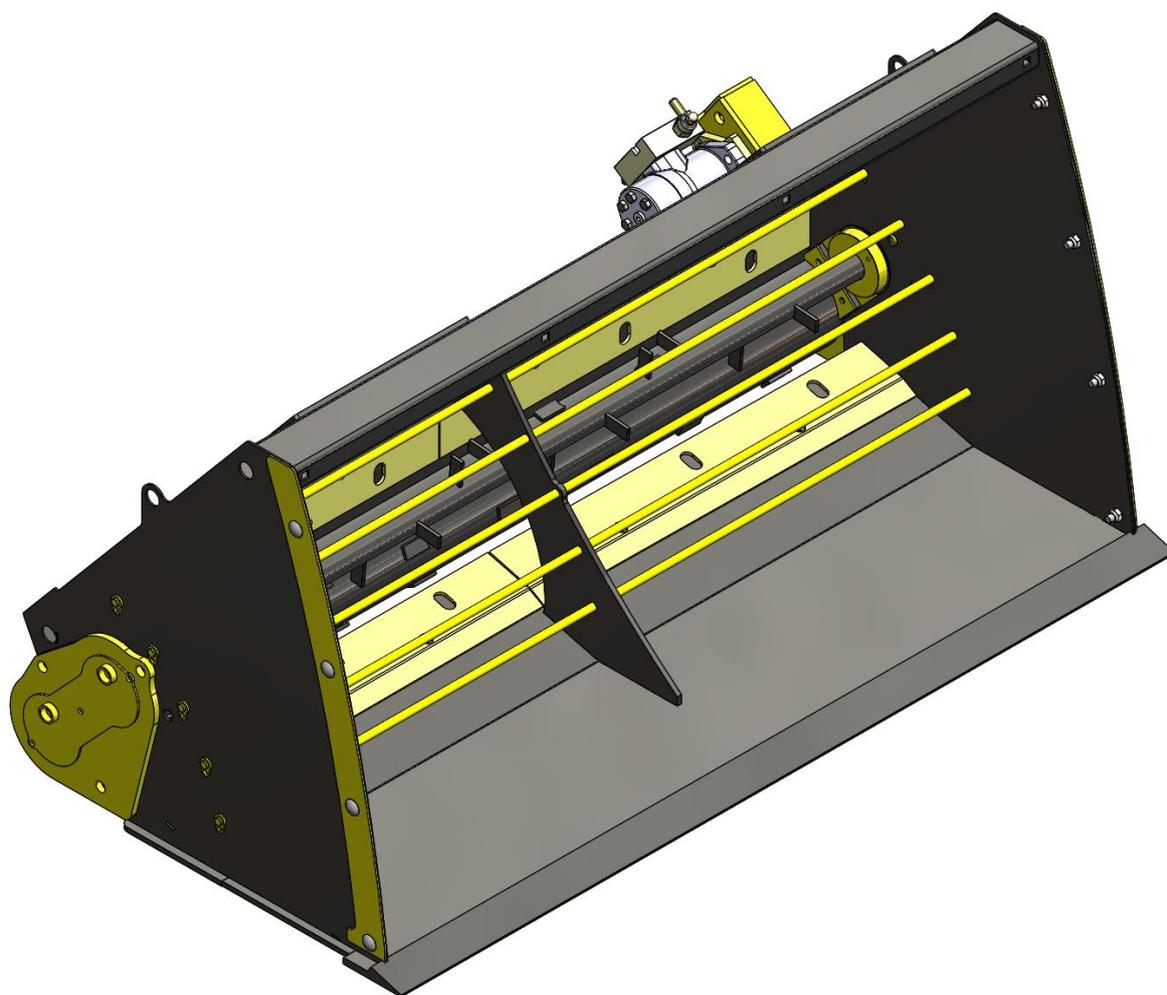




Original

Operating and maintenance manual

Bucket spreader



Lametal Oy • Kaskenviertäjantie 2, 73100 LAPINLAHTI, FINLAND

• info@stark.fi • parts@stark.fi • www.stark.fi

General

Congratulations on the purchase of your STARK Bucket spreader!

