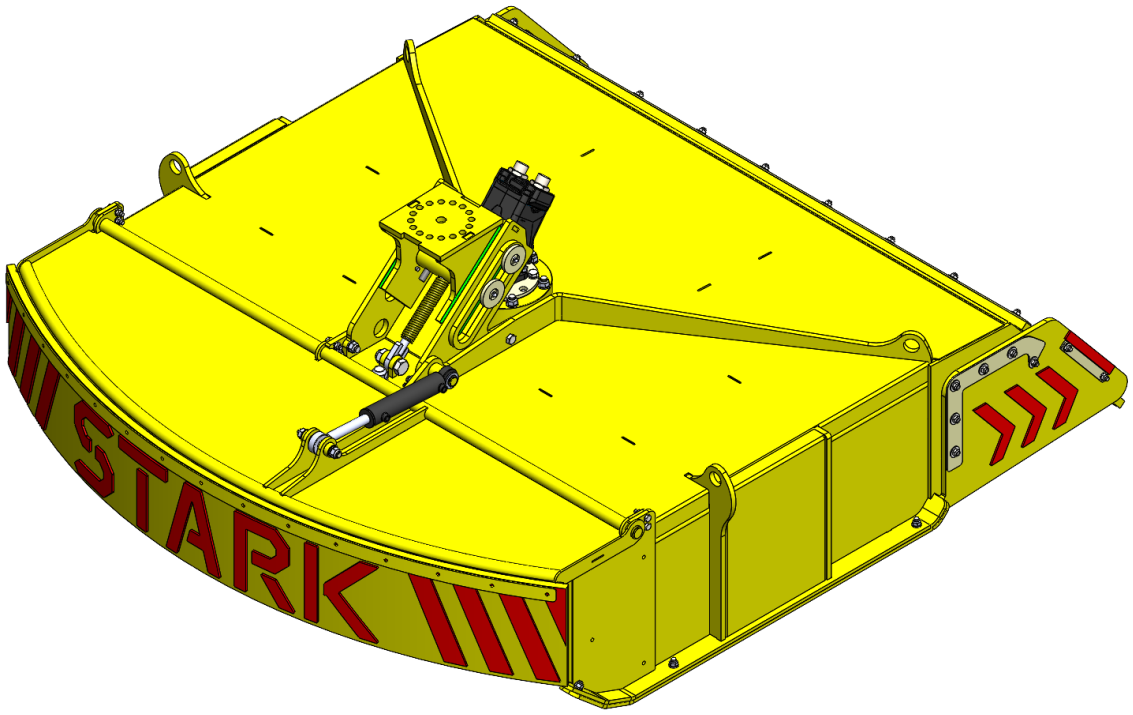
Original

Operating and maintenance manual

CC Chain Crusher



Lametal Oy • Kaskenviertäjäntie 2, 73100 LAPINLAHTI, FINLAND
• info@stark.fi • parts@stark.fi • www.stark.fi

General

Congratulations on the purchase of your STARK CHAIN CRUSHER!

For us, the long lifecycle and efficiency of your new equipment is a priority. To keep the sweeper in top working condition, read this manual carefully before using the equipment.
STARK products are engineered and manufactured in Finland, and each of them is equipped according to the needs of the customer.
Never let anyone operate or maintain the device without reading this manual carefully! Always make sure that safety precautions are observed in use and maintenance. Keep this manual for future reference and make sure to hand it over to a new owner.
The cornerstones of the product development of STARK attachments are quality, durability and economy. The products are engineered to be high-performing, safe and durable in professional use. Any feedback on our products is welcome and contributes to the further development of our products. If you have any questions about the use or maintenance of the broom, please contact us by e-mail: info@stark.fi
Visit our webpage www.stark.fi for the complete product range, including new products.
The manufacturer reserves the right for structural and technical changes without prior notice. Therefore, some pieces of information given in the manual may have changed after printing this manual.

Read before use



Familiarize yourself thoroughly with the device before commissioning.
The device may only be operated by a person trained in its use.
The machine operators must be carefully trained in the operation and maintenance of the machine. An untrained person can cause serious dangers to themselves, the environment, and the attachment.

