be activated with full throttle on the engine.

When stopping: Operate the wood chipper until it is empty of material. Disengage the wood chipper. Let the engine run for about 30 seconds in idle, then turn the throttle to stop. Turn the ignition key to neutral. (See symbols on the start box).



Check the V-belts between the engine and wood chipper:

Stop the engine and make sure that the disc has stopped moving. Remove the outer guard above the V-belts.

If the V-belt requires tightening:

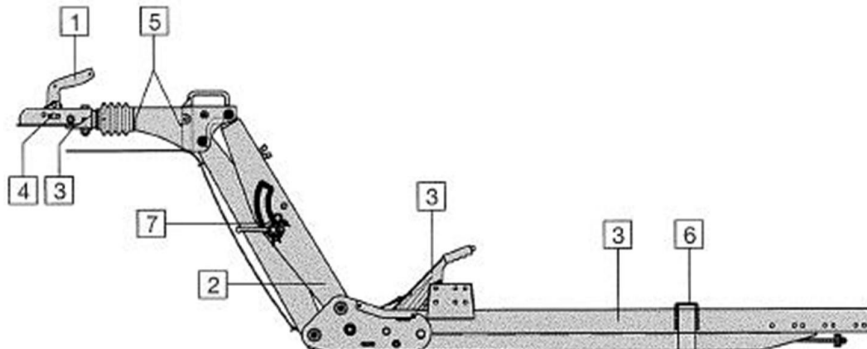
First, loosen the bolts that hold the wood chipper on the engine console. Next, tighten the tensioning bolt so that the wood chipper shifts to the side.

Check that the two pulley wheels are parallel and aligned.

Next, tighten the bolts and counter nuts (re-check the V-belt tension).

Fit and close the guard.

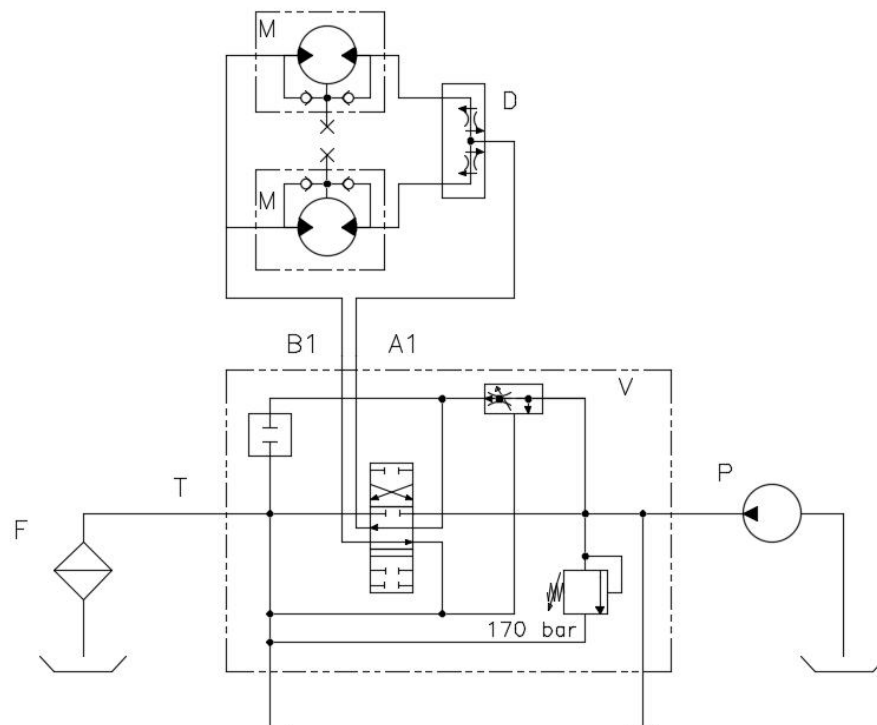
Maintenance of the drawbar

							
Maintenance schedule BPW Special Long-term Grease ECO-Li 91		Before use	After the operating for the first time	After all settings	approx. 50 km after setting of the drawbar	After approx. 500 km	For every 2000–3000 km, at least once a year
1	Test the overrun brake and ball and socket coupling	x					x
2	Test the setting of the drawbar	x				x	x
3	Test the handbrake	x				x	x
4	Lubricate the ball and socket coupling	x					x
5	Lubricate the overrun brake						x
6	Tighten the fixing bar		x				
7	Tighten the castellated nut	x		x	x		

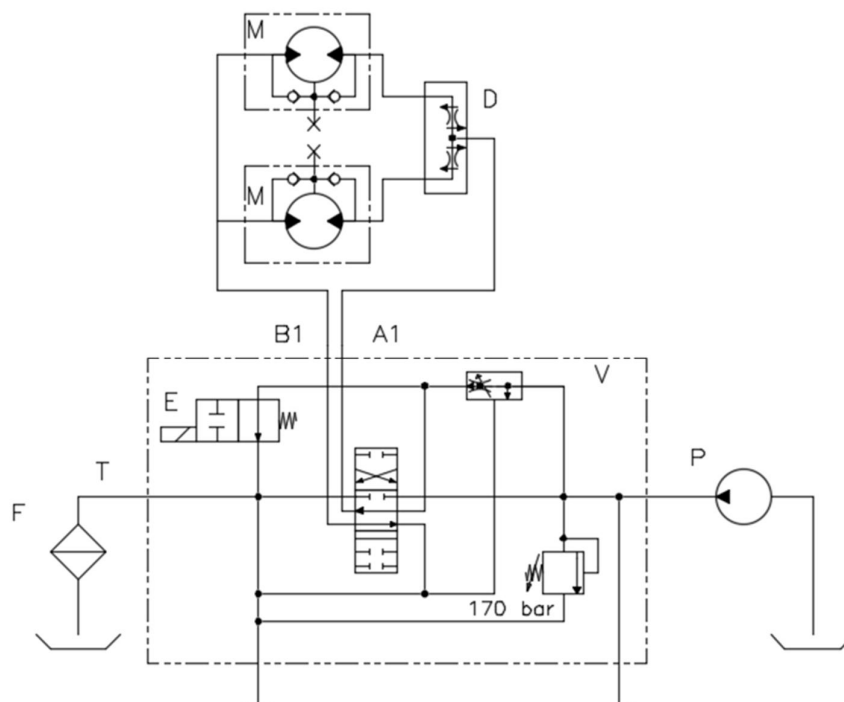
Every 50 hours, lubricate three lubrication nipples on the turntable.

