

OPERATION, MAINTENANCE AND SPARE PARTS MANUAL

CHIPPER AND HYDRAULIC FEEDER CH180HF + F180



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

FARMI®
Forest

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CH180HF

WARNINGSYMBOLS 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

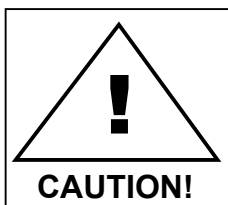
NOTE!

- 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.

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.

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MANUFACTURER'S DECLARATION OF CONFORMITY

Farmi Forest Corporation
Ahmolantie 6, FIN-74510 IISALMI, Finland

Informs that the machine, launched on to the market

Farmi chipper and hydraulic feeder
(make)

CH180HF
(type)

(serial number)

conforms to the directives 2006/42/EC and 89/336/EC, as amended, and the national regulations bringing these directives into force.

In designing the machine, the following unified standards have been applied:

EN 12100-1/2, EN 294, EN 30204-1, EN 13525, EN 4254-1

In designing the machine, the following national standards and specifications have been applied:

SFS EN ISO 730-1, SFS EN ISO 2332

Iisalmi, Finland
(place)

16.6.2010
(date)



Juhani Hallivuori

CH180HF

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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. CH180HF, knife, 43510220, 2 pc

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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 operation, ensure the machine is properly connected.
- Never use a faulty or deficient machine.

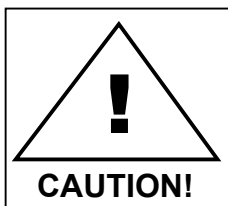
CH180HF

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.
- 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.

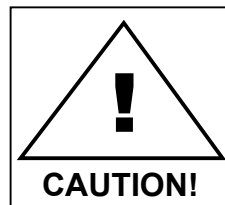


The machine's operator must have constant, unobstructed visibility of the work area. If this is not possible, the operator must work with an assistant.

- 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.

MAINTENANCE

- 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.
- 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.

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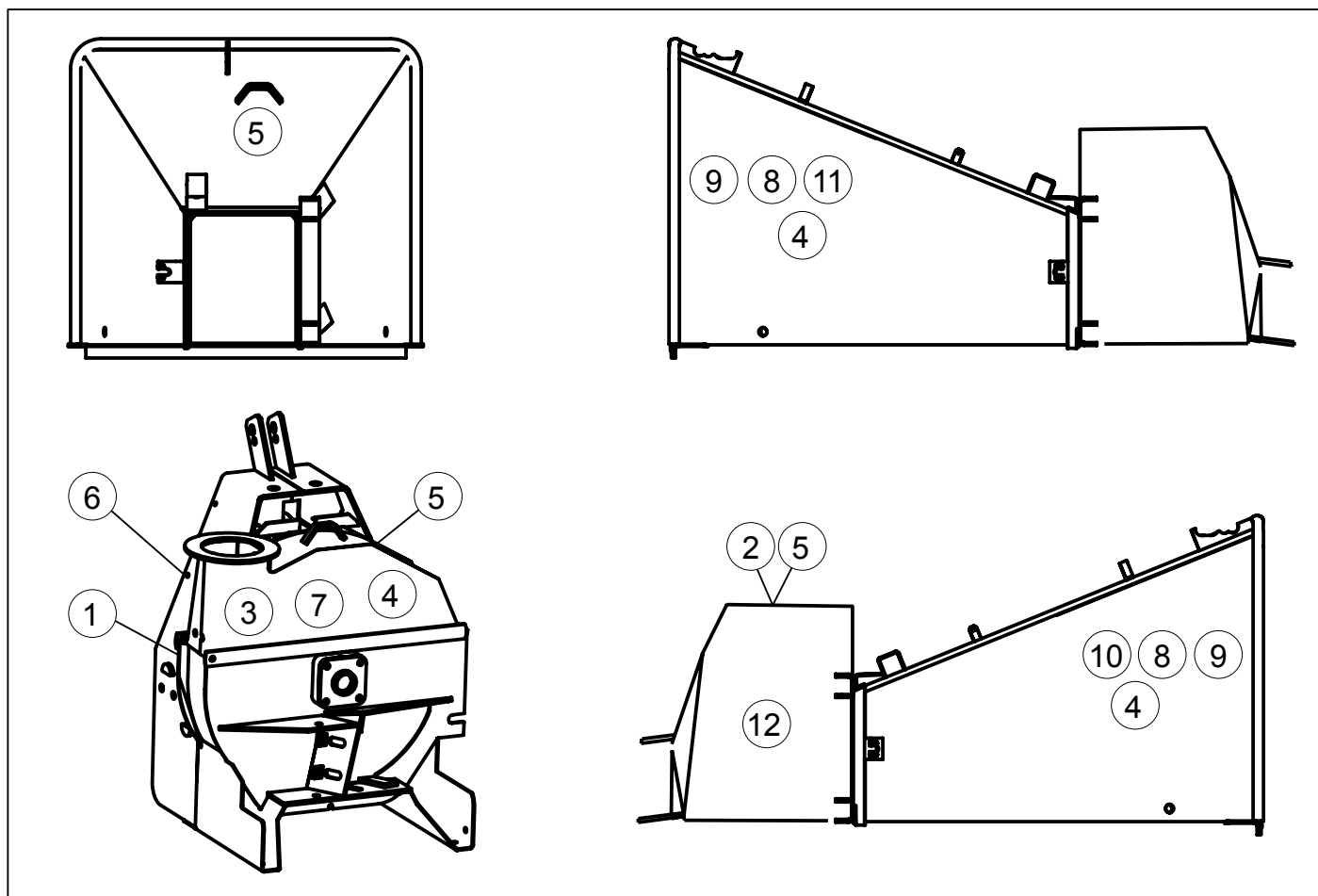
SAFETY INSTRUCTIONS FOR HYDRAULIC CIRCUITS

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.
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. When working in ecologically vulnerable areas, use biofuel.
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!

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STICKERS AND PLATES

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



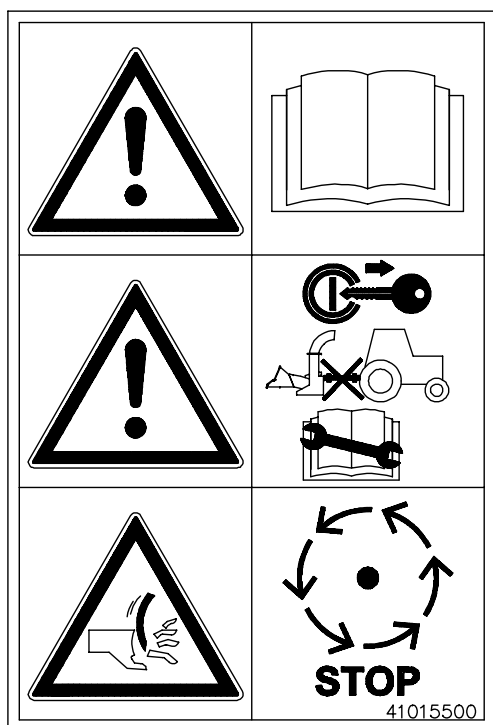
Farmi Forest Corporation		CE
Ahmolantie 6 FIN-74510 IISALMI FINLAND		
TYPE	FARMI CHIPPER	
MODEL	CH 180	
SERIAL NO.		
YEAR OF MANUFACTURE	20	
POWER NEEDED	30 – 70 kW	
WEIGHT (HYDR/MANUAL)	410/330 kg	
MAX. HYDR. PRESSURE	175	bar
OIL FLOW NEEDED	8,6–16	l/min
41012510		

1. Machine plate (41012510)

FARM! <i>forest</i>	valmistaja manufacturer
	Farmi Forest Oy
FIN-74510 IISALMI FINLAND	

2. Manufacturer sticker (40605214)

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3. *Note!* (41015500)

Note!

See operation and maintenance manual.

Note!

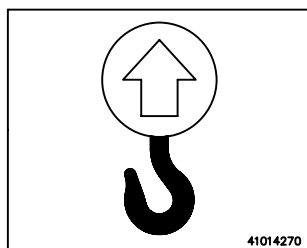
Stop the engine and remove the PTO shaft for maintenance.

Risk of cutting injury!

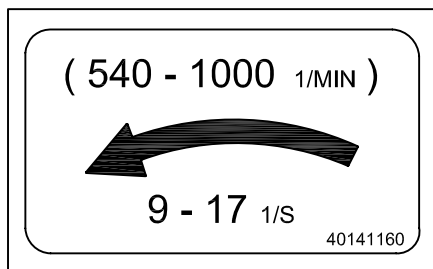
Stop the engine and wait until the disk has stopped.



4. *Wear hearing protection.* (40142080)



5. *Lifting point sticker* (41014270)

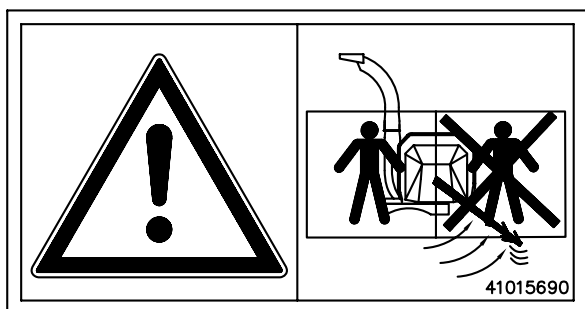


6. *Rotation speed sticker* (40141160)

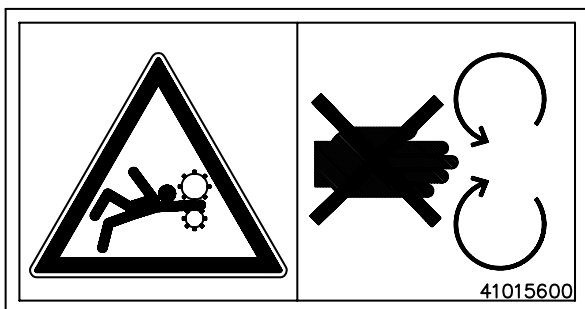


7. *FARMI Forest sticker* (41016100)

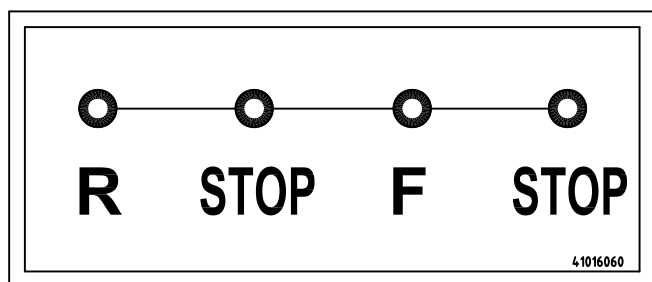
CH180HF



8. Stand on the left side of feeder. (41015690)



9. Stay away from revolving parts. (41015600)



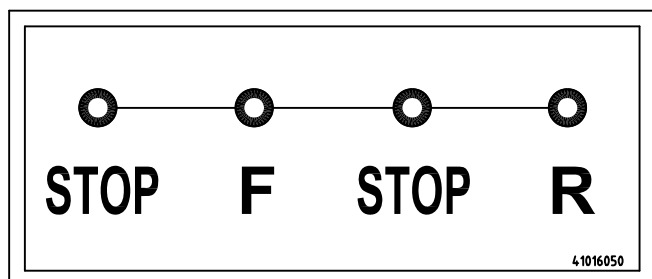
10. Control handle, left (41016060)

This sticker shows the movements of the control handle.

R = reverse

STOP = stop

F = feed



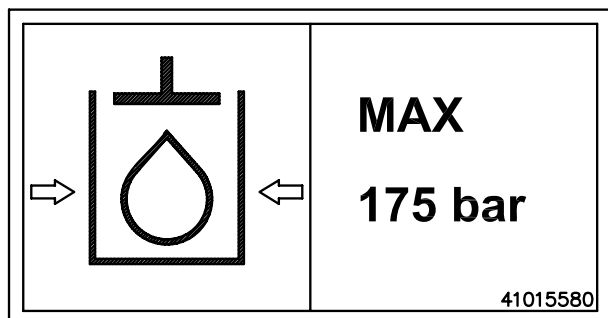
11. Control handle, right (41016050)

This sticker shows the movements of the control handle.

F = feed

STOP = stop

R = reverse



12. Maximum hydraulic pressure (41015580)

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PRESENTATION CH180

The FarmiCH180 is a double-knife disk cutter for chipping wood up to $\varnothing 180$ mm, for processing wood waste from, e.g., the side of jogging tracks or roads, for other environmental chipping duties and for energy chips (thickness of chip 10, 12 and 14 mm). The chipper can be driven by a tractor with a rating of 30-70 kW. The chipper can also be driven by a separate hydraulic motor.

CH180 accessories:

- Single-motor hydraulic feeder or mechanical hopper
- Independent hydraulic unit HD11
- Separate hydraulic motor drive
- Belt transmission 180T
- No Stress NSH 180

MAIN COMPONENTS CH180

1. UPPER CHAMBER
2. LOWER CHAMBER
3. DISK
4. KNIFE
5. VERTICAL ANVIL
6. HORIZONTAL ANVIL
7. TWIG BLADE
8. DISCHARGE PIPE
9. LID
10. HYDRAULIC MOTOR (OPTIONAL)
11. BELT TRANSMISSION 180 T (OPTIONAL)

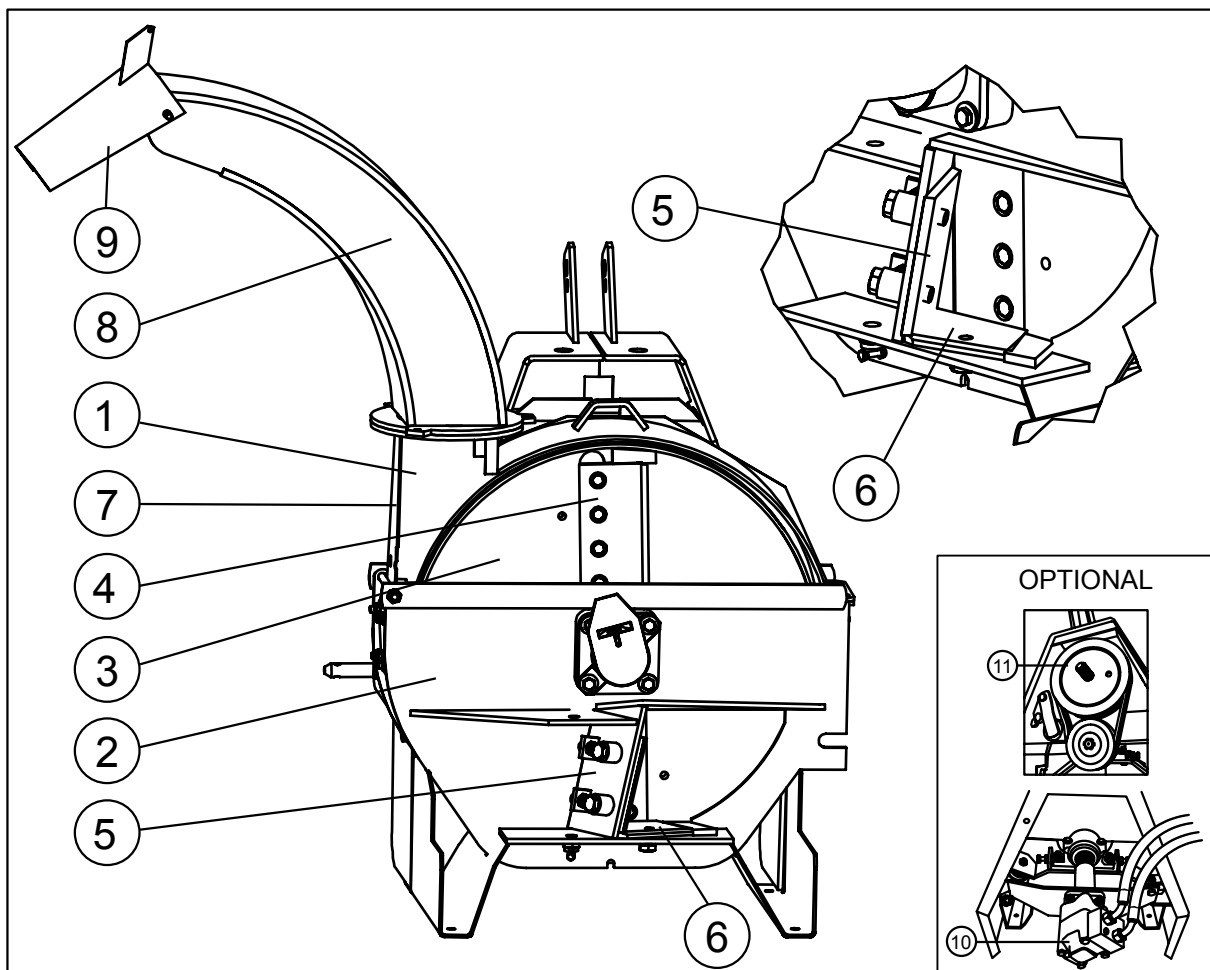
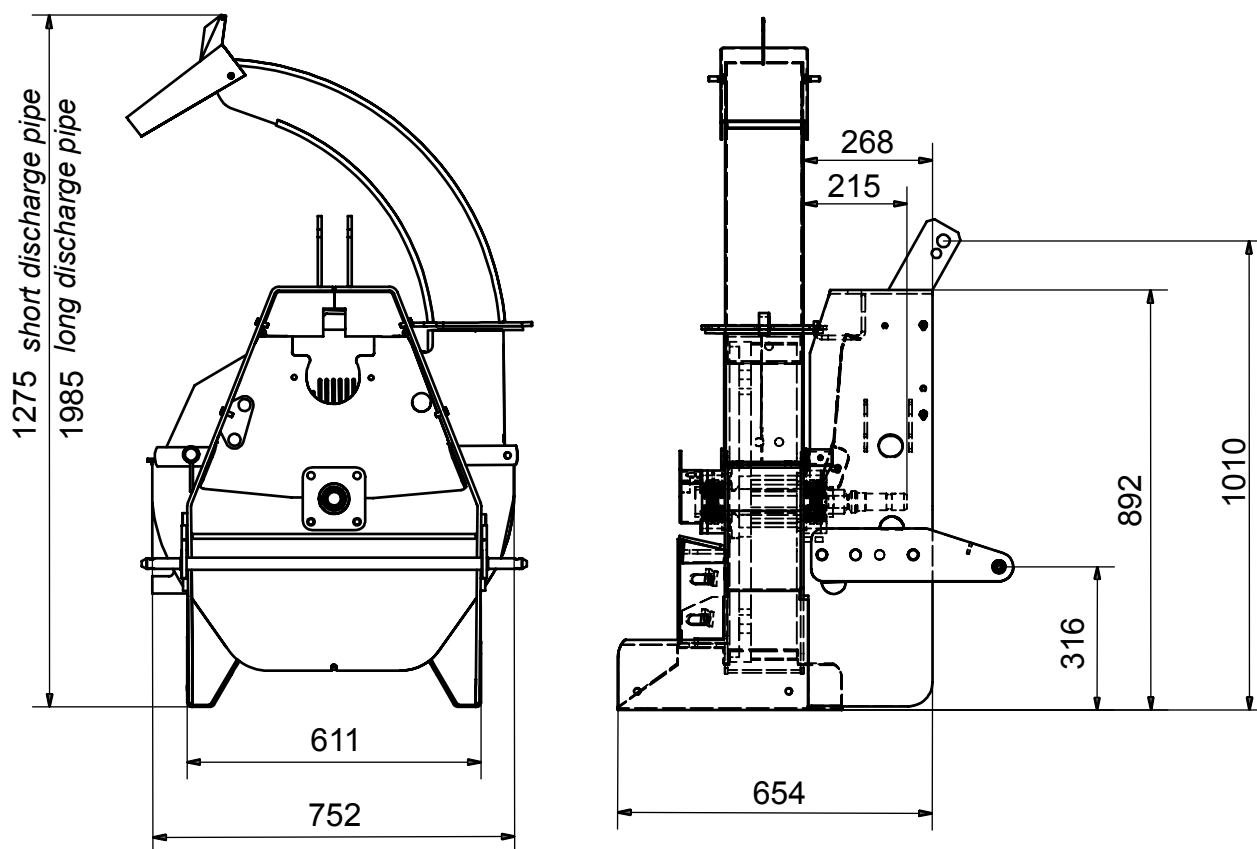