Before connecting the hydraulics to the attachment, ensure that:

- no one is between the device and the base machine
- the base machine is turned off and the parking brake is engaged

When connecting the attachment to the base machine, ensure that:

- locking pins and linchpins are in good condition
- hydraulic hoses are intact
- hydraulic oil does not come into contact with skin when connecting hydraulic hoses
- you do not pull the hydraulic hoses by the hose section

During operation, take into account:

- a safe speed appropriate for the situation
- other traffic, persons, and animals
- danger zones and obstructions to visibility
- that the device is not operated if anyone is in the danger zone
- watch out for children
- use a flashing beacon and sufficient warning markings
- do not go under the device

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1. DECLARATION OF CONFORMITY

The original manufacturer's EC declaration of conformity
Generic product name: Chain crusher
Models: STARK CC 1800, CC 2200

Manufacturer:
Lametal Oy
Kaskenviertäjäntie 2, 73100 LAPINLAHTI
FINLAND
tel. +358 400 480 401

Declares that the above-mentioned equipment meets the provisions of Directive 2006/42/EC on machinery and, where applicable, comply with the standards

- SFS-EN ISO 12100-1,
- SFS-EN ISO 12100-2
- SFS-EN 1050

The person authorized to compile technical documentation:



Lassi Mehtonen
Head of board
Kaskenviertäjäntie 2
73100 Lapinlahti, FINLAND

2. PURPOSE OF USE

Chain mulchters are intended for roadside mowing and clearing work. The chain mulcher is connected to a boom.

3. SAFETY INSTRUCTIONS



Familiarize yourself thoroughly with the device before commissioning. The device may only be operated by a person trained in its use.

Before connecting the hydraulics to the attachment, ensure that:

- no one is between the device and the base machine
- the base machine is turned off and the parking brake is engaged

When connecting the attachment to the base machine, ensure that:

- locking pins and linchpins are in good condition
- hydraulic hoses are intact
- hydraulic oil does not come into contact with skin when connecting hydraulic hoses
- you do not pull the hydraulic hoses by the hose section

During operation, take into account:

- a safe speed appropriate for the situation
- other traffic, persons, and animals
- danger zones and obstructions to visibility
- that the device is not operated if anyone is in the danger zone
- watch out for children
- use a flashing beacon and sufficient warning markings
- do not go under the device



BEWARE of rotating rollers!



BEWARE of pressurized hydraulic hoses and components!

When servicing the device, the hydraulics of the base machine must absolutely be disconnected, the base machine turned off, and the parking brake engaged. The device must be lowered onto supports if maintenance requires going under the device. Never go under the device unless it is supported.
Daily maintenance:

- check the general condition of the structures, repair faults if necessary
- check the condition of hydraulic hoses and connectors, replace broken ones with new ones

Every 50 operating hours:

- lubricate the grease points (locations are mentioned in the product-specific section)
- check the tightness of bolts and nuts

Check the tightness of bolts, nuts, and hydraulic connectors **after the first day** of operation!
If the device is going to be out of use for a longer period, clean the device well after the last use and perform lubrication.

4. IDENTIFICATION AND SPARE PARTS

4.1. Identification plate

The identification plate is mounted on the side of the device. In addition to the manufacturer's contact details, the plate marks the machine type, year of manufacture, serial number, and weight.
The first four digits of the serial number indicate the month and year of manufacture (with the month of manufacture first: MMYY). The last five digits of the serial number are the machine's actual serial number, which is visible in the manufacturer's systems (13971 in the example below). Below is a sample image of the identification plate.



Picture 1. Identification plate

Record the product type and serial number on the lines below:

Product _____Sno _____

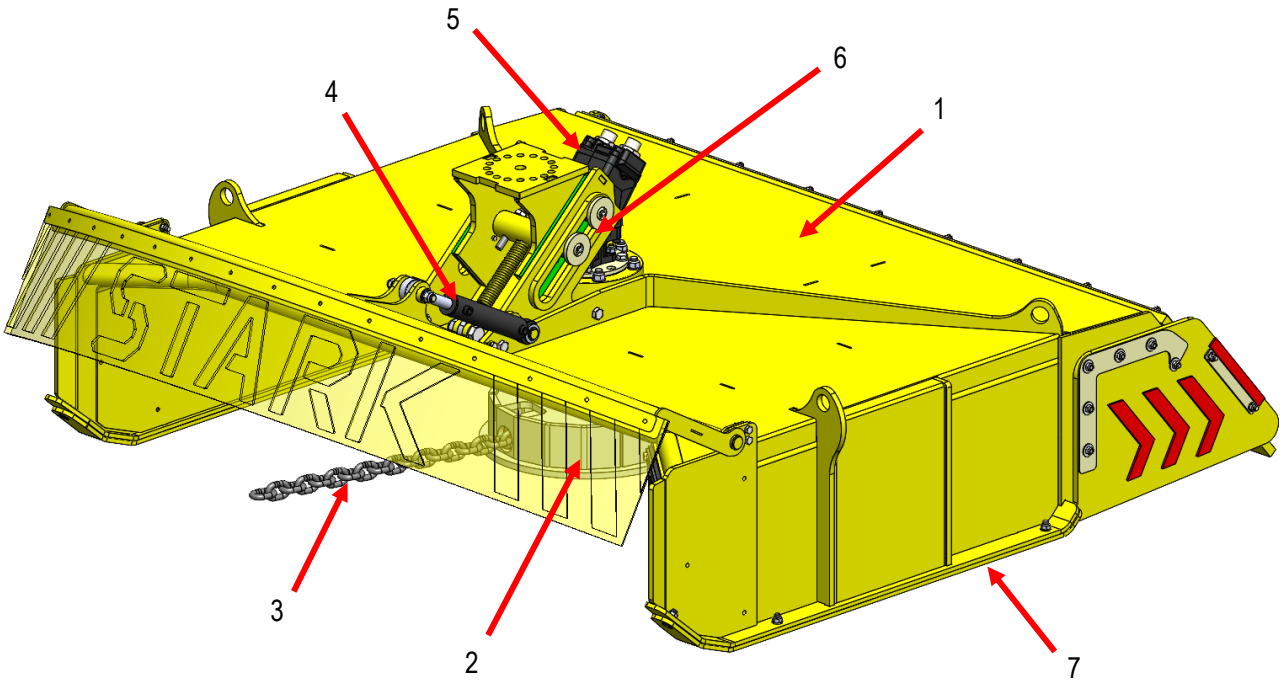
4.2. Maintenance services

Only original spare parts must be used for repairing the product. By using original spare parts, you ensure the trouble-free operation of the chain crusher and the validity of the warranty. When inquiring about or ordering spare parts, please state the chain crusher type and serial number from the rating plate presented above to expedite the service.
STARK maintenance and spare parts service, as well as your dealer, will answer your questions regarding maintenance or spare parts.

Contact your dealer or

STARK Maintenance service:
tel. +358 400 480 401, email info@stark.fi
STARK Spare parts service:
tel. +358 400 480 401, email parts@stark.fi

5. MAIN COMPONENTS OF THE CHAIN CRUSHER



Picture 2. General view of the chain crusher

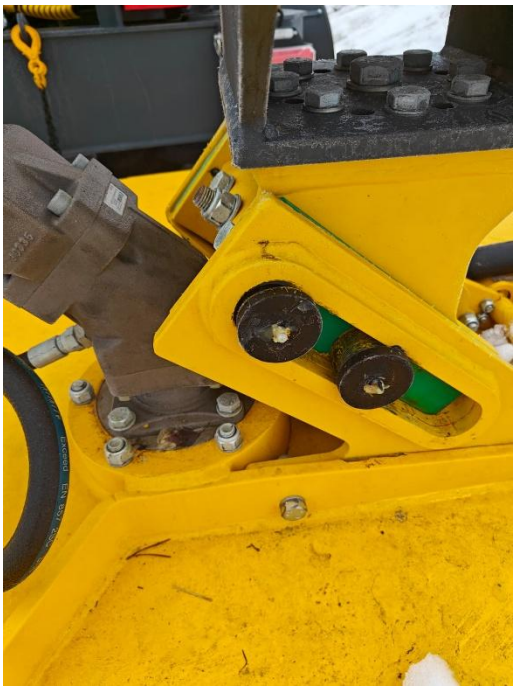
1) Chain crusher frame
2) Chain housing
3) Mulching chain
4) Hatch opening cylinder
5) Motor
6) Safety device
7) Bolt-on wear runners

6. COMMISSIONING

Commissioning ensures that the base machine and the attachment are compatible. Always perform commissioning when the base machine changes.

6.1. Attaching the chain crusher to the boom system

1. The safety device of the chain mulcher is bolted onto the boom bracket (Picture 3). The chain mulcher is attached using M24 and M16 bolts.



Picture 3. Attaching the boom to the safety device

2. The safety device must always be located between the chain crusher and the boom. The load capacity of the boom system must be sufficient to withstand the weight of the chain crusher. The chain crusher CC 1800 weighs 650 kg and the CC 2200 weighs 750 kg.
3. The base machine must be equipped with adequate guards against flying stones and other thrown materials.
4. The chain mulcher features a free-circulation valve and a drain line / free return line (Picture 4). The chain mulcher must not be operated at all without these components.



