

OPERATION, MAINTENANCE AND SPARE PARTS MANUAL

CHIPPER AND FEEDER FARMI 100F



**READ THIS OPERATION AND MAINTENANCE MANUAL CAREFULLY
BEFORE USING THE MACHINE**

FARMI®
FOREST

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FARMI 100F

WARNING SYMBOLS IN THIS MANUAL



- imminent danger which could cause serious personal injury or death



- danger which could cause personal injury



- conditions or misuse that could damage equipment or machinery
- reminders, such as for performing checks or carrying out maintenance or repair procedures

INTRODUCTION

This manual includes the information and maintenance instructions required for operating the machine in the optimal manner.

Although you have experience in using this kind of machinery, read the operation and maintenance instructions carefully since they include information enabling efficient and safe operation. Regular maintenance is the best way to guarantee the efficient and economical performance of the machine.



Each and every operator must read, understand, and follow all safety instructions and procedures.

PRODUCT WARRANTY

Farmi provides a 12-months warranty on all Farmi products. Register on our home page (www.farmiforest.fi) under FeedBack ("Product Registration" form) within 30 days after the receipt of the product to get full product warranty and additional information on your product. If it is not possible for you to register via internet, please register as follows: Complete the registration form on the last pages of this manual and return it to us within 30 days after the receipt of the product.

CUSTOMER FEEDBACK

We are happy to receive your opinions and suggestions for improvements by mail, fax or e-mail. All implemented suggestions for improvements will be rewarded.

FARMI 100F



EC DECLARATION OF CONFORMITY

Manufacturer:

Farmi Forest Corporation
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Person authorized to compile the technical documentation:

Name: Matti Berg
Address: Ahmolantie 6, FIN-74510 IISALMI, Finland

Commercial name:

Farmi

Machine denomination:

Farmi wood chipper with attachable Farmi feed hopper

Machine type:

Wood chipper: FARMI 100

Available feed hoppers for manual feed: F100

Machine series number:

Herewith, we declare that the machine brought into circulation conforms with the pertinent requirements of the Machinery Directive 2006/42/EC and the EMC Directive (directive relating to electromagnetic compatibility) 2004/108/EC. The following harmonized standards have been applied for the conceptional design of the machine:

SFS-EN ISO 12100-1/2, SFS-EN ISO 13857, SFS-EN 13525, SFS-EN ISO 4254-1

The following additional standards and specifications have been applied for the conceptional design of the machine:

SFS ISO 730-1, SFS ISO 2332

Iisalmi
(Place)

13.3.2013
(date)

Juhana Hallivuori

FARM I 100F

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When ordering spare parts, please indicate machines type from the machine plate, spare parts order number, description and quantity required. Example. FARM I 100F, knife, 43620080, 2 pc

FARMI 100F

GENERAL SAFETY INSTRUCTIONS

These safety instructions are meant for the owners of FARMI equipment, as well as those who operate, service or repair it.

The instructions help with:

- using the machine safely, appropriately and effectively.
- identifying, avoiding and preventing potentially dangerous situations.

The manufacturer supplies an instruction manual, which must always be available at the place of operation of the machine. Each user must read the safety, maintenance and operating instructions before operating the machine, and comply with these instructions at all times.



Ensure that every operator of the machine is familiar with the content of the instruction manual and situation-specific safety instructions, and has been suitably trained before operating the machine.

The machine complies with technical requirements and applicable safety regulations. However, incorrect use, maintenance or repair of the machine may cause risks.

In addition to the instruction manual, remember to comply with regulations of the local occupational health and safety authorities, and with your country's laws and decrees.

The manufacturer is not liable for damages caused by:

- incorrect, negligent or inappropriate use of the product.
- non-original spare parts.
- normal wear and tear.
- misuse caused by an untrained person's improper actions.
- alterations made without the manufacturer's permission.



Written authorization must be requested from the manufacturer for any alterations to the machine.

STARTING

- Familiarize yourself thoroughly with the use, operation and controls of the machine and its equipment before starting.
- Familiarize yourself with the capacities and limitations of the machine and its equipment.
- Do not use the machine unless you are completely familiar with its operation.
- Be aware of the machine's danger zones.
- During operation, prevent bystanders from entering the danger zone.
- Ensure that each operator has the necessary safety equipment, such as a helmet, safety goggles, work safety boots and suitable protective clothing.
- Never wear loose clothing around moving parts. Protect long hair!
- Ensure that work is carried out according to the stipulations of applicable occupational health and safety legislation.
- Before starting up or using the machine, ensure that it cannot cause a risk to other people or property.
- Perform a safety check on the machine before every use. If you observe any faults or deficiencies, repair the machine immediately.
- Before operating the machine, ensure that there are no foreign articles in it.
- Place the machine on a hard, level surface for operation. In the winter avoid working in slippery areas.
- Before mounting and using the machine, check the PTO drive shaft for correct condition and attachment.
- Never use a faulty or deficient machine.

FARM 100F

TRANSPORT

- Before driving with the machine, ensure the safe mounting of the machine. Make sure that the journals are seating correctly and that the pins are tight. Check the tension of the lower link stabilizers.
- Before driving with the machine, make sure that the required lamps and reflectors as well as the slow moving vehicle sign are attached correctly. Moreover, the lamps should be checked for correct functioning.
- Before driving with the attached machine, make sure that the hydraulic unit of the machine is depressurized (unless otherwise instructed in the operating instructions).
- When driving on public roads, always observe the valid traffic regulations. The travel speed must be adapted to the specific conditions.
- When driving, please take into consideration the additional mass resulting from the machine's weight. It may affect the reactions, the steerability and the braking function of the tractor.
- Please note that the machine rear sways when turning.
- Pay attention to the machine's height near bridges or other height restricting objects.
- When backing off, the machine may obstruct the rear view. Exercise extreme caution. If necessary, ask a flagman to help you; he can indicate the required distances.
- It is prohibited for other people to ride on the machine.

- Never insert any body part into the machine with the engine running.
- If any faults arise that may jeopardize occupational safety, turn off the machine.
- During operation, the machine's operator is responsible for safety in the whole work area. Work may not be carried out in the presence of any factors that jeopardize occupational safety.
- Exercise extreme caution when hitching / unhitching the machine from a tractor/trailer.



The machine's operator must have constant, unobstructed visibility of the work area. If this is not possible, the operator must work with an assistant.

- Look out for moving parts when the machine is in operation.
- Secure the machine against unauthorized and accidental operation (e.g. moving when parked) whenever it is left unattended.
- Never leave the machine running unattended.
- Avoid causing fast, stroke-like loading.
- Never exceed the given operating values.
- All safety and warning signs on and in the machine must be legible and intact.
- The machine may not be operated by persons who are unwell or under the influence of drugs or alcohol.

OPERATION



Many occupational accidents take place in abnormal circumstances. Therefore it is important to take into account all the possible circumstances that may arise during operation of the machine.

- Depending on the machine's type, it will have diverse safety devices and protectors. These are meant to protect the machine and its operator, and they must never be removed or altered. Never start up or use the machine without all the safety devices and protectors in place. Also check the universal joint's safety equipment and joints.
- The machine may only be serviced and repaired by professionals.
- Electrical and hydraulic faults may only be repaired by authorized professionals.
- In cases requiring welding, contact the manufacturer.
- Turn off the tractor engine and disconnect the universal joint before beginning service or maintenance actions.
- Before any maintenance work, turn the main power switch of the tractor to OFF.
- Ensure that there is no pressure in the hydraulic system.
- Take out the key from the tractor's ignition for the duration of the servicing or maintenance. Check that the power is off from the machine you are working on.

- When servicing the machine, place it on a level surface and ensure that it cannot be moved.
- Observe the service intervals and annual safety inspections.
- All spare parts and equipment must fulfill the manufacturer's requirements. This can be guaranteed by using original parts.
- Put all safety devices back into place immediately once servicing or maintenance is complete.



When lifting the machine, check that the lifting/hoisting equipment is in perfect working order. Check the weight of the machine before lifting it. Choose lifting trajectories so that they do not cause any danger.

Many countries have specific legislation on lifting, hoisting cables and hoists. Always comply with local safety regulations.

OILS AND LUBRICATION

- Always use the oil types recommended by the manufacturer. Other types of oil may cause faults or improper operation of the equipment, which could lead to serious damage to people or property.
- Never mix different liquids or oils.
- Always follow the manufacturer's lubrication instructions.
- Use control equipment carefully until the hydraulic oil has had time to reach its operating temperature.

SAFETY INSTRUCTIONS FOR HYDRAULIC CIRCUITS

1. Work on hydraulic equipment may only be carried out by professional hydraulic engineers.
2. Be cautious when using the equipment in cold conditions.
3. Check the machine for leaks. Do not use the machine if there is a leak from any system. Check all hydraulic hoses – particularly those which are bent during use – and replace any that are in poor condition or have leaks. Ensure that all joints are tight and that the lines are not damaged. Check that all protective caps and filler caps are closed properly. Check the hose sheathing for damage.
4. Check that all hose connectors, lengths and qualities comply with applicable requirements.

When replacing or repairing hoses, use original parts or hoses and connectors recommended by the manufacturer. Check particularly that the pressure classes of the hoses and connectors are suitable to the operating pressure levels.

5. Check that all safety devices such as pressure relief valves, etc., are in place and work properly. Familiarize yourself with their use. Safety systems may never be bypassed.
6. Check the main hydraulic parts daily, and always after a fault. Replace any damaged parts immediately.
7. If a component is damaged, clean it before repairing it. Do not use solvents when cleaning parts.
8. Do not attempt to carry out repairs that you are not fully familiar with.
9. Never carry out repairs of the hydraulic circuit when the system is pressurized. When pressurized, the oil spray can penetrate the skin and cause mortal danger.
10. Never work below a device or component that is only being held up by hydraulics. Use separate supports when carrying out maintenance or repairs. Do not disconnect cylinders or their valves until the machine is well supported.
11. Most hydraulic oils do not evaporate easily. Risk factors include hot oil, spills and oil mist (pressurized).
12. If oil gets into your eyes, rinse with plenty of water and contact a doctor.
13. Avoid prolonged or repeated contact with your skin.
14. If sprays or contact with the skin cannot be avoided, use protective gloves, goggles and clothing as necessary. Do not use oily clothing.
15. Avoid discharging hydraulic oil into the environment, as it can pollute waterways and the groundwater. If biodegradable oil is to be used, please contact the manufacturer beforehand and have the suitability of your equipment for the operation with biodegradable oil confirmed by him before such oil is used.
16. Store the oil in sealed containers provided by the manufacturer. Try to transfer the oil directly from its container into the tank.
17. If the oil must be passed through other containers, ensure that they are completely clean. Caps, funnels, sieves and filling holes must also be clean.
18. Never store oil outdoors, as water could condense in it.
19. Always dispose of oil in a suitable container, never into the environment!

