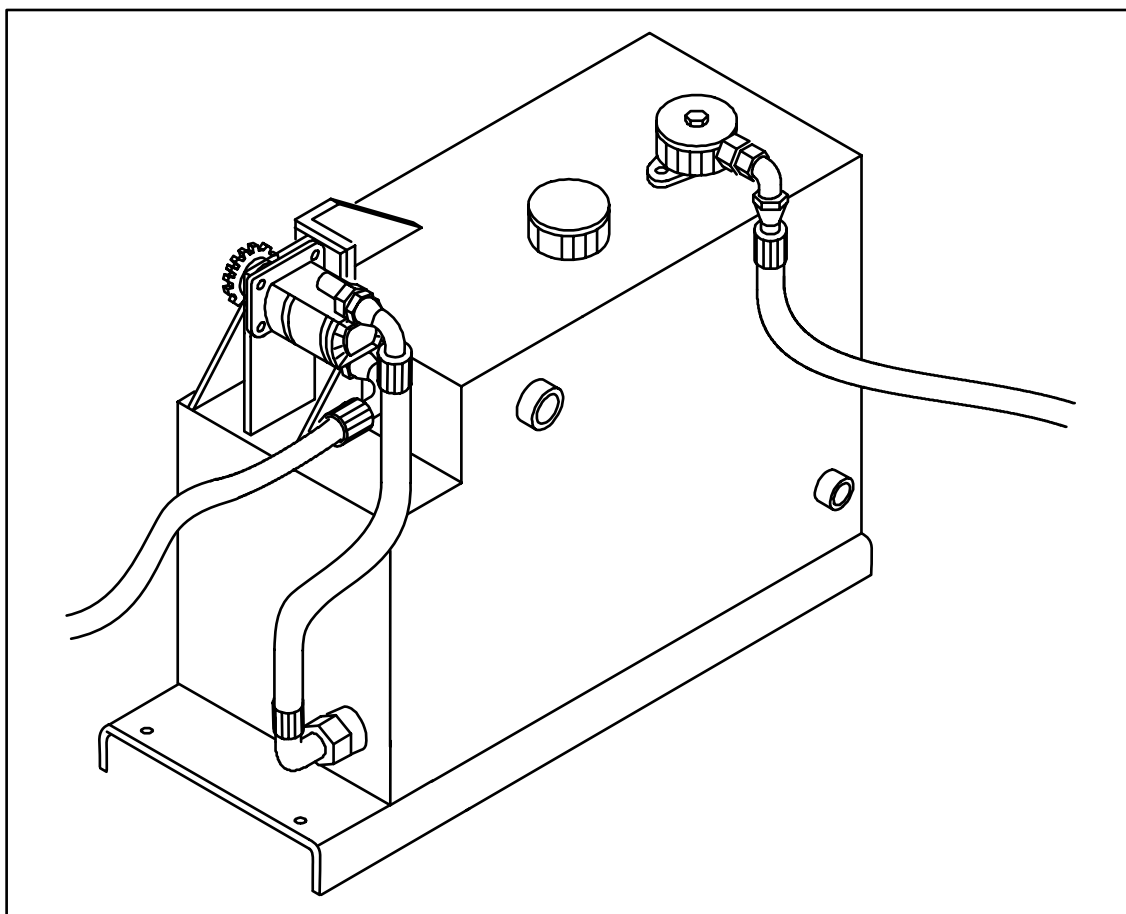


# OPERATION, MAINTENANCE AND SPARE PARTS MANUAL

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## HYDRAULIC UNIT HD11



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

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## **PRODUCT WARRANTY**

Farmi provides a 12-months warranty on all Farmi products.

Register on our home page ([www.farmiforest.fi](http://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.

## 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

### 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.



## EC DECLARATION OF CONFORMITY

**Manufacturer:**

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

**Person authorized to compile the technical documentation:**

Name: Heikki Sirviö  
Address: Ahmolantie 6, FIN-74510 IISALMI, Finland

**Commercial name:**

Farmi

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**Machine denomination:**

Farmi hydraulic unit

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**Machine type:**

HD11

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**Machine series number:**

Herewith, we declare that the machine brought into circulation conforms with the pertinent requirements of the Machinery Directive 2006/42/EC.

The following harmonized standards were used for the conceptional design of the machine:

SFS EN ISO 12100

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Iisalmi  
(Place)

26.11.2012  
(date)

---

Juha Hallivuori

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# HD11

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## TABLE OF CONTENTS

SAFETY INSTRUCTIONS	5
INTRODUCTION	8
TECHNICAL DATA HD11	8
MAIN COMPONENTS OF THE TANK	8
MOUNTING CH180 / CH260 OEM	9
MOUNTING CH260	10
MOUNTING CH180	11
HYDRAULICS	12
MAINTENANCE	13
HD11 MACHINERY	14
HD11 ADJUSTING PARTS CH180	16
HD11 ADJUSTING PARTS CH260	17
HD11 ADJUSTING PARTS CH260 OEM	18
CH180 BELT TRANSMISSION	19
CH260 BELT TRANSMISSION CHIP LENGTH 13-18 MM	19
CH260 BELT TRANSMISSION CHIP LENGTH <13 MM	19
CH180 CHAIN TRANSMISSION	20
CH260 CHAIN TRANSMISSION	20
CH260 OEM CHAIN TRANSMISSION	20

When ordering spare parts, please indicate machines type from the machine plate, spare parts order number, description and quantity required. Example. HD11, 58231200, Hydraulic pump, 1 pc

## 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.

## 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!

# HD11

## INTRODUCTION

When fitted with a separate hydraulic unit, the hydraulic feed motors operate independent of tractor hydraulic system.