Service and maintenance of engine: See the separate service sheet for the engine.

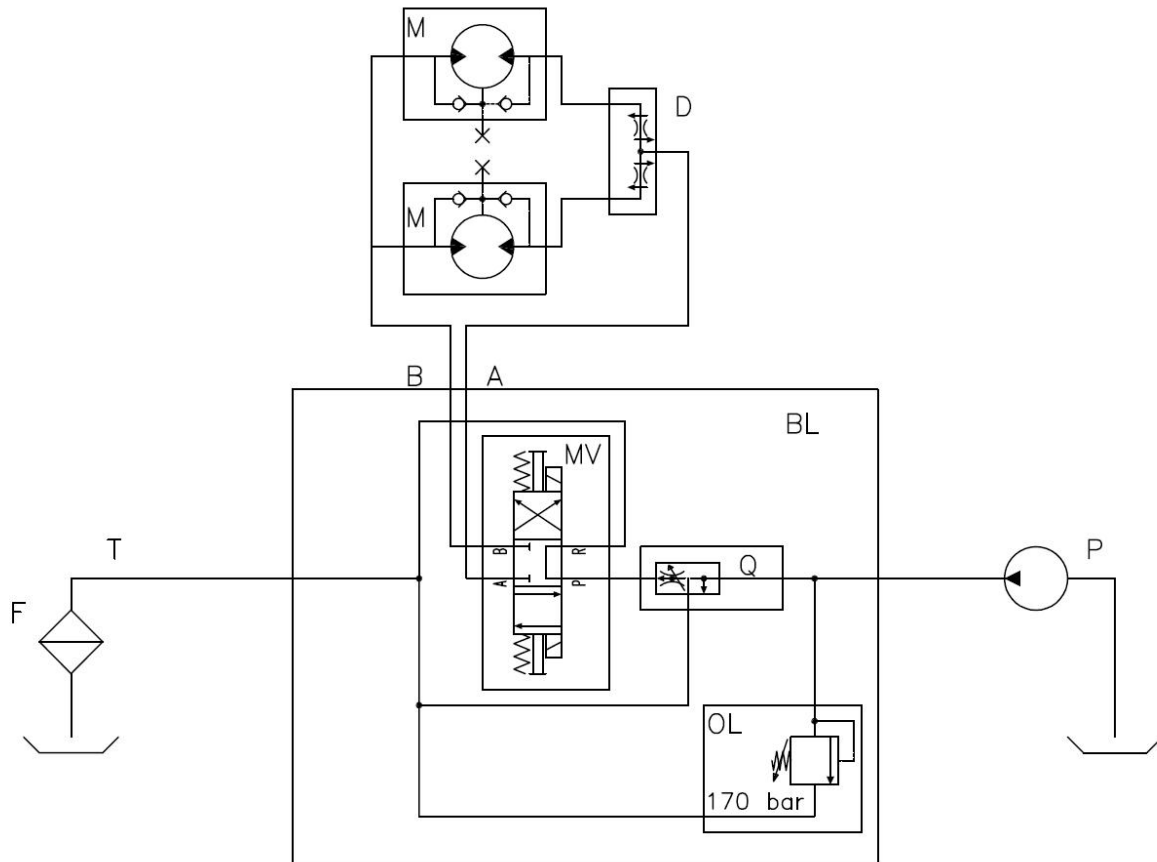
11 Hydraulics diagram, TP 250 without rpm monitor



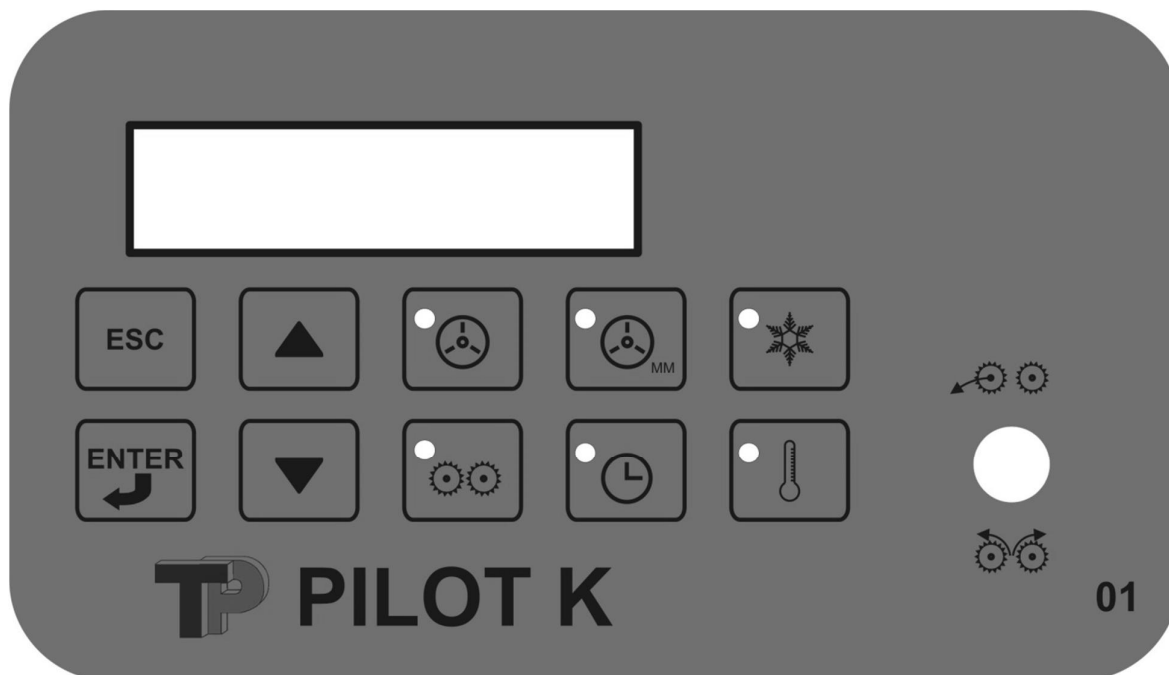
12 Hydraulics diagram, TP 250 with rpm monitor