GENERAL SAFETY INSTRUCTIONS FOR THE CHIPPER

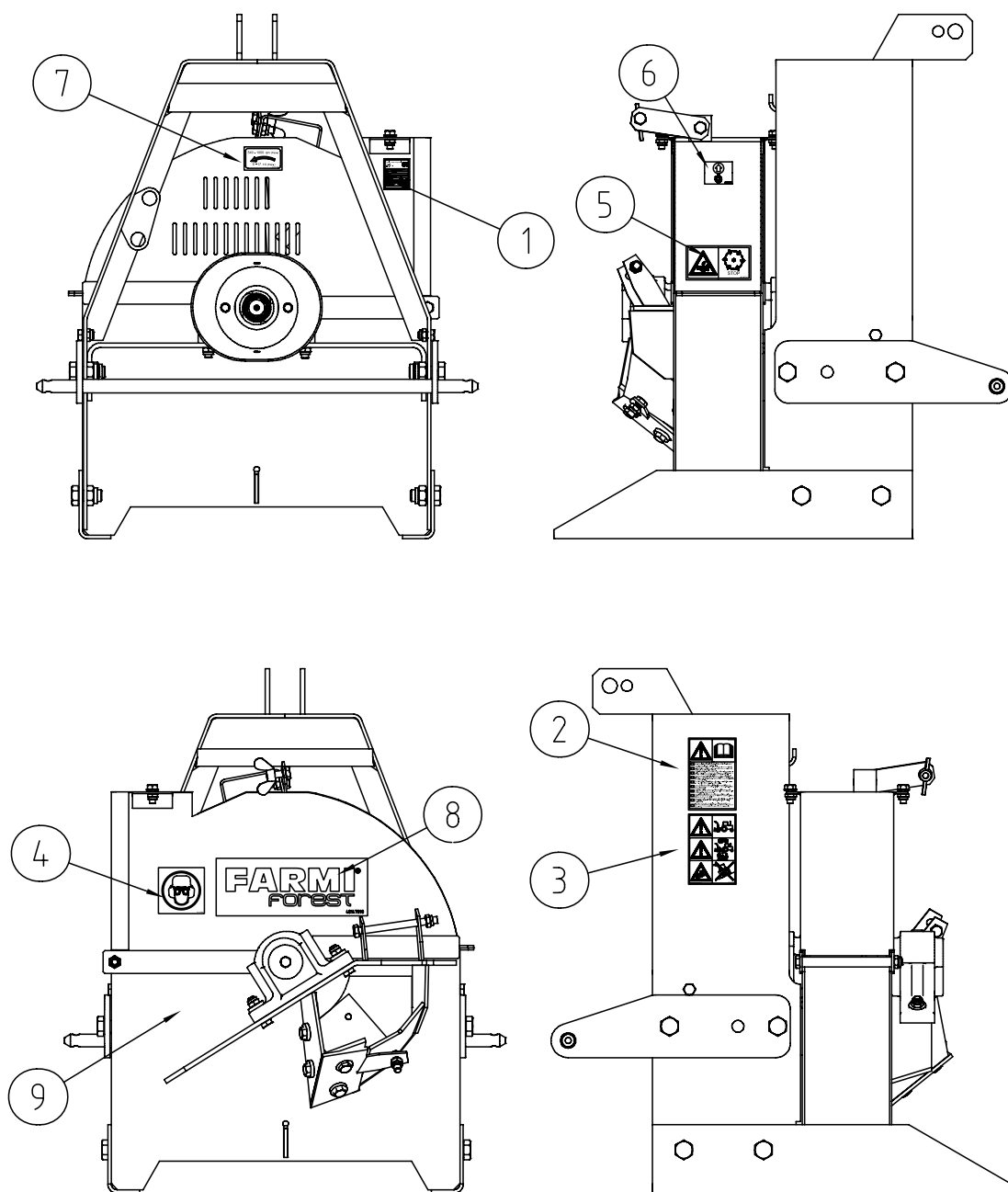


- Please make sure any machine operator has the required personal protective equipment: safety helmet, protective goggles, cut resistant safety boots and required protective clothing.
- The chipper must not be used without being mounted to a tractor. It is prohibited to mount the chipper to another power source.
- It is not permitted to operate the chipper without feed unit or feed hopper.
- Indoor operation of the chipper is prohibited.
- Always keep a safe distance to the discharge position of the chips.
- Detach the chipper from the tractor before performing any maintenance or repair works.
- Do not remove, lock, disable or modify in any other way the stop lever of the feed unit.
- The feed hopper or the feed unit must not be mounted at a higher or lower position as this would impede the stop lever function.


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STICKERS AND PLATES

These plates and stickers must be found on the chipper. Replace missing plates or stickers immediately.



FARMI 100F

Farmi Forest Corporation Ahmolantie 6 FIN-74510 IISALMI FINLAND		 41010100
TYPE	WOOD CHIPPER	WEIGHT kg
MODEL	100	150/+35/+40 OEM/3-POINT/BT
FEEDER	F100	30
SERIAL NO.		
YEAR OF MANUFACTURE		20
POWER NEEDED		8.5-40 kW
MAX. HYDR. PRESSURE		175 bar
OIL FLOW NEEDED		30 l/min

1. Machine plate FARMI 100 (41010100)





40147020

[GB] Please read the operating instructions of the machine meticulously before you operate, maintain or repair the machine. During machine operation, please observe the operating and safety instructions.

[DE] Lesen Sie vor dem Betrieb, der Wartung oder Reparatur der Maschine die Betriebsanleitung sorgfältig durch. Beachten Sie während des Betriebs die Bedienungs- und Sicherheitsanweisungen.

[FR] Veuillez lire les instructions de service de la machine méticuleusement avant d'utiliser, d'entretenir ou de réparer la machine. Lors du fonctionnement de la machine, veuillez observer les instructions de service et de sécurité.

[IT] Leggere scrupolosamente le istruzioni per l'uso della macchina prima di attivare la macchina, prima di eseguire la manutenzione o la riparazione della macchina. Durante il funzionamento della macchina, osservare le istruzioni per l'uso e per la sicurezza.

[FI] Lue käyttöohjeet huolellisesti ennen kuin käytät, huollat tai korjaat konetta. Noudata käytön aikana käyttö- ja turvallisuusohjeita.

[SE] Var god läs igenom maskinens driftsinstruktioner noggrant innan du kör, underhåller eller reparerar maskinen. Följ drifts- och säkerhetsinstruktionerna när maskinen är i drift.

[NO] Vennligst les driftsinstruksjene for maskinen nøye igjennom før du driver, vedlikeholder eller reparerer maskinen. Under driften av maskinen må drifts- og sikkerhetsinstruksene overholdes.


[DK] Læs betjeningsvejledningen for maskinen omhyggeligt, før du betjener, vedligeholder eller reparerer den. Følg anvisningerne vedrørende betjening og sikkerhed under brug af maskinen.

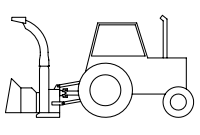
[EE] Palun lugege masina kasutusjuhend enne masina käitamist, hooldamist või remondimist hoolikalt läbi. Masina käitamise ajal tuleb järgida käitus- ja ohutusjuhiseid.


[RU] Перед использованием, техническим обслуживанием или ремонтом внимательно изучите инструкции по эксплуатации агрегата. В процессе работы агрегата соблюдайте указания по эксплуатации и технике безопасности.

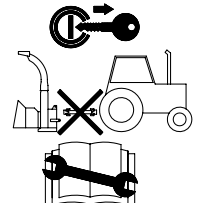
2. CAUTION!


Please read the instruction manuals of the machine meticulously before you operate, maintain or repair the machine. During machine operation, please observe the operating and safety instructions.
(40147020)

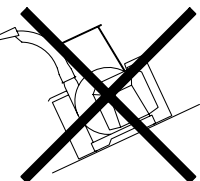












40147000

3. (40147000)

CAUTION!

Before operation, mount the chipper to the 3-point hitch of the tractor.

CAUTION!

Before maintenance and repair, please turn off the tractor and disconnect the PTO drive shaft.

CAUTION!

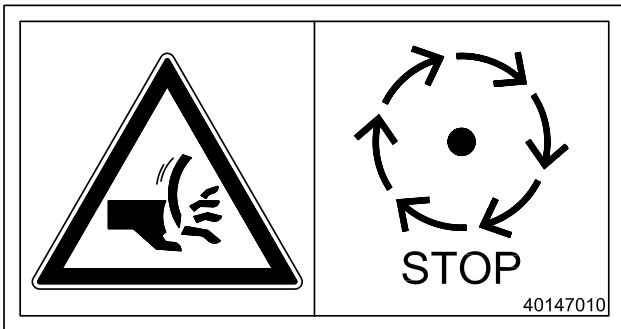
Before detaching the chipper from the tractor, it must be placed on a level surface.

FARMI 100F

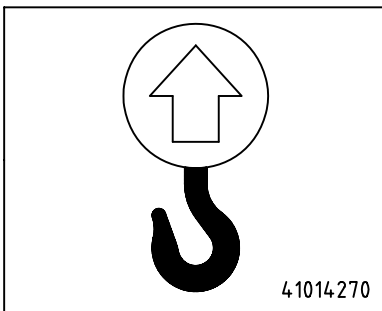
4. Wear personal protective equipment. (40142080).



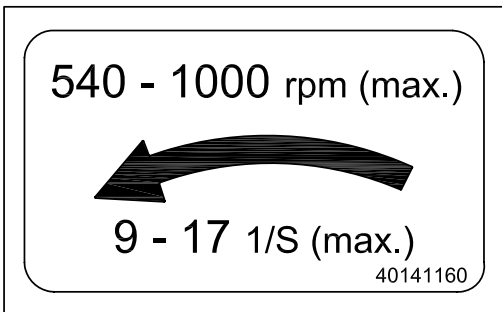
5. Cutting hazard! (40147010)



6. Lifting point sticker (41014270).



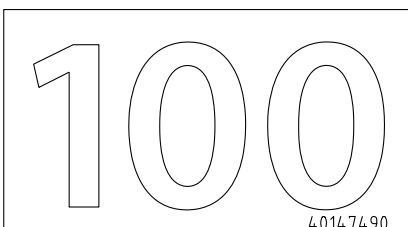
7. SPEED sticker (40141160)
Recommended speed range.
The rated speed must not be exceeded.



8. FARMI Forest sticker (40147090)



9. Sticker "100" (40147490)



FARMI 100F

FARMI 100F - GENERAL DESCRIPTION AND INTENDED USE

Farmi 100 is a single-disk chipper with two knives used for chipping wood with a diameter of up to 100 mm (chip size 12 mm). In addition, it is used to clear the embankments of roads and hiking trails as well as in gardening and landscaping.

A tractor with a performance of 7.5 to 30 kW will suffice as power source.

However, the chipper can also be driven by a separate hydraulic motor.

MAIN COMPONENTS OF THE FARMI 100

1. UPPER CHAMBER
2. LOWER CHAMBER
3. CUTTING DISK
4. KNIFE
5. VERTICAL KNIFE
6. HORIZONTAL KNIFE
7. DISCHARGE PIPE
8. DISCHARGE PIPE LID
9. DRAWBAR
10. FEED HOPPER

Optional equipment for the FARMI 100:

- Mechanical feed hopper
- Separate hydraulic motor as power source
- Long discharge pipe