Fig. 1. Main components

CH180HF

DIMENSIONS CH180HF



TECHNICAL DATA		CH180
Type		disc chipper
Output		5-20 m ³ /h
Chip length		10, 12 or 14 mm
Max. wood diameter		180 mm
Power demand		30-70 kW
PTO rpm		540 or 1000 rpm
Number of knives		2 pc
Power source		tractor
Mounting		3-point linkage
Chipper weight		CH180 215 kg / CH180-2 236 kg
Disc diameter		670 mm
Disk weight		100 / 110 kg
Discharge pipe turning		360°
Opening of upper chamber		to one side
Feeder		hydraulic feeder
Sound pressure level		102 dB (A)
Sound power level		120 dB (A)
CEN/TC144 WG8N16		
TECHNICAL DATA		HF180
Feeder roll		1 pc
Max. wood diameter		180 mm
Hydraulic motor		1 pc, 400 cm ³
Oil demand, 540 rpm		min. 15 l/min
Max. working pressure		175 bar
Size of the feeder opening		850 x 760 mm
Weight		215 kg

CH180HF

PRESENTATION HF180

The hydraulic feeder device facilitates the handling of material that would otherwise be fed with difficulty. The quality of the chips improves as the feeding speed remains constant.

The HF 180 feeder can be connected to the hydraulics of a tractor or to its own separate hydraulic unit HD11.

MAIN COMPONENTS HF180

1. CONTROL HANDLE
2. DIRECTION VALVE
3. FLOW CONTROL VALVE
4. HYDRAULIC MOTOR
5. FEEDER ROLL
6. FRAME
7. FEED CHUTE

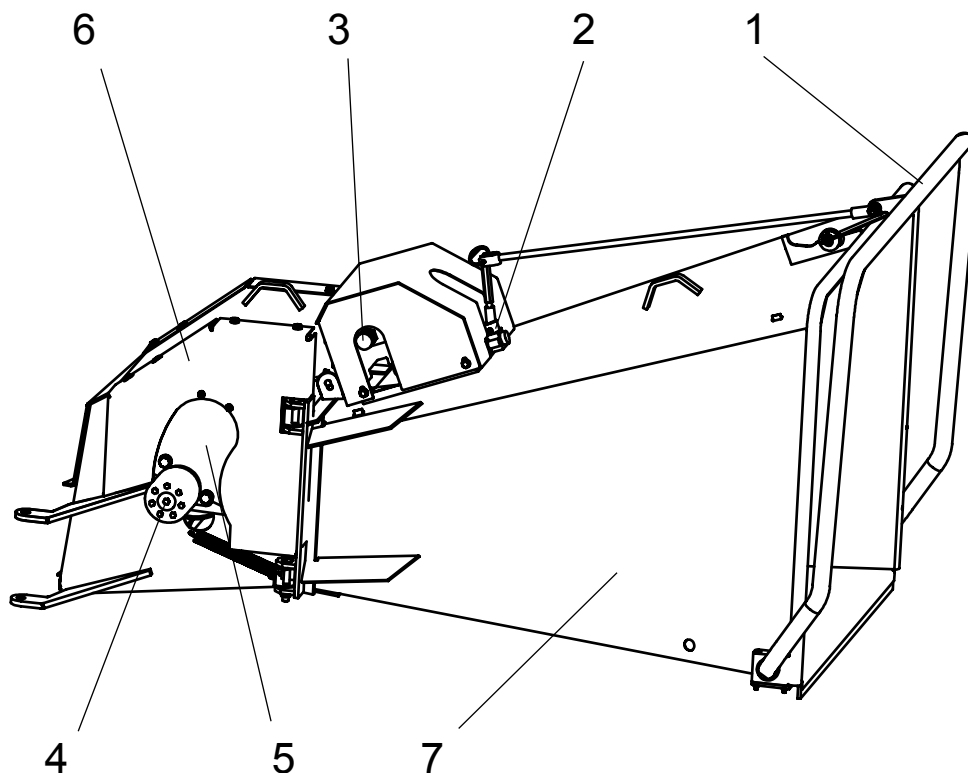


Fig. 2. Main components

CH180HF

LIFTING



Lifting points for each machine are marked with hook symbols.

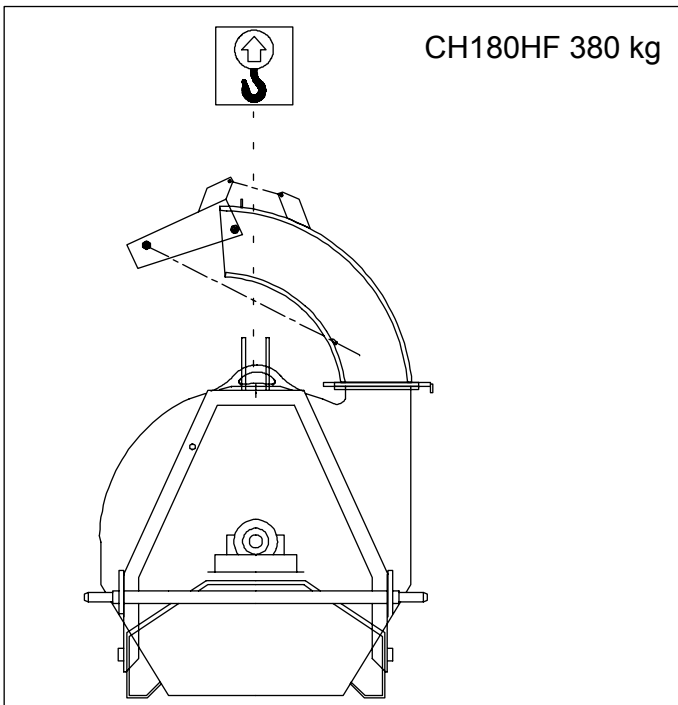


Fig. 3. CH180 lifting point.

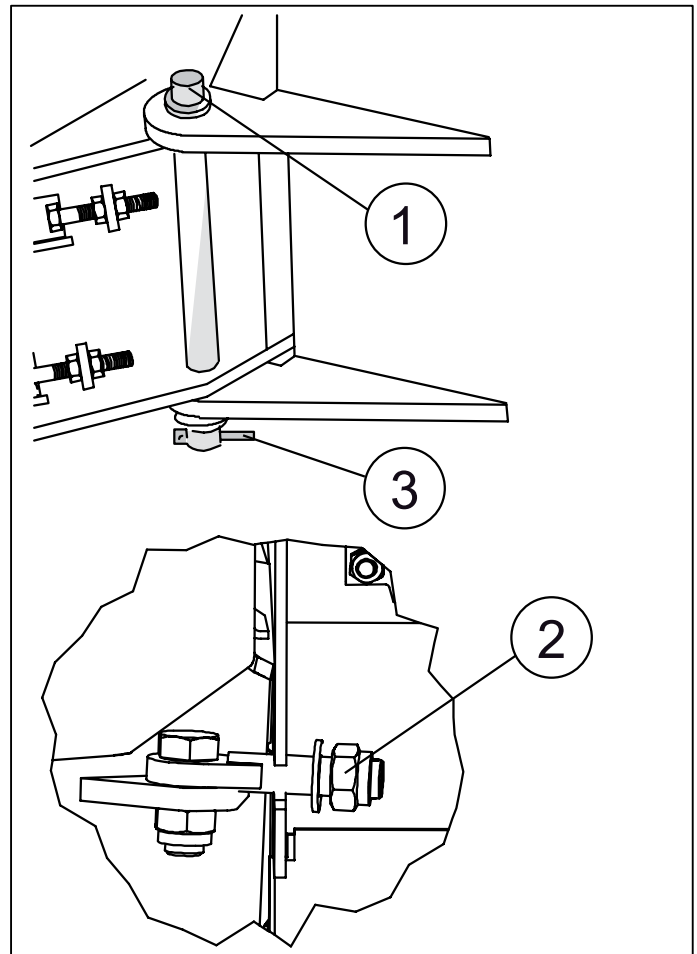


Fig. 4. Mounting the feeder

ASSEMBLY INSTRUCTIONS

1. Attach the feeder to the chipper from the left side with the hinge pin (1) and from the right side with bolt (M20) (2). See Fig. 4.
2. Attach the feed chute to the body of the feeder using two MB hinged screws (4) and clasp nuts (5). Lock the feed funnel into the working position (6), see Fig 4a.
3. Attach the operating rod to the valve switch.
4. Connect the hydraulic hoses. Connect the pressure hose (the oil flow direction has been marked on the hose with arrows) for example to the tractor pressure connection.
The maximum working pressure is 175 bar.

5. Attach the return hose either to the free return connection or directly to the tank. An oil filter is recommended in the return line. See Fig 4b.
6. Attach the discharge pipe to the chipper with two M10 bolts and one M16 bolt.
7. Mount the chipper on the tractor's 3-point hitch.
8. Install the PTO shaft.
9. Check that the length of the PTO shaft is correct for different hitch positions.

CH180HF

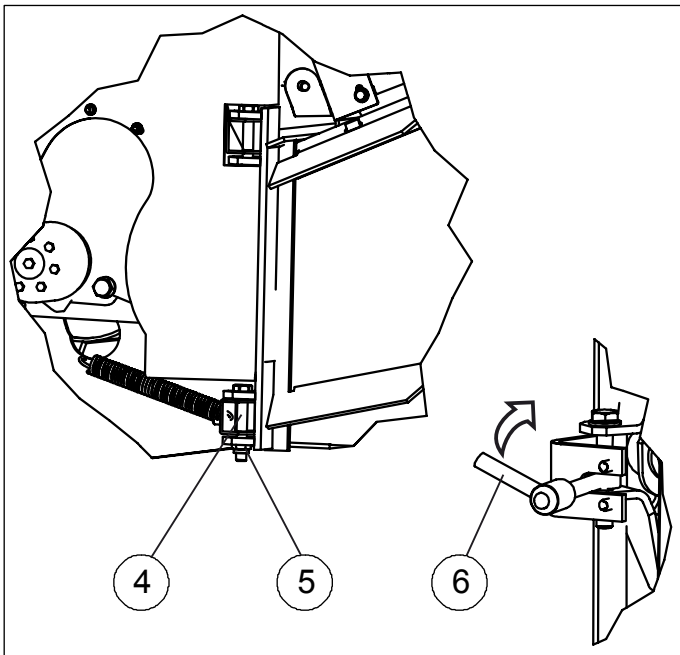


Fig 4a. Installation of the feed chute



The hydraulics of HF 180 have been designed primarily for an open hydraulic system. If your tractor has a closed hydraulic system, the control valve pressure must be adjusted 5-10 bar over the tractor pressure and the valve must be made suitable for use in a closed system. Maximum hydraulic pressure is 175 bar.

OPERATION

CONTROL HANDLE

The HF 180 is operated with a control handle, which has 4 positions:

1. REVERSE R
The feeder reel spins outward and wood comes out of the feeder.
2. STOP
The feeder reel ceases to spin and the feeding stops. The handle locks in this position.
3. FEED FORWARD F
The feeder reel spins inwards and wood can be fed into the chipper. The handle locks in this position.
4. REVERSE R
The feeder reel spins outward and wood comes out of the feeder.

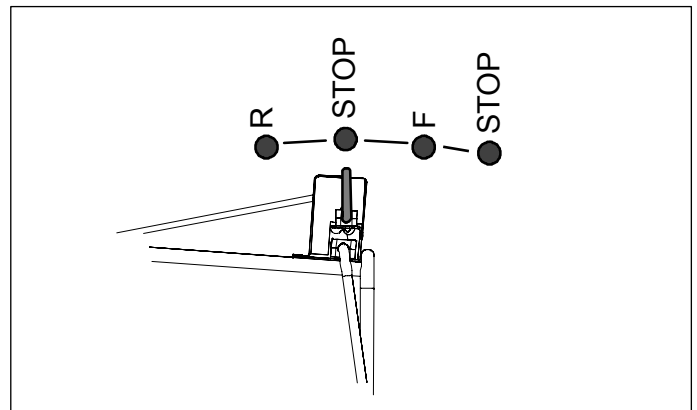


Fig 4c. Control handle

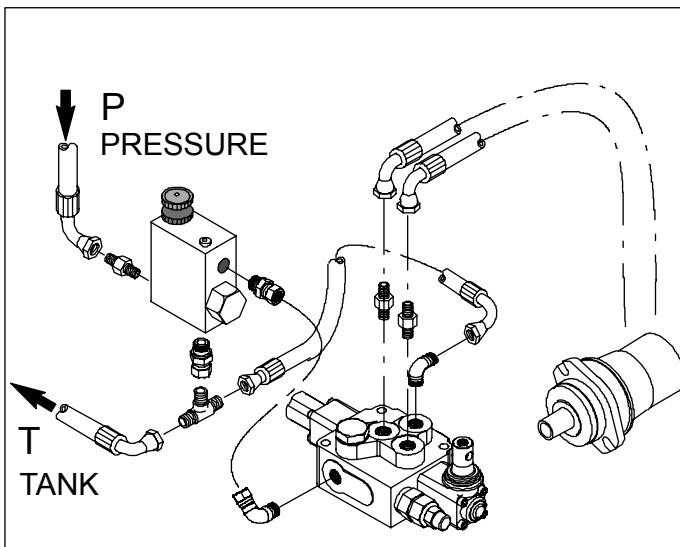


Fig 4b. Hydraulics connection

CH180HF

OPERATION

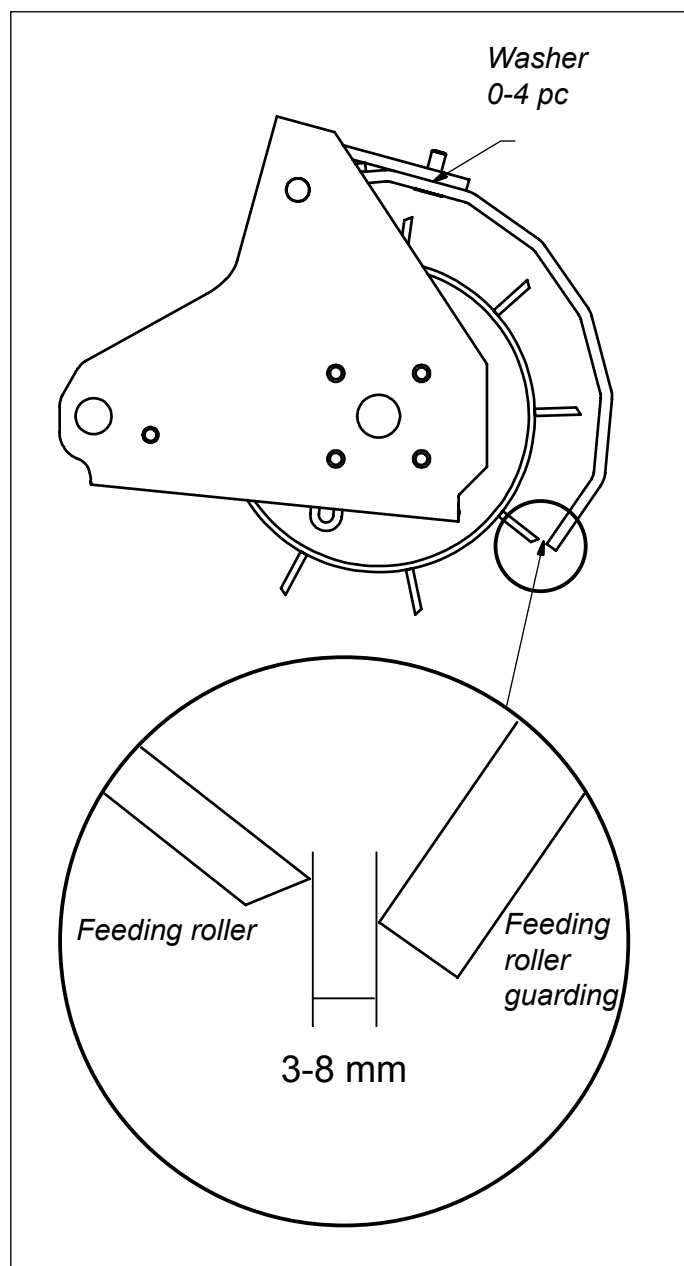
1. Ensure that the feed funnel is empty. Turn on the tractor hydraulics or connect an external power source (OEM).
2. Before feeding the material, ensure that nails, stones etc will not get into the chipper amongst the material to be chipped.
3. If necessary, set the revolving speed of the feeder reel to correspond to the revolving speed of a grinding wheel. The speed is suitable when the wood does not push against the grinding wheel or the feeder reel spikes do not slow down the feeding of wood. See Setting the feeder speed.
4. Set the control handle in the FEED F position. The feeder reel will begin to roll when the air has left the hydraulic circuit.
5. Feed the wood into the feed chute. Let go of the wood immediately after the feeder reel begins to pull it.