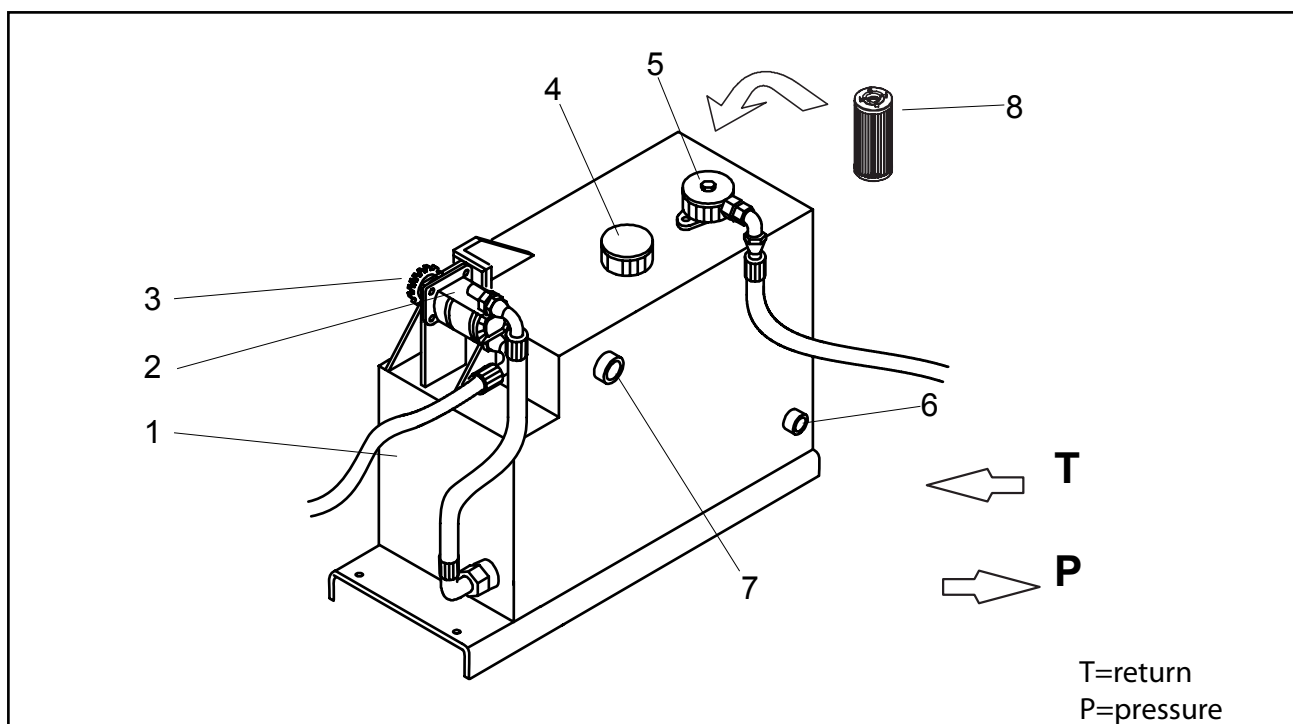
The optional independent hydraulic unit HD11 runs the hydraulic feed. It can be mounted on the chipper at the factory or it can be retrofitted.

The use of a hydraulic unit is recommended if:

- The chipper is used on more than one tractor; in this way dirt cannot enter the chipper's hydraulic system.
- The hydraulic system of the tractor is not sufficient or appropriate to run the feed.
- Tractor's hydraulic pump has too large an output (danger of overheating).
- Electric or diesel motors run the chipper; the hydraulic unit enables the use of the hydraulic power feed.

## MAIN COMPONENTS OF THE TANK

1. OIL TANK
2. PUMP
3. SECONDARY SPROCKET Z =11
4. FILLER CAP
5. RETURN FILTER
6. DRAIN PLUG
7. OIL SIGHT GLASS
8. FILTER CARTRIDGE



TECHNICAL DATA HD11	
Hydraulic tank oil grade, level	10W30 or hydraulic oil 46S, max. 23 liters,
Pump output	11 cm <sup>3</sup> /n
Pump output, 1000 rpm	
HF 180 16:11	16 l
HF 260 B (OEM) 30:11	30 l
HF 260 30:11	30 l

## MOUNTING CH180 / CH260 OEM

1. Install the chain/belt pulley onto the threaded part of the disc shaft. See Figure 2.
2. Install the raising feet onto the chipper using M16X40 screws, lock nuts, washers and raising bushes. Do not tighten the screws to torque.
3. Loosen the plough beam from the chipper by loosening the M20 screws.
4. Attach the hydraulic unit to the raising feet using M16x70 screws, lock nuts and washers. See Figure 3. Do not tighten the screws to torque.
5. Align the chain pulleys with each other by moving the hydraulic unit / raising feet in their runners. Carry out the alignment very carefully. See Figure 4.
6. Tighten all the M16 screws to 200 Nm. See Fig 7.
7. Install the chain/belt pulley in its place. Ensure that the locking direction of the locking loop is the same as the turning direction. See Figure 5.
8. Tighten the chain/belt using the tightening screw. See Figure 6. Tighten the chain until it is straight and has no slack. Tighten the belt until it can be depressed with the fingers at the centre by about 15 mm.
9. Tighten the chain tightening screw to 400 Nm.

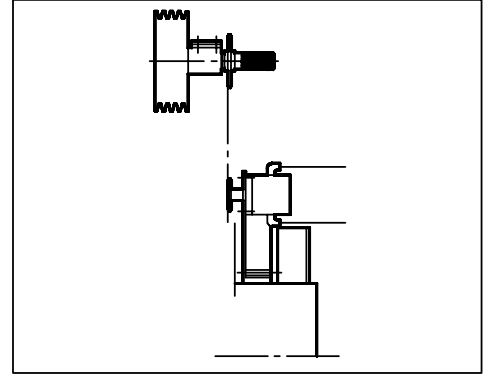


Figure 4. Align the chain / belt pulleys with each other without the chain/belt.