13 Hydraulics diagram, TP 250 PTO K



14 Instructions for TP PILOT K



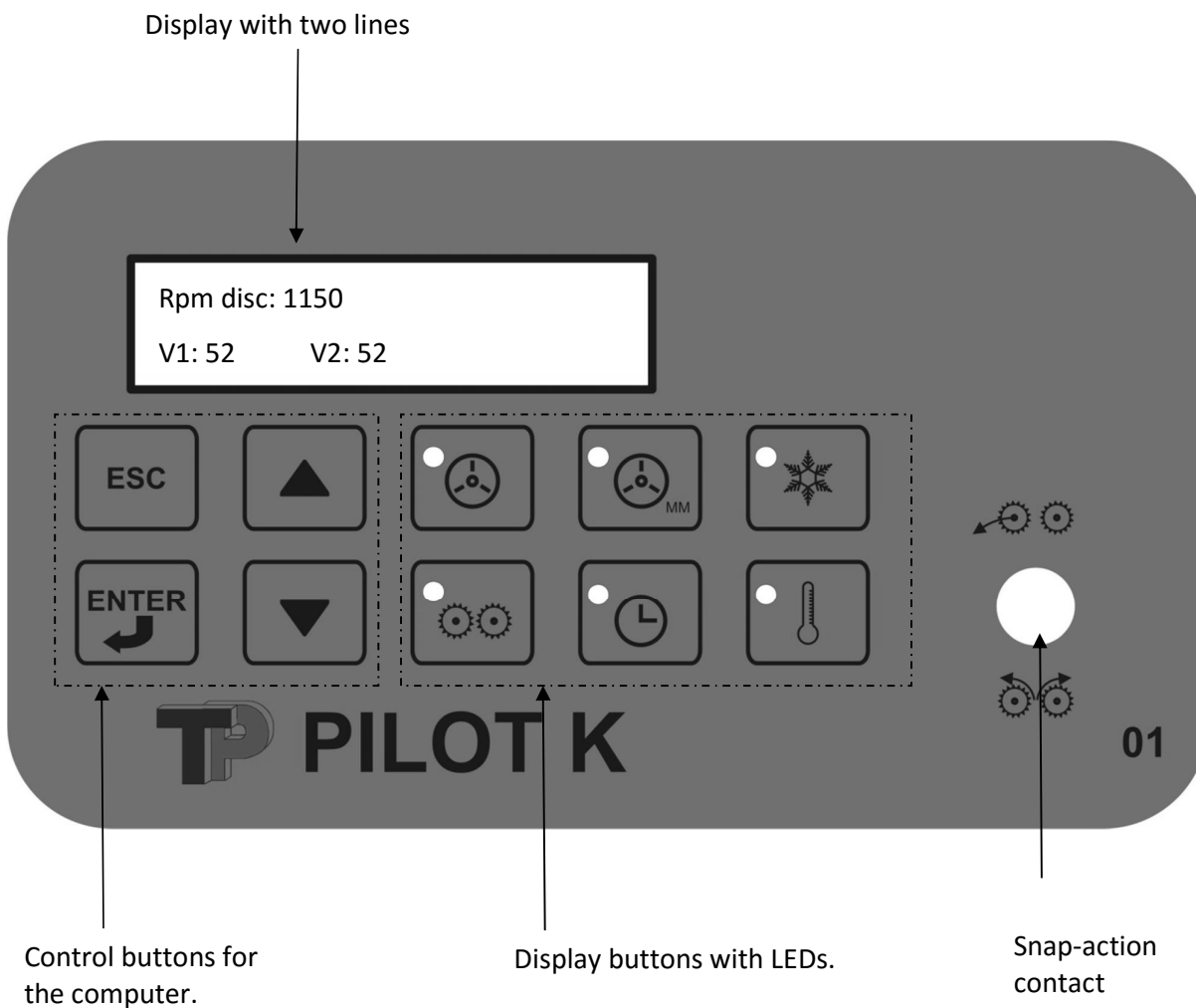
Overall description of the system

During normal operation of the machine, the desired chip size can be set by setting the position of the knives and entering the setting of the knives in the computer. Followed by a hydraulic setting of the roller speed. The wood chipper is now ready for use: set the knife rpm higher than the set start value, at which the rollers start pulling in wood material. As long as the rpm of the disc is between the low and high limit values, the rollers will rotate so the material between the rollers will be pulled towards the knives.

It is recommended that the 12 V power supply is run through an emergency stop button which cuts off the power supply to the PILOT K and the crane.