INSTALLATION AND REMOVAL OF THE FEEDING-ROLLER GUARDING

Remove the feeding-roller guarding (pg. 41, part no. 33), when chipping twigs, willow trees or other similar material, otherwise the twigs tend to roll around the feeding-roller.

When chipping wood of diameters exceeding 70 mm, re-install the feeding-roller guarding to its place.

1. Lift the roller arms as up as possible, for example by feeding a tree butt-part into the feeding machine of diameter 120 - 150 mm.
2. Remove the hydraulic hoses from the tractor.
3. Remove the external guarding from the feeding machine.
4. Remove the cotter-pin and pull out the locking bar.
5. Remove the feeding-roller guarding by opening 3 pcs. of locking nuts.
6. Always put the removed parts (3 pcs. of locking nuts M10, washer M16, locking bar and cotter-pin) back onto the feeding-roller guarding so that they will not disappear.
7. Install the external guarding back into place.
8. Connect the hydraulic hoses.
9. Remove the wooden butt-part from the feeding machine.
10. The chipper is ready to be used.



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Do not work in front of the feeder if not necessary! Feeder reels can wrench the wood up or to the right.



Make sure that your clothes or hair do not get tangled in the revolving parts of the appliance when it is turned on.

Feeding rope or barbed wire into the chipper is dangerous, because the rope can get caught on the operator and pull him/her with it to the feed funnel.

Never push limbs into the feed chute when the appliance is turned on.

- When chipping a large tree with a low capacity tractor, the tractor's revolutions will endeavour to fall especially towards the end of a long tree. Stop the feeding occasionally by switching the control handle to STOP -position. When the revolutions have increased sufficiently, continue feeding by switching the control handle to FEED F -position.
- If you need to remove the tree from the feed funnel in the middle of chipping, switch the control handle to REVERSE R -position and hold it there until the feeder reel releases the tree.



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.



Observe the revolutions of the feeder reels. If the feeder reel stops, switch the control handle to REVERSE R position.

If the feeder reels are stopped when the control handle is in FEED FORWARD F position, the oil flows through the pressure limit valves and heats very quickly.

SETTING THE FEEDER SPEED



Do not set the feeder speed when the feeder reels are revolving. This damage the valve. Stop the feeder reels for the duration of the setting and try the speed afterwards.

- Using the flow control valve, set the revolution speed of the feeder reel to correspond with the cutting speed of the blades. By turning the knob anticlockwise, the revolution speed of the feeder reel grows, correspondingly by turning it clockwise, the revolution speed will diminish. See fig 4d.
- The speed is suitable when the wood does not push against the grinding wheel or the feeder reel spikes do not slow down the feeding of wood.
- Make sure that you are using clean oil in the hydraulic system. Dirt in the oil will damage valves and hydraulic motors.

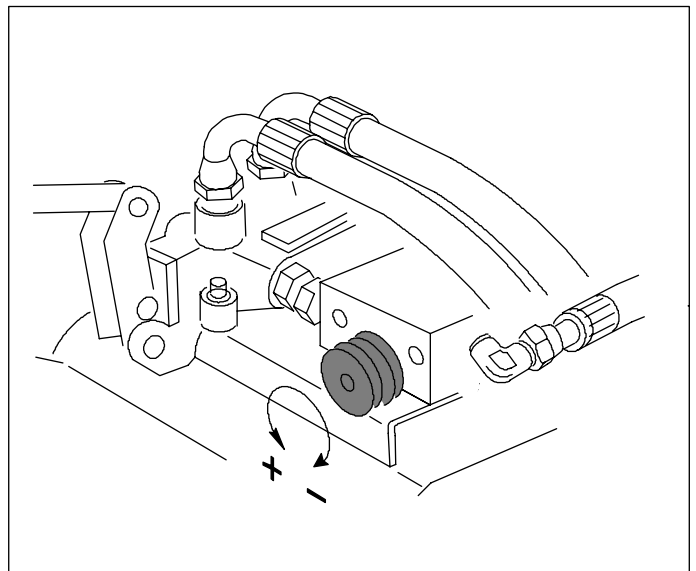


Fig 4d. Feeder reel speed settings

CH180HF

EMPTYING THE CHIPPER AFTER USE

Before stopping the chipper, chip about 80-100 mm wood. Let the blades cut a few centimetres, after which reverse the feed direction to clean the blades. Leave the tree into the feeder to remind you that the chipper has been emptied. This way you will avoid a possible jam when you turn on the chipper next time.



When you stop the chipper, wait for all movement to stop. The grinding wheel will continue to revolve like a flywheel once the power outlet has been switched off.

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.

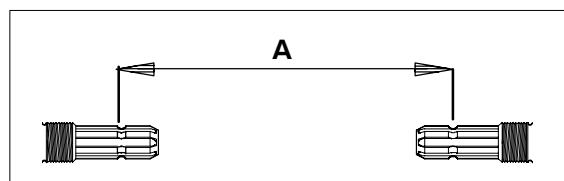


Fig. 5. Measure A, when the distance between the splined shafts is at its shortest.

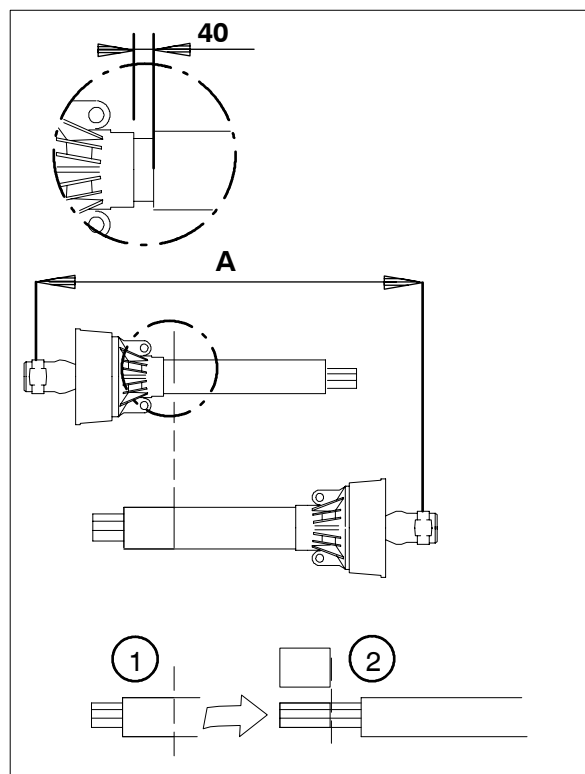


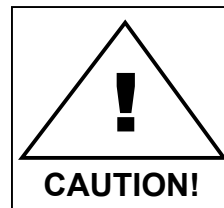
Fig. 6. Shortening the PTO shaft

CH180HF

OPERATING THE CHIPPER

INSPECTIONS PRIOR TO OPERATION

- Tighten the tractor boom limiters.
- Park the chipper on level, hard ground.
- Stop the tractor's engine and ensure that the chipper is fully stopped before carrying out the inspections.
- Check that the disk rotates freely by turning the shaft, and ensure that there are no foreign objects inside the chipper.
- Ensure that all protective devices are intact and in place.
Removal of the covers is prohibited.
- Direct the discharge pipe so that flying chips do not pose a risk to the operator or anyone else.



Never disconnect the hydraulics from high rpm. This will cause a risk of cavitation and may damage the hydraulic motor. Check that no sounds indicating cavitation can be heard from the hydraulic motor.



After stopping the chipper, wait for all movement to stop. The disk continues rotating like a flywheel after the PTO is disengaged.

STARTING THE CHIPPER

- Start the chipper at low tractor engine speed and increase the speed slowly to the required chipping speed (540/1,000 rpm).
- The chipper is now ready for chipping.

STOPPING A TRACTOR-DRIVEN CHIPPER

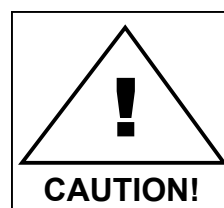
- Slow the tractor engine speed to idle before disengaging the PTO. This is especially important with tractors featuring a PTO brake (e.g., Ford). Turn the PTO control lever slowly to the OFF position.

STOPPING A HYDRAULIC MOTOR DRIVEN CHIPPER

IMPORTANT! When the chipper is driven by the HD100, it is extremely important to slow the driving engine speed to idle before disconnecting the hydraulics, to prevent cavitation.

CHIPPING

- Before feeding in the material to be chipped, ensure that the wood is free from nails, stones, etc.
- Feed the wood from a standing position on the left side of the feeder.
- Push the wood inside the feed chute until chipping starts. Let go of the wood as soon as the self-feeding starts.
- If you are using a hydraulic feeder, refer to the separate chipping instructions in the feeder manual.



Do not use the chipper in temperatures below -20°C. This is to avoid damage due to brittleness – especially in the knives – caused by the cold. Avoid chipping wood that is frozen solid, as self-feeding is reduced in this case.

CH180HF



ROTATING KNIVES!
Knives can cause cutting injury. Do not reach inside the feed chute with hands or feet.



FIRE HAZARD! Always keep adequate fire-fighting equipment on hand when using the chipper. Check the outside temperature of the chipper

regularly. If the chipper heats up abnormally, stop the chipper and determine the cause of the overheating.

Check the temperature of bearings regularly. Pay special attention to careful maintenance, and keep the chipper free from dust. If the chipper starts smoking, pour water down the feed chute.

REDUCING THE POWER DEMAND

When using a small tractor to power the CH180 chipper, select a PTO speed of 540 rpm. Run the tractor at full engine speed.

If the tractor's engine speed still decreases during chipping, reduce power demand by altering the chipper to cut with one knife.

The chipper is altered for single-knife operation simply by removing one knife and attaching it to the other side of the disk as a counterbalance, to retain the balance of the disk.

Since the chipper is self-feeding, the feed speed of wood is also halved.

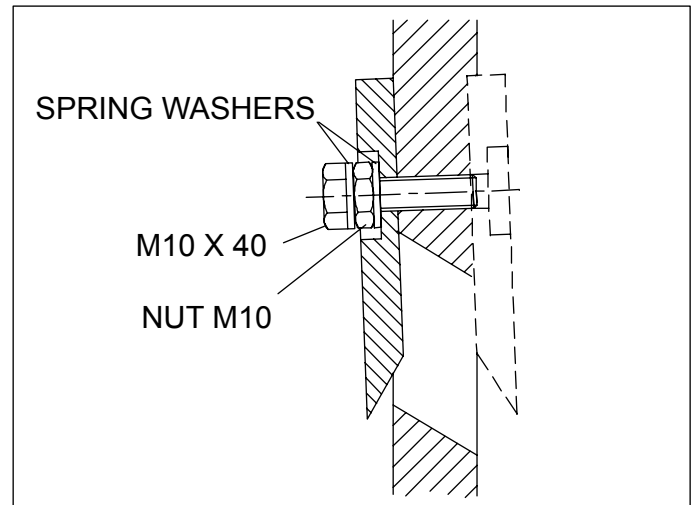


Fig. 7. Remove one knife and attach it to the other side of the disk. The dotted line shows the knife in its normal cutting position.

1. See Sections "Removing the upper chamber" and "Sharpening the knives".
2. Place a spring washer on the bolt. Turn the lock nut on the bolt and tighten to 45 Nm.
3. Place another spring washer on the bolt and turn the bolt through the knife into the disk. See Fig. 7. Tighten the bolts to 45 Nm. Attach the knife using all four bolts.
4. Interchange the cutting and counterbalance knives regularly to ensure the balance of the disk.

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PERIODIC MAINTENANCE



Always disengage the PTO and stop the tractor and chipper fully before maintenance or repair work.

Ensure that the disk is fully stopped before inserting anything inside the feed chute.

Lock the disk before maintenance or repairs.

Park the chipper on hard, level ground to avoid it falling over.

Wear protective gloves when handling knives or anvils.

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.

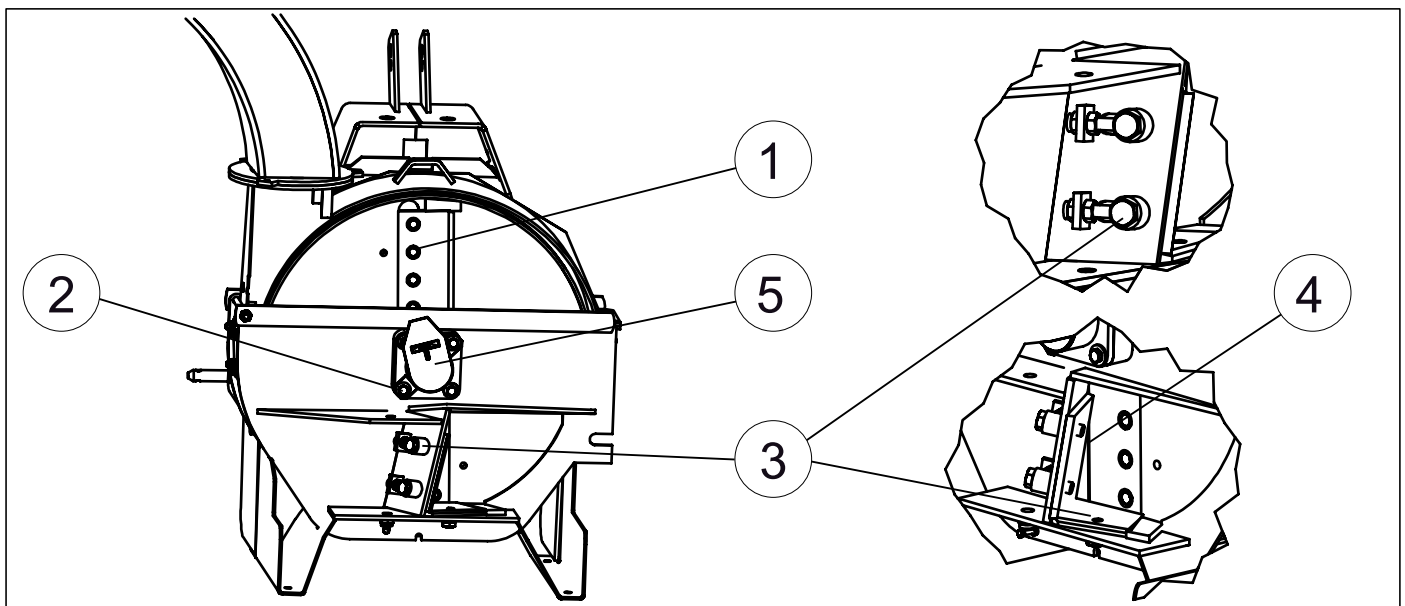


Fig. 15. Checklist for tightening and checking clearances

Item	Width across flats, mm (inches)	Tightening torque, Nm (lbf)
1. Check the knife bolts for tightness.	17 mm (11/16")	60 (44 ³ / ₁₆)
2. Check the bearing housing bolts for tightness on both sides..	22 mm (14/16")	100 (73 ¹¹ / ₁₆)
3. Check the anvil bolts for tightness.	24 mm (15/16")	200 (147 ³ / ₈)
4. Check the clearance between knives and vertical anvils.	19 mm (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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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, (page 38, part 10). 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 100 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.

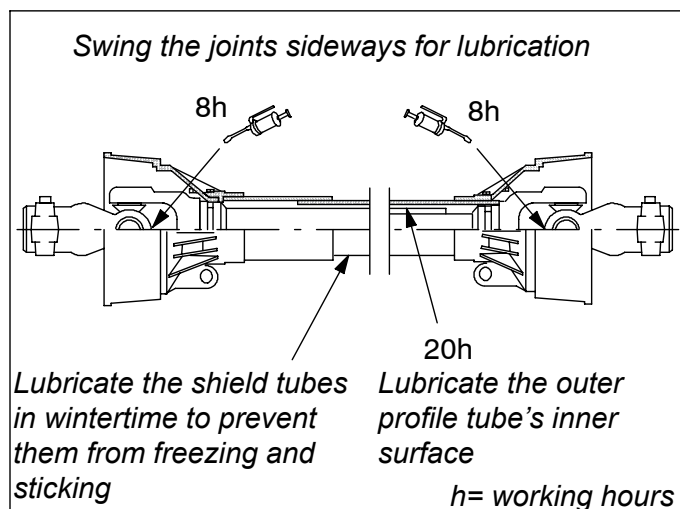
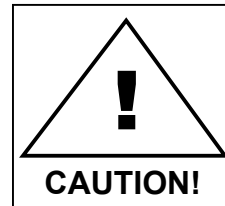


Fig. 9. Lubrication points and intervals for the PTO shaft

KNIFE AND ANVIL MAINTENANCE



Read the safety instructions. The disk continues rotating like a flywheel after the PTO is disengaged.



Wear protective gloves when handling knives or anvils.

OPENING AND REMOVING THE UPPER CHAMBER

- Remove the upper chamber (A) securing bolts (M6) (B) and fastening bolts (M12) (C). Turn the upper chamber to the side.
- To remove the upper chamber, remove the securing bolt (M6) (D) and hinge bolt (M12) (E).
- Lock the disk with the lock bolt Fig. 11.
- Remove the feeder or turn it to the side.