For us, the long lifecycle and efficiency of your new equipment is a priority. To keep the bucket spreader 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 bucket spreader, 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

Make sure you know your equipment before you start using it.

Equipment may be operated only by an individual who is thoroughly familiar with its use.

All operators must be properly instructed before use and maintenance of the equipment. Use by individuals with insufficient instructions may pose serious risks to the operators themselves, to the environment and the equipment.

When coupling the attachment to the base machine, make sure:

- that all locking cotters are intact and in order
- there is no pressure in the hydraulic system
- that hydraulic hoses are intact
- there is no skin contact to hydraulic oil when connecting hydraulic hoses
- not to pull by the hydraulic hoses, but only by the hydraulic fitting

During operation, pay attention to:

- safe, appropriate travel speed
- other traffic, people and animals
- danger zones and objects that block your view
- children

NEVER use the machine if there is someone in the danger zone.

NEVER go under the attachment.



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1. DECLARATION OF CONFORMITY

The original manufacturer's EC declaration of conformity:

Generic product name: Bucket spreader

Models: HK 310, HK 360, HK 400, HK460, HK 560, HK 710, HK 1010, HK 1400, HK 1800, HK 2200, HK 2600, HK 3010

Manufacturer:

Lametal Oy

Kaskenviertäjäsentie 2 73100 LAPINLAHTI, Finland

tel. +358 17 731 565

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

Managing director

Kaskenviertäjäsentie 2

73100 Lapinlahti, FINLAND

2. PURPOSE OF USE

The Bucket spreader is used for sanding streets and small / large areas.

3. SAFETY PRECAUTIONS

Make sure you know your equipment before you start using it. Equipment may be operated only by an individual who is thoroughly familiar with its use.

Before connecting hydraulics to the base machine, make sure that:

- there is no-one between the attachment and the base machine
- the base machine is turned off and the parking brake is on.

When coupling the attachment to the base machine, make sure that:

- all locking cotters are intact and in order
- hydraulic hoses are intact
- there is no skin contact to hydraulic oil when connecting hydraulic hoses
- you do not pull by the hydraulic hoses, but only by the hydraulic fitting.

During operation, pay attention to:

- safe, appropriate travel speed
- other traffic, people and animals
- danger zones and objects that block your view
- children
- use of turn signal when driving

NEVER use the machine, if there is someone in the danger zone

NEVER go under the attachment



WARNING! Rotating rollers!



WARNING! Pressurized hydraulic hoses and components!

During maintenance, the hydraulics of the base machine **MUST** be turned off. The base machine **MUST** also be turned off and the parking brake **MUST** be applied. The equipment must be properly supported, if maintenance can only be performed by going under the equipment. Never go under the equipment if it is not properly supported.

Daily maintenance:

- check general condition of structures, make repairs if needed
- check the hydraulic hoses and fittings, and replace damaged parts

After every 50 hours of operation:

- lubricate points specified in the product specific section of this manual
- check all bolts and nuts for tightness

Check all bolts, nuts and hydraulic fittings for tightness after the **first day** of operation!

If the equipment is not likely to be used for a longer period, clean it thoroughly after use and lubricate as instructed.

4. IDENTIFICATION INFORMATION AND SPAREPARTS

4.1. Identification plate

Identification plate is placed on the side of the equipment. The plate includes contact information, machine type, year of manufacture, serial number and weight. (See an example of an identification plate in picture 1 below).

The first four numbers in the serial number indicate the month and year of manufacture (month first). The remaining five numbers constitute the machine tracking number, which is stored in the manufacturer's database (13971 in the example below).



Picture 1. Identification plate

Take down the machine type and the serial number of your bucket spreader:

Product and model _____ Serial number _____

4.2. Maintenance services

When replacing parts, use original, manufacturer spare parts only. By using original spare parts, you ensure dependable operation of the bucket spreader and comply with the warranty policy. To facilitate the supply of spare parts, always inform the manufacturer/retailer of the model and serial number of the bucket spreader (marked in the identification plate) when you order spare parts.