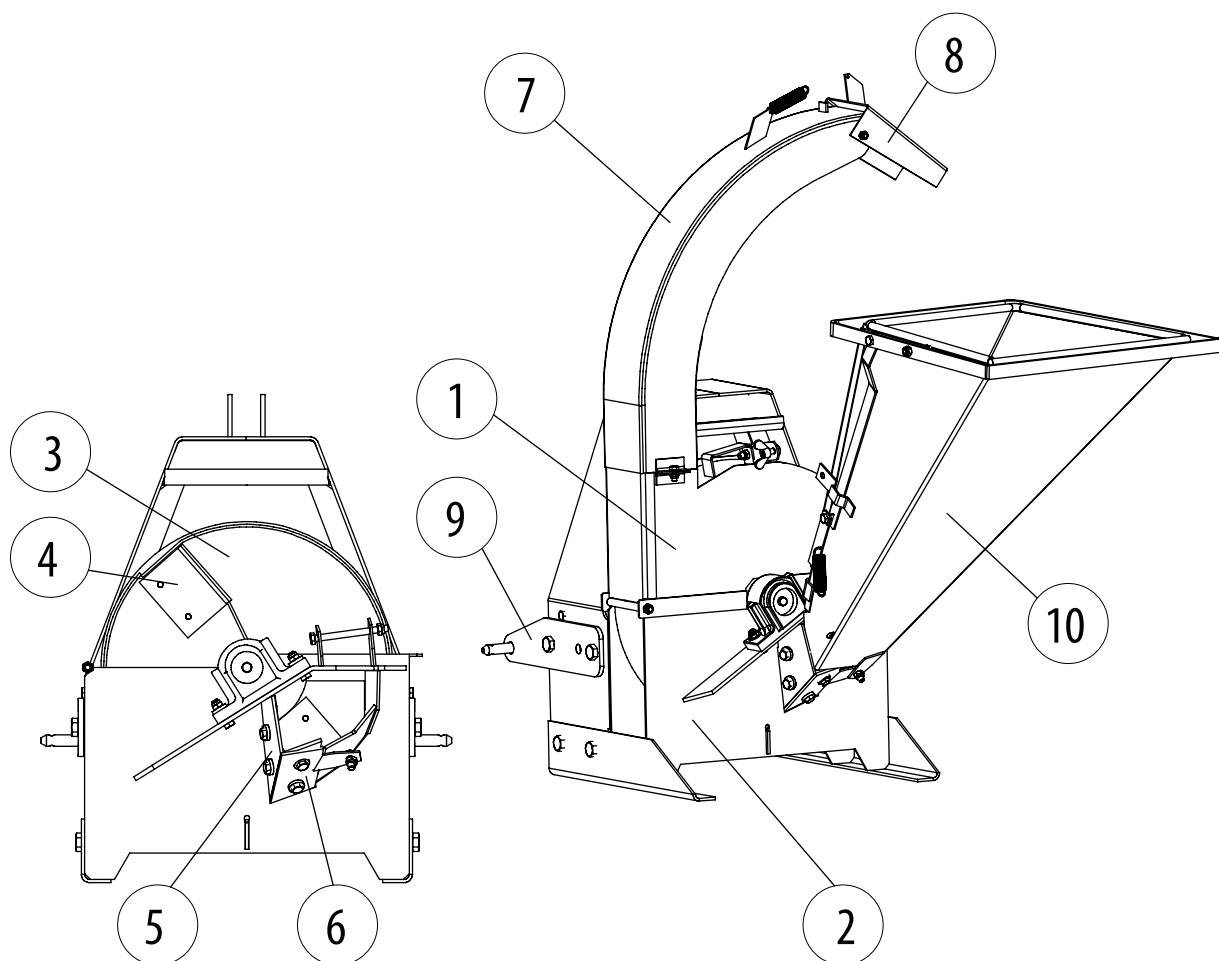
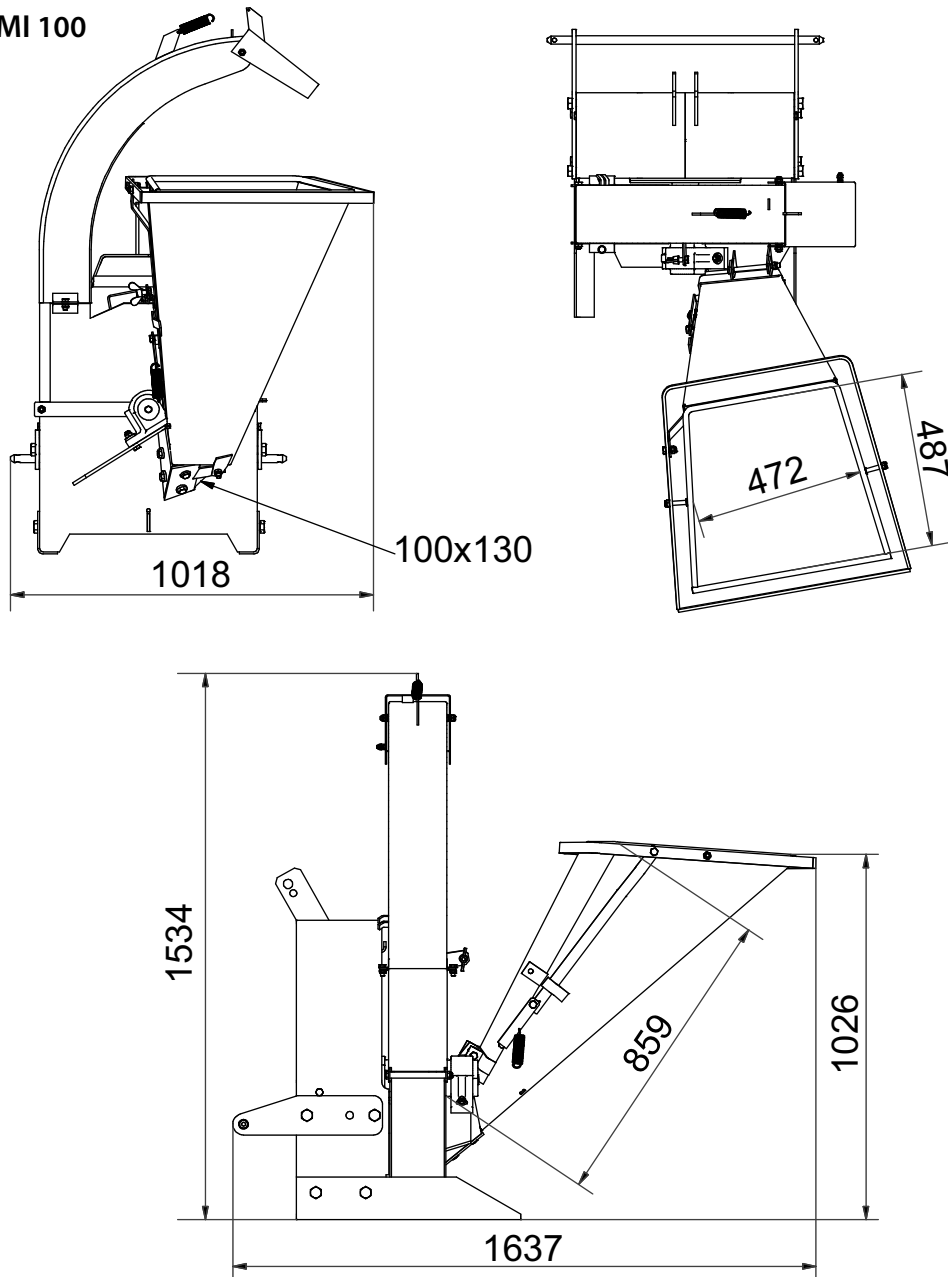


Fig. 1. Main components

FARMI 100F

DIMENSIONS FARMI 100



TECHNICAL DATA	FARMI 100
Type	disc chipper
Output	0,5-2 m ³ /h
Chip length	12 mm
Max. wood diameter	100 mm
Power demand	7,5-30 kW
PTO rpm	540 or 1000 rpm
Number of knives	2 pcs
Power source	tractor or hydraulic motor
Mounting	3-point linkage
Chipper weight	193 kg / 210 kg
Disc diameter	550 mm
Disk weight	46 kg
Discharge pipe turning	to two sides
Feeder	drop spout

MOUNTING

LIFTING



Lifting points for each machine are marked with hook symbols.

Lift only using the proper type of lifting device and ensure that it has an appropriate lifting capacity.

Check the lifting slings, cables, and chains regularly.

Ensure that you know the weight of the load to be lifted and never exceed the lifting capacity stated by the manufacturer of the lifting device.

Select the transport routes for lifting so that the load is not transported over people or a location where people might be.

SHORTENING THE PTO SHAFT

1. Connect the device to the tractor.
2. Measure the distance between the splined shafts (Distance A)
3. First cut the thicker shaft shield to the correct length (1). Remember to leave at least a 40 mm clearance. Then cut a similar length off the profile tube (2). Shorten the other half of the PTO shaft in the same way. File off the burr.
4. Interconnect the tubes and check that the shaft has been shortened enough by moving the machine gently. Ensure that there is a 40 mm clearance. Also move the machine sideways to check that the shaft moves freely.

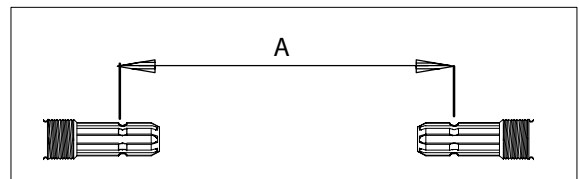


Fig. 2. Measure A, when the distance between the splined shafts is at its shortest.

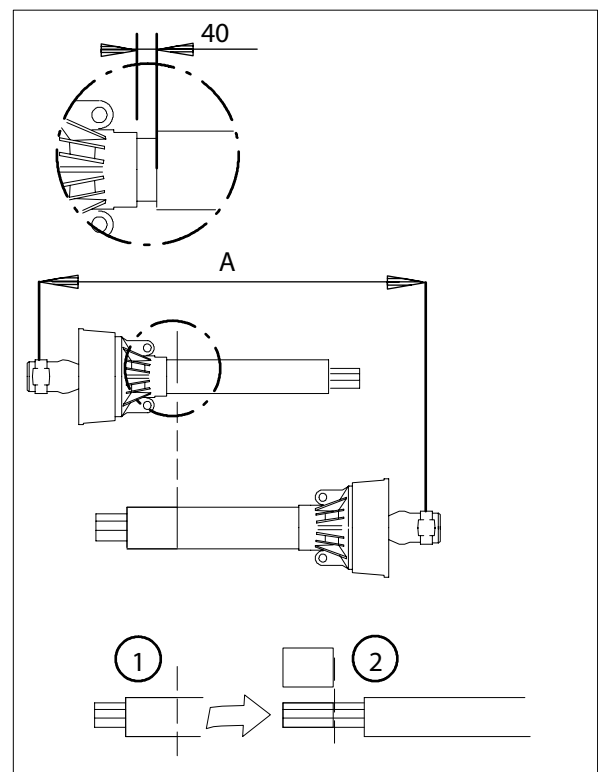


Fig. 3. Shortening the PTO shaft

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ASSEMBLY INSTRUCTIONS

1. Attach the feed hopper to the chipper using M12x120 and M12x30 hexagon head bolts and lock nuts. Lock the feed hopper in its operating position. See fig 4.
2. Mount the discharge pipe to the chipper using two M10 bolts.
3. Mount the chipper on the tractor's 3-point hitch.
4. Install the PTO shaft.
5. Check that the length of the PTO shaft is correct for different hitch positions.

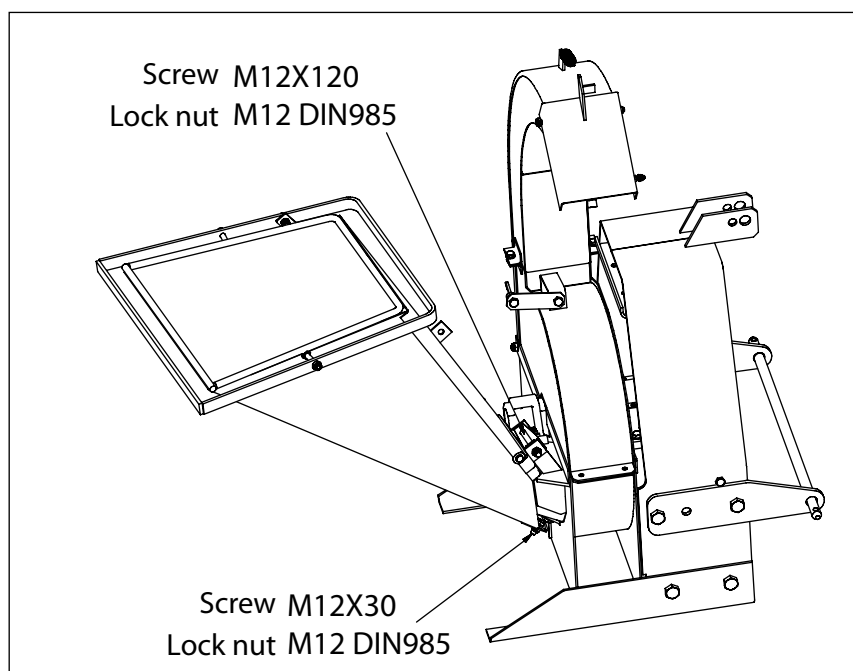


Fig. 4. Installation of the feed chute / Chipping position

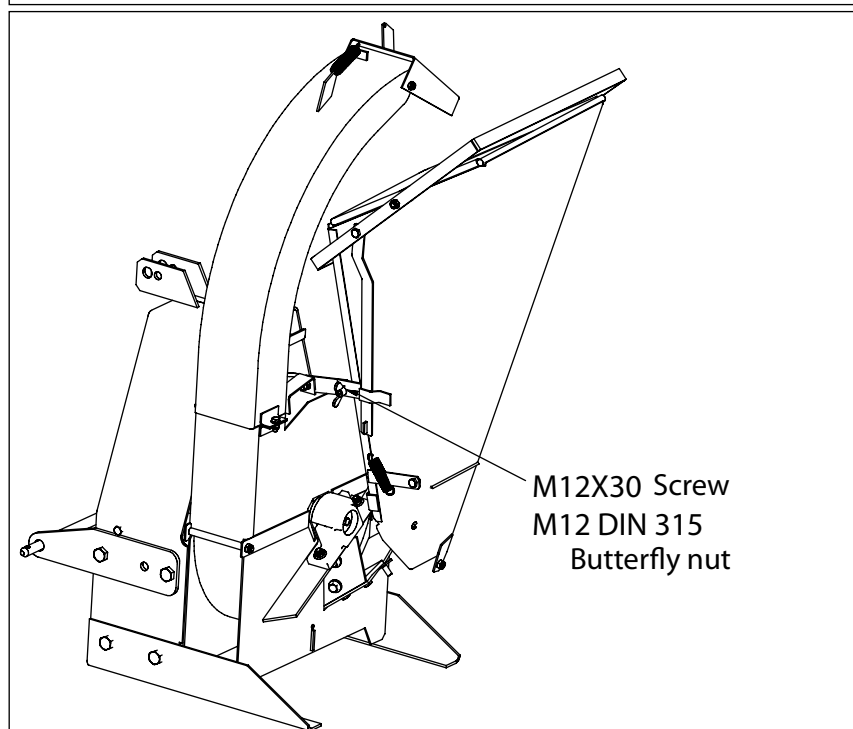


Fig. 4a. Installation of the feed chute / Transport position

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MOUNTING OF THE CHIPPER AND PRE-OPERATION INSPECTIONS

1. For mounting or dismounting the chipper, always turn off the tractor and apply the parking brake before entering the area between chipper and tractor.
2. Check the PTO drive shaft for damage and make sure it has the appropriate length.
3. Make sure the connection shields of the PTO drive shaft are seating correctly and the holding chain of the connection shields is fastened.
4. Make sure all protective and safety devices of the chipper are installed. Never remove any protective device during operation.
5. Before operation, please make sure there are no foreign objects in the feed hopper.
6. Before operation, please make sure there are no foreign objects in the chipper. Rotate the shaft to make sure that the cutting disk can rotate freely.
7. Make sure that the water drainage holes on the lower chamber are open and that the disk is not frozen up.
8. During operation, the chipper must stand on level and hard ground.
9. As compared to the tractor, the chipper must not be lowered excessively. Otherwise, the PTO drive shaft connection may loosen during operation.
10. Direct the discharge pipe so that the thrown out chips do not pose a risk to the operator of the chipper or to or anyone else. Always keep a safe distance to the discharge position of the chips.