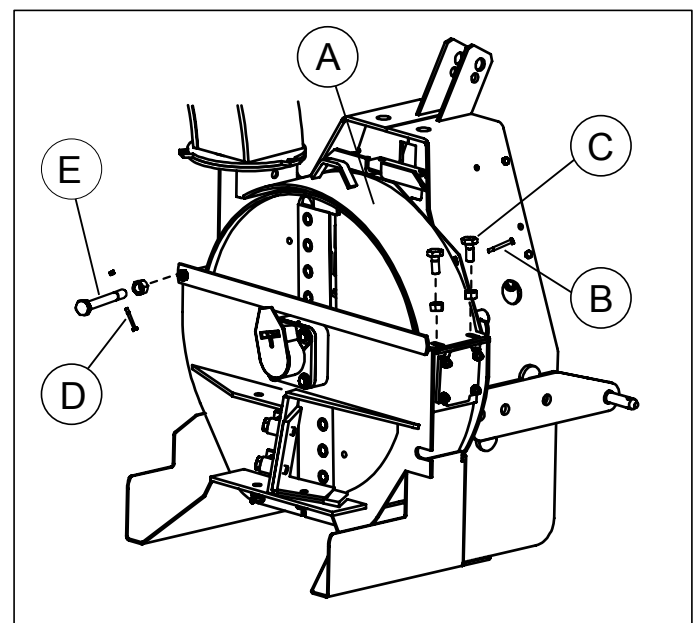


Fig. 10. Removing the upper chamber

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REMOVING THE KNIVES

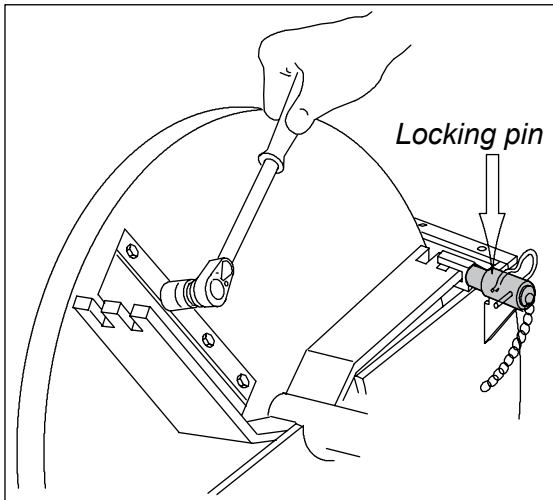


Fig. 11. Locking the disk and removing the lock nuts

1. Remove the knife lock nuts (M10). Fig. 11.
2. Remove the knife fastening bolts (M10). Turn the wrench in such a way that your hands would not hit the knife if the wrench should slip. Fig. 12.

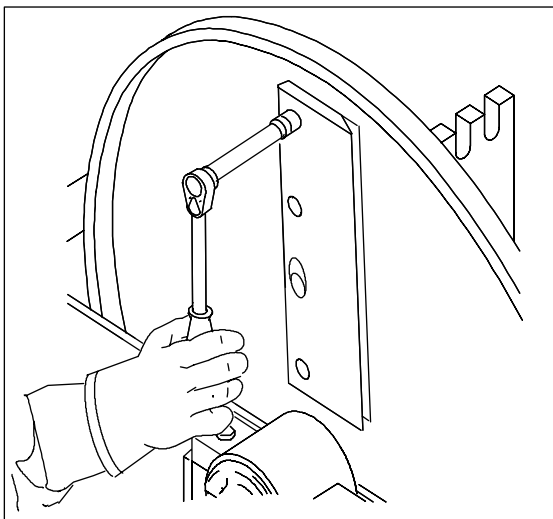
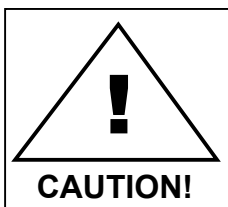


Fig. 12. Removing the knife fastening bolts

SHARPENING THE KNIVES



Sharpen all knives equally.
This ensures disk balance.
Avoid heating the knife
during sharpening.
Wear protective gloves when
handling knives or anvils.

The knives need sharpening when

- the self-feeding of wood has decreased;
- the power demand has increased;
- the chip surface is rough.

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 new knives are sharpened to a concave shape, $R=200$. The sharpening angle is 30° and hone angle is 45° . The hone angle prevents the edge from breaking. Fig. 13.

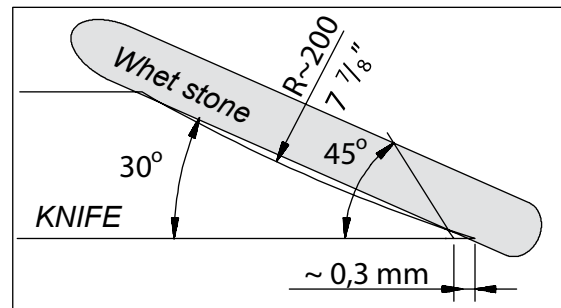


Fig. 13. The profile of a concave knife

It is recommended that the knives be sharpened to a concave shape. If this is not possible, the knife is sharpened to a flat profile. Fig. 14.

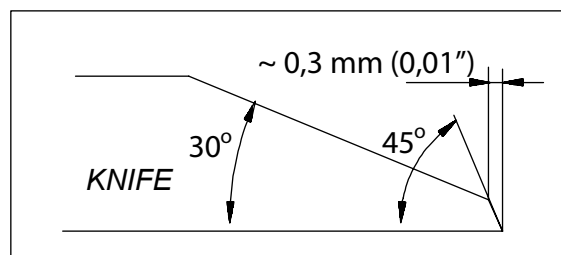


Fig. 14. A knife with a flat profile

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

Burrs are removed from the knife fastening bolt side, grinding with the surface. Fig. 15.

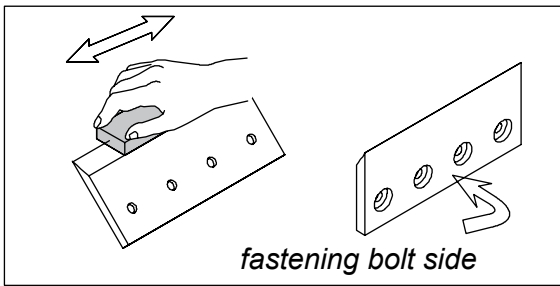


Fig. 15. Final grinding of the knife

REMOVING THE ANVILS

The chipper features both a vertical and horizontal anvil. To remove the anvils, open the fastening bolts (A) and (B) (M16). The horizontal anvil fastening bolt (B) is located below the feed opening. Fig. 16.

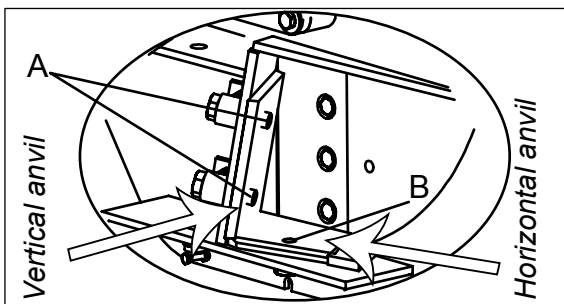


Fig. 16. Anvil fastening bolts

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.

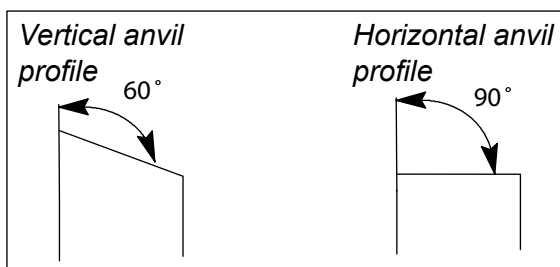


Fig. 17. Anvil profiles

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 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.

Check the clearance with a feeler gauge.

1. Loosen the anvil fastening bolts (A) and (B) (M16). Fig. 16.
2. Turn the disk so that a knife and the anvil are aligned. Place a feeler gauge between the knife and anvil. Adjust the vertical anvil clearance with the adjusting nuts (M12) (C, Fig. 18.) to 1.2–1.5 mm (0.05–0.06").
3. Tighten the adjusting nuts (C) and anvil fastening bolts (A).
4. Adjust the horizontal anvil clearance at the front edge to 1,2-1,5 mm..
5. Tighten the fastening bolt (B).
6. Re-check the knife-to-anvil clearances.

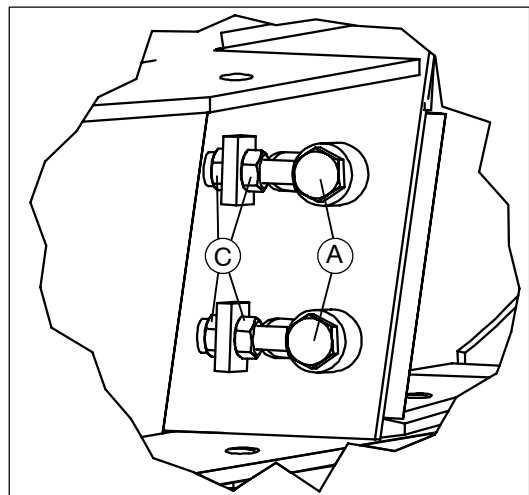


Fig. 18. Vertical anvil fastening and adjustment

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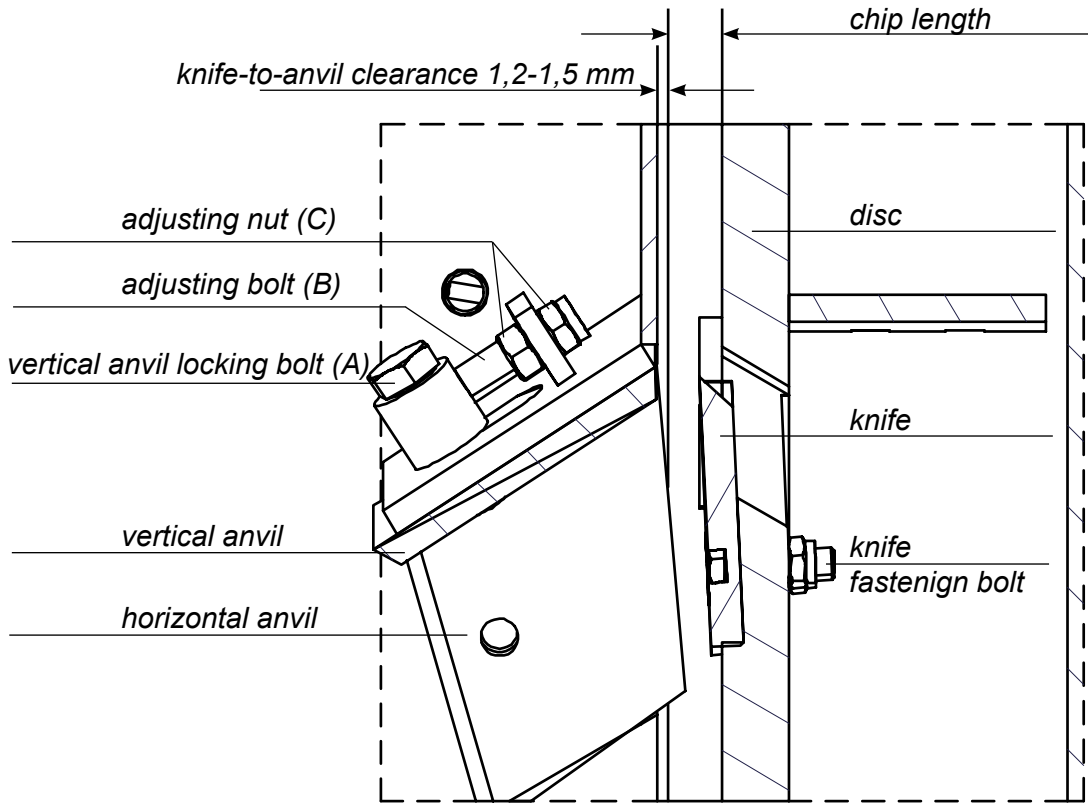


Fig. 19. Cross-section of the disk and knives / anvils

REPLACING THE SPLINED SHAFT

1. Remove the upper chamber.
2. Remove the bearings (see Chapter 13). Welding damages the bearings.
3. Lift the disk up using a hoist.
4. Grind an 11-mm-deep groove about 17 mm from the edge of the shaft. See Fig. 20.
5. Heat the joint area, if necessary.
6. Move the splined shaft so that it comes loose and can be removed.
7. Clean the shaft hole and install the new shaft as shown in Fig. 20.
8. Make a fillet weld up to the surface level with three runs. Use ESAB 68.81, OK 48, OK Fe-max 38.65, or equivalent filler.

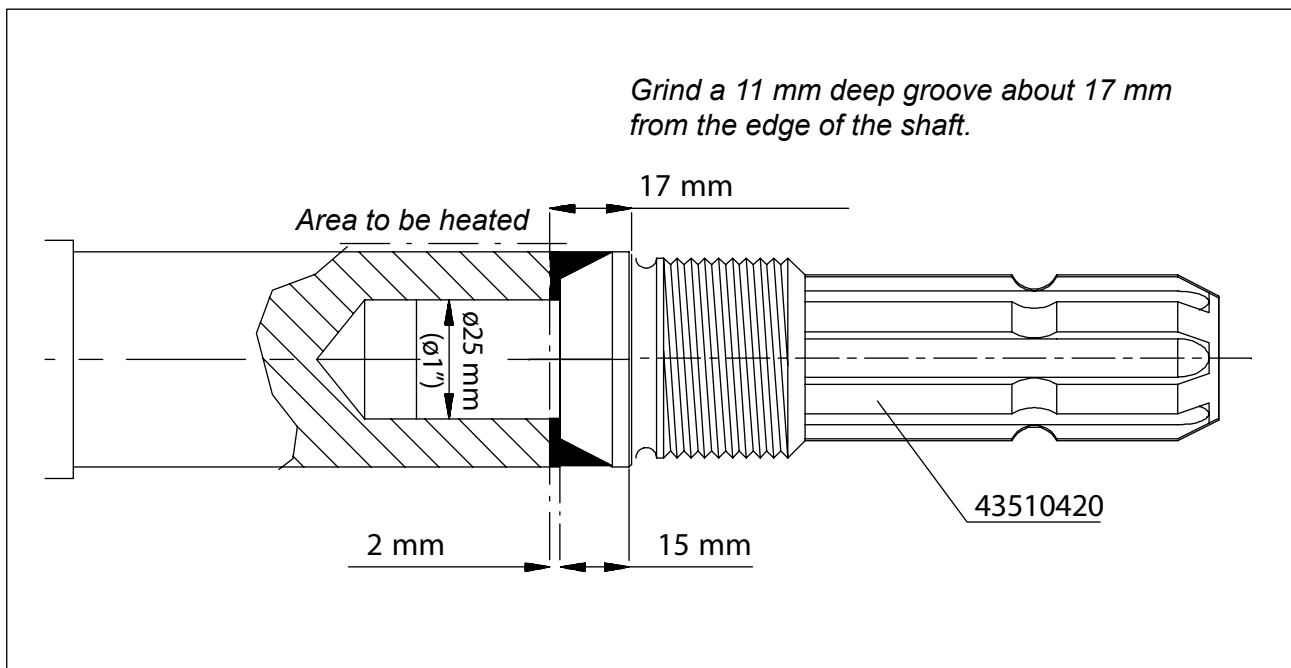


Fig. 20. Replacing the splined shaft

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MAINTENANCE

- The feeder reel bearing has been permanently greased and does not require routine maintenance.
- Grease the bearings of the reel holder axis once a week.
- Check and tighten screws often enough.
- Regularly monitor the condition of the hydraulic hoses and the tightness of the connections.
- Make sure that you use clean oil in the hydraulic system. Dirt in the oil will damage valves and hydraulic motors.

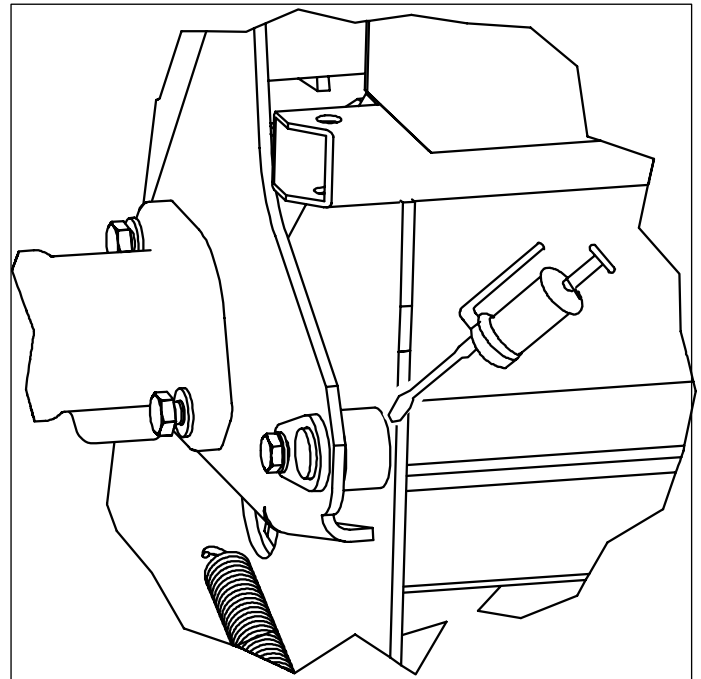


Fig 27. The greasing of the reelholder axis

TROUBLESHOOTING

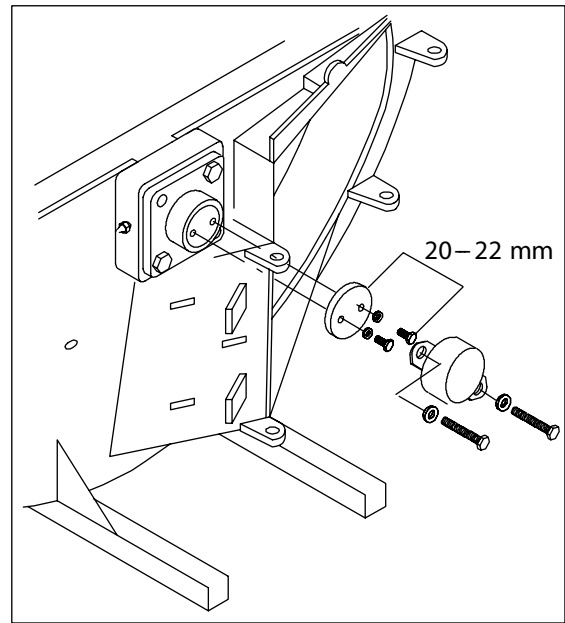
PROBLEM	POSSIBLE CAUSE	SOLUTION
THE BLADES HEAT UP	FEEDER REELS REVOLVE TOO FAST	SET THE REVOLVING SPEED UNTIL CORRECT
THE ROTOR SIDES HEATS UP		
THE FEEDER DOES NOT WORK	HOSES ARE UNCONNECTED	CONNECT THE HOSES
	QUICK-COUPERS HAVE DIRT IN THEM	CLEAN FOR EXAMPLE WITH COMPRESSED AIR OR CHANGE
	QUICK-COUPERS ARE INCORRECT	CHANGE ACCORDING TO SPARE PARTS
	QUICK-COUPLER IS NOT ATTACHED	CHECK THE ATTACHMENT
	RETURN HOSE BACK PRESSURE VALVE IS BLOCKED	CLEAN OR CHANGE
	TRACTOR HAS NO OIL	ADD OIL
	THE PRESSURE OF THE TRACTOR OR FEEDER IS INCORRECT	PUT THE PRESSURES RIGHT
BRANCHES GET TANGLED AROUND THE FEEDER REEL	REEL IS ASKEW	CHECK THE CLEARANCE BETWEEN THE WIPER AND THE REEL

CH180HF

INSTALLATION OF THE “NO STRESS” DEVICE

The No stress feed rate controller which monitors the chipping machine wheel's speed and stops the feed rolls, if the wheel speed drops below the set limit value, is available as an option.