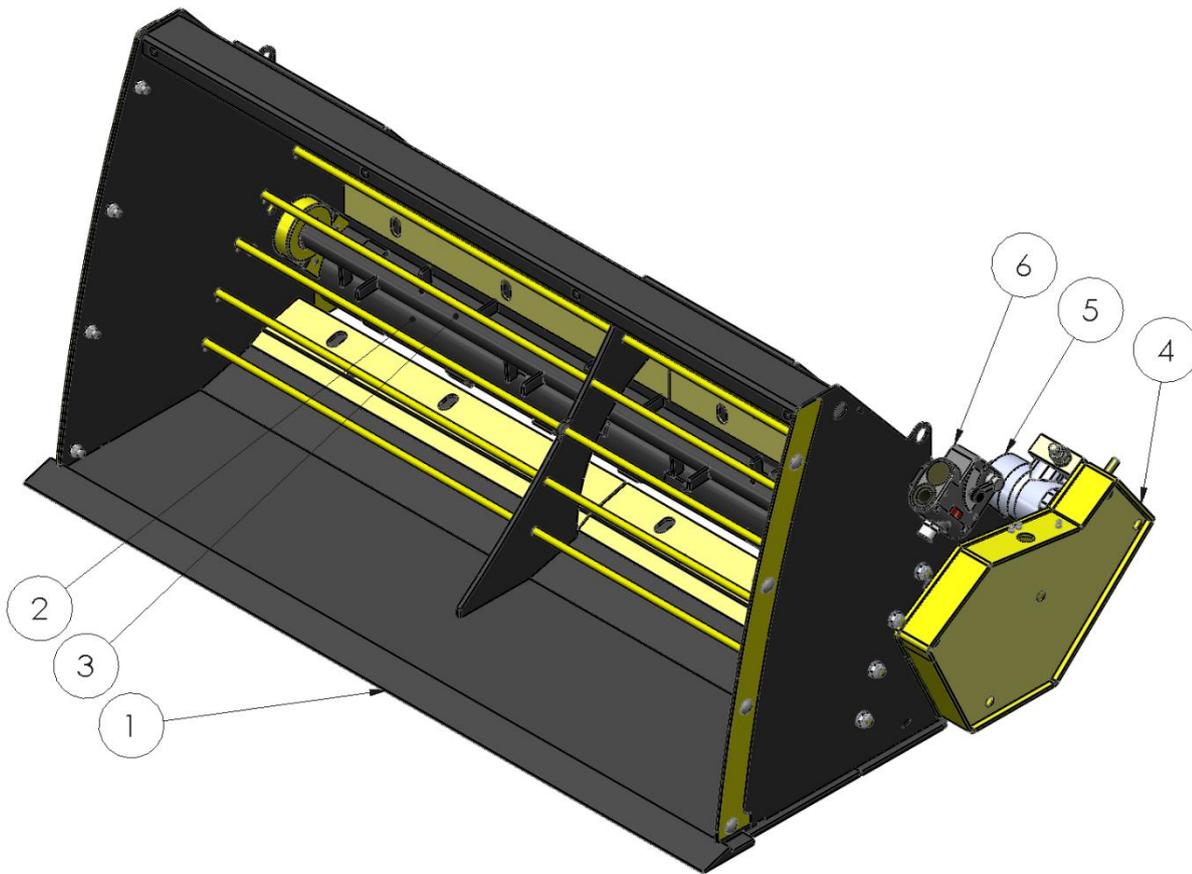
For more information on maintenance and spare parts, please contact the STARK maintenance and spare part services or your retailer.