14.1 Description of the TP PILOT K control panel.

Below is an overview of the control panel for the control showing the positions of the buttons and switches.



14.1.1 Display

Overview of all the user's displays and descriptions of each display can be found in appendix 1 and 2.

Setting the display contrast.

To set the display contrast, hold the  button down, and at the same time press the  button or the  button.

Work display.

The work display shows the rpm of the disc and the two rollers.
In the case of type TP 250, only one roller rpm is shown.

Rpm disc: 1150	
V1: 52	V2: 52

When the  button or the  button is pressed, the display navigates between the following displays:

- The disc rpm display.

Rpm disc
1150

- The rollers rpm display. In the case of type TP 250, only one roller rpm is shown.

Rpm Rollers	
V1: 52	V2: 52

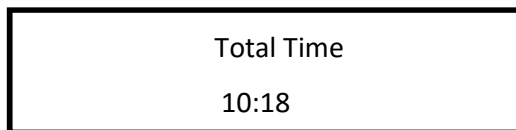
- Display of the set knife setting in mm. It is possible to change the value.

Knife setting	
12	ENTER

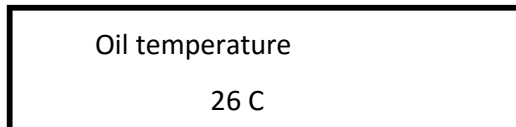
- Display of the time spent on the current job. It is shown in hours and minutes. It is possible to reset to 0.

Job Time	
1:48	ENTER

- Total work time of the machine display. It is shown in hours and minutes.



- Display of the current temperature of the oil in degrees Celsius (extra equipment).



The displays shown are also available through a specific display button described below (see also Appendix #1 User display).

14.1.2 The computer operating buttons.

The computer operating buttons are described below.

 	Display change and changing entry values.
	ENTER button. Change to entry display, approving an entry and start calibration.
	The ESC button is used to delete a value that has been entered, or to leave a given display and go to the preceding display. Pressing repeatedly will always call up the work display.

14.1.3 Display buttons with LEDs.

	Changes the display to show the rpm of the disc. When the display is active, the LED will light up.
	Changes the display to show the knife setting that was entered. When the display is active, the LED will light up. The value of the knife setting can be changed.
	Changes the display to show oil heating. When the display is active, the LED will light up. Press a second time and hold the button down for two seconds to start oil heating. Oil heating will only start if the oil temperature is lower than "Temp. Oil Heating" or if no sensor has been fitted. If a sensor has been fitted, the oil temperature will be shown. If a sensor has not been fitted, the time from the start of heating will be shown in minutes. When oil heating has started, an LED will flash. Oil heating will stop when the temperature reaches "Temp. Oil Heating". Or by pressing the button again.
	Changes the display to show the rpm figure for the rollers. When the display is active, the LED will light up. If the control is put in reverse, an LED will light up no matter which display is showing in order to indicate that the rollers are in reverse. If the percentage difference between the rollers is larger than the entered value, the LED will flash regardless of which display is being shown. At the same time, an audio alarm will be triggered. Not TP 250.
	Display changes to show the time registered for the job. When the display is active, the LED will light up. Pressing a second time will change the display to show the machine's total time. It is possible to reset the job time. Push ENTER in for two seconds.
	Changes the display to show the oil temperature. When the display is active, the LED will light up. If a sensor has been fitted, the current temperature will be shown. If a sensor has not been fitted, and "Temp. Oil Heating" is less than 99 the error message "Sensor error" will be shown. If a sensor has not been fitted, and "Temp. Oil Heating" is 99, the message "Sensor not installed" will be shown.

14.1.4 Switch for machine operation

	The switch will move to the middle position when it is not being pushed. Switch <u>up</u> is not an issue on this type of machine. Short press <u>down</u> will cause the rollers to reverse the number of pulses which have been set in the control. In the case of TP 250, the total number of pulses is 0 (does not reverse when the in-feed is stopped). Holding the switch down will cause the rollers to reverse for as long as the switch is held down. For both functions, an audio alarm will be triggered.
---	---

14.2 Functions

An overview of the control display can be found in Appendix #1 User display. An overview of each display screen can be found in Display #2 Description.

14.2.1 General display screens and button functions

If "ENTER" is shown on the display it means that  must be held down for two seconds to allow values to be changed or to activate underlying displays.

A flashing value means that the value can now be changed using  and .

 always returns to the previous display and will finally show the work display.

If a value is flashing and you do not want to change this value then just press . You will then exit that display without changing the value.

A code must be entered in order to access the machine's functions and set-up. To gain access to enter the code, press the  and  buttons down for two seconds. Then the display will show.

Machine set-up
Code 0

User codes are code 3 and code 5.

Code 3 gives access to the machine set-up.

Code 5 gives access to calibration of the rollers (not relevant for this type of machine).

Machine set-up

Enter code 3 in the code entry display. The following display is shown, where it is possible to change the different machine parameters:

- The rpm of the disc when the feed rollers start.

RPM Start
1000 ENTER

- The low rpm of the disc where roller retraction stops.

RPM Stop
850 ENTER

Number of pulses the rollers reverse when they are stopped because of low rpm of the disc.
In the case of TP 250, the rollers do not reverse, value = 0.

Pulses Reversing	
15	ENTER

- Minimum temperature for starting the feed rollers.

Temp. Oil Heating	
20 C	ENTER

14.3 Setting of roller speed.

Regulation with adjustment of flow valve.

The rollers' speed must be set in accordance with the specific knife setting, respectively in the table below.

Blade position Model	Disc rpm	8 mm	10 mm	12 mm	13 mm	15 mm
TP 250 PTO K	1000				55	

Alternatively, the current roller speed can be read directly on the PILOT K's display.