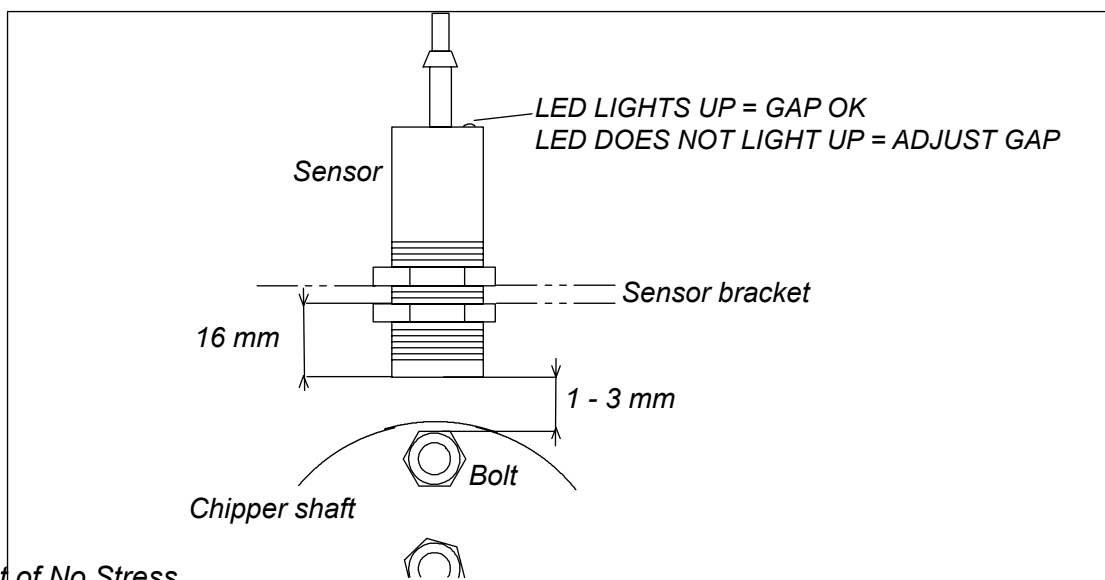
The feed rolls continue feed timber, when the wheel speed increases up to the set value. Thus the feed rate is adjusted in relation to speed of the wheel, giving homogenous wood chips, and the operator can concentrate on feeding the timber.



Installation of No Stress

To install the “No stress” speed control device:

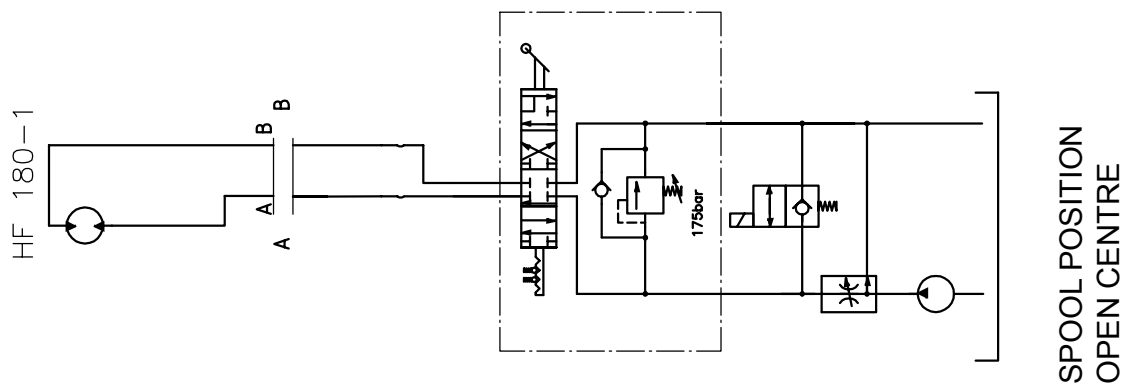
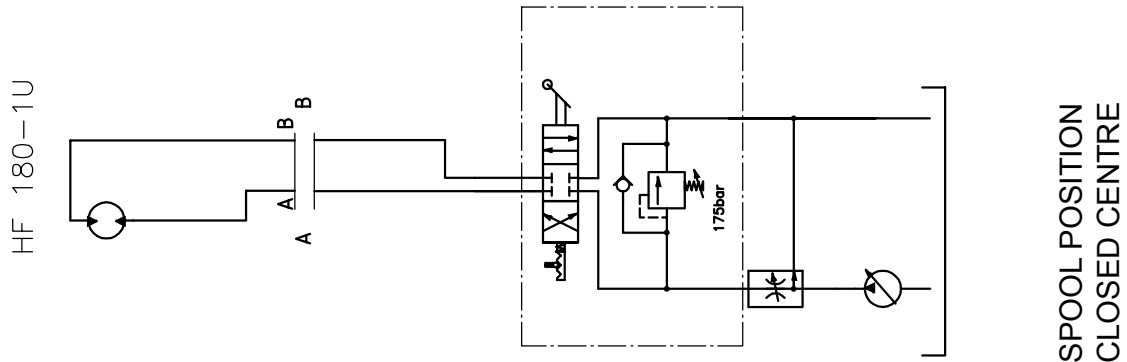
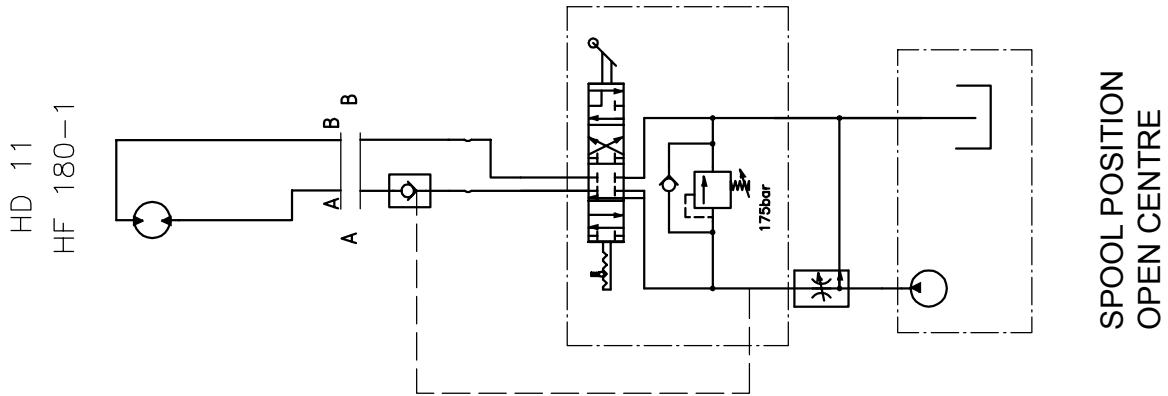
1. Fit the sensor in the bracket so that the black tip is approximately 16 mm from the bottom the bracket. Lock the nuts.
2. Check through cover slot that the gap between the screw head and the sensor tip is approximately 3 mm. The LED will light up, when the head is at the sensor and the gap is suitable. If the LED does not light up, adjust the sensor somewhat closer. See figure Adjustment of No Stress.
3. Start the tractor's PTO and adjust the engine working speed with the manual throttle. Press the black button on the electrical box for 2-5 seconds. After this, increase the tractor's revs by 50-100. The No stress sensor has now identified the speed. When the speed drops approximately 10 %, the feed rolls stop rotating and feeding is interrupted. The feed rolls start rotating again, as the speed returns to the set level. This instruction is applicable to all speeds.



Adjustment of No Stress

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HYDRAULICS CIRCUIT DIAGRAM HF180



NO STRESS NSH

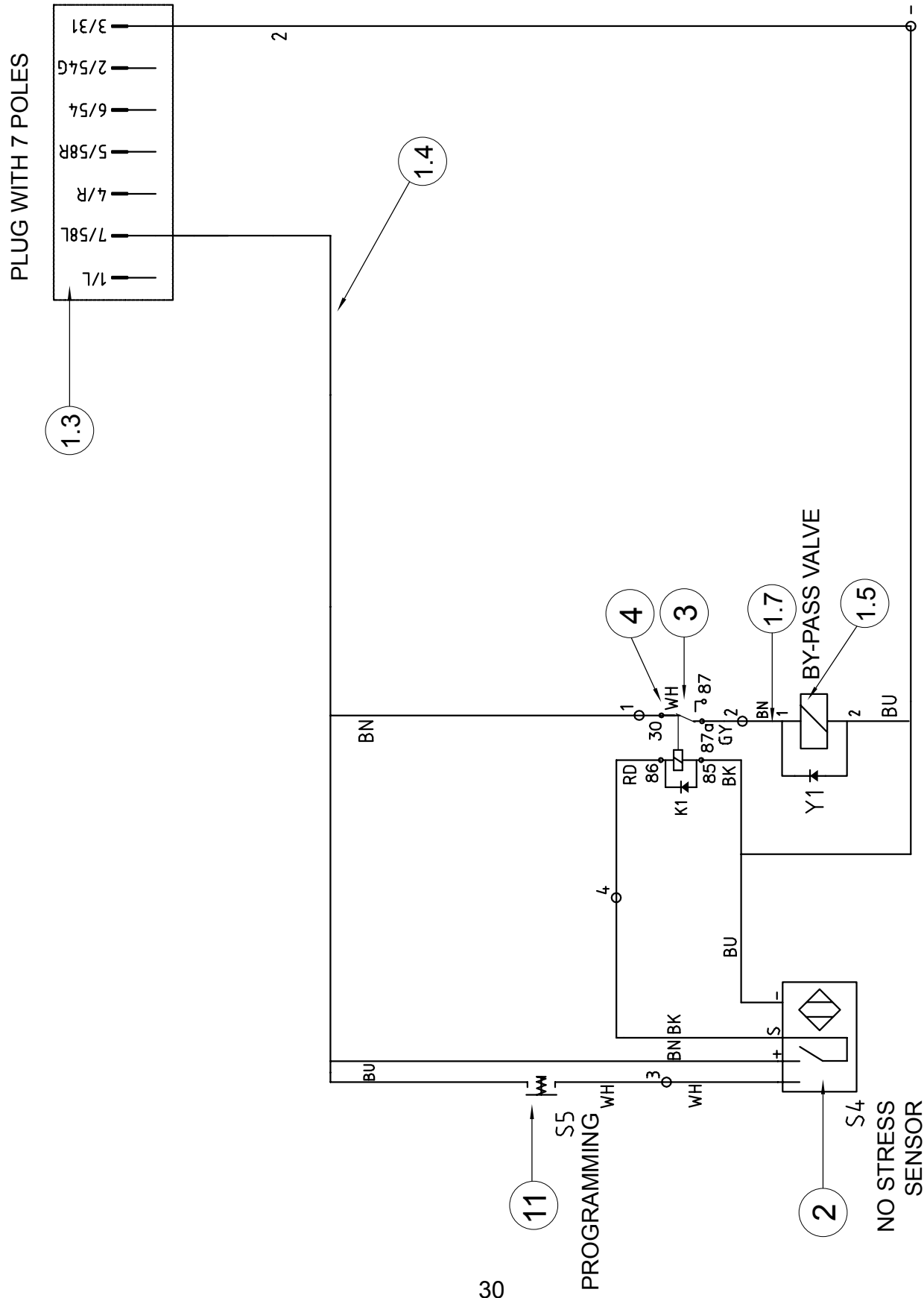
This diagram shows an exploded view of a hydraulic system. It includes a pump (P) on the left, a tank (T) at the top, and a main hydraulic line with various fittings, valves, and hoses. The components are numbered as follows:

- 4: A valve or fitting component.
- 5: A hose or pipe section.
- 6: A hose or pipe section.
- 7: A hose or pipe section.
- 10: A hose or pipe section.
- 11: A hose or pipe section.

The diagram also shows a separate component on the right, possibly a solenoid or actuator, and a small component at the bottom right.