Contact information for STARK maintenance services:

tel. +358 (0)17 731 565, e-mail info@stark.fi

tel. +358 (0)44 758 6221, e-mail parts@stark.fi

5. MAIN PARTS OF THE BUCKET SPREADER



Picture 2. Main parts of the bucket spreader

- 1) Frame of the bucket spreader
- 2) Spreader roll
- 3) Mixing shaft
- 4) Engine's case
- 5) Hydraulic engine
- 6) Flow control valve

6. ATTACHING THE BUCKET SPREADER

When attaching the bucket spreader for the first time, make sure it is compatible with the base machine by following the instructions below. Always check the compatibility when attaching the bucket spreader to a new base machine.

6.1. Attaching the bucket spreader to a base machine

The bucket spreader is attached to the base machine by welded or bolted STARK FIT quick hitches. The machine is connected to a hydraulic system. Hydraulic circuit diagrams can be found in a later section in this manual. Ask your retailer for available STARK FIT quick hitches.

Before using the bucket spreader, MAKE SURE all locking cotters and pins are secured and intact.

When coupling the bucket spreader to the base machine, please pay attention to the instructions on the use of the base machine.

1. Make sure that the attachment and the base machine are compatible in terms of mechanical solutions, hydraulics and electricity.
2. The bucket spreader is attached to the coupler on the base machine (e.g. a loader). Attach the bucket spreader to the base machine, and make sure the locking cotters and pins are secured. Apply parking brake.
3. Turn off the base machine and make sure the parking brake is applied.
4. Make sure there is no pressure in the base machine hydraulic system. When connecting, always make sure the hydraulic connectors are clean and the hoses are intact
5. Check carefully the attachment's, the base machine's and the fitting's trajectory for collision. Do a test run using the base machine and the loader in extreme position to check that the bucket won't collide with base machine. Make sure that the hydraulic hoses and attachments have enough space. If needed change the location of hoses in the base machine.
6. During first hours of operating the attachment, bolts, nuts and connectors might loosen up. **Retighten them** after the first day of operating the attachment.

7. OPERATING THE BUCKET SPREADER

Before using the bucket spreader, make sure:

- the bucket spreader is installed correctly
- all locking pins are in place
- hydraulic hoses are connected properly
- hoses are intact
- there are no oil leaks
- all functions are working properly

7.1. Operating instructions

1. Make sure that the attachment and the base machine are compatible in terms of mechanical solutions, hydraulics and electricity
2. The bucket spreader is attached to the coupler on the base machine (e.g. a loader). Attach the bucket spreader to the base machine, and make sure the locking cotters and pins are secured.
3. Turn off the base machine and make sure the parking brake is applied.
4. Make sure there is no pressure in the base machine hydraulic system. When connecting, always make sure the hydraulic connectors are clean and the hoses are intact.
5. Check the attachment's, the base machine's and the fitting's trajectory for collision. Make sure that the hydraulic hoses and attachments have enough space.
6. Push the bucket spreader to the sandpile slowly and turn the bucket up with the loader. Work with careful, steady movements in order to avoid damage to the bucket or the base machine.
7. When using a 3-point filling cylinder, slow down the cylinder movement in order to avoid damage to the bucket or the base machine.
8. Adjust the flow of sand by a flow control valve, engine's rotational speed and driving speed so it is appropriate in the working area.
9. Stay alert for any abnormal behavior and oil leaks also during driving.

7.2. Adjusting the sanding roller rubber

The sanding roller rubber is a wear part. Make sure to check its condition and tightness before the winter season.

Adjusting of the sanding roller rubber:

- loosen the fixing bolts of the protective plates,
- push the rubber out of the opening (e.g. with a screwdriver) firmly against the discharge shaft (Picture 3).
- Tighten the bolts of protective plates to the correct torque. The worn rubber can be turned around.