Picture 4. Free-circulation valve and drain line

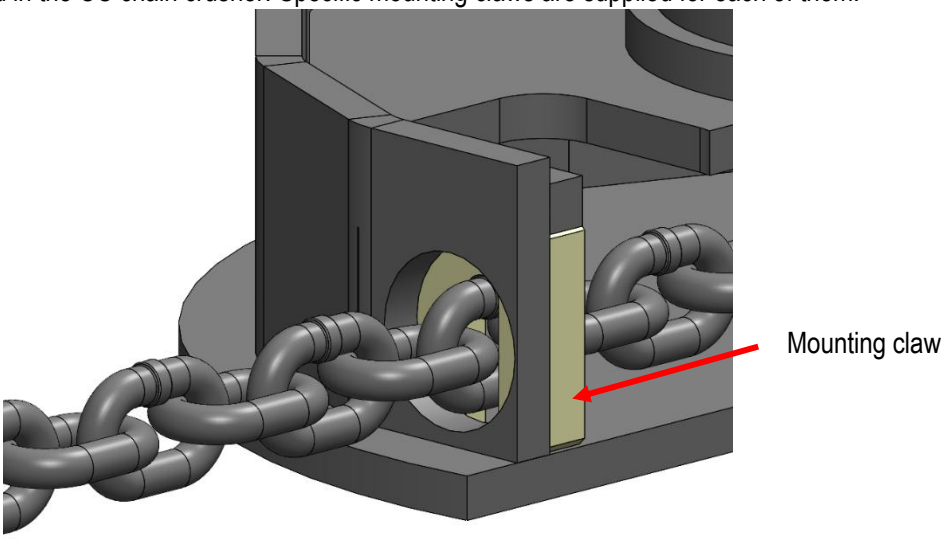
5. The hydraulic hatch requires at least a 3/8” double-acting hydraulic system. The chain mulcher can also be operated without hydraulic hatch opening, in which case the hatch is locked in place.
6. The chain is driven by a hydraulic motor. The CC 1800 motor requires a minimum oil flow of 100 l/min and the CC 2200 requires 120 l/min. If the oil flow is lower, the chain of the chain mulcher rotates slower.
7. The hydraulic oil used in the chain mulcher must be of ISO HV 46 quality.
8. Oil cleanliness must comply with ISO 17/13 or better. A 10 µm filter is recommended.

7. OPERATION OF THE CHAIN MULCHER

1. Check that there are no people or objects nearby that could be hit by flying stones.
2. The chain crusher can throw stones and other materials over a long distance. **Danger zone: 50 m.**
3. The chain crusher must not be pressed against the ground; instead, it should be suspended slightly above the ground surface.
4. Lower the chain mulcher close to the working area and accelerate the mulcher chain smoothly to its maximum rotation speed. **Maximum chain speed: 1400 RPM.**
5. The chain must not be rotated at high speed in the air, but only close to the ground. If the chain breaks, it may fly a long distance if it is rotating freely in the air.
6. Check that the chain rotates clockwise when viewed from above.
7. Use only original chains or ensure that the chain you use is suitable for mulching work.
8. Keep the driving speed moderate so that you can observe other traffic in addition to the working area.
9. The driving speed is determined by the amount of material to be mulched and the condition of the road embankment.
10. The bolts, nuts, and connectors of a new attachment may loosen during the first operating hours. Perform a RETIGHTENING for them after the first working day.

7.1 Replacing the chain

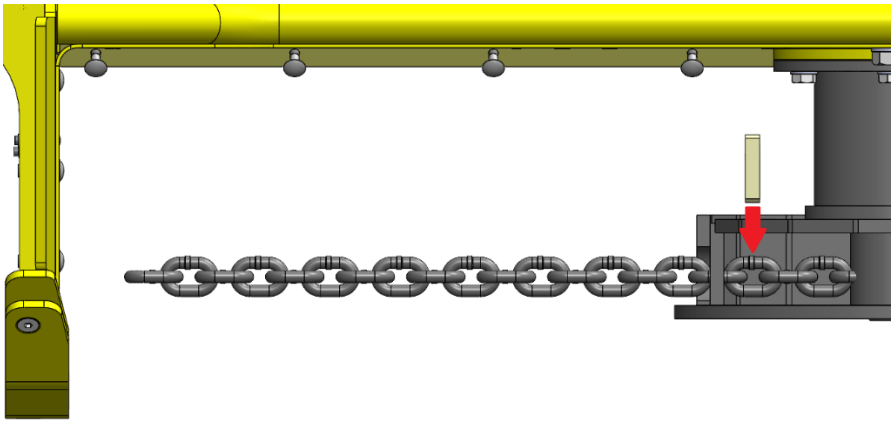
1. The chain is attached to the chain pocket by means of a mounting claw (Picture 5). A 10, 13, or 16 mm chain can be used in the CC chain crusher. Specific mounting claws are supplied for each of them.