STARTING THE CHIPPER

- Start the chipper with caution while operating the tractor at low speed. Slowly increase the speed until the required chipping speed has been achieved (540/1000 rpm). CAUTION! Do not exceed the max. chipper speed of 1000 rpm.
- Now, the chipper is ready for operation.

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STOPPING A TRACTOR-DRIVEN CHIPPER

Slow the tractor engine speed to idle before disengaging the PTO. This is especially important with tractors featuring a PTO brake (e.g., Ford). Turn the PTO control lever slowly to the OFF position.



After stopping the chipper, wait for all movement to stop. The disk continues rotating like a fly-wheel after the PTO is disengaged. Please wait until the disk has stopped completely before performing any further actions.

The chipper requires approx. 1 ½ minutes to slow down from maximum speed to complete stop (1000 rpm -> 0 rpm).

STOPPING A HYDRAULIC MOTOR DRIVEN CHIPPER



IMPORTANT! When the chipper is driven by the HD 50, it is extremely important to slow the driving engine speed to idle before disconnecting the hydraulics, to prevent cavitation.

CHIPPING



During chipping, please observe the following safety instructions:

- The danger zone of the chipper is approx. 20 m.
 - During operation, the danger zone must be safeguarded to prevent unauthorized people from entering the danger zone. If necessary, operation must be interrupted.
 - The operator of a chipper with manual feed must wear the following personal protective equipment: safety helmet, ear protection, protective goggles, cut resistant safety boots and required protective clothing.
 - Never work in front of the feed hopper. Stand on the left side of the feed hopper when feeding, since the feed rollers may push the wood upwards or to the right.
 - Never hold any part of the body into the feed hopper or into another part of the chipper with the machine running.
 - Make sure that loose clothing or long hair cannot be caught by rotating machine parts or by the material to be fed.
 - Before feeding in the material to be chipped, ensure that the wood fed into the chipper is free from metal or soil (such as nails, stones, etc.).
 - Never feed ropes or barbed wire to the chipper since these could get caught on the operator's body and draw him into the feed hopper.
 - Do not use the chipper at temperatures below -20 °C. This is to avoid damage due to brittleness – especially of the knives – caused by the cold.
 - Avoid chipping wood that is frozen solid; otherwise, excessive stress will be exerted on the chipper and self-feeding will be impaired.
 - FIRE HAZARD! Always keep adequate fire-fighting equipment on hand when using the chipper. Regularly check the surface temperature of the chipper. If the chipper suddenly heats up abnormally, stop the chipper and determine the cause of overheating. Regularly, check the temperature of the bearings. Pay special attention to careful maintenance, and keep the chipper free from dust. If the chipper starts smoking, pour water into the feed hopper.
- Start the chipper. Caution! See section "Starting the chipper".
 - Set the operating lever to the FEED FORWARD F position. Caution! See picture "Operating lever functions".
 - Push the material to be chipped into the feed hopper. Release the material immediately when the feed rollers start to rotate.
 - When chipping large trunks or the like, the rotary speed of a low-power tractor often drops during chipping very long wood pieces. Temporarily stop feeding by setting the operating lever to the STOP position. After the rotary speed has sufficiently increased again, continue feeding by setting the operating lever to the FEED FORWARD F position.



Oil will heat when travelling through the hydraulic pump, hydraulic motor and the valves. The heating can be considerable if the tractor has a small hydraulic tank.

Check the oil temperatures twice an hour to prevent the oil from overheating. If the oil overheats, let it cool down by stopping the chipping.

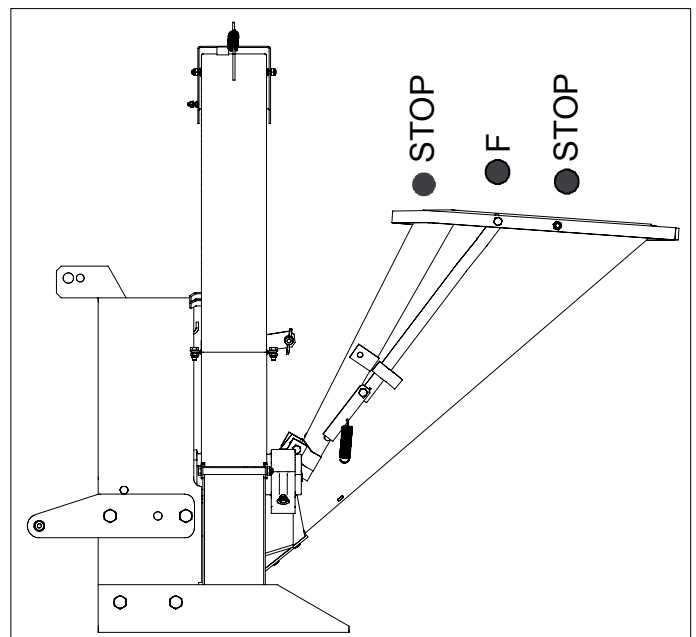


Fig. 5 Operating lever functions

FARM 100F

EMPTYING THE CHIPPER AFTER USE

Let the chipper run empty by operating it for a short time.

SWIVELING THE FEED HOPPER TO THE TRANSPORT POSITION

1. Attach the feed hopper to the chipper using an M12x30 hexagon head bolt and an M12 butterfly nut. See the figure showing how the feed hopper is swiveled to the transport position.

STORAGE OF THE CHIPPER

- Before detaching the chipper from the tractor, park it on level and hard ground. Take appropriate measures to prevent the chipper from moving or falling.
- If the chipper is to be stored for a long period, lubricate the knives e.g. with petroleum jelly.
- Take appropriate measures to keep the water drainage holes on the lower chamber open.

MAINTENANCE



Before beginning maintenance and repair

- place the chipper onto level and hard ground and make sure it cannot tip;
- turn off the tractor and disconnect the PTO drive shaft;
- disconnect the hydraulic hoses from the tractor;
- familiarize yourself with the machine-specific maintenance and repair instructions.

In case of doubt, please contact the manufacturer.

- Always lock the rotor before adjusting or changing the knives.
- Always wear protective gloves when handling knives.

PERIODIC INSPECTIONS

- With new machines, check the mounting bolts for tightness after the first operating hour, tightening them if necessary. Tightening torques are shown in table.
- Check the mounting bolts for tightness once a week.
- The knife-to-anvil clearance is adjusted to the specified values. For instructions on adjusting the clearance, see Adjusting the knife-to-anvil clearance.

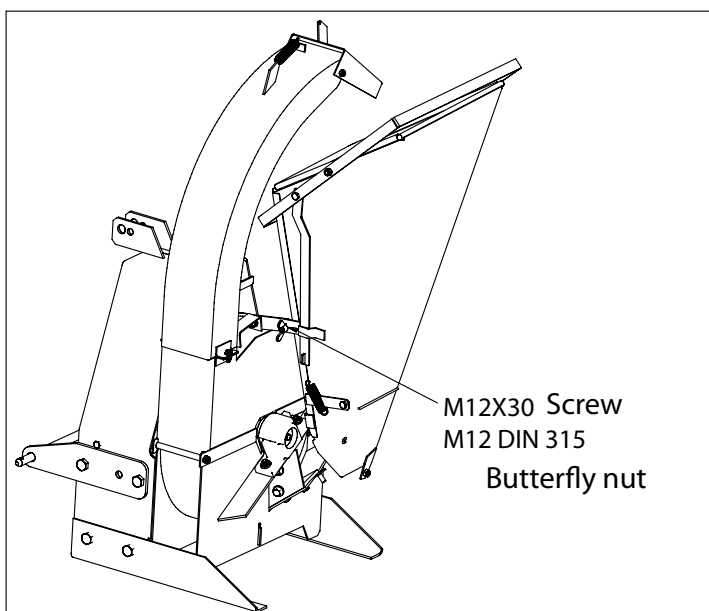


Fig 6. Swiveling the feed hopper to the transport position

REPLACING THE BEARING

1. Open the upper chamber.
2. Remove the fastening bolts M10 (7) and the upper bearing housings (6).
3. Mark the location of the tightening cone on the shaft.
4. Lift the disk.
5. Bend the claw of the securing ring (3) out from the notch on the axle nut and open the axle nut.
6. Remove the axle nut, securing ring, spacer ring (4), bearing (5), spacer ring (9), and tightening cone (10).
7. Install the tightening cone, spacer ring (9), and bearing on the disk shaft. Note the thickness of the spacer ring (9) - see Fig. 7a.
8. Install the securing ring with the claws facing outwards and the inside claw in the groove of the tightening cone, and install the axle nut.
9. The inner ring of the bearing should press tightly against the tightening cone.
10. Tighten the axle nut with a hook spanner until the bearing is tightly on the cone, or to 80 Nm. However, the outer ring of the bearing should turn freely. Note the location of the tightening cone on the shaft.
11. Bend one claw of the securing ring (3) into a notch on the axle nut.
12. Install the other half of the dust cover and end plate on the bearing housing. Install the spacer ring (4) on the shaft.
13. Lower the disk to the bearing housing.
14. Attach the other half of the dust cover to the upper bearing housing; install the upper bearing housing fastening bolts and tighten to 50 Nm.
15. Lubricate the bearing housing. An excessive amount of grease causes overheating and impairs lubrication.

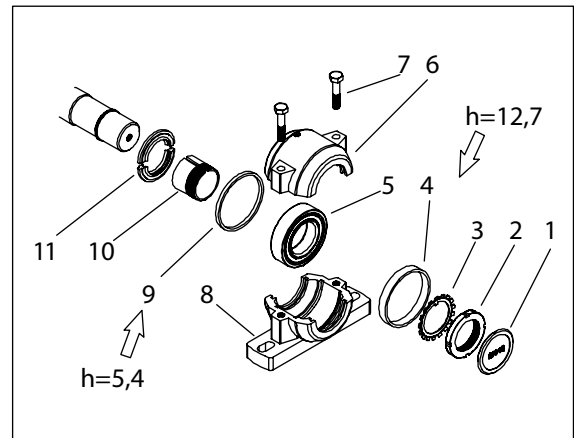


Fig. 7a. Bearing, feeder side

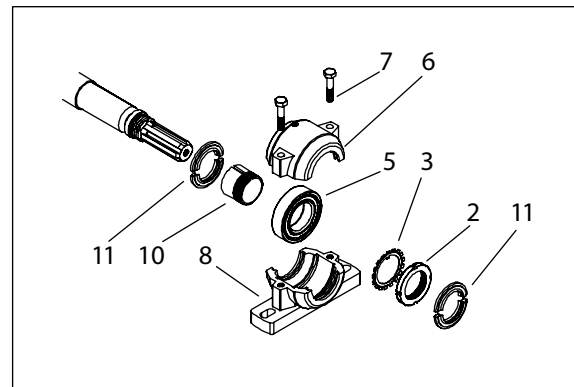


Fig. 7b. Bearing, splined shaft side

The bearings at the feeder side and splined shaft side are different from each other. The bearing at the splined shaft side, Fig. 7b., does not have spacer rings (4 and 9) and an end plate (1). The bearing at the splined shaft side has dust covers on both sides (11).

ADJUSTING THE BEARING CLEARANCE

1. Open the upper chamber.
2. Remove the fastening bolts (M10) (7) and the upper bearing housings (6).
3. Remove the grease from the bearing housing.
4. Lift the disk.
5. Bend the claw of the securing ring (3) out from the notch on the axle nut and open the axle nut.
6. Remove the spacer ring (3) if the bearing is at the feeder side.
7. Measure the radial clearance on top of the bearing between the rollers and outer ring with a feeler gauge. The clearance should be 0.02–0.03 mm (0,008-0,012"). Measure the clearance by pushing the feeler gauge between the rollers (point A, Fig. 8b.) through the bearing and then moving the gauge back and forth between the rollers and outer ring - see Fig. 8c. Do not force the feeler gauge through the clearance.
8. If the clearance exceeds 0.03 mm, bend the claw of the securing ring (2) out from the notch on the axle nut (1).
9. The bearing is tightened by turning the axle nut clockwise with a 70 mm (2 3/4") hook spanner until the right clearance is achieved. Do not tighten by hammering the axle nut.
10. Turn the axle nut clockwise until the notch is aligned with the nearest claw of the securing ring. Bend the claw into the notch. Do not bend the claw that was bent earlier.
11. Lower the disk to the bearing housing.
12. Install the upper bearing housing and tighten the bolts (6) to 50 Nm (36 7/8 lbf).
13. Lubricate the bearing housing. An excessive amount of grease causes overheating and impairs lubrication.