Picture 3. Adjusting the sanding roller rubber

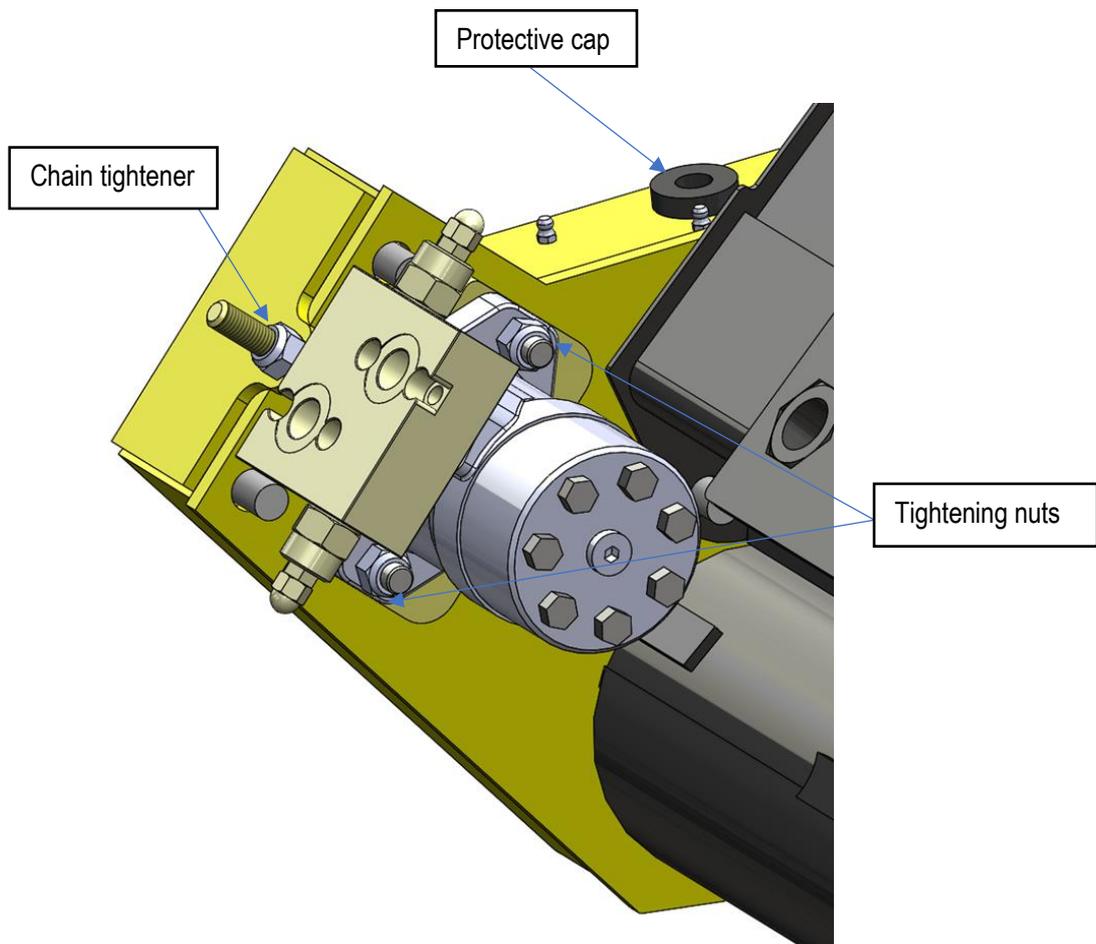
7.3. Adjusting the chain

The spreader roll and the mixing shaft are operated by a hydraulic engine chain. The chain needs to be checked for tightness every 50 hours of operation to make sure that the bucket spreader works properly. Remove the protective cap and press the chain e.g. with a screwdriver with a force of 25 kg. If the chain gives in more than 5-10mm, it needs to be tightened (Picture 4).

Tightening the chain:

- Loosen the tightening nuts
- Adjust the chain with a chain tightener
- Tighten the nuts to the right torque (table 1)

NOTE! The chain can be adjusted without opening engine's case. However, if you must open the protective lid of the engine case, seal it off with adhesive paste when closing. This way dust or dirt does not damage the chain.