After setting the knife setting on PILOT K, do the following:

Press  and  at the same time and the following is displayed:

Ro: 0	0:	0:1000
V0: 28	V1: 0	V2: 0

V0 states the calculated roller speed.

V1/V2 states the rollers current rpm. NB: The disc's rpm must be over RPM Start for the rollers to rotate.

This display has an associated roller alarm. The roller alarm activates if V1 or V2 is greater than V0. This can be used with the setting of the rollers' rpm. The roller alarm is an audio alarm with two-second intervals. The LED flashes at the same time next to the key with the roller symbol.

14.4 Alarms

A triggered alarm will always emit a sound.

There are alarms for:

- Temperature sensor fault.
- Temperature too low.
- Temperature too high.
- Too great a difference in the rpm of the rollers.
- Both rollers are stopping.
- Manual reverse of rollers.

Temperature alarms and roller alarms issue an alarm sound of five beeps.

Manual reverse produces an alarm sound of two beeps.

14.5 Important information

Welding must not be carried out on the machine where the control system is mounted, before disconnecting all cables, power supplies, sensors, communication etc. from the control system, and it is recommended that the ground cable for the welder is placed close to where the welding is going to take place. If these recommendations are not followed, the control system may be irreparably damaged.

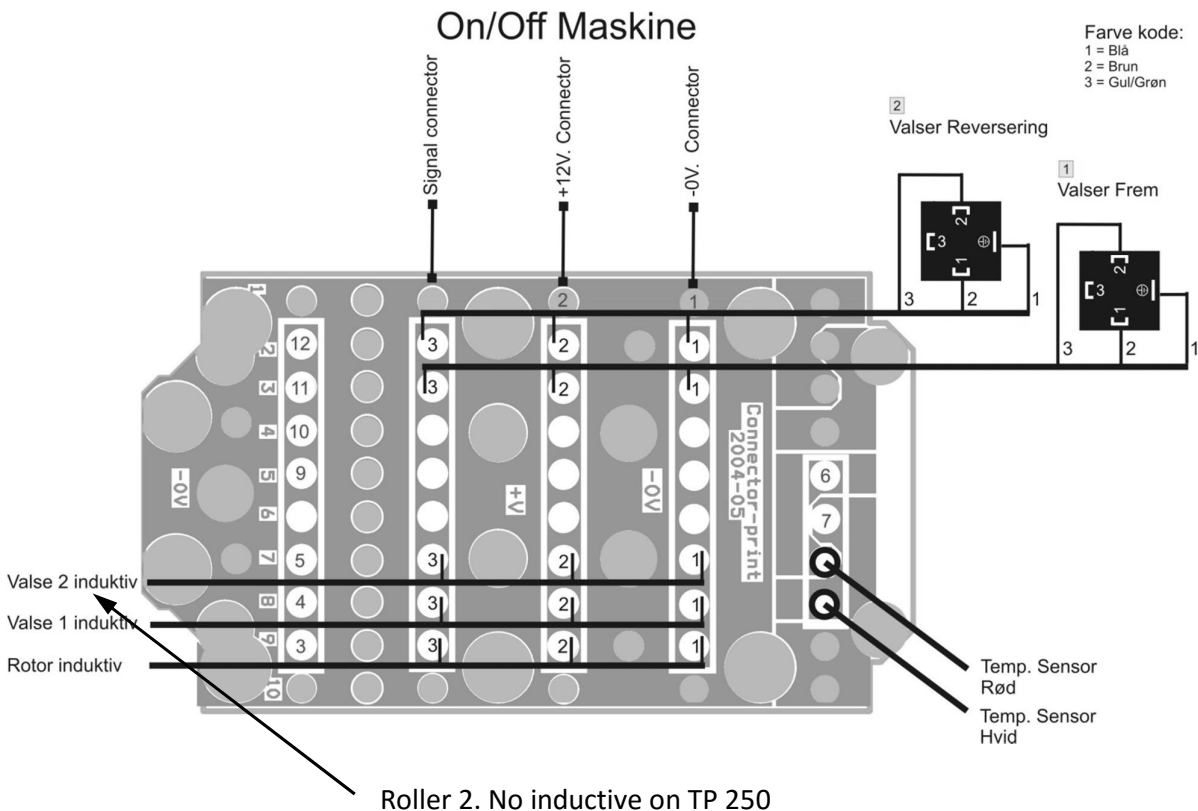
14.6 Technical data

Power supply +12 VDC

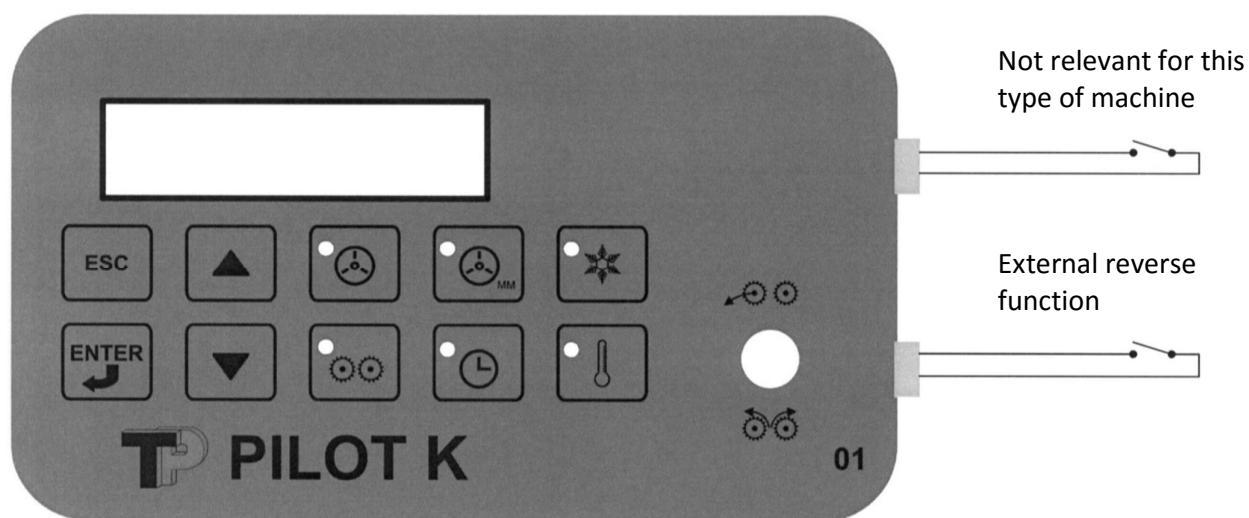
Temperature range 0°C – 50°C

Fuse T3, 2 A/250 V

14.7 Electrical fittings