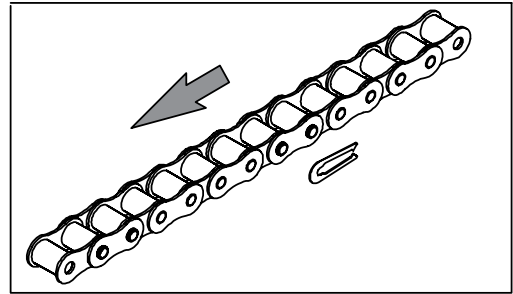


Figure 5. Direction of chain shackle

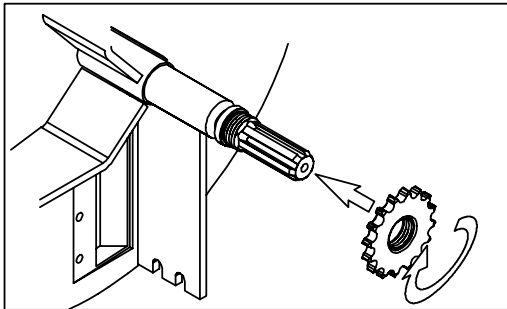


Figure 2. Chain pulley installation

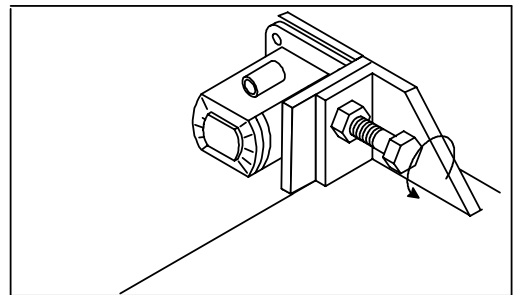


Figure 6. Chain tightening screw

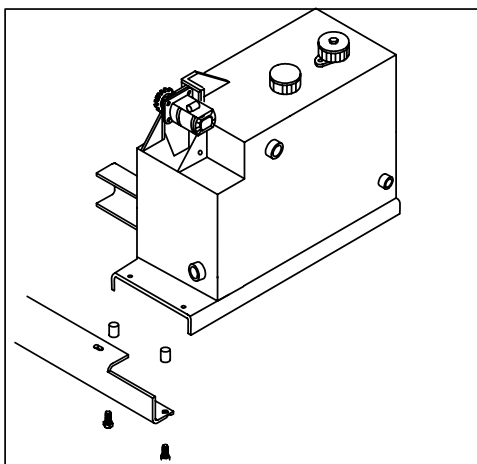


Figure 3. Installation of HD11 to tank connector

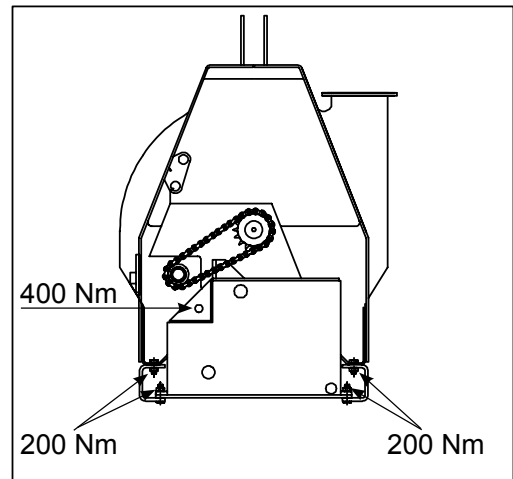


Figure 7. Tightening screws

## MOUNTING CH260

1. Install the chain/belt pulley onto the threaded part of the disc shaft. See Figure 2.
2. Measure the distance between the chipper's feet. Attach the tank connectors to the tank with M16x40 screws. Adjust the space between the connectors until it is right. Tighten the screws to 200 Nm.
3. Loosen the plough beam from the chipper by loosening the M20 screws
4. Attach the tank connectors to the chipper with M16x40 and M12x30 screws. See Figure 3.
5. Align the chain pulleys with each other by moving the tank connectors in their runners. Carry out the alignment very carefully. See Figure 4.
6. Tighten all the M16 screws to 200 Nm and M12 screws to 117 Nm. See Fig 7.
7. Install the chain/belt pulley in its place. Ensure that the locking direction of the locking loop is the same as the turning direction. See Figure 5.
8. Tighten the chain/belt using the tightening screw. See Figure 6. Tighten the chain until it is straight and has no slack. Tighten the belt until it can be depressed with the fingers at the centre by about 15 mm.
9. Tighten the chain tightening screw to 400 Nm.

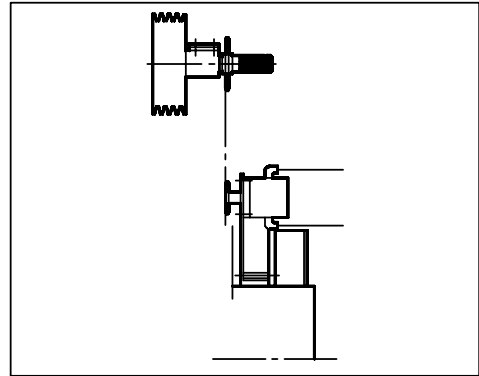


Figure 4. Align the chain/belt pulleys with each other without the chain/belt.