Picture 4. Adjusting the chain

7.4. Detaching the bucket spreader

1. Lower the bucket spreader to an even ground.
2. Turn off the base machine, put on the parking brake and release pressure from the system
3. Detach the hydraulic hoses and protect the couplings with plugs
4. Open the mechanical lock and loosen the bucket spreader
5. If the bucket spreader is left unused for a long period of time, it needs to be clean and lubricated properly before storage.

7.5. Transferring the bucket spreader

Lift the bucket spreader high enough and reduce speed if needed, especially on bumpy, uneven roads. The bucket spreader or the base machine can be damaged due to excessive speed.

7.6. Bucket spreader accessories

The following accessories are available for the bucket spreader:

- Filling cylinder with a lock valve
- Hot-dip galvanisation
- Remote controlled flow control valve
- Vibration device

8. MAINTAINING THE BUCKET SPREADER

8.1. General safety precautions for use and maintenance

- Comply with the applicable laws and regulations and the instructions in this manual.
- Never go under the bucket spreader if it is not supported.
- Always put on the base machine's parking brake before any servicing on the attachment.
- Use only tools which are in good condition.
- Watch out for pressurised hydraulic hoses and components.
- Make sure there is no pressure in the hydraulic system. Take into account the pressure accumulator.
- Do not let hydraulic fluids or lubricants to the ground.
- Wear appropriate personal protective equipment.

8.2. Tightening torque

	Nm (Strength 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 torque

8.3. Daily maintenance

It is important to perform a daily visual inspection of the attachment for early detection of possible faults and to prevent further damage. Inspect the following items on the bucket spreader daily:

- Hydraulic hoses and components for possible leaks
- General mechanical condition

8.4. Maintenance after 10 hours

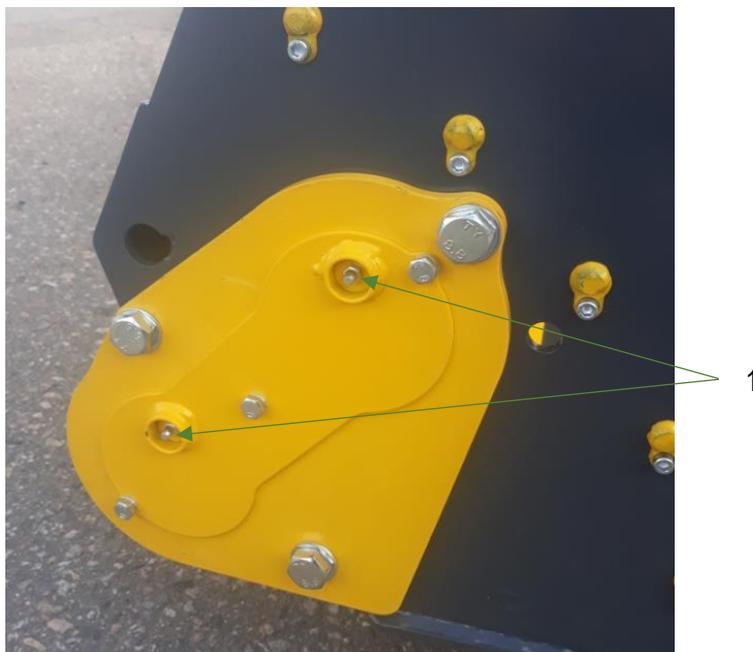
- Lubricate, recommended quality NLGI-2 grade grease or equivalent (shown in the later section)
- Check the bolts for tightness (table 1.)