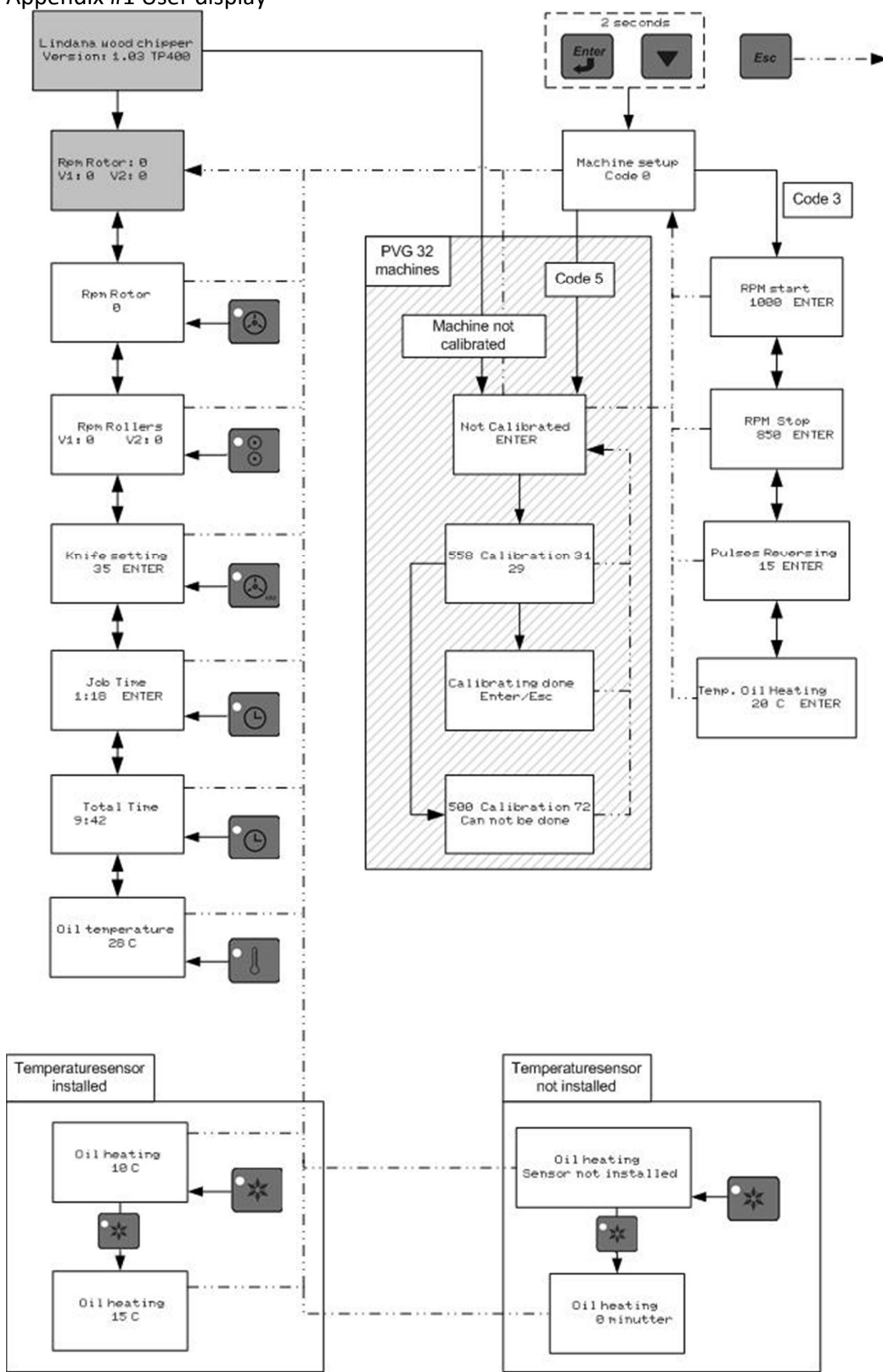


External functions



14.8 Appendix

Appendix #1 User display



Display #2 Description of user display

Start display

Display	Description
Linddana wood chipper Version: 1.14 TP250	Information: Shows the software version and selected machine type

14.8.1 Work displays

Display	Description
Rpm disc: 0 V1: 0 V2: 0 Rpm Rollers (TP 250)	Information:(main display) Current disc rpm. Current Roller 1 rpm and Roller 2 rpm. Current rpm on rollers
Rpm disc 0	Information: Current rpm on the disc alone. Can be used if this information is overwritten by error messages in the main display.
Rpm Rollers V1: 0 V2: 0 Rpm Rollers (TP 250)	Information: Current rpm of the rollers alone. Can be used if this information is overwritten by error messages in the main display.
Knife setting 15 ENTER	Information: Knife setting in mm. Can be changed by holding the Enter button down for two seconds.
Job Time 0:16 ENTER	Information: Current job time in hours and seconds. The job time is only registered when the rollers are running. The job time can be reset by holding the Enter button down for two seconds.
Total Time 00:16	Information: Shows the machine's total work time in hours and minutes. The total time is only registered when the feed rollers are running.
Oil temperature 26 C	Information: The current temperature of the hydraulic oil in degrees Celsius.
Oil temperature Sensor not installed	Information: The sensor is not fitted and "Temp. Oil Heating" is set at 99.
Oil heating 10 C	Information: The current temperature of the hydraulic oil in degrees Celsius.