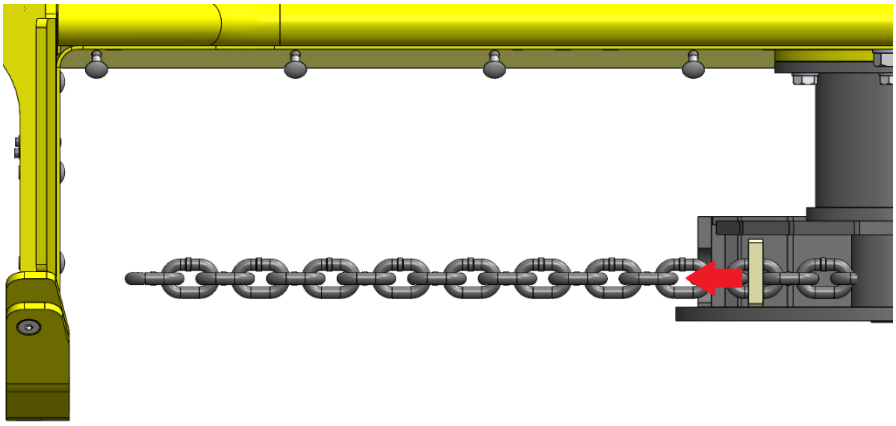
Picture 5. Chain mounting claw

2. Push the chain inward while simultaneously assisting the mounting claw out of the slot in the chain housing.
3. Pull the chain out of the housing or replace it with a new chain, then place the chain at the appropriate position into the slot of the mounting claw (Picture 6).
4. Carefully place the mounting claw back into its slot in the chain pocket and pull the chain firmly outward (Picture 7).
5. Ensure that the chain is locked in place and that the chain length is correct (Picture 8).

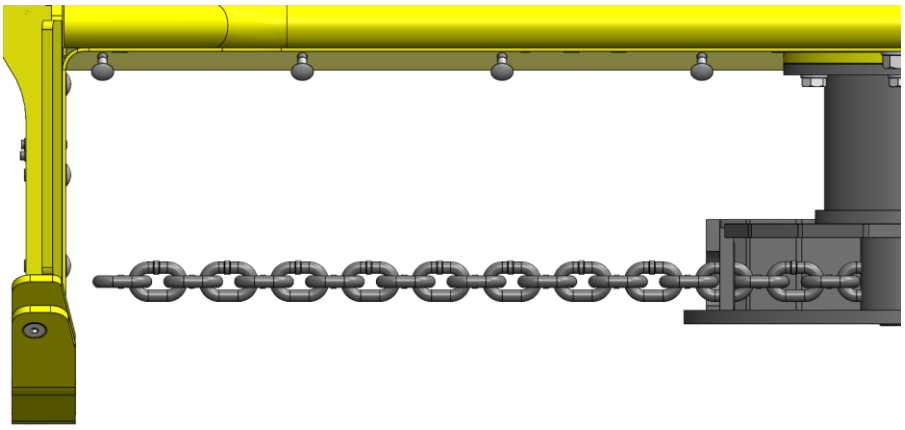
6. The chain stretches during use; if the end of the chain starts to hit the mulcher frame, it must be shortened or replaced with a new one.



Picture 6. Placing the mounting claw onto the chain



Kuva 7. Place the claw back into its slot and pull the chain firmly



Kuva 8. Chain locked at the correct length

8. MAINTENANCE OF THE CHAIN CRUSHER

8.1. General safety instructions for operating and maintenance of the device

- Comply with applicable laws and regulations, as well as the instructions specified in this manual.
- Never go under an unsecured device.
- Always engage the parking brake of the base machine before performing any operations on the device.
- Only use tools that are in good condition.
- Beware of pressurized hydraulic hoses and components.
- Ensure that the hydraulic system is depressurized. Take the pressure accumulator into account.
- Do not release hydraulic fluids or greases into the ground.
- Use the necessary personal protective equipment.