8.5. Maintenance after every 50 workhours or weekly

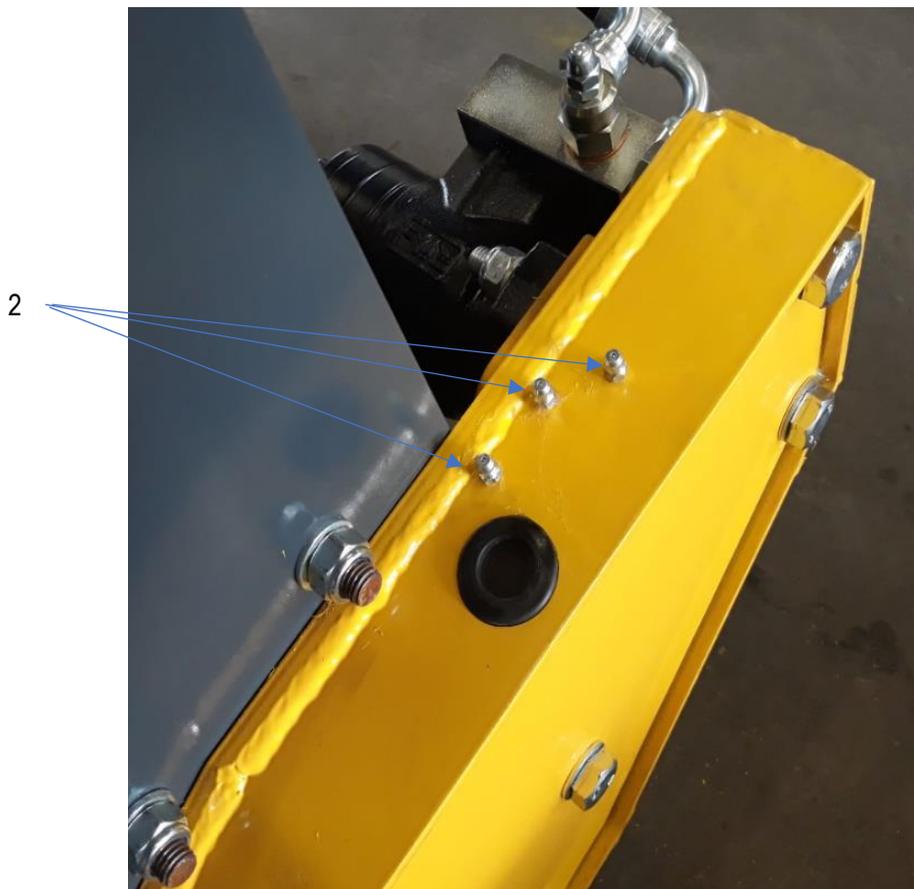
- Lubricate, recommended quality NLGI-2 grade grease or equivalent (shown in the later section)
- Check the mechanical condition of the bucket spreader for distortion or breach
- Check the fastening bolts for tightness
- Check the chain for tightness (shown in the earlier section)

8.6. Lubrication points

- 1) Grease nipples of the bearings
- 2) Grease nipples of the bearings and of the chain



Picture 5. Grease nipples of the bearings



Picture 6. Grease nipples of the bearings and of the chain

9. HYDRAULICS

The bucket spreader is attached to the base machine with 2-hose hydraulics (chart 1). The system has been tested and adjusted by the manufacturer. Any alterations or modifications to the hydraulic system are on the sole responsibility of the client.

Max. pressure: 120 bar

Max. oil flow: 120 l/min.

Max. counter pressure for returning oil 75 bar

The Bucket Spreader has a double pressure relief valve, with a pressure setting of 120 bar. Higher pressure adjustment is strictly prohibited. Max. allowed oil flow is 120l / min. **A larger flow controller is required for higher oil flow from the base machine.** Please contact STARK spare parts sales!

Due to counter pressure in the return line, some oil may leak in the Bucket spreader motor housing (this may damage the engine sealing). Open and drain the leaking oil out of the housing every 80 hours (Picture 7).

The maximum counter pressure of the returning oil from the Bucket Spreader is 75 bar, depending on speed (chart 2).