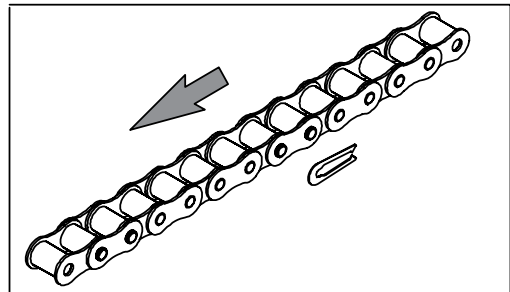


Figure 5. Direction of chain shackle

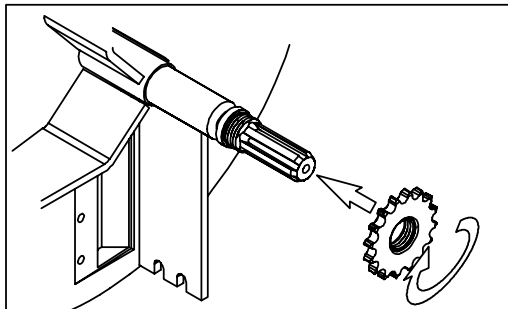


Figure 2. Chain pulley installation

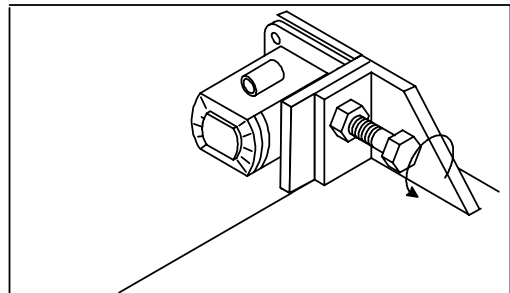


Figure 6. Chain tightening screw

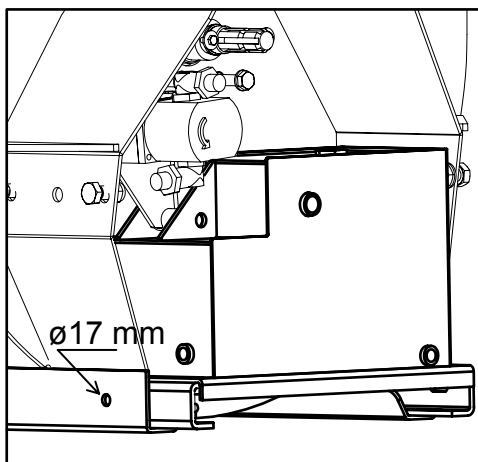


Figure 3. Installation of HD11 to tank connector

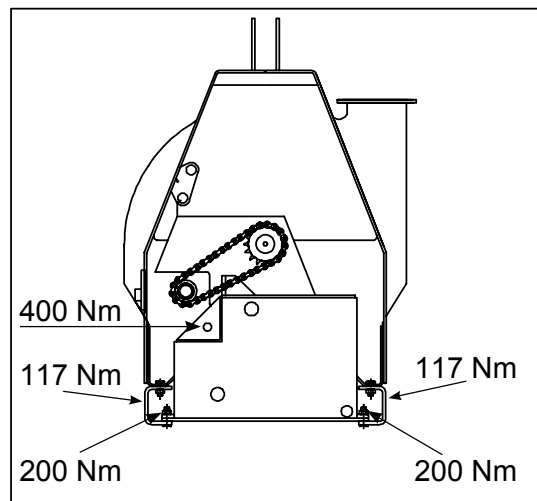
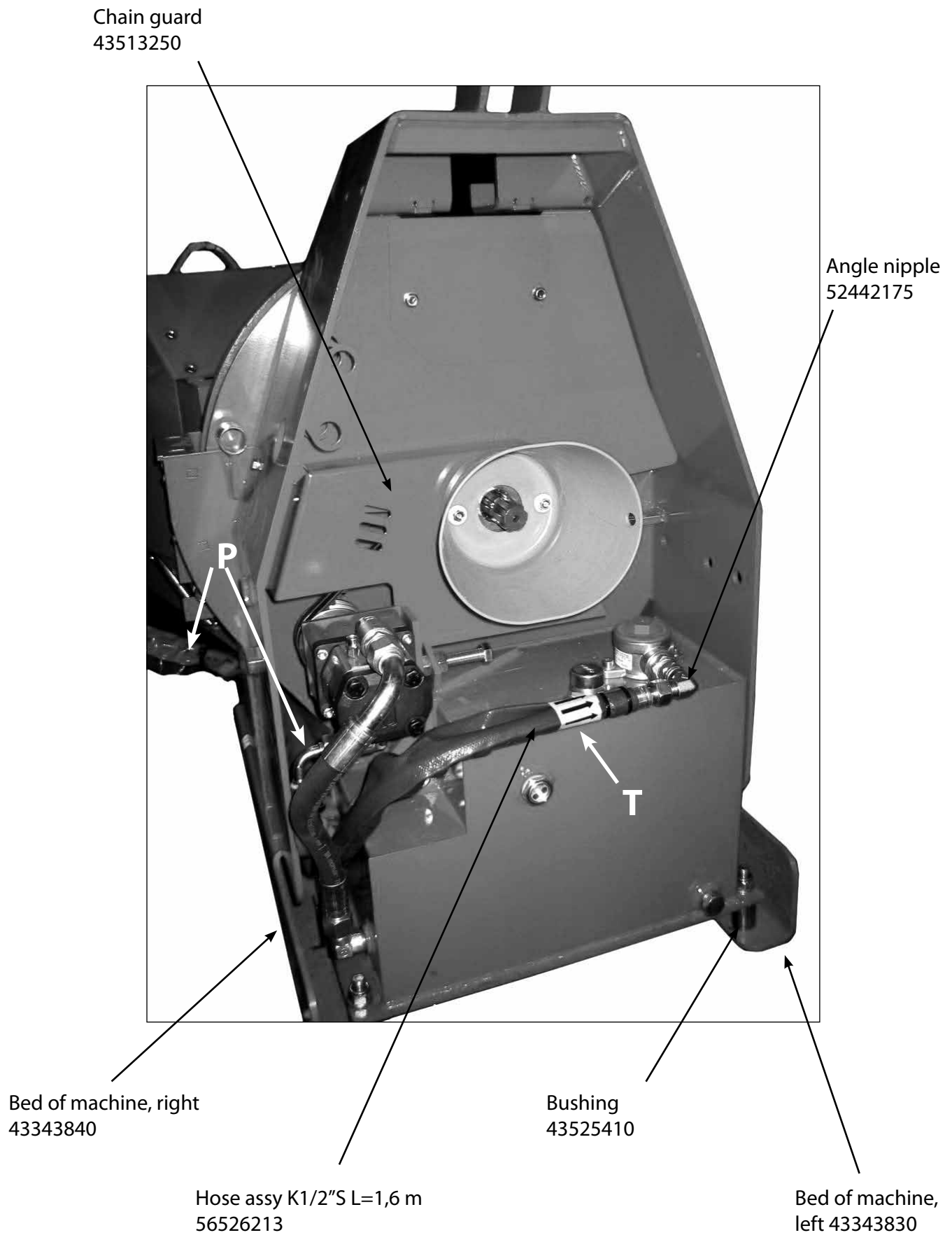


Figure 7. Tightening screws

# HD11

## MOUNTING CH180





# HD11

## MAINTENANCE

The points of the HD11 to be serviced are shown in fig. 10 and service procedures in table below.