Display	Description
Oil heating Sensor not installed	Information: The sensor is not fitted and "Temp. Oil Heating" is set at 99.
Oil heating 10 minutes	Information: The sensor is not fitted and "Temp. Oil Heating" is set for 99. Shows how long the oil heating has been activated.

14.8.2 Machine setup (Code 3)

Display	Description
Rpm start 1000 ENTER	Information: Disc rpm for start of feed.
Rpm Stop 850 ENTER	Information: Value of feed stop at too low disc rpm.
Pulses Reversing 15 ENTER	Information: Desired number of pulses the rollers are to reverse.
Temp. Oil Heating 26 C	Information: The temperature the oil must reach before feed is started. This value must be set at 99 if the sensor has not been fitted.

15 Troubleshooting for the TP 250 wood chipper

Check possible causes before contacting the supplier.

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

16 Warranty terms wood chipper

Refer to the issued warranty certificate.

17 Technical data wood chipper

Type	TP 250 PTO	TP 250 MOBILE TURNTABLE	TP 250 PTO K
Chipping principle	Disc chipper	Disc chipper	Disc chipper
Disc diameter, mm	960	960	960
PTO rpm*	1000	930	540–1000
Total number of knives	3	3	3
Power requirement min./max. kW/(HP)	45–104/(60–140)	47/(64)	45–104/(60–140)
Max. wood diameter, mm	250	250	250
Chip length, mm	13	13	13
Weight, kg	1065	2200	1030
Height, mm	2942	3200	1365 + *
Width, mm	1536	2200	1625
Length, mm	1985/2581	4200	1871

PTO transmission shaft: Walterscheid type 2400 with free running and friction coupling.

