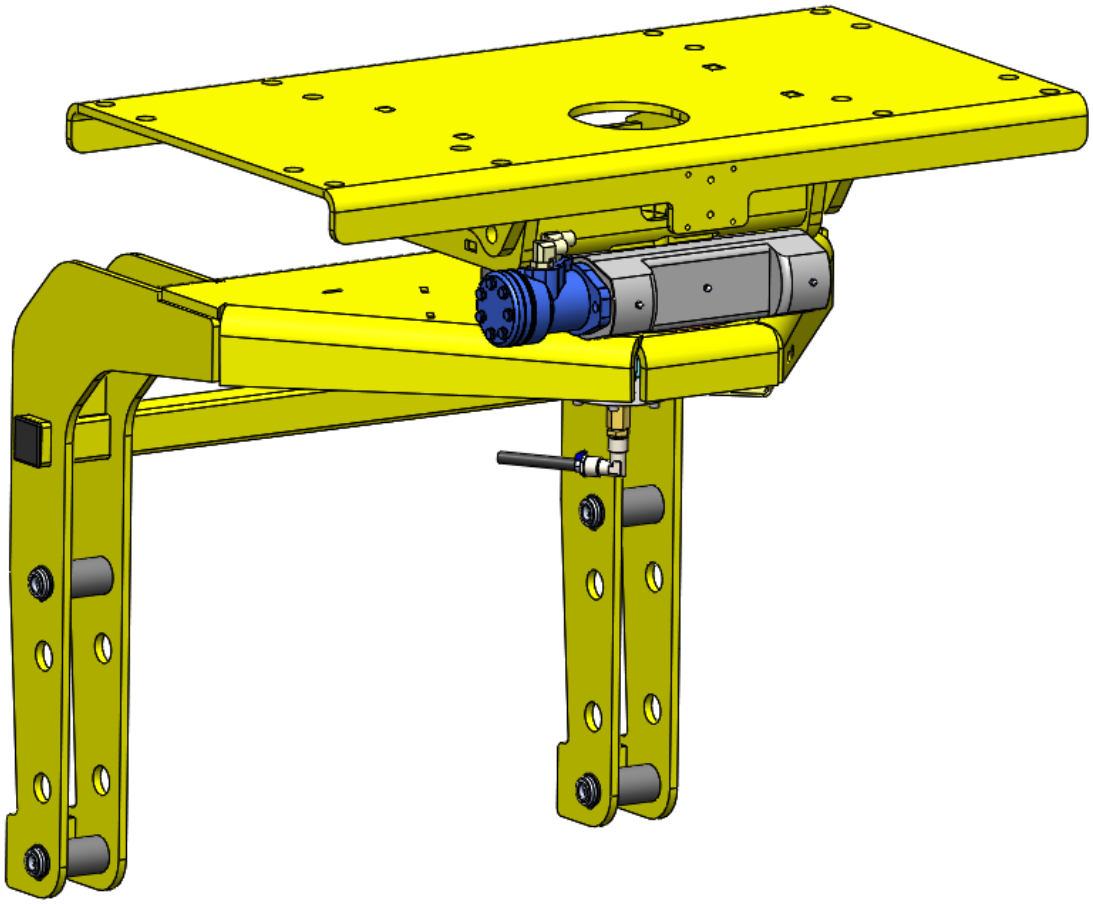
Original

User and Maintenance manual

Rotating device



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

Introduction

Congratulations for choosing STARK Rotating device!

We at the STARK want your device to serve you the best possible way, efficiently and for a long time. Therefore, please read this manual before taking your new device in use.

STARK products are designed and manufactured in Finland and each attachment is equipped to meet the customer's needs.

Make sure that everyone using and servicing the rotating device reads this manual beforehand! Always ensure safety while using and servicing the device. Please keep this manual and make sure to pass it on to a possible new owner.