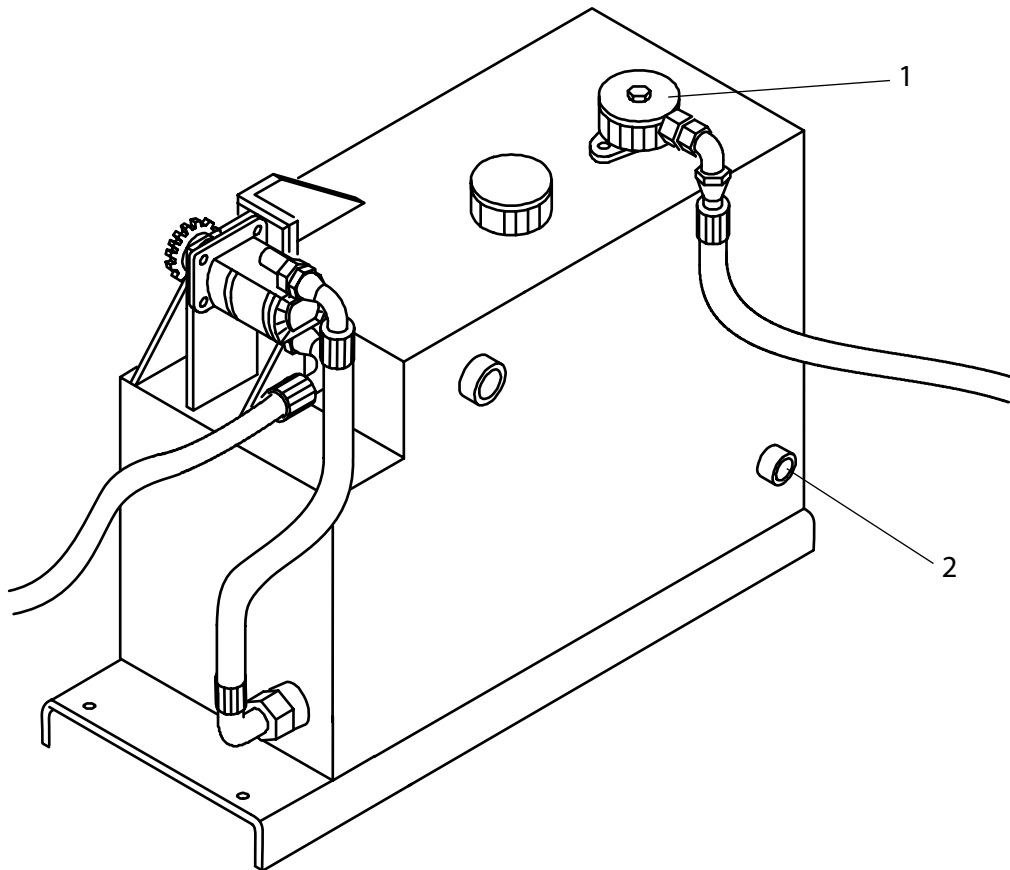


Fig. 10. Points to be serviced and checked

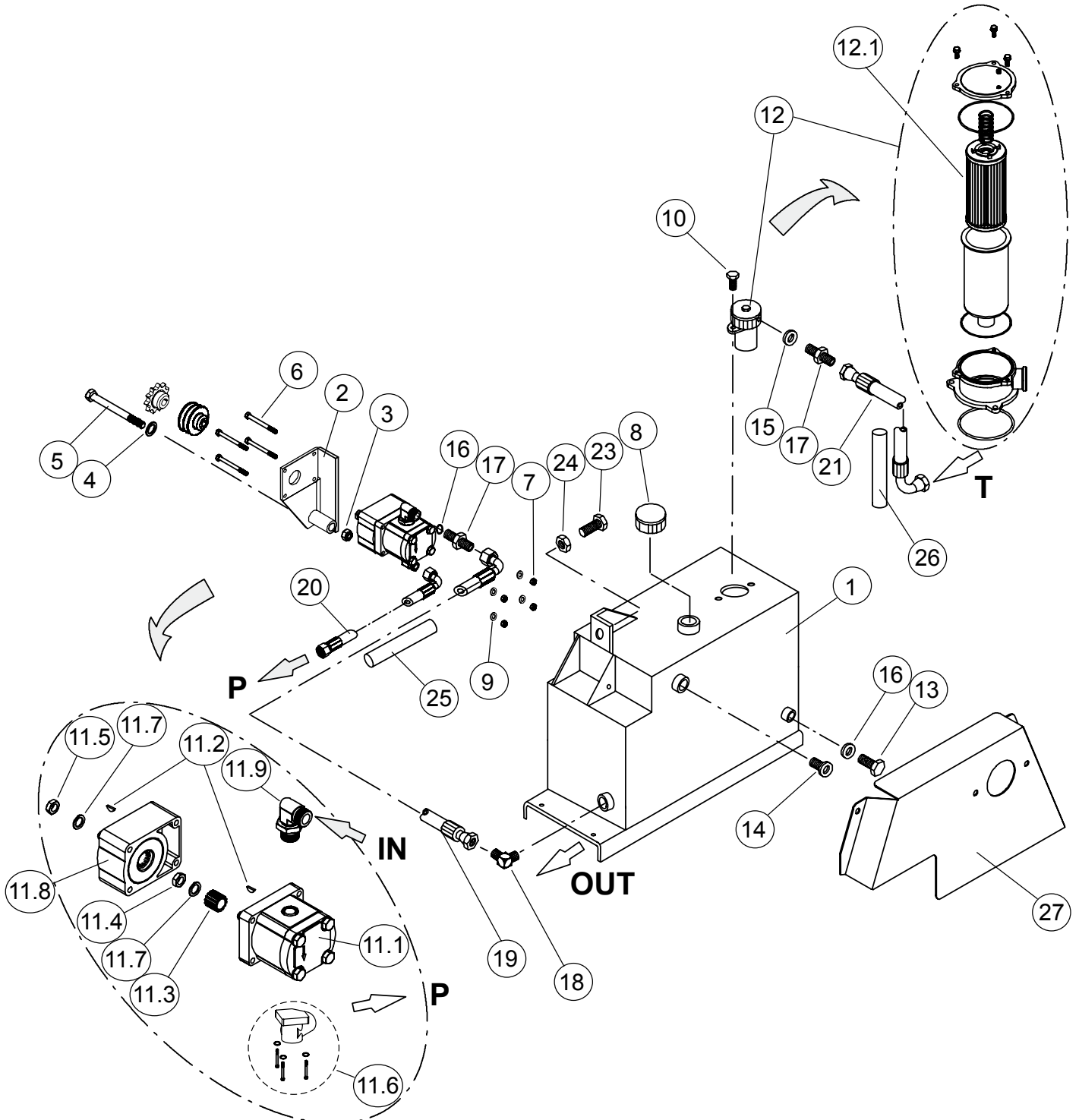
POSITION	ACTION		NOTE
	Maintenance interval, working hours		
	first 40 h	400 h or every year	
1. Return filter	Change the filter cartridge.	Change the filter cartridge.	Cartridge order no. 56027460
2. Oil drain plug	Clean the magnet.	Clean the magnet.	
Oil change	Change oil.	Change oil.	Oil viscosity 10W30 or hydraulic oil 46S, 23 l
Hose couplings	Check and tighten when necessary.		every day

- Always check the oil level before using the device. The oil level should be at the level of the control glass.
- After the first few hours of use check for possible leaks and tighten the joints, if necessary.
- Lubricate the chain every four operating hours.