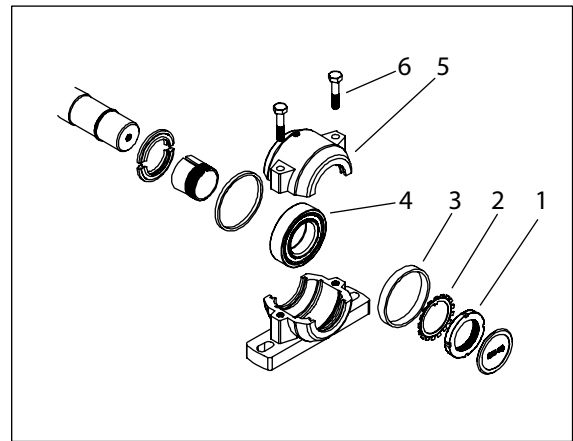


Fig. 8a. Bearing, feeder side

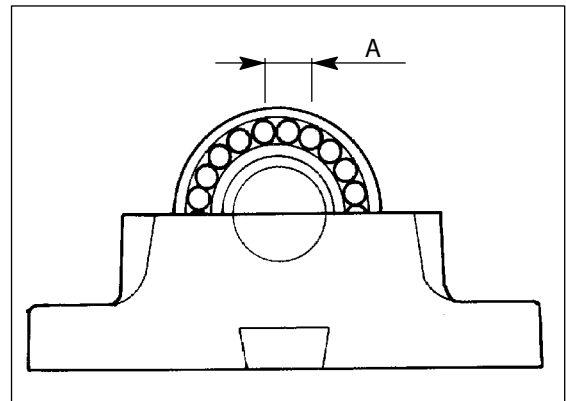


Fig. 8b. Push the feeler gauge between the rollers and outer ring.

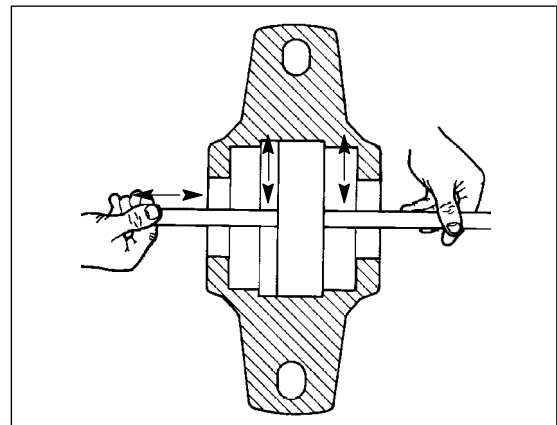


Fig. 8c. Measuring the clearance

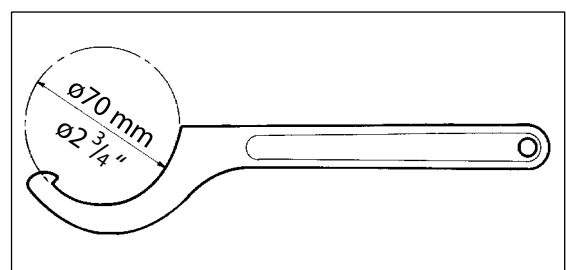


Fig. 8d. Tightening the bearing

LUBRICATING THE BEARINGS

- The bearings are lubricated at the factory, and a similar lubricant should be used for subsequent lubrication (Shell Alvania Grease R 3. or Kendall L427). An excessive amount of grease causes overheating and impairs lubrication.
 - Lubricate the bearings every 200 working hours or at least once a year.
1. Open the upper bearing housing - see bearing housing assembly drawing, (pic. 7a). Remove old grease as carefully as possible and replace it with new grease. Do not fill the bearing housing with grease.
 2. Install the upper bearing housing and tighten to 50 Nm.

LUBRICATING THE PTO SHAFT

- Lubricate the PTO shaft prior to operation and regularly, as shown in Fig. 9.
- Lubricate the inner surface of the PTO shaft, accessed via the outer profile tube.
- Lubricate the shield tubes in wintertime to prevent them from freezing and sticking.

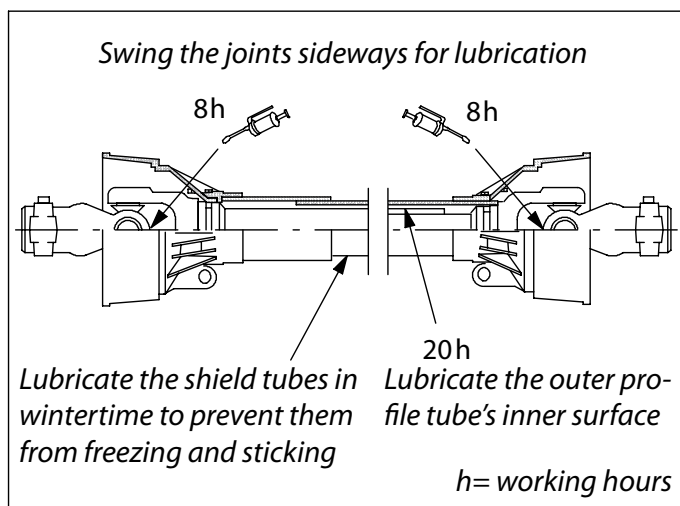


Fig. 9. Lubrication points and intervals for the PTO shaft

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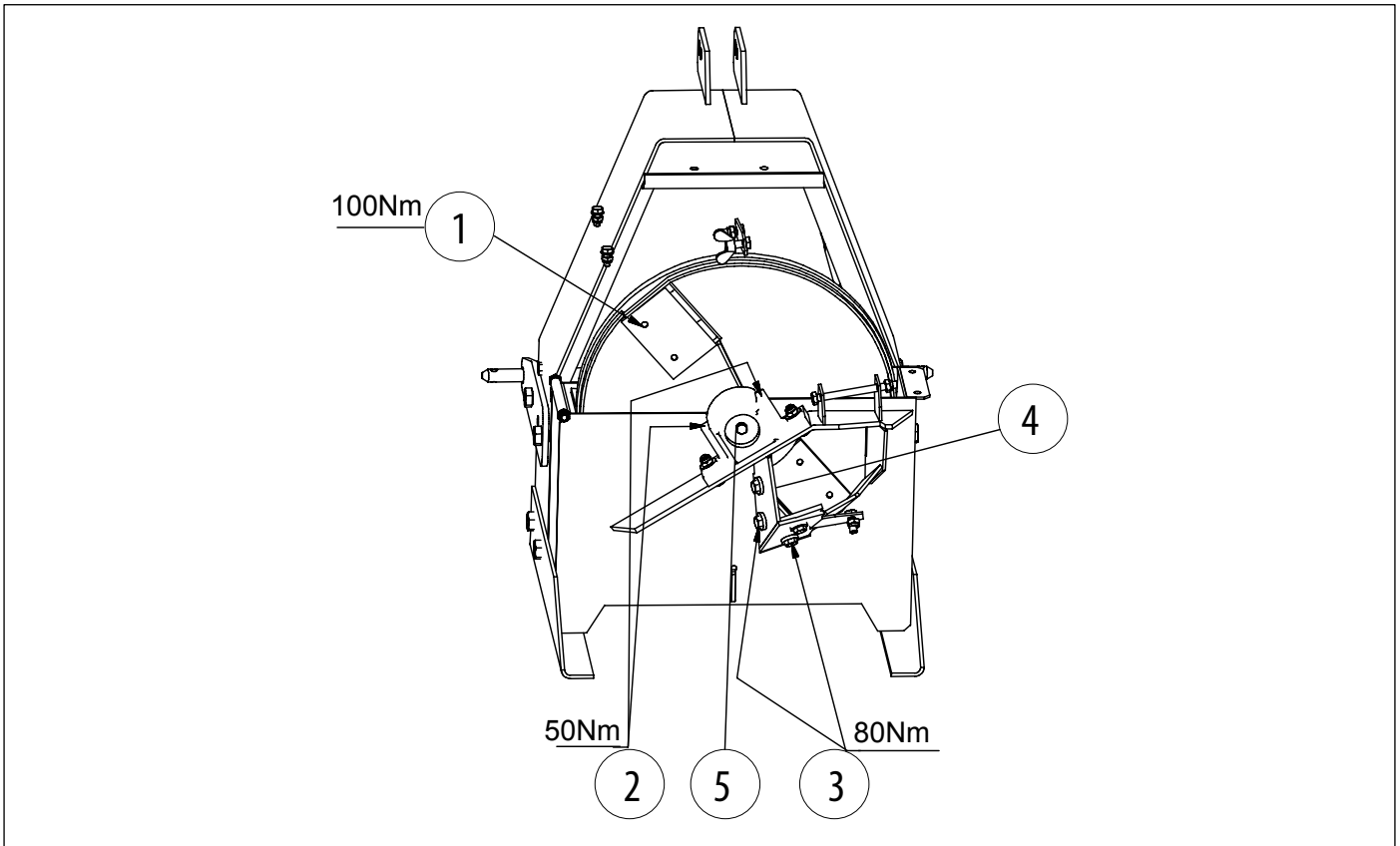


Fig. 10. Checklist for tightening and checking clearances

Item	Width across flats, mm (inches)	Tightening torque, Nm (lbf)
1. Check the knife bolts for tightness.	19 (12/16")	100 (73 11/16)
2. Check the bearing housing bolts for tightness on both sides.	17 (11/16")	50 (36 7/8)
3. Check the anvil bolts for tightness.	19 (12/16")	80 (58 15/16)
4. Check the clearance between knives and vertical anvils.	19 (3/4")	1,2 - 1,5 mm (0,02 - 0,06")
5. Check the bearings for radial clearance.		0,02 - 0,03 mm (0,008 - 0,0012")

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KNIFE AND ANVIL MAINTENANCE



Read the safety instructions.
The disk continues rotating like a flywheel after the PTO is disengaged. Please wait until the disk has stopped completely before performing any further actions.



When manually turning the rotor, never touch the edges of the lower chamber or other parts where there is the risk for the hands to get squeezed between the lower chamber and the rotor knives or blades.

REMOVING THE KNIVES

1. Remove the knife fastening bolts (M12). Turn the wrench in such a way that your hands would not hit the knife if the wrench should slip. Fig. 12.



Wear protective gloves when handling knives or anvils.

OPENING AND REMOVING THE UPPER CHAMBER

- Remove the M10 mounting bolts of the upper chamber. Swing the upper chamber to the side.
- Remove the M12 pin to release the upper chamber.



Exercise extreme caution when opening the upper chamber.
Take appropriate measures to keep the upper chamber from falling down.

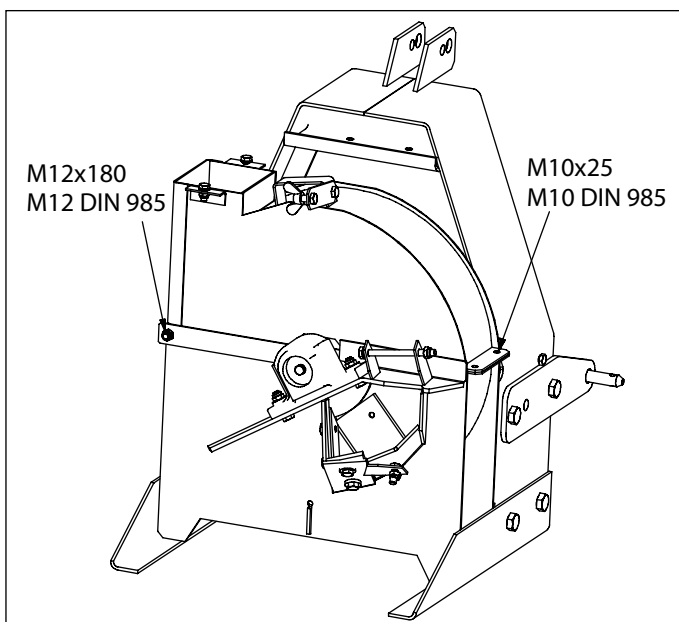


Fig. 11. Removing the upper chamber

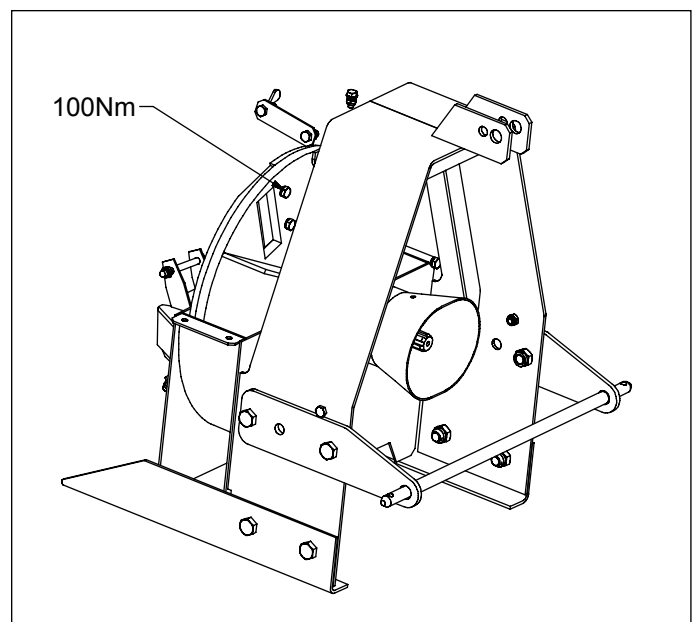


Fig. 12. Removing the knife fastening bolts

SHARPENING THE KNIVES



Sharpen all knives equally. This ensures disk balance. Avoid heating the knife during sharpening.