8.2. Tightening torques

	Nm (Strenght class 8.8)
M4	3,3
M5	6,5
M6	11,3
M8	27,3
M10	54
M12	93
M14	148
M16	230
M18	329
M20	464
M22	634
M24	798
M27	1176
M30	1597
M33	2161
M36	2778
M39	3597

Table 1. Tightening torques

8.3. Daily maintenance

A daily visual inspection is important to detect potential faults early and prevent further damage. Inspect the following items on the device daily:

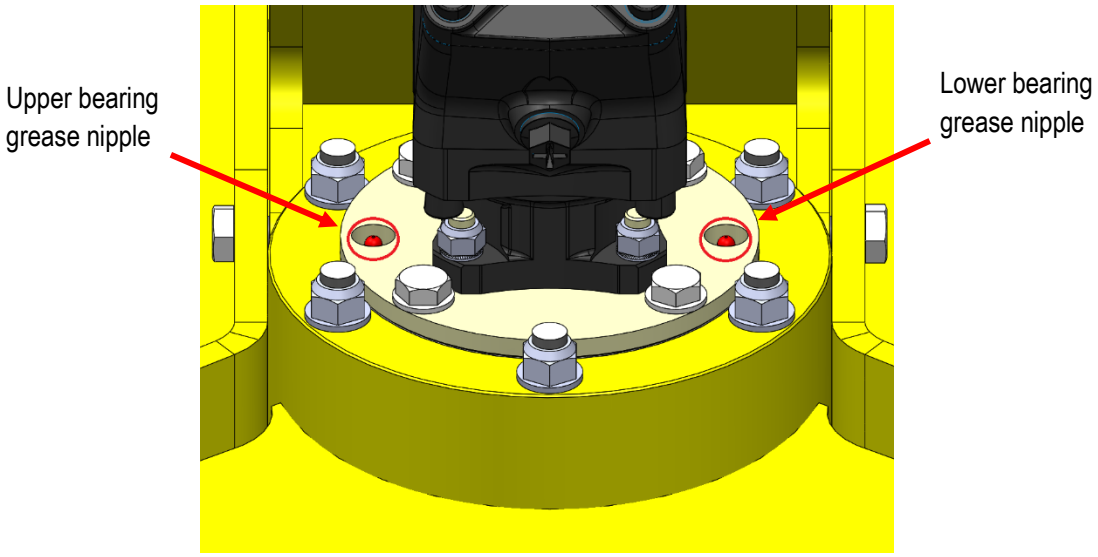
- Potential leaks in hydraulic hoses and components
- General mechanical condition

8.4. Maintenance after the first 10 hours

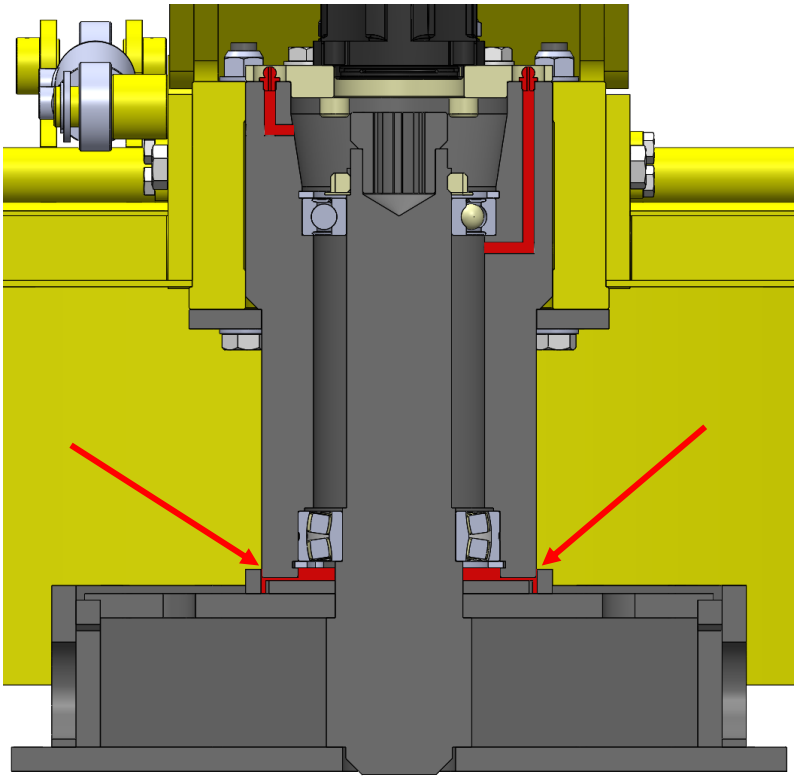
- Perform lubrication; the recommended grease grade is NLGI-2 classified grease or equivalent (see instructions below)
- Check the tightness of bolts and nuts (Table 1)

8.5. Bearing lubrication

The chain pocket rotates at a high speed. Lubricate the upper bearing every 8 hours by applying four pumps / lubrication session. The nipples are shown in Picture 9. Add grease to the lower bearing every 8 hours until you see the old grease coming out from the base of the chain pocket (Picture 10).