[illegible]



[illegible]



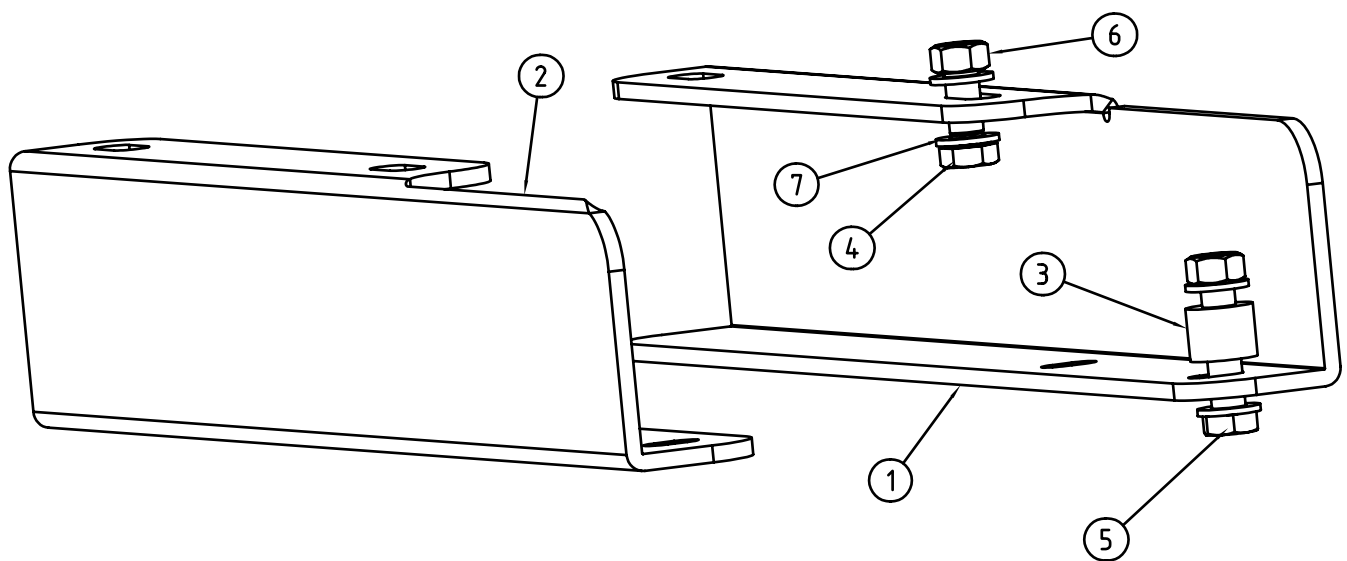
# HD11

## HD11 MACHINERY 03343630

Part	Order no	Description	Remarks	Qty
1	23342603	Tank		1
2	33342676	Pump fastener		1
3	52117207	Lock nut	M20 DIN985 8ZN	1
4	52200086	Washer	M20 DIN126 58ZN	1
5	52062270	Screw	M20X120 DIN931 88ZN	1
6	52060811	Screw	M8x90 DIN931 88ZN	4
7	52117082	Lock nut	M8 DIN985 8ZN	4
8	52443330	Filler filter		1
9	52200037	Washer	M8 DIN126 58ZN	4
10	52060159	Screw	M8X50 DIN933 88ZN	2
11	56025324	Hydraulic pump, complet		1
11.1	58231200	Hydraulic pump		1
11.2	58231120	Key		2
11.3	58231130	Bushing		1
11.4	58231140	Axle nut		1
11.5	58231170	Nut		1
11.6	58231190	Pressurized flange		1
11.7	52211059	Spring washer	M12 DIN127 ZN	2
11.8	58231150	Bearing		1
11.9	58231180	Intake flange		1
12	56027457	Return oil filter		1
12.1	56027460	Filter cartridge		1
13	52080819	Plug	R1/2 DIN910 5.8 ZN	1
14	52460037	Oil control glass		1
15	52390580	Usit-ring	U27,2X36,0X2,0	1
16	52390200	Usit-ring	U21,5X28,7X2,5	2
17	52432044	Double nipple	R1/2-3/4	2
18	52442241	Angle nipple	RK3/4-R3/4 UK 90AST	1
19	56534027	Hose assy	K3/4"S L=0,35 m	1
20	56526288	Hose assy	K1/2"S L=2,3 m	1
21	56526320	Hose assy	K1/2"S L2,7 m	1
22	-	-	-	-
23	52062916	Screw	M16x100 DIN 933	1
24	52110079	Nut	M16 DIN934 8ZN	2
25	54921473	Water drainage pipe	2,2 m	1
26	54921473	Water drainage pipe	2,6 m	1
27	43513250	Chain guard	CH160	1