The knives need sharpening when

- the self-feeding of wood has decreased;
- the power demand has increased;
- the chip surface is rough.
- The individual chips have become smaller.

Normally, the knives can be sharpened several times without actually being removed (with, e.g., a sharpening stone or belt grinder).

More thorough conditioning is carried out with a surface grinder, with the knives removed.

The grinding angle of the knives is 32° and their honing angle 45° . The honing angle is intended to prevent edge breakage. See fig 13.

The hone angle is ground to a 45° angle with two to three longitudinal strokes, using a level sharpening stone.

Any burrs can be removed by parallel grinding of the surface opposite to the knife mounting bolts. Fig. 15.

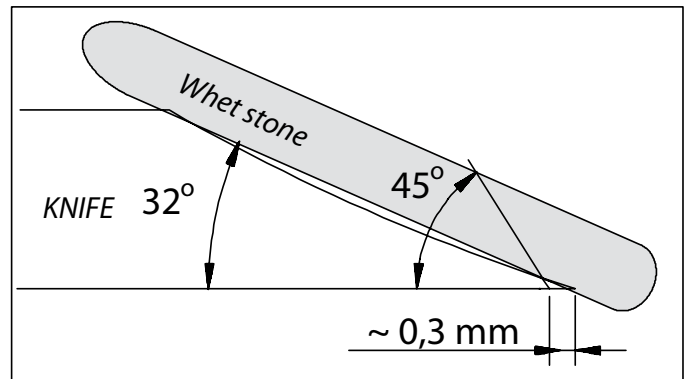


Fig. 13. The profile of a concave knife

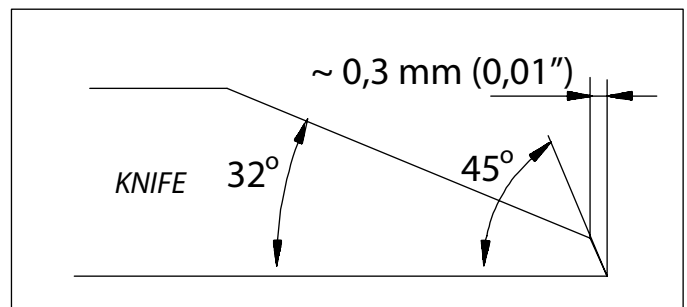


Fig. 14. A knife with a flat profile

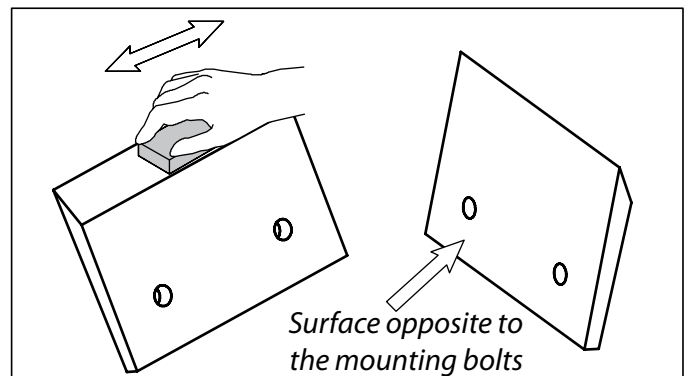


Fig. 15. Final grinding of the knife

REMOVING THE ANVILS

The chipper features both a vertical and horizontal anvil. To remove the anvils, open the fastening bolts (A) and (B) (M12). The horizontal anvil fastening bolt (B) is located below the feed opening. Fig. 16.

SHARPENING THE ANVILS

If you notice wear or rounding of the inner edge of the anvil, sharpen the anvils so that the original angles are retained. Fig. 17.

INSTALLING THE KNIVES AND ANVILS

- Check the condition of the fastening bolts and nuts.
- Install the knives and anvils and tighten the fastening bolts to the torques specified in table.
- Adjust the knife-to-anvil clearance.

ADJUSTING AND CHECKING THE KNIFE-TO-ANVIL CLEARANCE

The need for adjusting the anvils is determined by the amount the knives are sharpened. Always check and, if necessary, adjust the clearance between knives and anvils

- after a heavy sharpening;
- if the knives were removed - for example, due to sharpening;
- if new knives are replaced,
- if chip length is adjusted.

Check the clearance with a feeler gauge.

1. Loosen the M12 locking screws (A) and (B) of the anvils. See fig 18.
2. Turn the cutting disk in such a way that the front edge of the knife is exactly opposite the vertical anvil. Slide a feeler gauge between the knives.
3. Tighten the screws of the anvil (A).
4. Adjust the play of the horizontal anvil towards the front edge of the knife to 1.2-1.5 mm.
5. Tighten the locking screw (B).
6. Recheck the knife play.

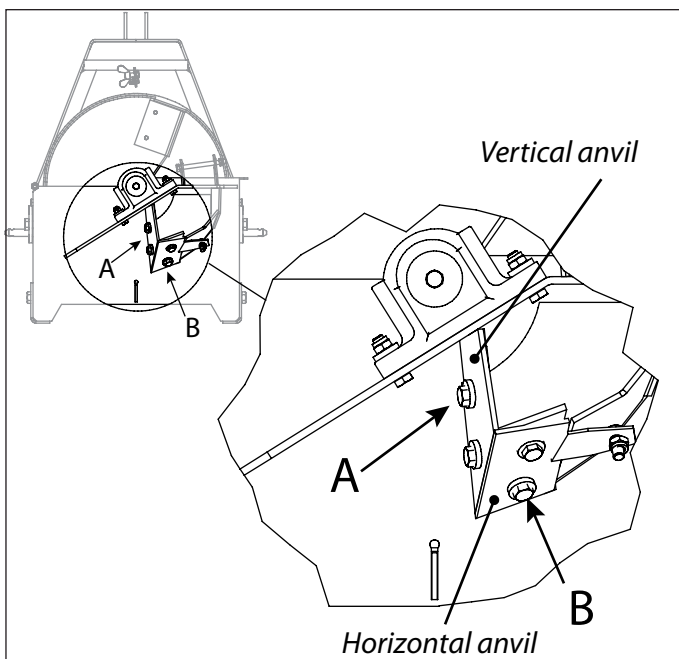


Fig. 16. Anvil fastening bolts

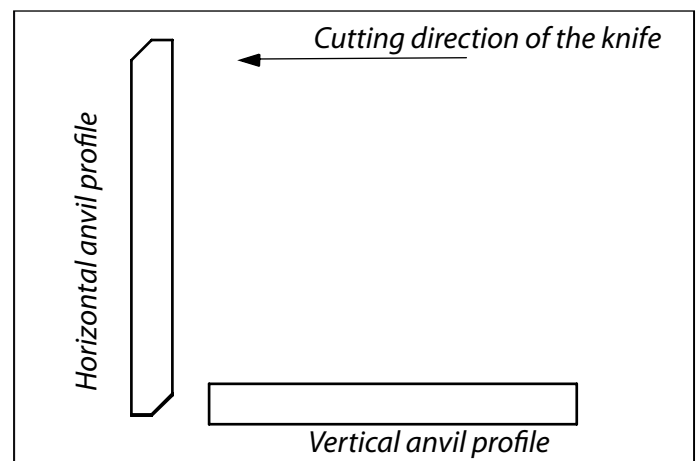


Fig. 17. Anvil profiles

FARM 100F

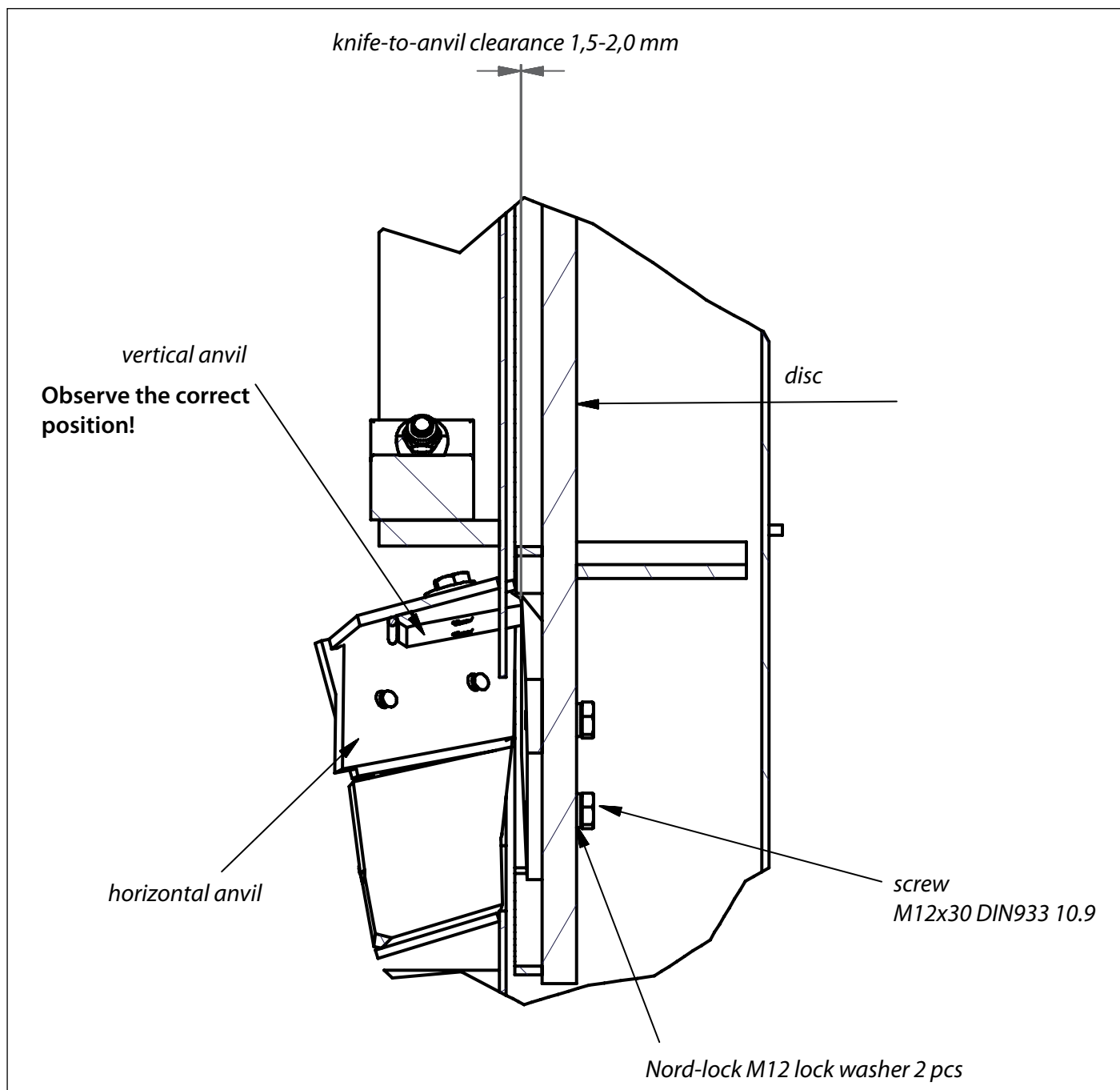
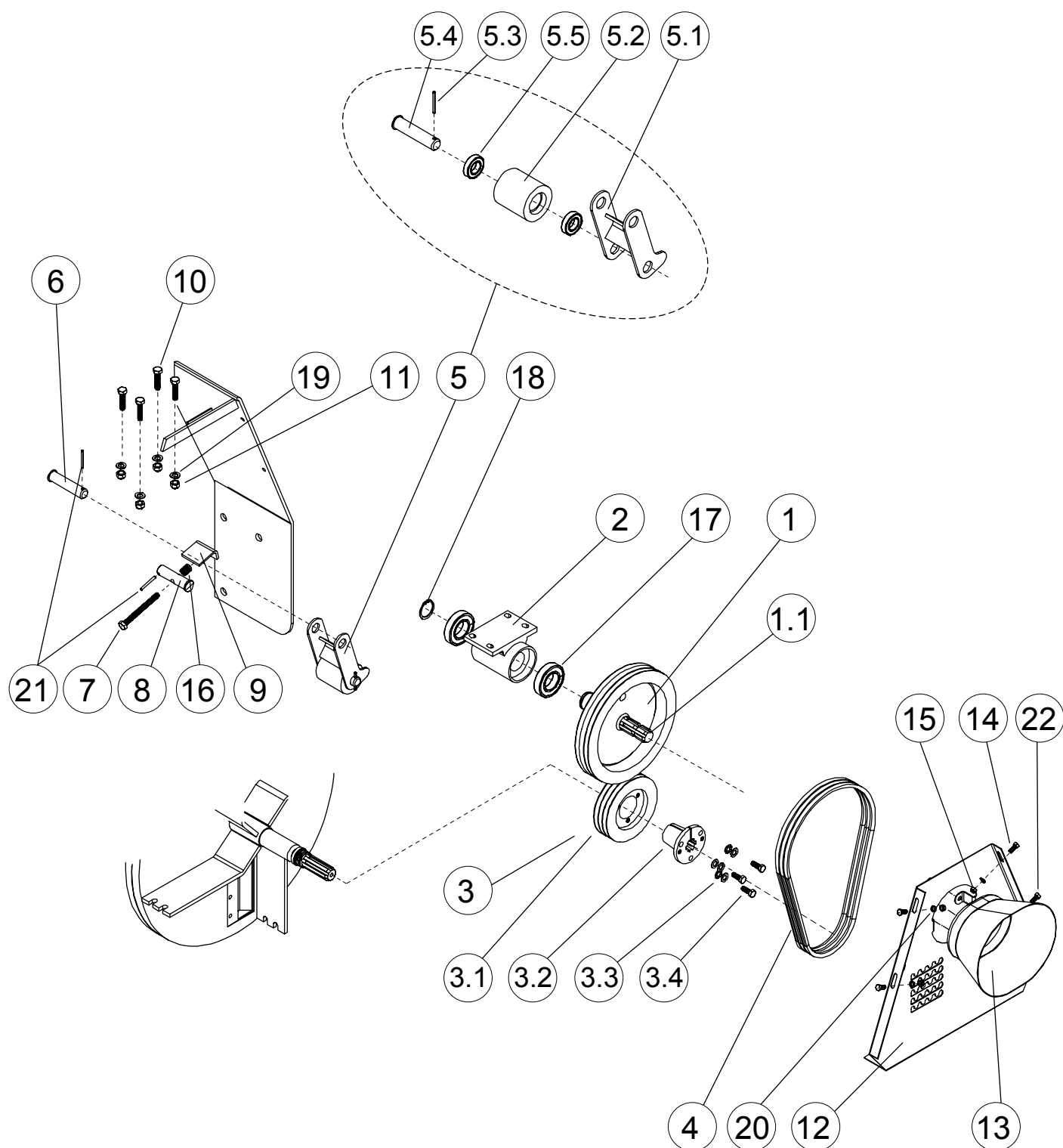