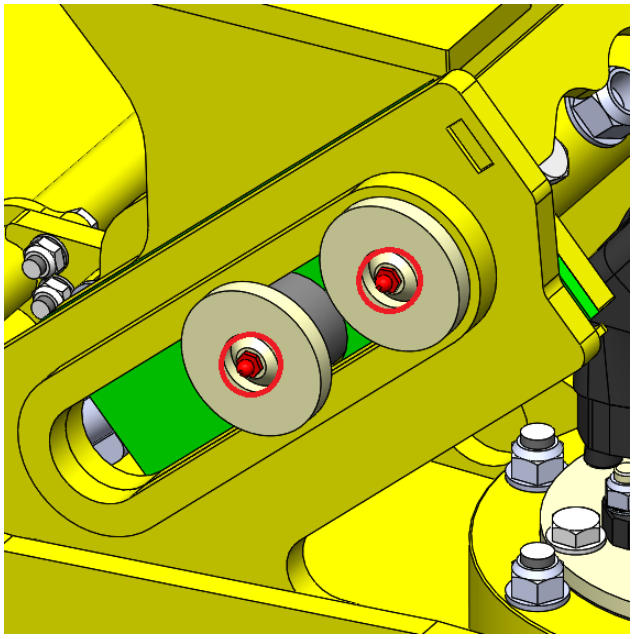
Picture 9. Bearing grease nipples



Picture 10. Bearing lubrication

8.6. Maintenance every 50 hours or weekly

- Perform lubrication; the recommended grease grade is NLGI-2 classified grease or equivalent. The location of the lubrication points is shown in Picture 11. There is a total of four grease nipples on the safety device slide – two on each side.
- Check the mechanical condition of the device for twists or cracks.
- Check the tightness of the mounting bolts (Table 1).



Picture 11 Grease nipples on the safety device slide

9. HYDRAULICS

The CC chain crusher is recommended to be connected to a 5-hose hydraulic system (Diagram 1). When connecting to a 3-hose hydraulic system, the operation of the hydraulically operated hatch is omitted. The chain crusher should not be used without motor drain line connected to the tank. Drain line shown as "T " in Diagram 1. The chain crusher is connected to the base machine's hydraulics using quick couplers. When connecting to the STARK RMB 8200 road maintenance boom, the hatch cylinder is connected to the hydraulic block of the road maintenance boom.