# HD11

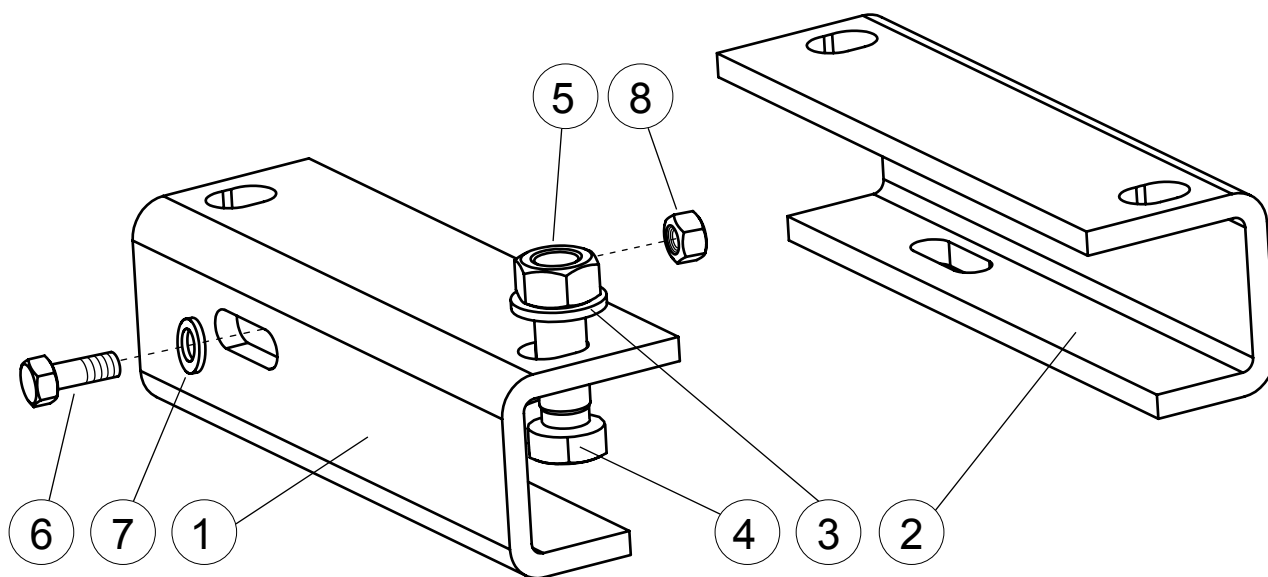
## HD11 ADJUSTING PARTS CH180



Part	Order no	Description	Remarks	Qty
1	43343840	Bed of machine		1
2	43343830	Bed of machine		1
3	43525410	Bushing		4
4	52062114	Screw	M16X40 DIN933 88ZN	4
5	52062650	Screw	M16X80 DIN931 88ZN	4
6	52117165	Lock nut	M16 DIN985 8ZN	8
7	52214285	Lock washer	M16 NORD-LOCK	16

# HD11

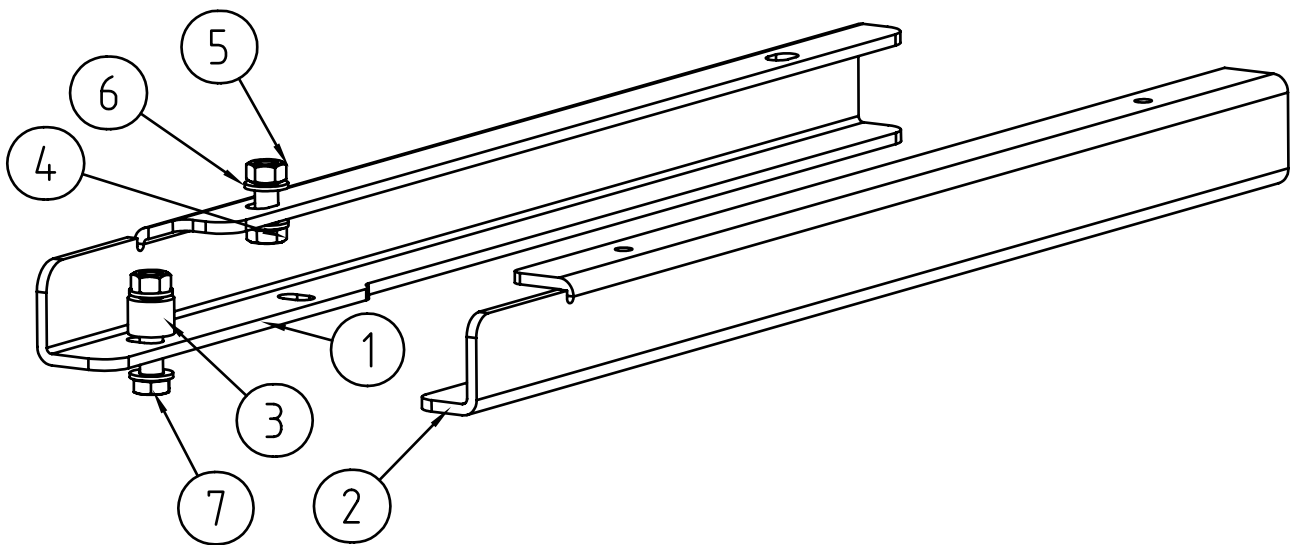
## HD11 ADJUSTING PARTS CH260 03299690



Part	Order no	Description	Remarks	Qty
1	43345660	Fastener, right		1
2	43345670	Fastener, left		1
3	52214285	Lock washer	M16 NORD-LOCK	6
4	52062114	Screw	M16X40 DIN933 88ZN	6
5	52117165	Lock nut	M16 DIN985 8ZN	6
6	52091839	Screw	M12x30 DIN933 10.9ZN	2
7	52214269	Lock washer	M12 NORD-LOCK	2
8	52117124	Lock nut	M12 DIN985 8ZN	2

# HD11

## HD11 ADJUSTING PARTS CH260 OEM 03343680

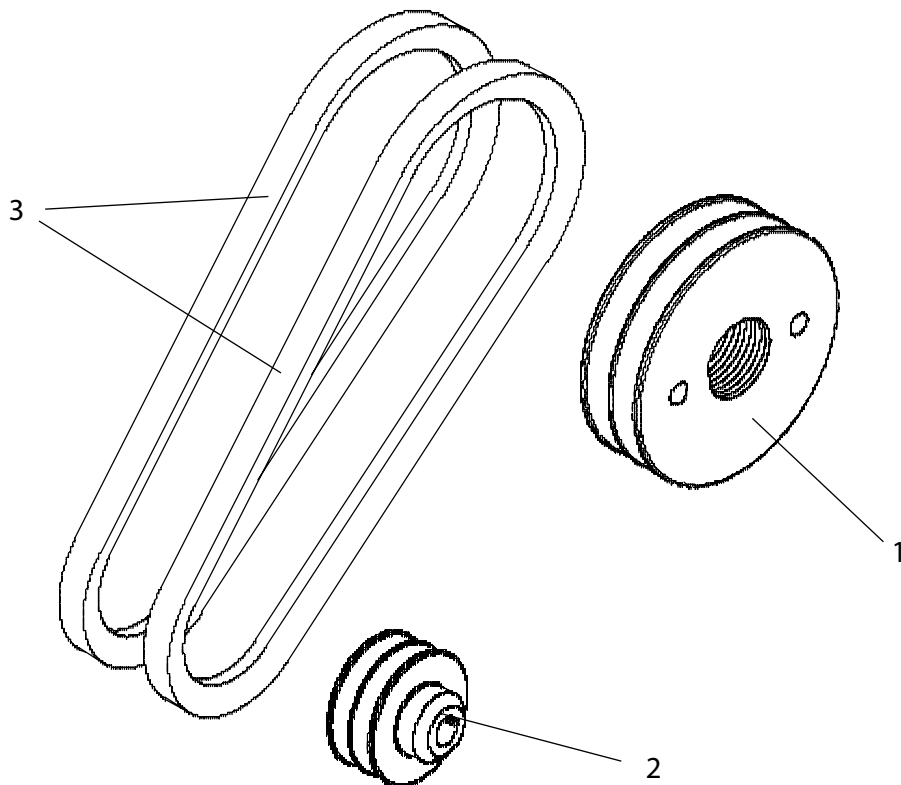


Part	Order no	Description	Remarks	Qty
1	43343670	Bar, left		1
2	43343660	Bar, right		1
3	43299950	Bushing		4
4	52062114	Screw	M16X40 DIN933 88ZN	4
5	52117165	Lock nut	M16 DIN985 8ZN	8
6	52214285	Lock washer	M16 NORD-LOCK	16
7	52062148	Screw	M16X70 DIN931 88ZN	4