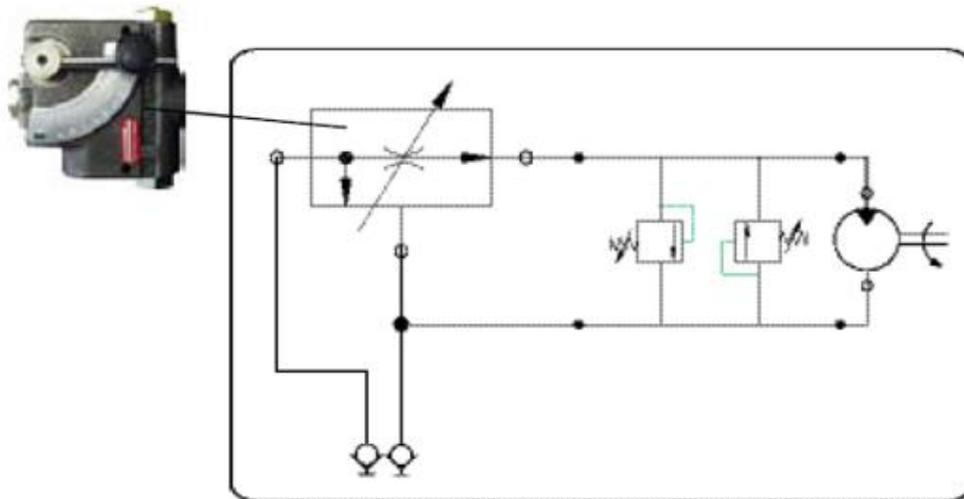


Chart 1. Hydraulic chart for the bucket spreader



Picture 3. Drain line greasing nipple at the end of the motor housing

STANDARD

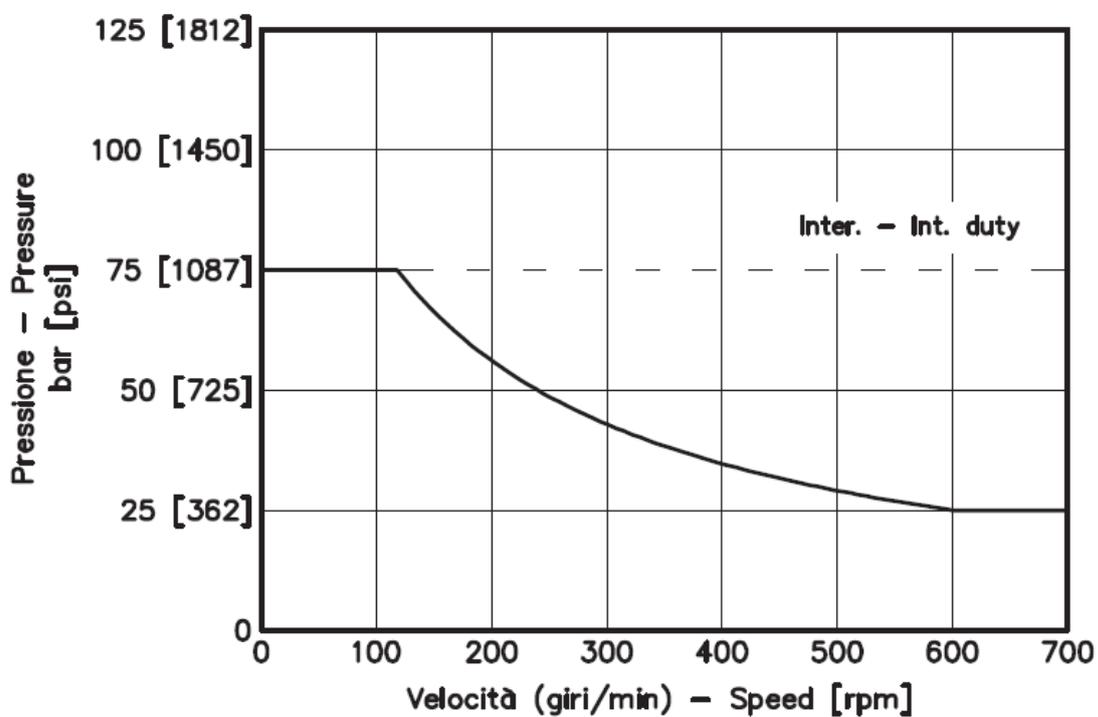


Chart 2. The counter pressure of the returning oil

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.