Fig. 18. Cross-section of the disk and knives / anvils

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BELT TRANSMISSION FARMI 100F $i=2,0$



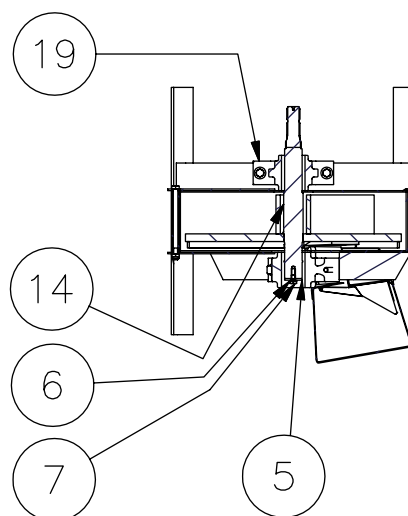
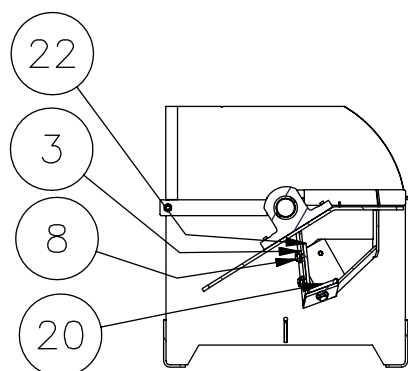
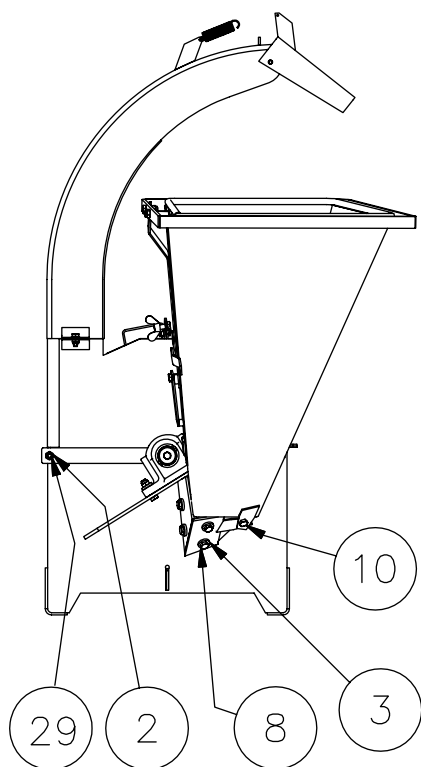
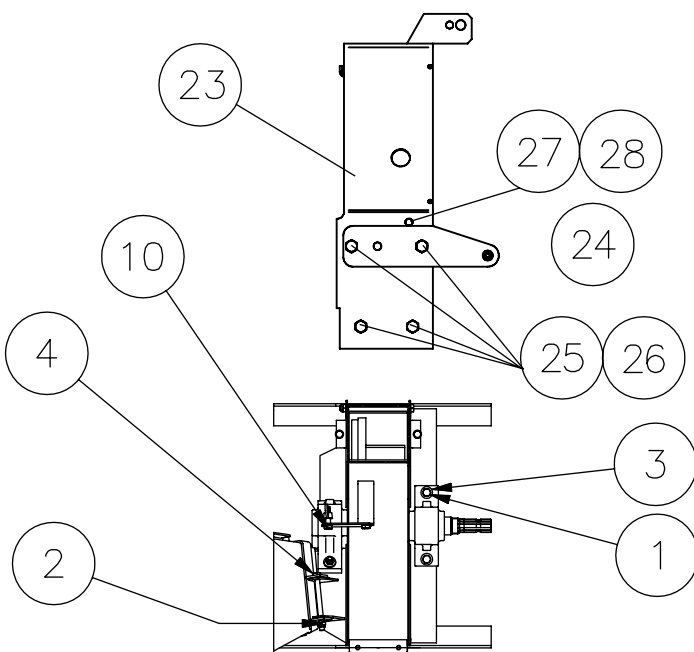
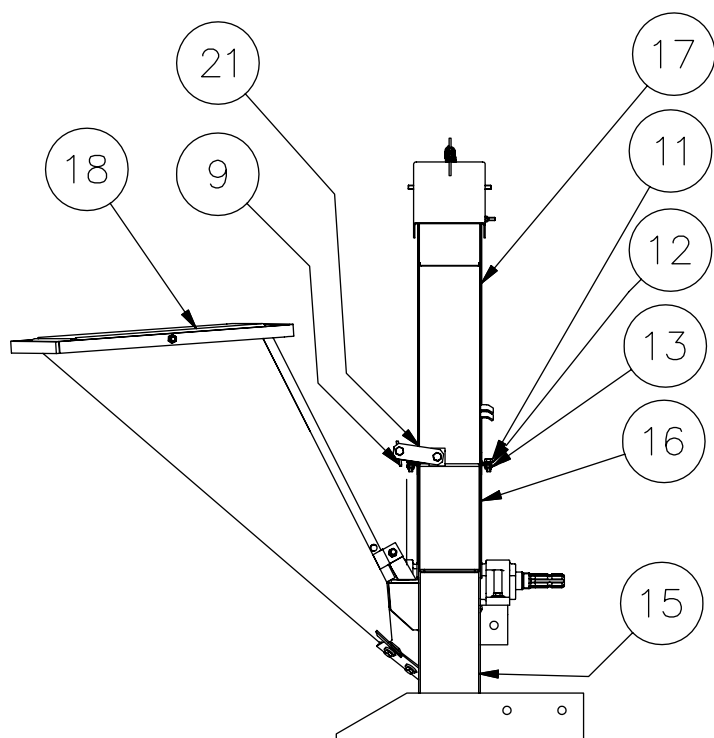
FARM 100F

BELT TRANSMISSION FARM 100F i=2,0

Part	Order no	Description	Remarks	Qty
1	53220540	Belt pulley	D315	1
1.1	43621220	Splined shaft		1
2	43514450	Bearing housing		1
3.1	43621240	Belt pulley	D150	1
3.2	43621230	Tapered adapter sleeve		1
3.3	52214269	Lock washer	M12 NORD-LOCK	3
3.4	52062023	Screw	M12X30 DIN933 88ZN	3
4	54822382	Belt		3
5	43512020	Belt tightener	complete	1
5.1	43512030	Belt tightener		1
5.2	43341106	Reel		1
5.3	52840055	Cotter pin	5X50 DIN1481	1
5.4	43341114	Pin		1
5.5	54511134	Slotted sealed ball bearing		2
6	43341114	Pin		1
7	52063658	Screw	M12x120 DIN933 88ZN	1
8	43511950	Pin		1
9	43512050	Adjusting plate		1
10	52090560	Screw	M12x50 DIN933 10.9	4
11	52117124	Lock nut	M12 DIN985 8ZN	4
12	33621380	Cover plate		1
13	43511780	Cover of the universal shaft		1
14	52060126	Screw	M8X20 DIN933 88ZN	4
15	52117082	Lock nut	M8 DIN985 8ZN	6
16	43402150	Spring		1
17	54512140	Ball bearing		2
18	52230257	Circlip	45x2,5 DIN471	1
19	52200466	Washer	M12 DIN440 ZN	4
20	52200037	Washer	M8 DIN126 58ZN	6
21	52840055	Cotter pin	5X50 DIN1481	2
22	52021250	Locking bolt	M8X16 DIN603 88ZN	2