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

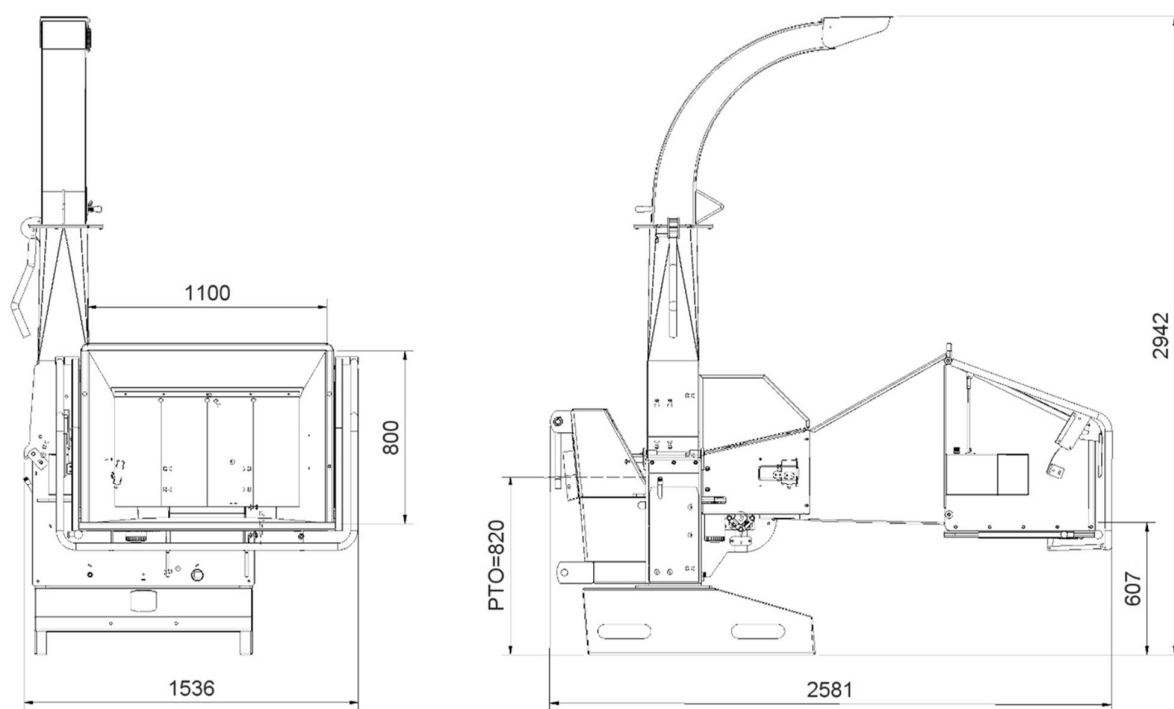


Figure 19 Dimensional drawing for TP 250 PTO

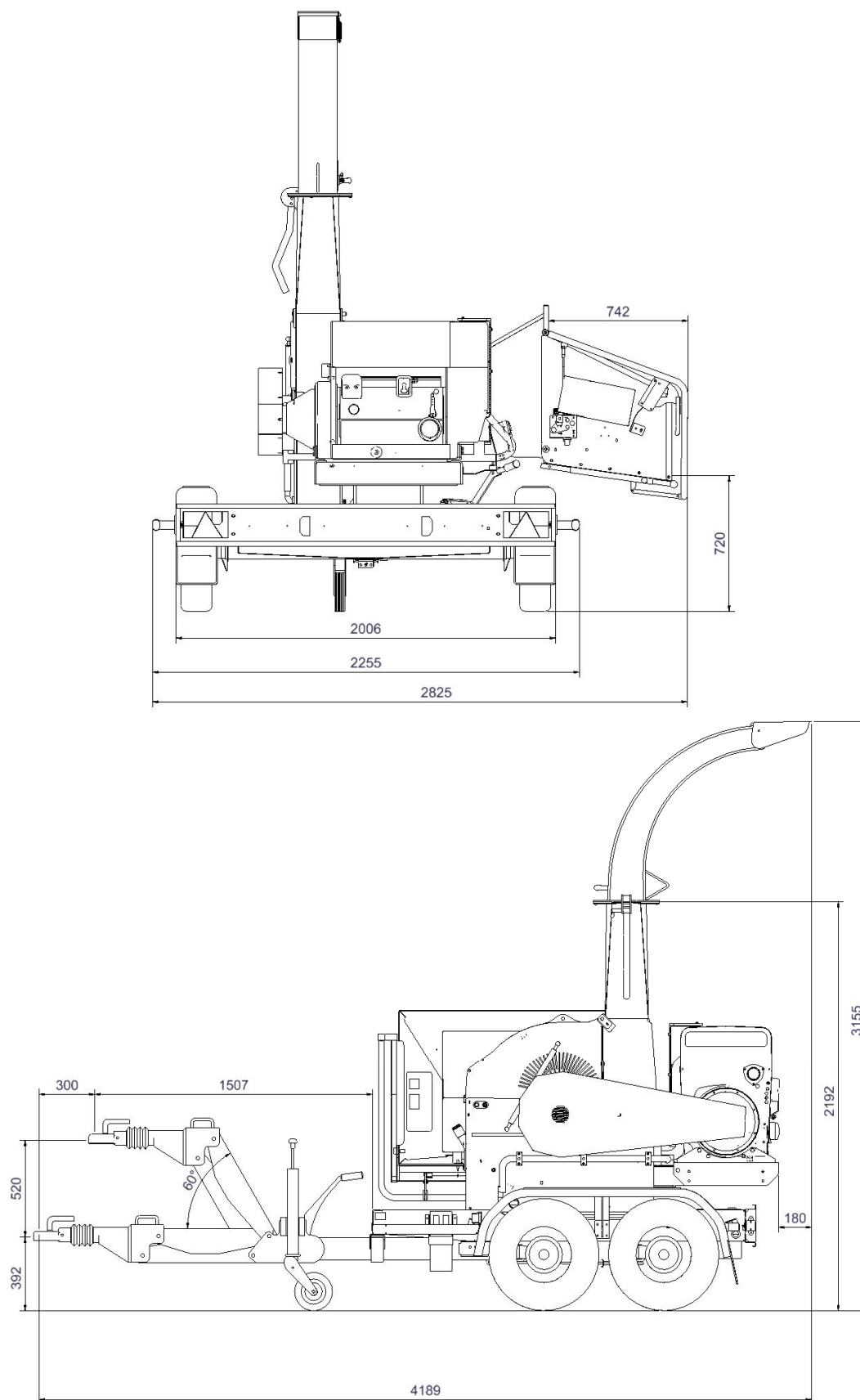


Figure 20 Dimensional drawing for TP 250 MOBILE TURNTABLE

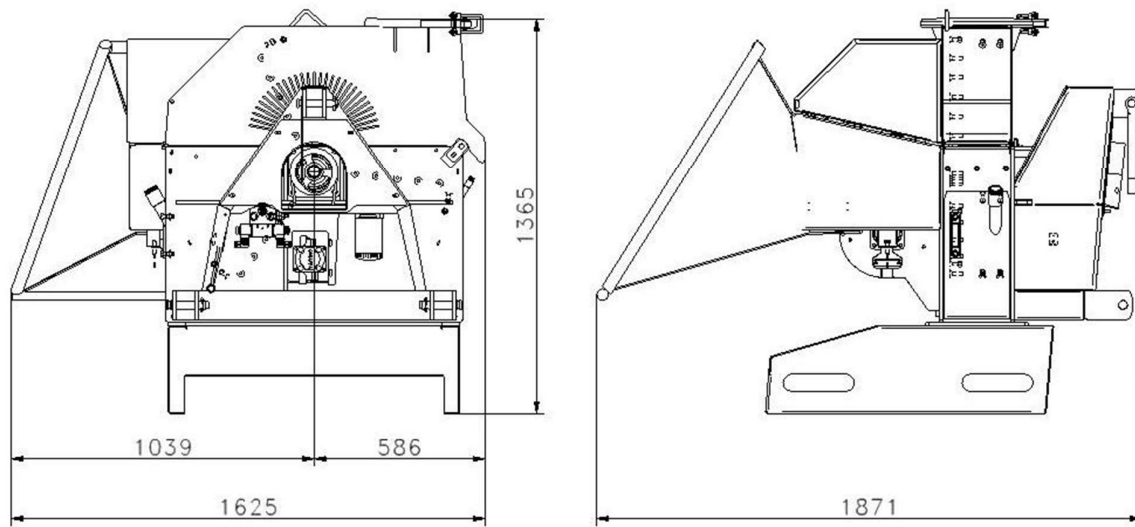


Figure 21 Dimensional drawing for TP 250 PTO K

18 Extra equipment

- Tool kit including torque spanner
- Extended ejector spout horizontal
- Extension for ejector spout vertical
- Lock for ball and socket coupling (TP 250 MOBILE)
- Light boom (TP 250 PTO)

19 Spare Parts Catalogue