# HD11

## CH180 BELT TRANSMISSION 03514980

Part	Order no	Description	Remarks	Qty
1	43514950	Belt pulley	D131	1
2	43514960	Belt pulley	D90	1
3	54822760	Belt		2
	52060621	Screw	M8X20 DIN933 88	2
	52117082	Lock nut	M8 DIN985 8ZN	2
	52200037	Washer	M8 DIN126 58ZN	2
	43513250	Chain guard		1



## CH260 BELT TRANSMISSION 03489880 CHIP LENGTH 13-18 MM

Part	Order no	Description	Remarks	Qty
1	43489890	Belt pulley	D245	1
2	43514960	Belt pulley	D90	1
3	54822780	Belt		2

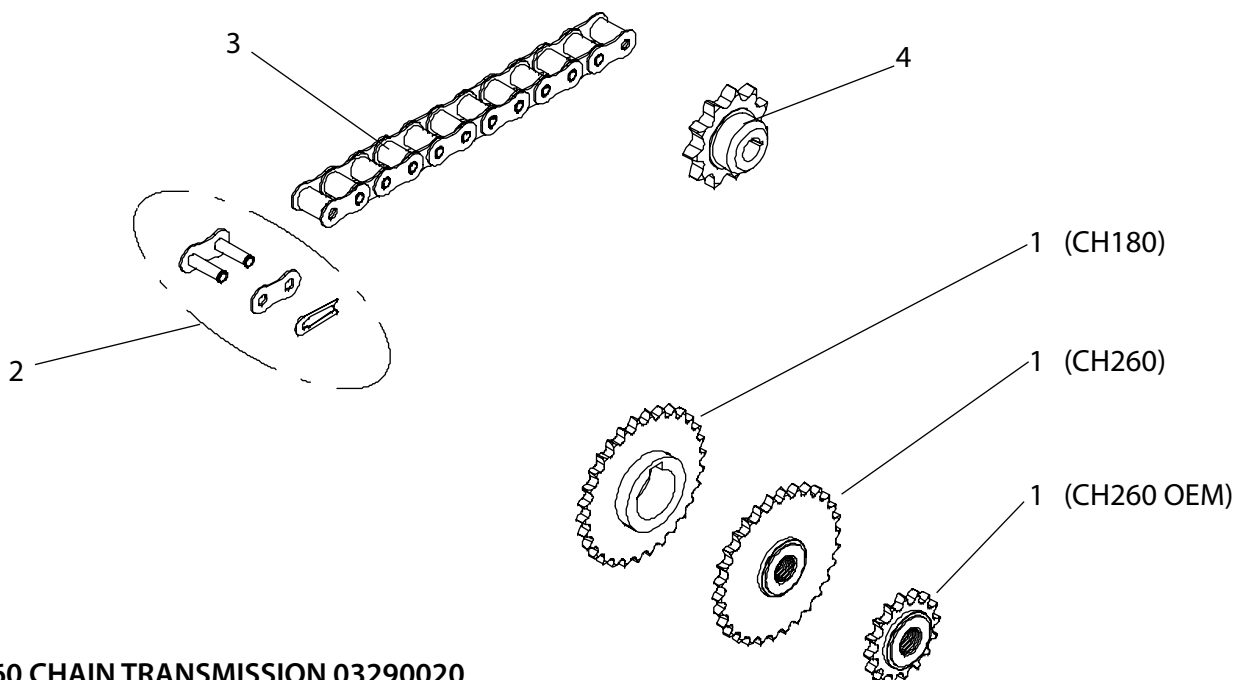
## CH260 BELT TRANSMISSION 03489870 CHIP LENGTH <13 MM

Part	Order no	Description	Remarks	Qty
1	43489940	Belt pulley	D190	1
2	43514960	Belt pulley	D90	1
3	54822960	Belt		2

# HD11

## CH180 CHAIN TRANSMISSION 03512470

Part	Order no	Description	Remarks	Qty
1	43512460	Sprocket		1
2	54820770	Chain link		1
3	54828223	Roller chain	49 links	1
4	43343630	Sprocket	z=11	1
	52200037	Washer	M8 DIN126 58ZN	2
	52060621	Screw	M8X20 DIN933 88	2
	52117082	Lock nut	M8 DIN985 8ZN	2
	43513250	Chain guard		1



## CH260 CHAIN TRANSMISSION 03290020

Part	Order no	Description	Remarks	Qty
1	43290010	Sprocket	z=30 M50x3	1
2	54820770	Chain link		1
3	54828223	Roller chain	49 links	1
4	43343630	Sprocket	z=11	1

## CH260 OEM CHAIN TRANSMISSION 03512500

Part	Order no	Description	Remarks	Qty
1	43298130	Sprocket	z=30, D60	1
2	54820770	Chain link		1
3	54828181	Roller chain	57 links	1
4	43343630	Sprocket	z=11	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

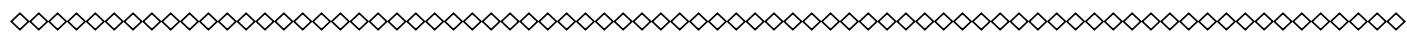
The warranty does not cover wearing parts.

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\_\_\_\_

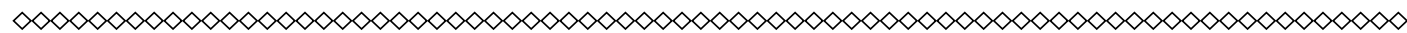
Dealer:

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:





Farmi Forest Corporation  
Ahmolantie 6  
FIN-74510 Iisalmi, Finland  
Puh. +358 (0)17 83 241  
Fax. +358 (0)17 8324 372  
[www.farmiforest.fi](http://www.farmiforest.fi)