CH180HF

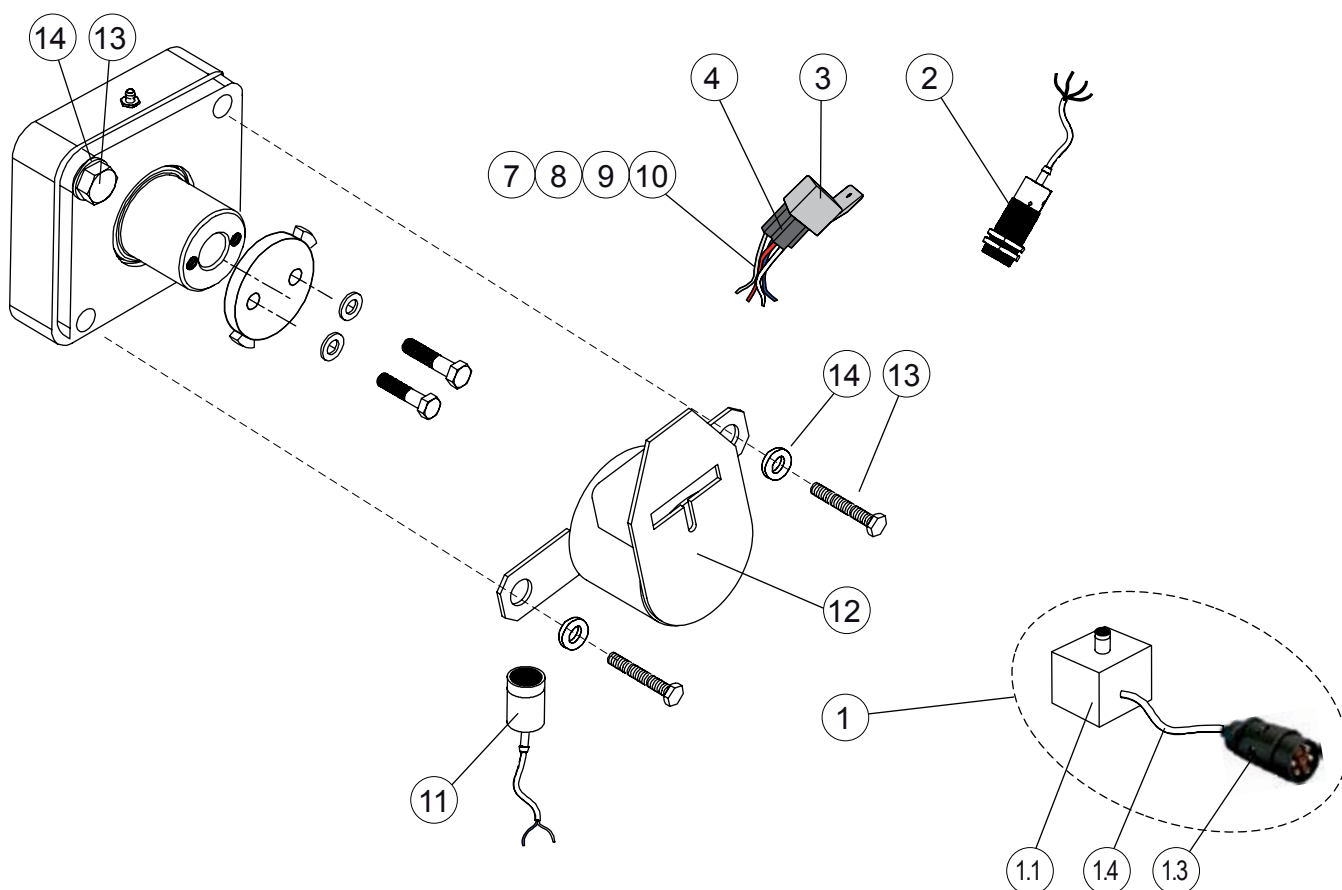
NSH ELECTRICS



CH180HF

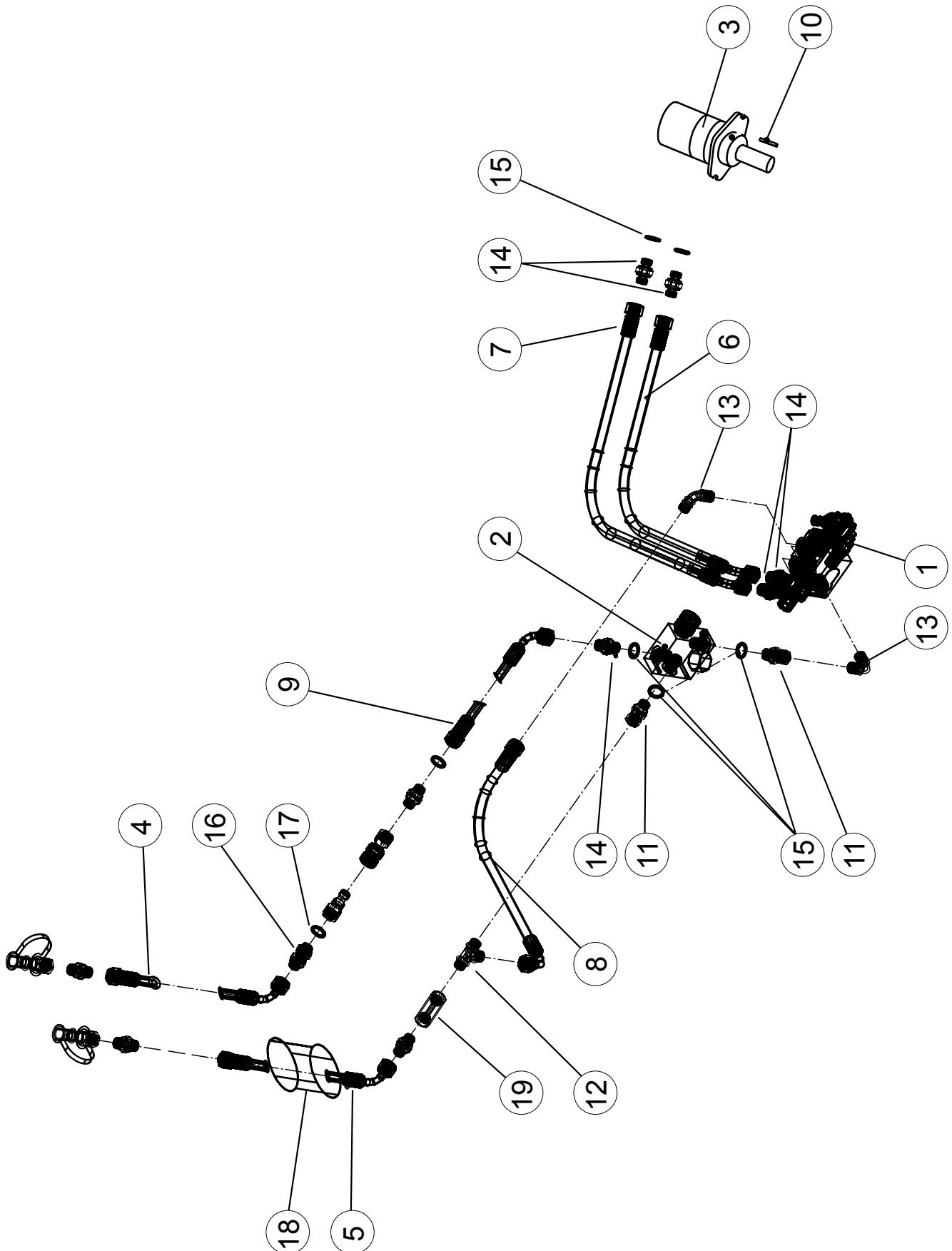
NSH ELECTRICS

Part	Order no	Description	Remarks	Qty
1	03489360	Control box		1
1.1	55129019	Box		1
1.2	43483180	Plate		1
1.3	55128011	Plug	with 7 poles	1
1.4	54946380	Cabel	6,0 m, 2x2,5	1
1.5	55119070	Hirschmann angle adapter with diode		1
1.6	55144780	Seal		2
1.7	54946397	Cabel	1,0 m, 3x1,5	1
2	55121420	Inductive detector	10%	1
3	55119572	Relay		1
4	55119275	Relay socket		1
5	55140602	Connector		4
6	55119804	Terminal block		1
7	55126429	Cabel	blue, 0,5 m	1
8	55126387	Cabel	grey, 0,5 m	1
9	55126403	Cabel	white, 0,5 m	1
10	55126346	Cabel	red, 0,5 m	1
11	55128630	Press switch	black	1
12	43481630	No Stress fastening		1
2	52063690	Screw	M14X60 DIN931 88ZN	2
3	52200060	Washer	M14 DIN126 58ZN	2



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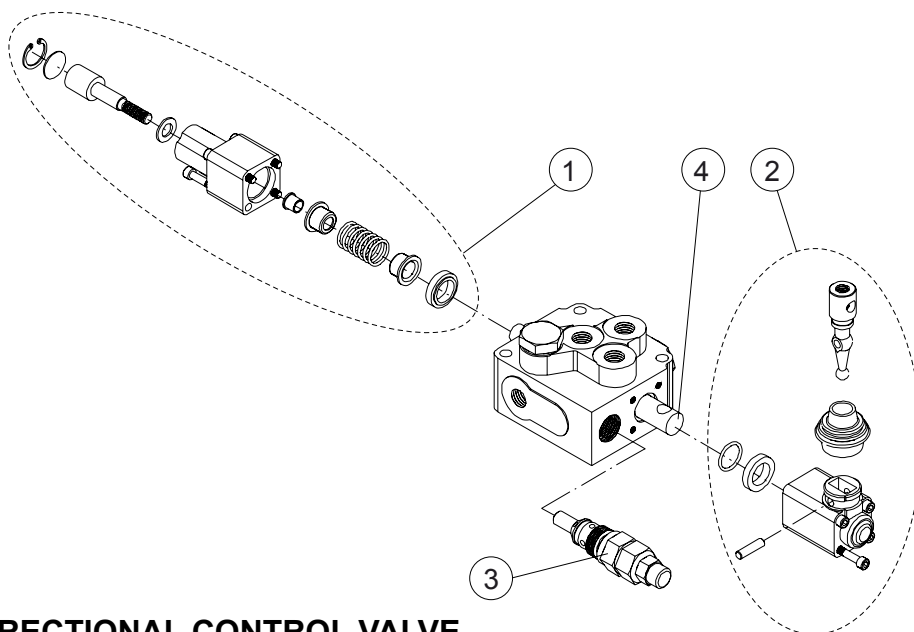
03517200 HYDRAULICS HF180



CH180HF

03517200 HYDRAULICS HF180

Part	Order no	Description	Remarks	Qty
1	56075330	Directional control valve		1
2	56070832	Flow regulator valve		1
3	56001951	Hydraulic motor	MP400	1
	58217746	Seal kit		1
4	03484330	Hose assy	2,2 m	1
5	03512560	Hose assy	2,7 m	1
6	56526163	Hose assy	K1/2"S L=1,1 m	1
7	56526155	Hose assy	K1/2"S L=1,0 m	1
8	56526015	Hose assy	K1/2"S L=0,3 m	1
9	03520490	Hose assy	0,5 m	1
10	57609125	Key		1
11	52435773	Swivel fitting	R1/2"	2
12	52443132	T-nipple	RK1/2"-R1/2"	1
13	52444057	Angle nipple	R1/2"	3
14	52432051	Double fitting	R1/2"	5
15	52390200	Usit-ring		5
16	52435336	Bulkhead fitting	R1/2"	1
17	52435344	Lock nut	R1/2"	1
18	54921473	Water drainage pipe		1
19	56013246	Back pressure valve		1

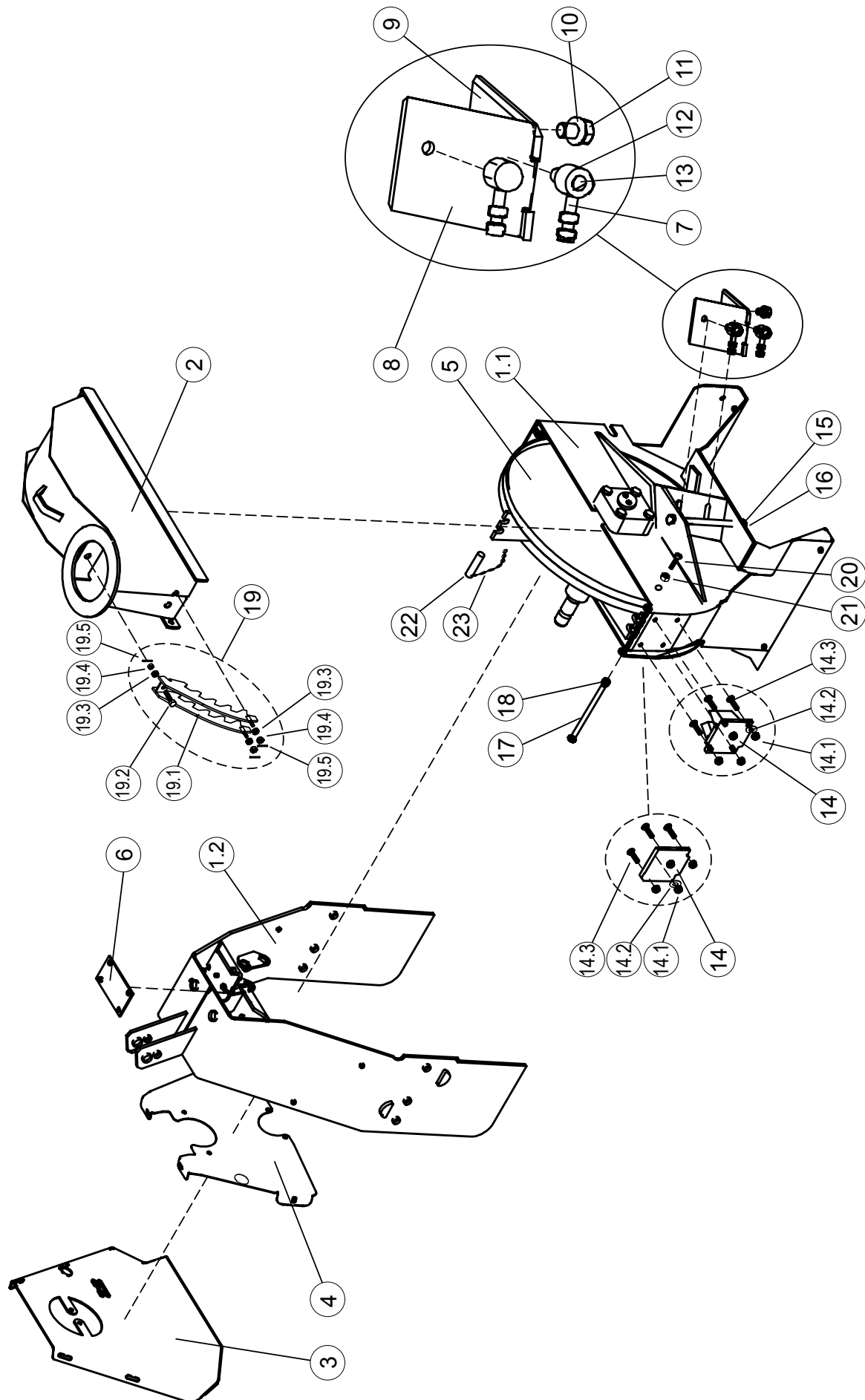


56075330 DIRECTIONAL CONTROL VALVE

Part	Order no	Description	Remarks	Qty
1	58219010	Rear case		1
2	58218975	Lever case		1
3	57819864	Pressure relief valve	175 bar	1
4	58219030	Spindle		1

CH180HF

03516050 CH180 FRAME



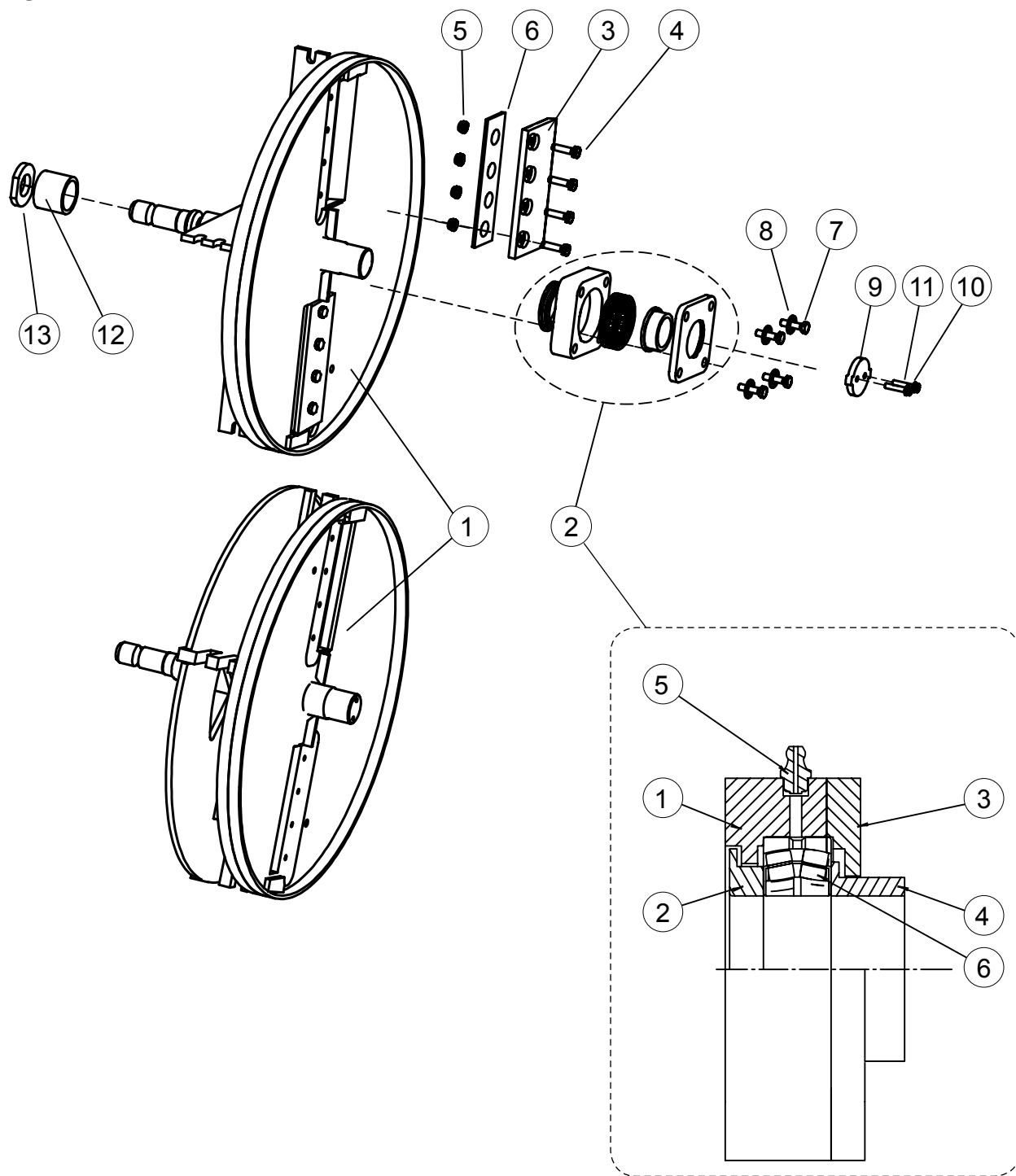
CH180HF

03516050 CH180 FRAME

Part	Order no	Description	Remarks	Qty
1	33525200	Lower frame		1
1.1	43516190	Lower housing		1
1.2	43516250	Mounting frame		1
2	33525130	Upper frame		1
3	43511970	Protective plate		1
4	43514210	Protective plate		1
5		Double disc	see pages 36-37	1
OR		Single disc	see pages 36-37	
6	43518170	Protective plate		1
7	43522110	Anvil adjuster		2
8	33518270	Vertical anvil		1
9	33518260	Horizontal anvil		1
10	43310499	Washer		1
11	52062098	Screw	M16X25 DIN933 88ZN	1
12	52200078	Washer	M16 DIN126 58ZN	2
13	52062130	Screw	M16X60 DIN931 88ZN	2
14	43525360	Twig blade		2
14.1	52117108	Lock nut	M10 DIN985 8ZN	8
14.2	52214251	Lock washer	M10 Nordlock	8
14.3	52090720	Hexagon socket countersunk head cap screw	M10X40 DIN7991 88MU	8
OR				
14	43525440	Cover plate		2
14.1	52117108	Lock nut	M10 DIN985 8ZN	8
14.2	52200045	Washer	M10 DIN126 58ZN	8
14.3	52090720	Hexagon socket countersunk head cap screw	M10X40 DIN7991 88MU	8
15	43511660	Safety screw	M16X240	1
16	52117165	Lock nut	M16 DIN985 8ZN	1
17	43340546	Screw	L202	1
18	52117124	Lock nut	M12 DIN985 8ZN	1
19	03524450	Twig crusher, complete	accessory / double disc	1
19.1	43517780	Twig crusher		1
19.2	43297680	Locking bolt		1
19.3	52214285	Lock washer	M16 NORD-LOCK	3
19.4	52117165	Lock nut	M16 DIN985 8ZN	3
19.5	52840071	Cotter pin	4X22 DIN1481	3
20	43525480	Wiper screw		1
21	58219684	Lock nut	M16X2 DIN985 8.8ZN	1
22	43341429	Locking pin		1
23	03487760	Chain		1

CH180HF

CH180 DISC



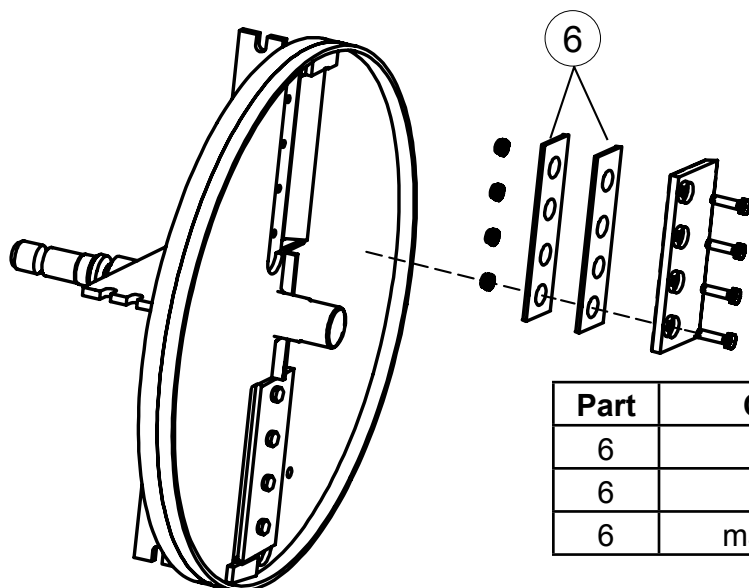
Part	Order no	Description	Remarks	Qty
	43525250	Bearing unit		
1	43525270	Bearing housing		1
2	43525240	Labyrinth ring		1
3	43525260	Bearing housing cover		1
4	43525230	Labyrinth sleeve		1
5	52401015	Grease nipple	1/8"	1
6	54512345	Spherical roller bearing		1