FARM I 100F

FARM I 100 CHIPPER



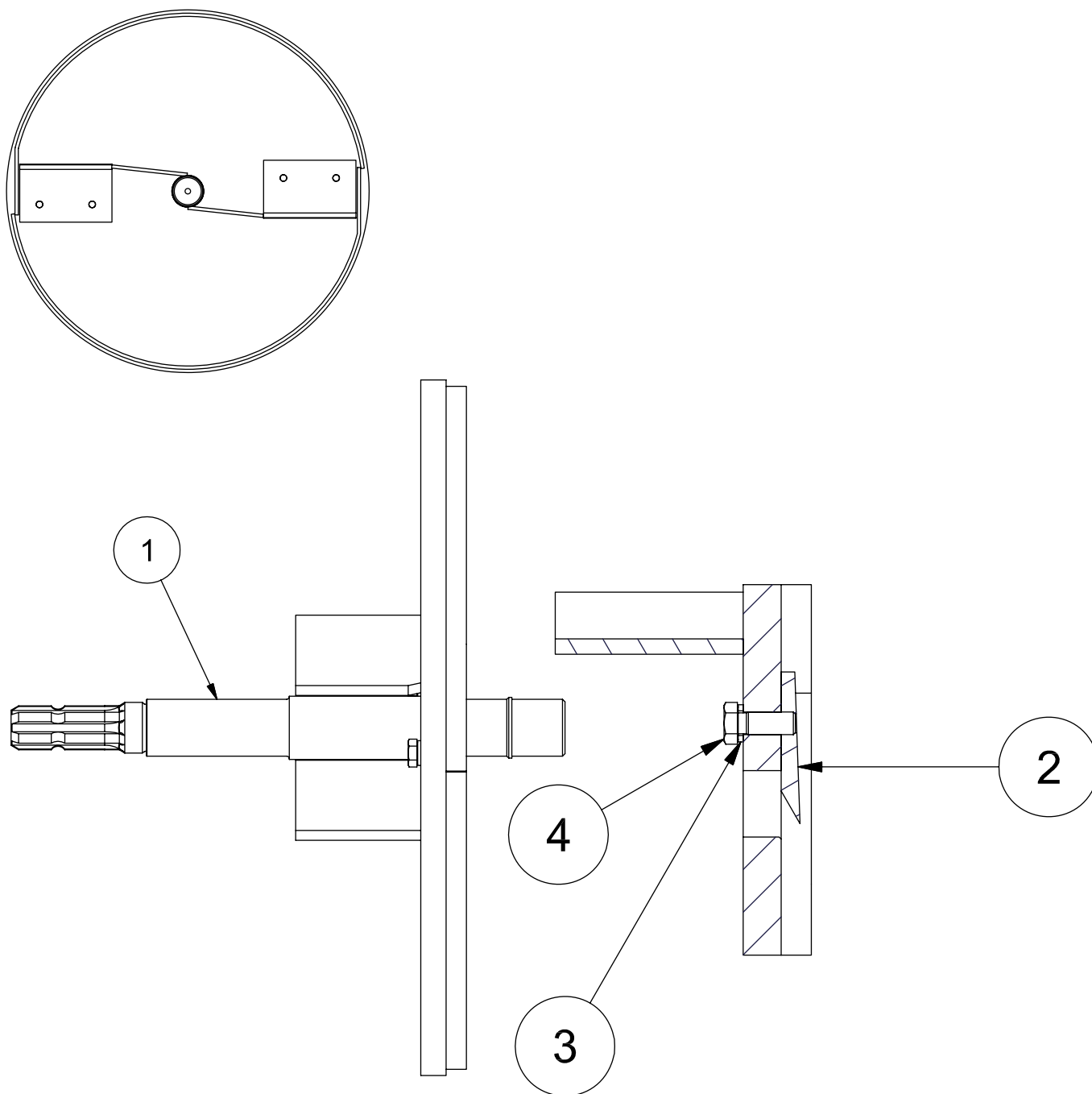
FARM 100F

FARM 100 CHIPPER

Part	Order no	Description	Remarks	Qty
1	52062041	Screw	M12X50 DIN933 88ZN	4
2	52117124	Lock nut	M12 DIN985 8ZN	7
3	52200490	Washer	M12 DIN 7349 ZN	8
4	52062502	Screw	M12X120 DIN931 88ZN	1
5	43340934	End plate		1
6	52211042	Spring washer	M10 DIN127 ZN	1
7	52060209	Screw	M10X16 DIN933 88ZN	1
8	52062015	Screw	M12X20 DIN933 88ZN	4
9	52117900	Butterfly nut	M12	1
10	52062023	Screw	M12X30 DIN933 88ZN	2
11	52060225	Screw	M10X25 DIN933 88ZN	2
12	52200045	Washer	M10 DIN125 58ZN	2
13	52117108	Lock nut	M10 DIN985 8ZN	2
14	33620100	Disc		1
15	33620250	Lower chamber		1
16	33620350	Upper chamber		1
17	33620400	Discharge pipe		1
18	33620650	Drop spout		1
19	43620660	Bearing system		2
20	43620670	Anvil		1
21	43620690	Support for transport		1
22	43620700	Side anvil		1
23	33620850	Mounting frame		1
24	43343790	Drawbar		1
25	52062213	Screw	M20X40 DIN933 88ZN	8
26	52117207	Lock nut	M20 DIN985 8ZN	8
27	52062015	Screw	M12X20 DIN933 88ZN	2
28	52117124	Lock nut	M12 DIN985 8ZN	2
29	52062486	Screw	M12x180 DIN931 88ZN	1

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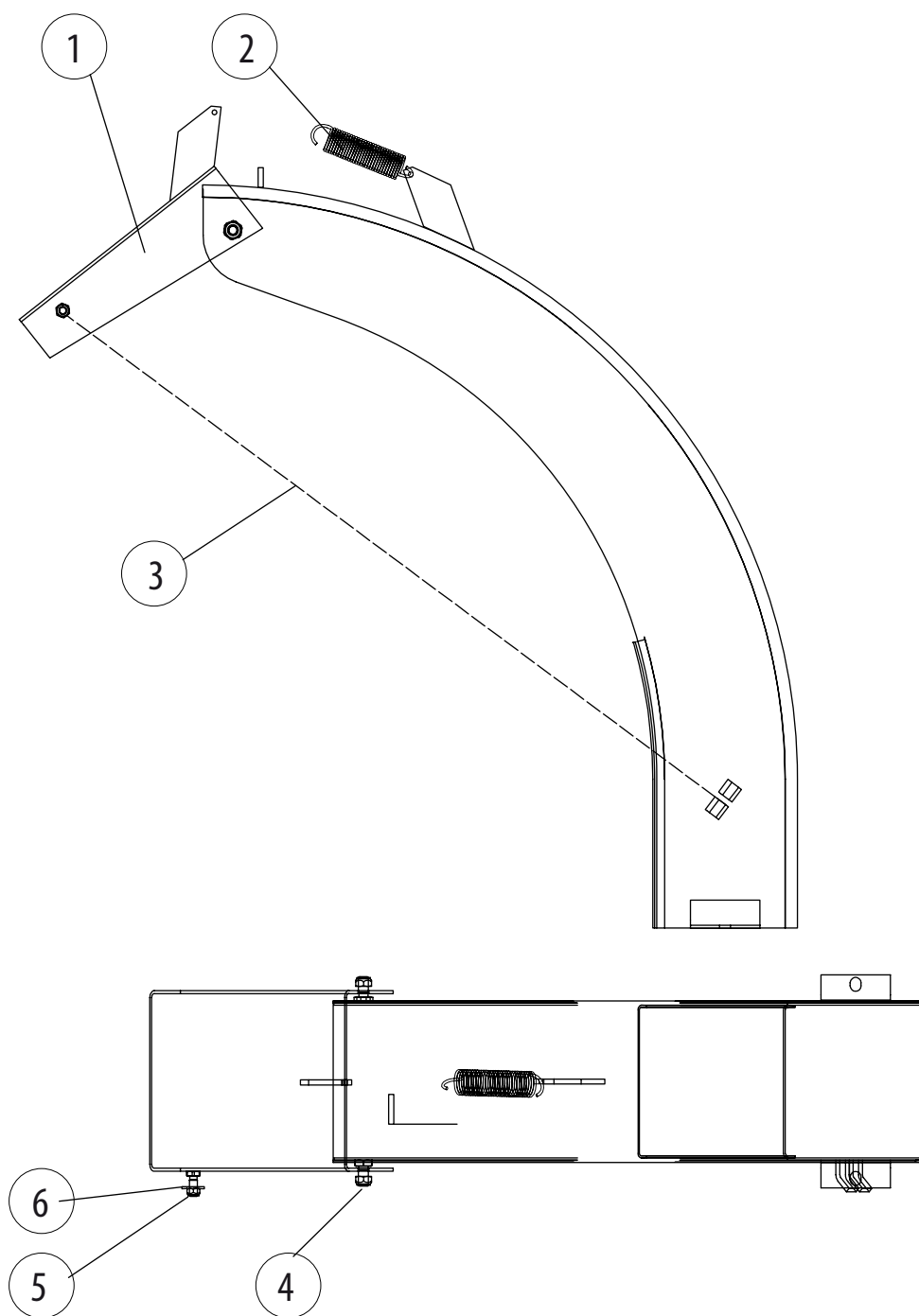
DISC, COMPLETE



Part	Order no	Description	Remarks	Qty
1	33620070	Disc		1
2	43620080	Knife		2
3	52214269	Lock washer	M12 NORD-LOCK	4
4	52091839	Screw	M12x30 DIN933 10.9ZN	4

FARM 100F

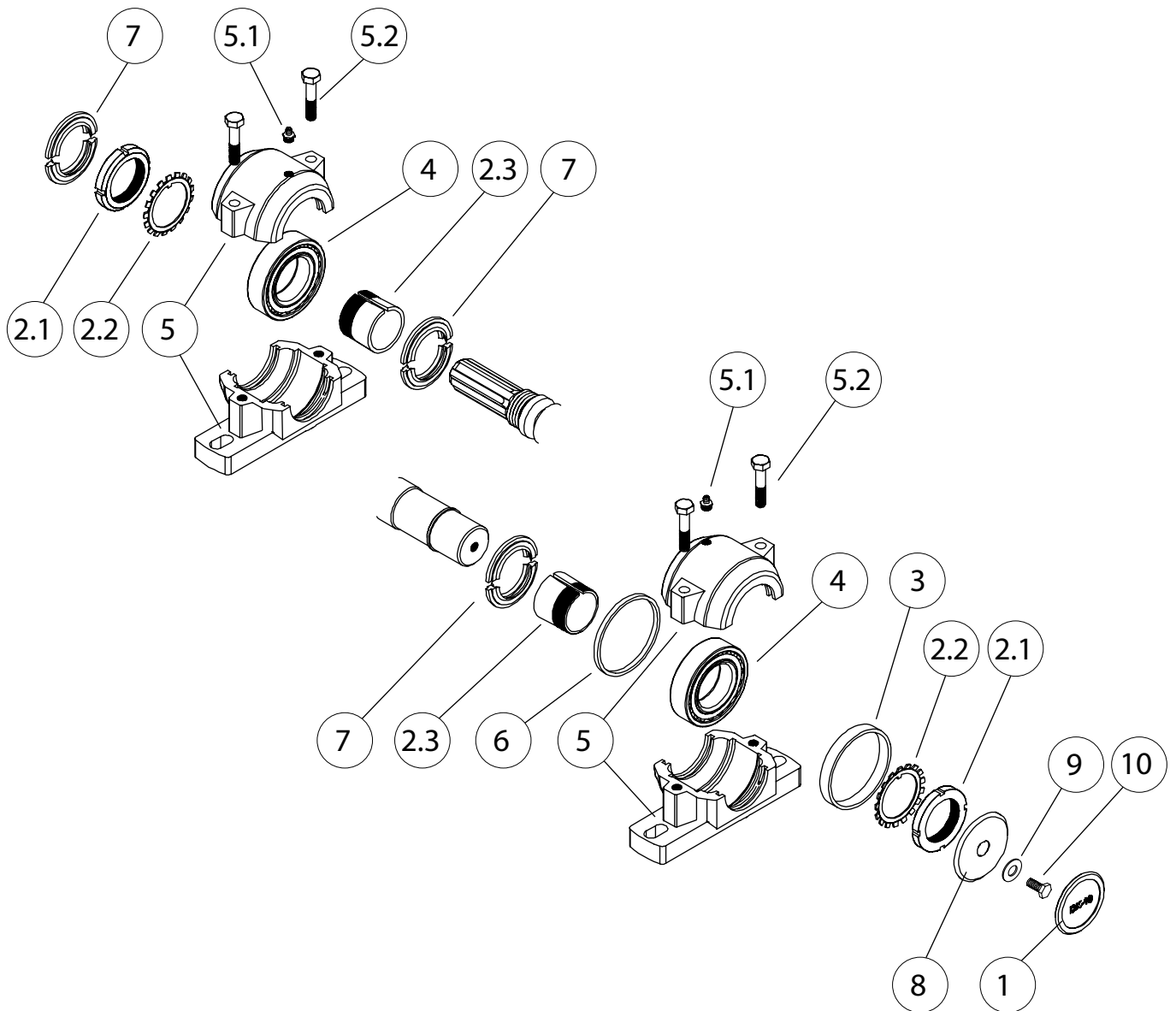
DISCHARGE PIPE



Part	Order no	Description	Remarks	Qty
	33620400	Discharge pipe	complete	1
1	43510240	Vizor		1
2	94612082	Tension spring		1
3	03514590	Chain		1
4	52117108	Lock nut	M10 DIN985 8ZN	2
5	52117082	Lock nut	M8 DIN985 8ZN	1
6	52200037	Washer	M8 DIN126 58ZN	1

FARMI 100F

FARMI 100 BEARING SYSTEM



Part	Order no	Description	Remarks	Qty
1	54513569	Dust cover		1
2	54512371	Tightener sleeve	complete	2
2.1	-	Axle nut		1
2.2	-	Locking plate		1
2.3	-	Tightener sleeve		1
3	43513360	Spacer ring	D90/83X12.7	1
4	54512363	Tapered roller bearing		2
5	54513590	Bearing housing		2
5.1	52401015	Grease nipple	AR1/8	1
5.2	-	Screw	M10x50 DIN 931 10.9	2
6	43513350	Spacer ring	D90/83X5.4	1
7	52334232	Seal		1
8	43340934	End plate		1
9	52214251	Lock washer	M10 NORD-LOCK	1
10	52060928	Screw	M10X20 DIN933 88	1

WARRANTY

Farmi Forest Oy grants a 12-month warranty on all of its products, covering material and manufacturing faults. The warranty comes into effect on the product's delivery date.

The manufacturer is not liable for damages caused by:

- misuse of the product
- alterations or repairs made without the manufacturer's permission
- insufficient maintenance
- non-original parts

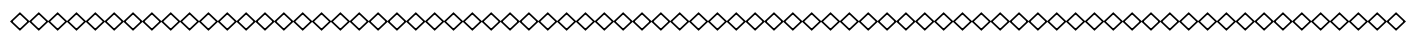
The warranty does not cover wearing parts.

Send faulty parts, carriage paid, to the manufacturer for inspection. Repairs will be conducted by Farmi Forest Oy or an authorized expert. The warranty is valid only if the bottom part of this page is filled in and returned to the manufacturer within 30 days of receipt of the product.

By returning the warranty certificate, you confirm that you have read and understood the instruction manual that came with the product.



Farmi Forest Corporation
Ahmolantie 6
FIN-74510 IISALMI
FINLAND



PRODUCT REGISTRATION FORM

Date of delivery: ____/____ 20____

Dealer:

Dealer's address:

Dealer's tel:

Product and type:

Serial number:



Return to the manufacturer

Date of delivery: ____/____ 20____

Dealer:

Dealer's address:

Dealer's tel:

Customer:

Customer's address:

Customer's tel:

E-mail:

Product and type:

Serial number:



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