SH = Cylinderhydraulics MH = Motorhydraulics

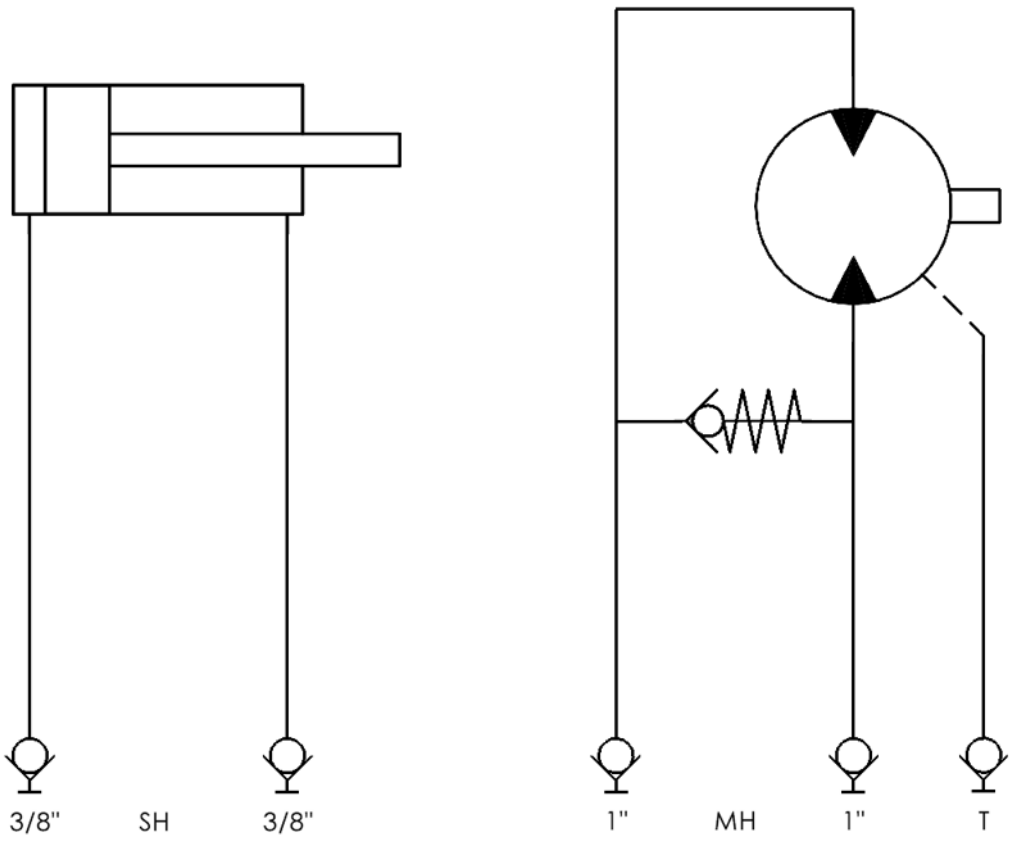


Diagram 1. 5-hose hydraulic system

10. WARRANTY POLICY

1. **Warranty coverage**
   Lametal Oy, the manufacturer of STARK attachments, offers new devices a guarantee which covers material and manufacturing defects in accordance with the terms in this warranty policy. Limitations to the warranty are specified in point 7.
2. **Warranty starting date**
   The warranty starts on the agreed date of product delivery to the client, or on the date of approved instalment or on the date the equipment has been taken into operation. The equipment is taken into operation when it has been delivered to the client in accordance with the agreement and the client has acknowledged receipt of the equipment. The client is to check the equipment before use as instructed in this manual and to notify the manufacturer or the reseller of the equipment of any defects or flaws that are noticed during initial inspection. This notification is to be done in writing within eight (8) days after delivery. Hidden defects and defects that are otherwise difficult to detect must be reported immediately after detecting them, within one (1) year after receipt of the equipment at the latest.
3. **Warranty period**
   STARK warranty covers a period of one (1) year. If need be, the client and the manufacturer make separate agreements on warranty concerning repairs and spare parts used in repairs.
4. **Repairs during the warranty period**
   Repairs during the warranty period are carried out free of charge within the normal working hours by the manufacturer repair and maintenance services or by a repair service provider accredited by the manufacturer. If repairs are carried out by a repair service provider which has not been accredited by the manufacturer, the manufacturer does not compensate for costs that are not covered by the warranty, such as travel and waiting hours, daily allowances, travel expenses or costs arising from detaching and reinstalling the equipment. The manufacturer does not compensate for indirect costs caused by repairs during the warranty period, such as lost working hours. Original parts replaced during the warranty period shall remain with the manufacturer. The client must keep the damaged parts for six (6) months unless otherwise agreed and have them delivered to the manufacturer without delay upon request.
5. **Conditions for repair under warranty**
   Manufacturer's instructions for operation, instalment and maintenance have been followed.
   The equipment was damaged when operated in conditions for which it has been engineered.
   In maintenance and repairs, only original, manufacturer parts have been used.
   The form for the notification of defects provided by the manufacturer or the retailer has been filled in according to the instructions and submitted for processing.
6. **Warranty after repair**
   Warranty holds until the end of the original warranty period. Repair under warranty does not prolong the warranty period.
7. **Limitation to the warranty**
   The warranty does not cover:
   - consequential expenses resulting from the damaged equipment
   - indirect costs, such as loss of working hours
   - damages caused to a third party
   - equipment or components that have been modified or repaired by the client themselves
   - damages caused by normal wear and tear, inappropriate maintenance operations, neglect, accident, connecting error, equipment overloading, user's inexperience or use of other than original parts

   The warranty offered by the manufacturer does not exceed the purchase price of the equipment.
8. **Warranty claim procedure**
   For a warranty claim to be processed, the form for the notification of defects provided by the manufacturer or the retailer must be filled in according to the instructions and submitted for processor. The warranty claim procedure is carried out either in Finnish or English.