CH180HF

CH180 DISC

Part	Order no	Description	Remarks	Qty
1	43517200	Disc, single		1
OR	43516750	Disc, double		1
	33525400	Disc, double	from machine: 3520071	1
2	43517300	Bearing unit	complete	2
2	43525250	Bearing unit	from machine: 3520050	2
3	43510220	Knife		2
4	52060258	Screw	M10X40 DIN933 88ZN	8
5	52117108	Lock nut	M10 DIN985 8ZN	8
6	43517190	Washer		0 - 4
7	52063690	Screw	M14X60 DIN931 88ZN	4
8	52200060	Washer	M14 DIN126 58ZN	4
9	43524060	Flange		1
10	52200037	Washer	M8 DIN126 58ZN	2
11	52060134	Screw	M8X40 DIN933 88ZN	2
12	43517280	Bushing		1
13	43296360	Axle nut		1

ADJUSTING THE CHIP LENGTH



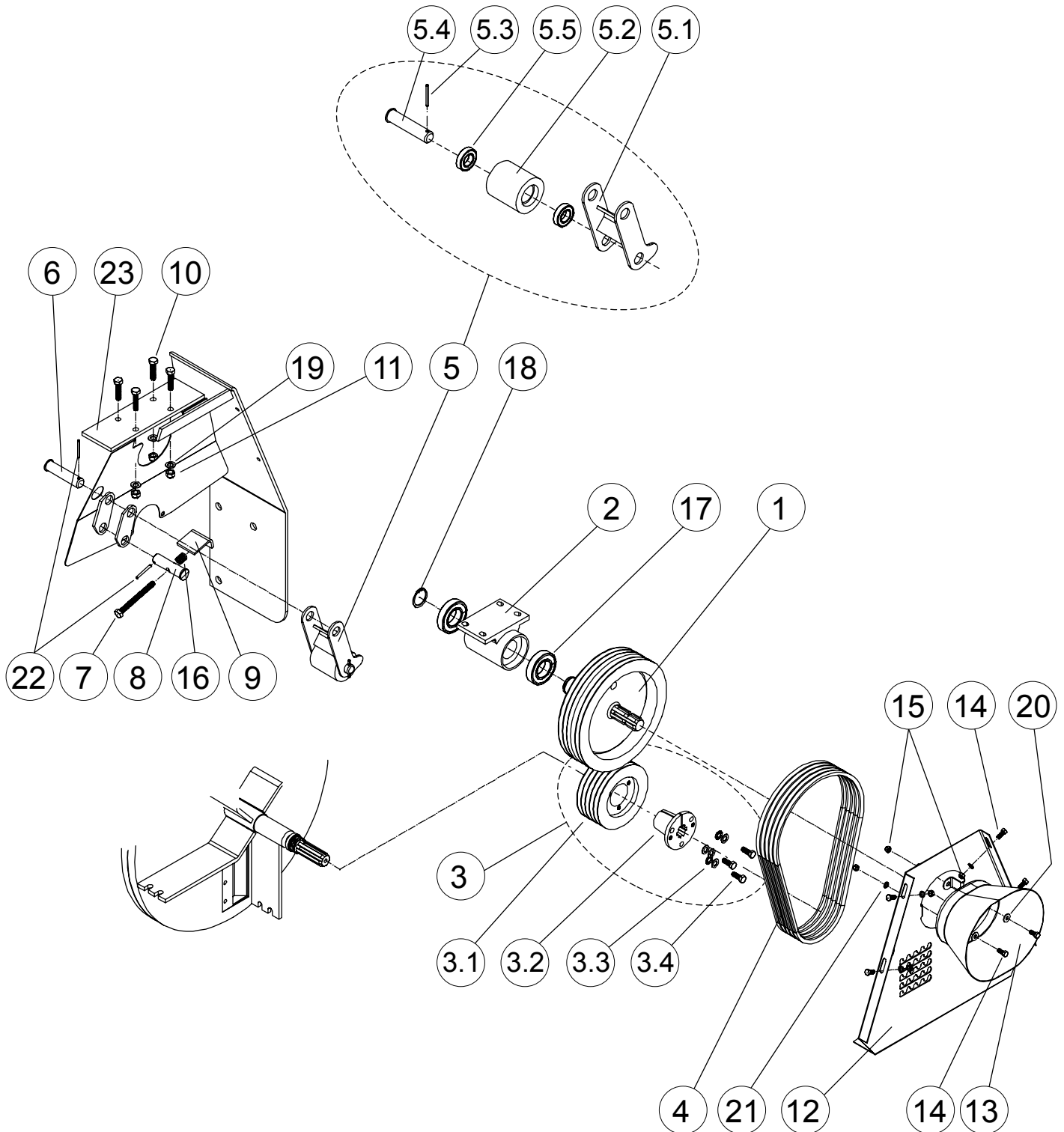
Part	Qty	Chip length, mm
6	0	10
6	1	12
6	max. 2	14

CHIP LENGTH / FEED ROLLER RPM

	Disc rpm 540	Disc rpm 1000
Feed roller rpm (chip 10 mm)	12	22
Feed roller rpm (chip 12 mm)	14	26
Feed roller rpm (chip 14 mm)	16	30

CH180HF

BELT TRANSMISSION CH180T i=2,1



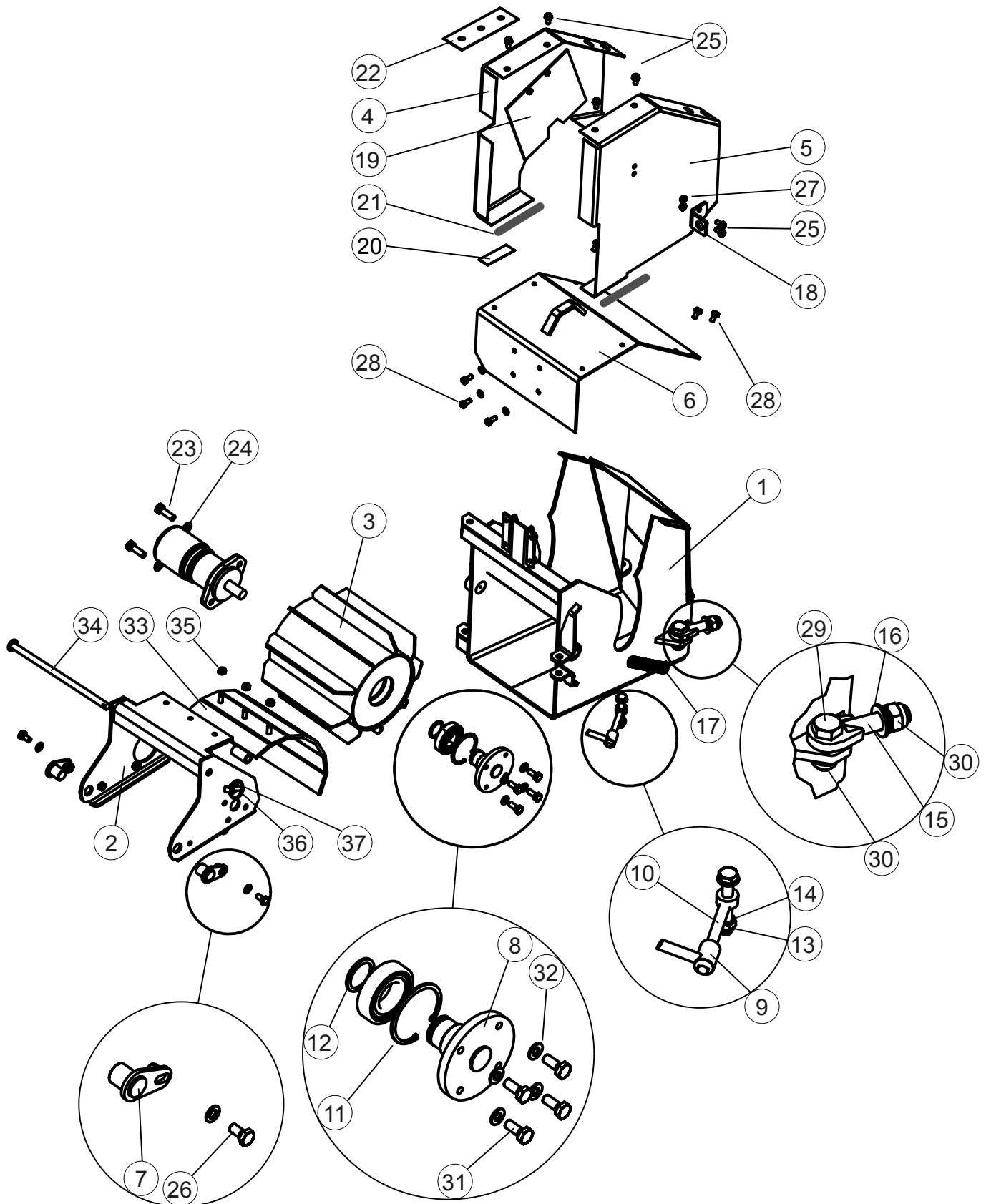
CH180HF

BELT TRANSMISSION CH180T i=2,1

Part	Order no	Description	Remarks	Qty
1	43514300	Belt pulley	D315	1
2	43514450	Bearing housing		1
3	43514330	Belt pulley	complete	1
3.1	43514350	Belt pulley	D150	1
3.2	43514340	Tapered adapter sleeve		1
3.3	52214269	Lock washer	M12 NORD-LOCK	3
3.4	52062023	Screw	M12X30 DIN933 88ZN	3
4	54822382	Belt		5
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	43511970	Cover plate		1
13	43511780	Cover of the universal shaft		1
14	52060126	Screw	M8X20 DIN933 88ZN	6
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	52200334	Washer	M8 DIN440 ZN	2
21	52200037	Washer	M8 DIN126 58ZN	6
22	52840055	Cotter pin	5X50 DIN1481	2
23	43518170	Cover plate		1

CH180HF

03516600 FEEDER HF180



CH180HF

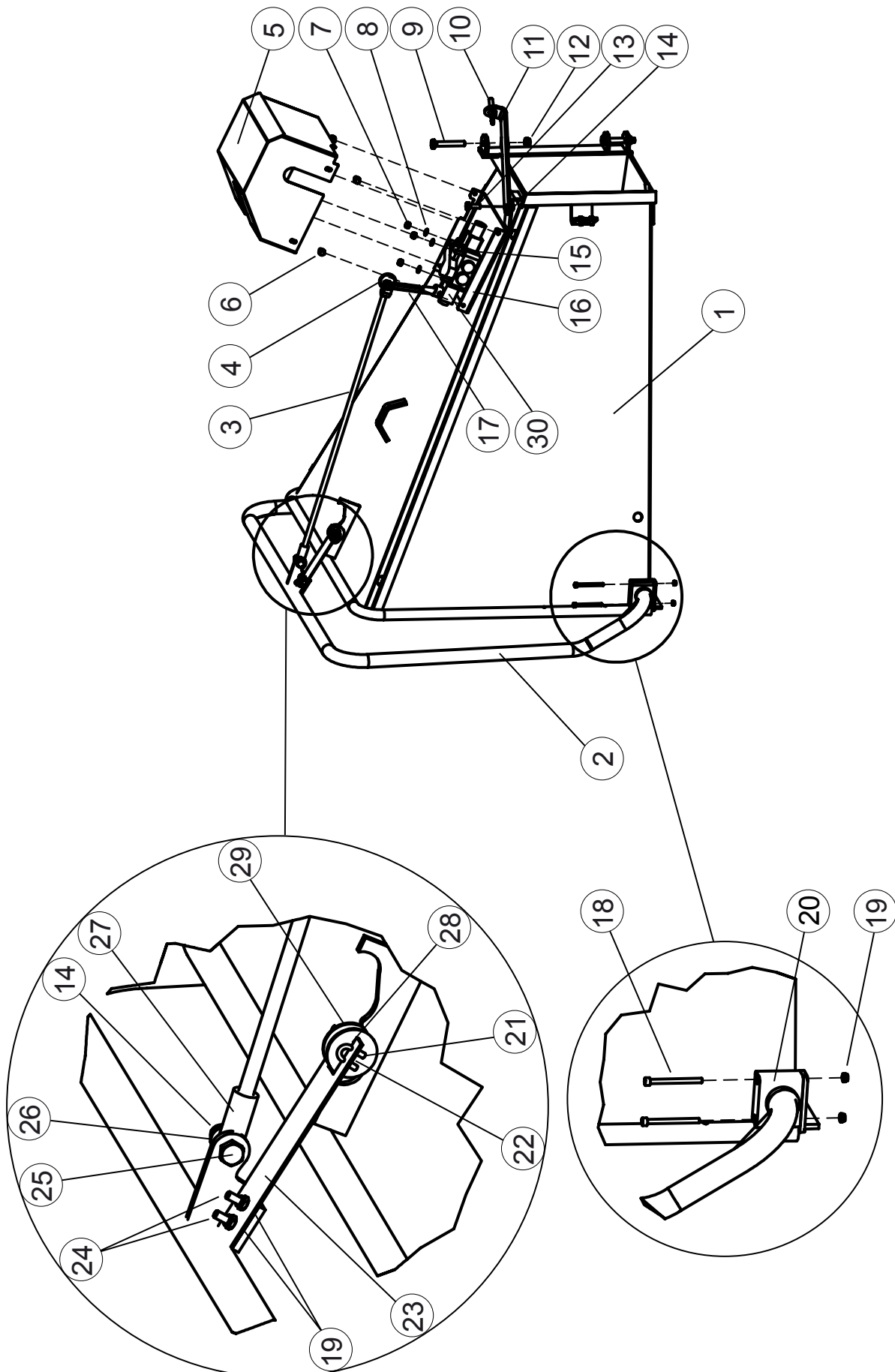
03516600 FEEDER HF180

Part	Order no	Description	Remarks	Qty
1	43516650	Frame		1
2	43516700	Reel shaft		1
3	33518200	Feeder roll		1
4	43519050	Side plate	Motor side	1
5	43519060	Side plate		1
6	43519070	Protective plate		1
7	43516680	Locking pin		2
8	43516870	Fastening flange		1
9	52110420	Hand lever	M12	1
10	52062840	Eyebolt	M12X120 88ZN	1
11	52231172	Circlip	72x2,5 DIN472	1
12	52230067	Circlip	35X2,5 DIN471	1
13	52117124	Lock nut	M12 DIN985 8ZN	1
14	52200052	Washer	M12 DIN125 58ZN	2
15	43802460	Locking bolt		1
16	52200086	Washer	M20 DIN126 58ZN	1
17	94613098	Tension spring		2
18	43519030	Hose guide		1
19	43525010	Protective rubber		1
20	43510610	Damper		2
21	52352119	Welting cord	0,25 m	1
22	43511130	Support plate		1
23	52063617	Screw	M12X40 DIN933 10.9MU	2
24	52214269	Lock washer	M12 Nord-Lock	2
25	52070620	Screw	M8X16 DIN 7500 TAPTITE	6
26	52060514	Screw	M10X20 DIN933 88ZN	2
27	52117108	Lock nut	M10 DIN985 8ZN	2
28	52060175	Screw	M8X25 DIN933 88ZN	7
29	52062221	Screw	M20X50 DIN933 88ZN	1
30	52117207	Lock nut	M20 DIN985 8ZN	1
31	52060225	Screw	M10X25 DIN933 88ZN	4
32	52200045	Washer	M10 DIN126 58ZN	4
33	43522570	Protective plate		1
34	43522600	Locking pin		1
35	52117108	Lock nut	M10 DIN985 8ZN	3
36	52842168	Ring cotter		1
37	52200078	Washer	M16 DIN125 58ZN	1

Parts 33-37 from serial number 3520070

CH180HF

03517100 FEED CHUTE HF180



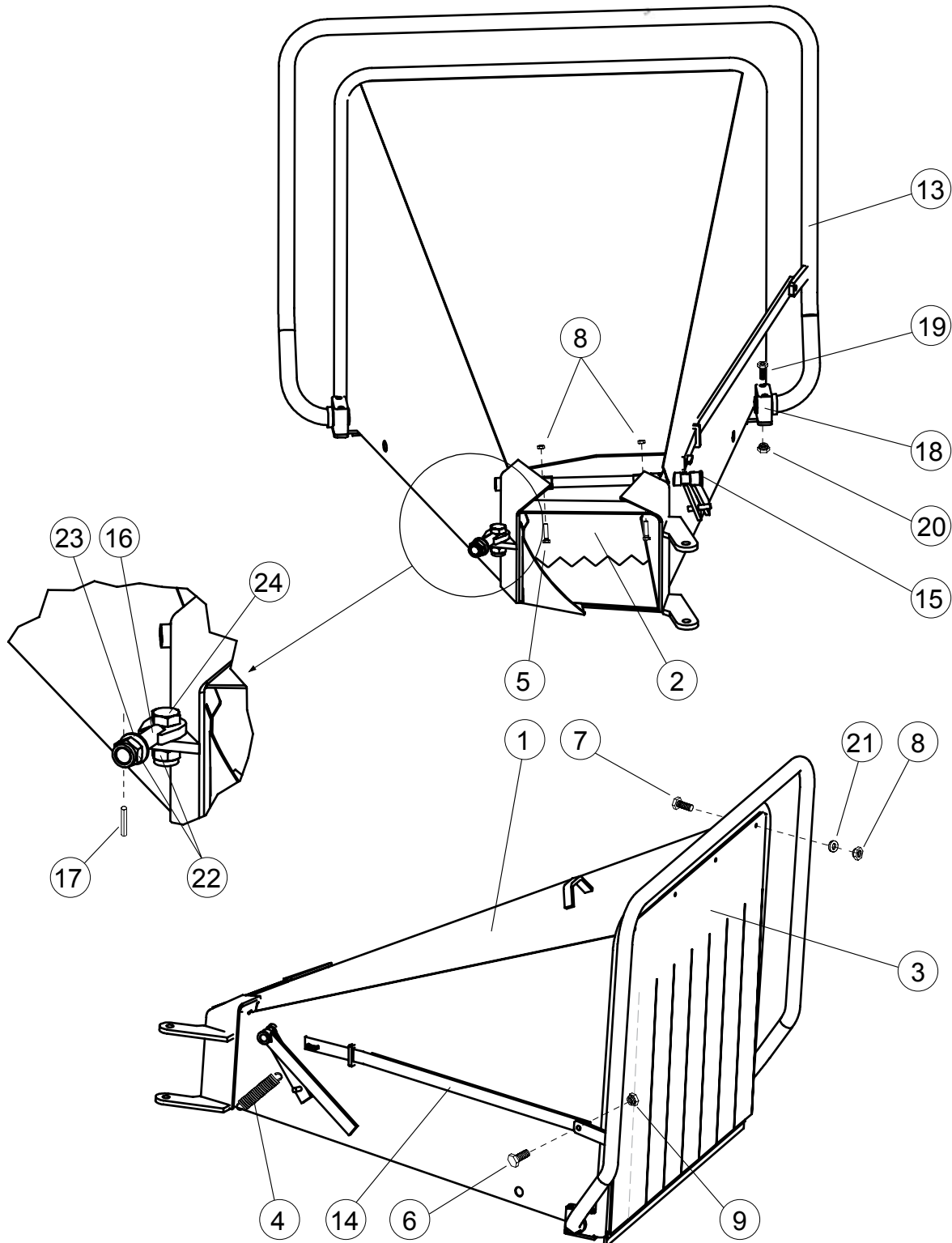
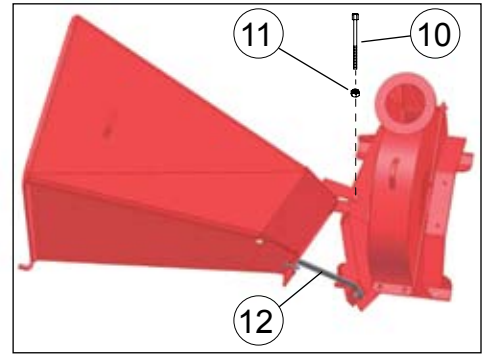
CH180HF

03517100 FEED CHUTE HF180

Part	Order no	Description	Remarks	Qty
1	43517000	Feed chute		1
2	43520790	Safety handle		1
3	43524440	Control rod		1
4	52842170	Ring splint	6X42 DIN11023	1
5	43511990	Control valve cover		1
6	52070620	Screw	M8x16 DIN 7500 TAPTITE	4
7	52117082	Lock nut	M8 DIN985 8ZN	3
8	52200037	Washer	M8 DIN126 58ZN	2
9	52063340	Screw	M12X80 DIN933 88ZN	1
10	52117940	Wing screw	M10X40 DIN316	1
11	43524410	Transport support		1
12	52117124	Lock nut	M12 DIN985 8ZN	1
13	52060233	Screw	M10X30 DIN933 88ZN	1
14	52117108	Lock nut	M10 DIN985 8ZN	2
15	52021220	Locking screw	M8X70 DIN603 88ZN	3
16	43512010	Attachement plate for valve		1
17	43524380	Lever extension		1
18	52001609	Hexagonal socket head screw	M6x70 DIN912 88ZN	2
19	52117066	Lock nut	M6 DIN985 8ZN	4
20	54916095	Tube clamp		2
21	54813076	Bulldog grip	M5	1
22	43520570	Pin		1
23	43520560	Flat flange		1
24	52060043	Screw	M6X25 DIN933 88ZN	2
25	52060258	Screw	M10X40 DIN933 88ZN	1
26	52200045	Washer	M10 DIN126 58ZN	2
27	43486370	Adjustement bushing		1
28	52117058	Lock nut	M5 DIN985 8ZN	2
29	43524400	Roll		1
30	56075330	Control valve	see Hydraulics	1

CH180HF

03520010 FEED CHUTE F180



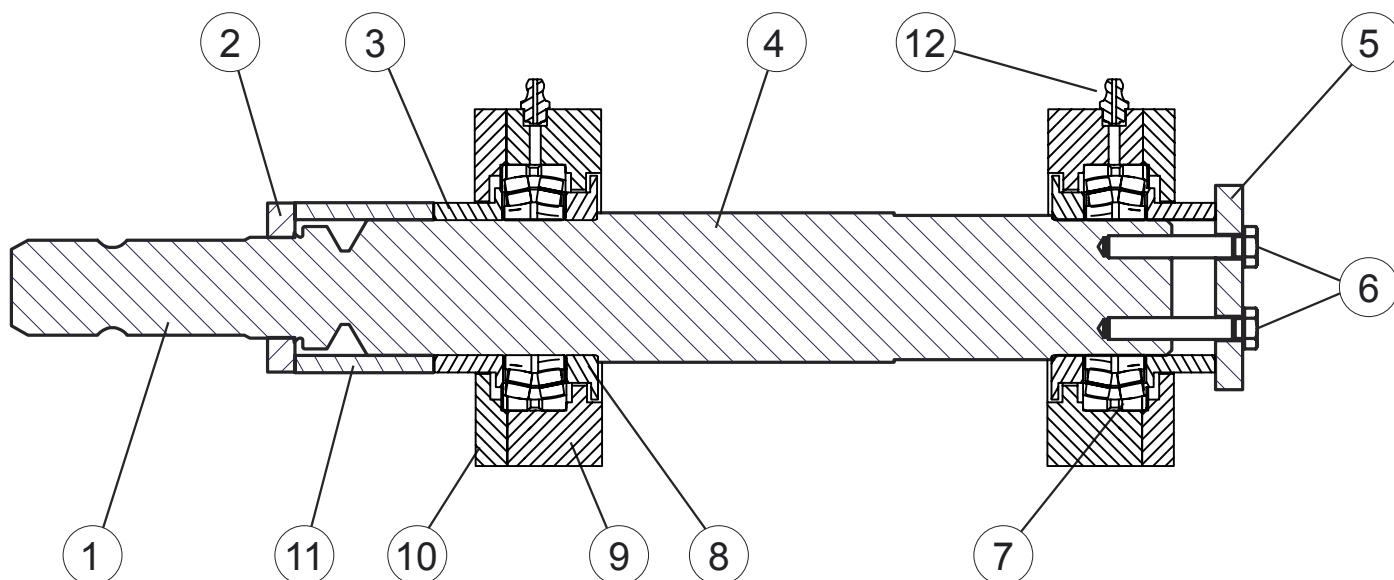
CH180HF

03520010 FEED CHUTE F180

Part	Order no	Description	Remarks	Qty
1	43520950	Feed chute		1
2	43521060	Safety clapper		1
3	43521090	Cover	PVC	1
4	94613098	Tension spring		1
5	52070406	Screw	M8x35 DIN931 88ZN	2
6	52060233	Screw	M10X30 DIN933 88ZN	1
7	52060191	Screw	M8X22 DIN933 88ZN	4
8	52117082	Lock nut	M8 DIN985 8ZN	6
9	52117108	Lock nut	M10 DIN985 8ZN	1
10	52063013	Screw	M16X240 DIN931 88ZN	1
11	52117165	Lock nut	M16 DIN985 8ZN	1
12	43517730	Support for transportation		1
13	43517630	Safety handle		1
14	43517650	Spring release lever		1
15	43517590	Axle		1
16	43802460	Locking bolt		1
17	52840071	Cotter pin	4X22 DIN1481	1
18	54916100	Tube clamp		2
19	52001609	Hexagonal socket head screw	M6x70 DIN912 88ZN	4
20	52117066	Lock nut	M6 DIN985 8ZN	4
21	52200235	Washer	M8 DIN9021 58ZN	4
22	52117207	Lock nut	M20 DIN985 8ZN	2
23	52200086	Washer	M20 DIN126 58ZN	1
24	52062221	Screw	M20X50 DIN933 88ZN	1

CH180HF

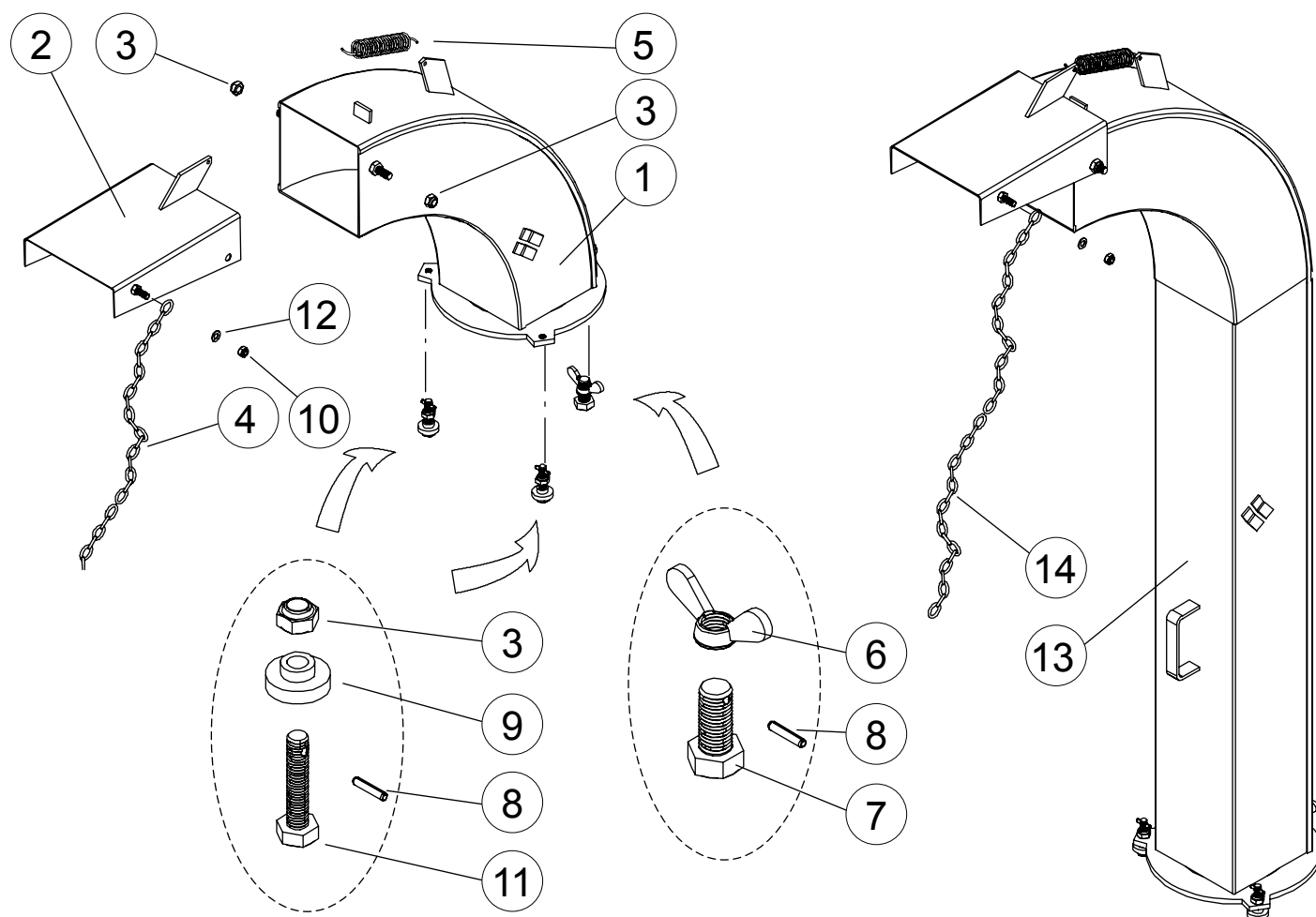
BEARING SYSTEM



Part	Order no	Description	Remarks	Qty
1	43510420	Splined shaft		1
2	43296360	Axle nut		1
3	43517270	Labyrinth sleeve		2
	43525230	Labyrinth sleeve	from serial number 3520050	2
4	43517220	Axle		1
5	43524060	Flange		1
6	52060563	Screw	M8X50 DIN931 88MU	2
7	54512345	Spherical roller bearing		2
8	43517250	Labyrinth ring	D82	2
	43525240	Labyrinth ring	from serial number 3520050	2
9	43517240	Bearing housing		2
	43525270	Bearing housing	from serial number 3520050	2
10	43517260	Cover of the bearing housing		1
	43525260	Cover of the bearing housing	from serial number 3520050	1
11	43517280	Bushing	D62X51	1
12	52401015	Grease nipple		2

CH180HF

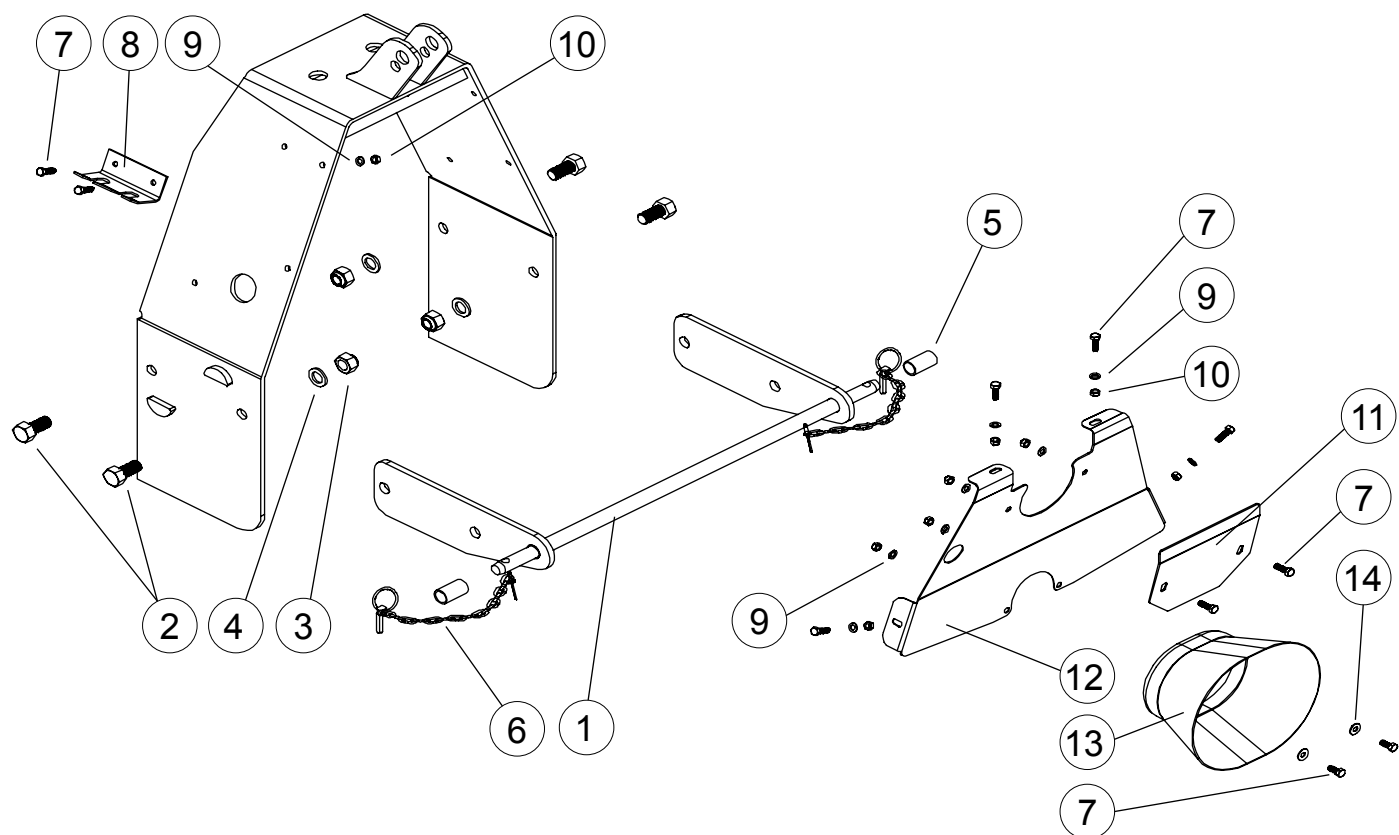
DISCHARGE PIPE



Part	Order no	Description	Remarks	Qty
	03515310	Short discharge pipe	complete	
	03515320	Long discharge pipe	complete	
1	43515120	Short discharge pipe		1
2	43510240	Lid		1
3	52117108	Lock nut	M10 DIN985 88ZN	4
4	03510300	Chain	600	1
5	94612082	Tension spring	DU26 DL2,6 L106	1
6	52119360	Butterfly nut		1
7	43511670	Safety screw	M16X40	1
8	52840295	Cotter pin	5X24 DIN1481	3
9	43340751	Reel		2
10	52117082	Lock nut	M8 DIN985 88ZN	1
11	43511650	Safety screw	M10X50	2
12	52200334	Washer	M8 DIN440 ZN	1
13	43515130	Long discharge pipe		1
14	03514590	Chain	1100	1

CH180HF

MOUNTING FRAME



Part	Order no	Description	Remarks	Qty
1	43343790	Draw bar		1
2	52062221	Screw	M20X50 DIN933 88ZN	4
3	52117207	Lock nut	M20 DIN985 8ZN	4
4	52211083	Spring washer	M20 DIN127 ZN	4
5	40293797	Bushing		2
6	03515010	Chain		2
7	52060175	Screw	M8X25 DIN933 88ZN	10
8	43482290	Hose fastener		1
9	52200037	Washer	M8 DIN126 58ZN	10
10	52117082	Lock nut	M8 DIN985 88ZN	10
11	43514240	Cover plate		1
12	43514210	Cover plate		1
13	43511780	Cover of the universal shaft		1
14	52200334	Washer	M8 DIN440 ZN	2

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

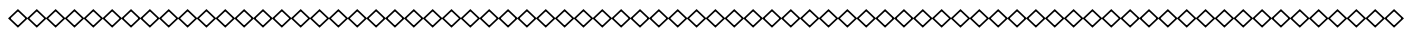
The warranty does not cover wearing parts.

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 14 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



Date of delivery:_____/_____ 20____

Dealer:_____

Dealer’s address:_____

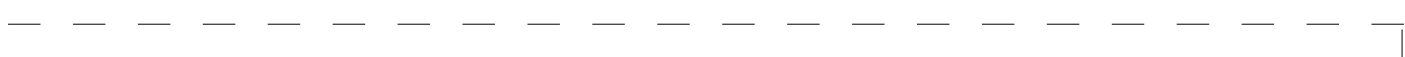
Dealer’s tel:_____

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:_____

Customer’s e-mail:_____

Product and type:_____

Serial number:_____



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