Development of STARK products is based on quality, durability and economical use. Products have been designed to be efficient, safe and durable in professional use. Feedback and customer experience are important to us for our future development. Also, if you have any questions regarding operation or maintenance of the rotating device please contact us by email: info@stark.fi

New innovations and all our products can be found on our website: www.stark.fi

Manufacturer reserves the right to structural and technical changes without notice. Information in the manual may therefore have changed after printing.

Read before use

Familiarise yourself with the device before taking it in use.



The rotating device should be operated only by proficient users.

People working with this device should be thoroughly introduced to operation and maintenance of it. People not acquainted with the device may cause danger to themselves, environment or the device.

When connecting the attachment, please pay attention:

- that the locking pins and cotter pins are fine
- there is no pressure in the hydraulics system
- that the hydraulic hoses are intact
- when connecting the hydraulics avoid skin contact with hydraulic fluid
- do not pull from the hose, only from the coupling

While operating, please pay attention:

- safe and appropriate speed
- other traffic, people and animals
- danger zones and visual obstacles
- device should not be used when someone is in the danger zone
- be careful around children
- do not go under the attachment



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1. DECLARATION OF CONFORMITY

Original manufacturer Declaration of conformity:
Product name: Rotating device
Models: STARK RF 900

Manufacturer:
Lametal Oy
Kaskenviertäjäntie 2, FIN-73100 LAPINLAHTI
tel. +358 17 731 565

Hereby declare that the following machinery fulfils all the relevant requirements of EC Machinery Directive 2006/42/EC, and the following standards:

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

The Technical Construction File is maintained at Lametal factory.
The authorized representative located within the Community is:



Lassi Mehtonen
Managing Director
Kaskenviertäjäntie 2
73100 Lapinlahti, FINLAND

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2. INTENDED USE

STARK RF900- Rotating Device is designed and intended to be used as an attachment on STARK Bucket Sweepers for rotating the machine. Rotating device enables turning the Bucket Sweeper rearwards while driving forward. Rotating device also enables sweeping near of edge rocks. RF 900 Rotating device is suitable for KAH 1600/ST, 1800/ST, 2000/ST and 2510/ST- models. Rotating device enables unlimited turning of the bucket sweeper.

3. SAFETY INSTRUCTIONS

Familiarise yourself with the attachment before taking it in use. The attachment should be operated only by proficient users.

Before connecting hydraulics to the device, please check:

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



When connecting the attachment to base machine, please pay attention:

- that the locking pins and cotter pins are fine
- there is no pressure in the hydraulics system
- that the hydraulic hoses are intact
- when connecting the hydraulics avoid skin contact with hydraulic fluid
- do not pull from the hose, only from the hydraulic fitting

While operating, please pay attention:

- safe and appropriate speed
- other traffic, people and animals
- danger zones and visual obstacles
- device should not be used when someone is in the danger zone
- be careful around children
- use flashing light while operating the machine
- do not go under the device



BEWARE pressurized hydraulic hoses and components!

While servicing the device, the base machine's hydraulics must be switched off, the base machine turned off and the parking brake put on. The device must be lowered on supports if going under the device is required. Never go under the device if it is not supported.

Daily maintenance:

- check the overall condition of structures, make repairs if needed
- check the condition of hydraulic hoses and couplings, change if damaged

Maintenance every 50 hours:

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

Check the tightness of hydraulic connectors, bolts and nuts after **first eight hours** of use!
If the device is left unused for a long time, it needs to be cleaned well and lubricated before storage.

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4. IDENTIFICATION AND PARTS

4.1. Identification plate

The identification plate can be found on the side of the Rotating Device. On the plate can be found the manufacturers contact info, type and model of the product, manufacturing year, serial number and weight.
The serial number's first four digits contain the manufacturing month and year (month before year: MMYY). The last five digits are the actual serial number, which is registered at the manufacturer (example below: 13971). Below a picture of an identification plate:



Picture 1. Identification plate.

Please write below the product type and serial number of your Rotating Device:

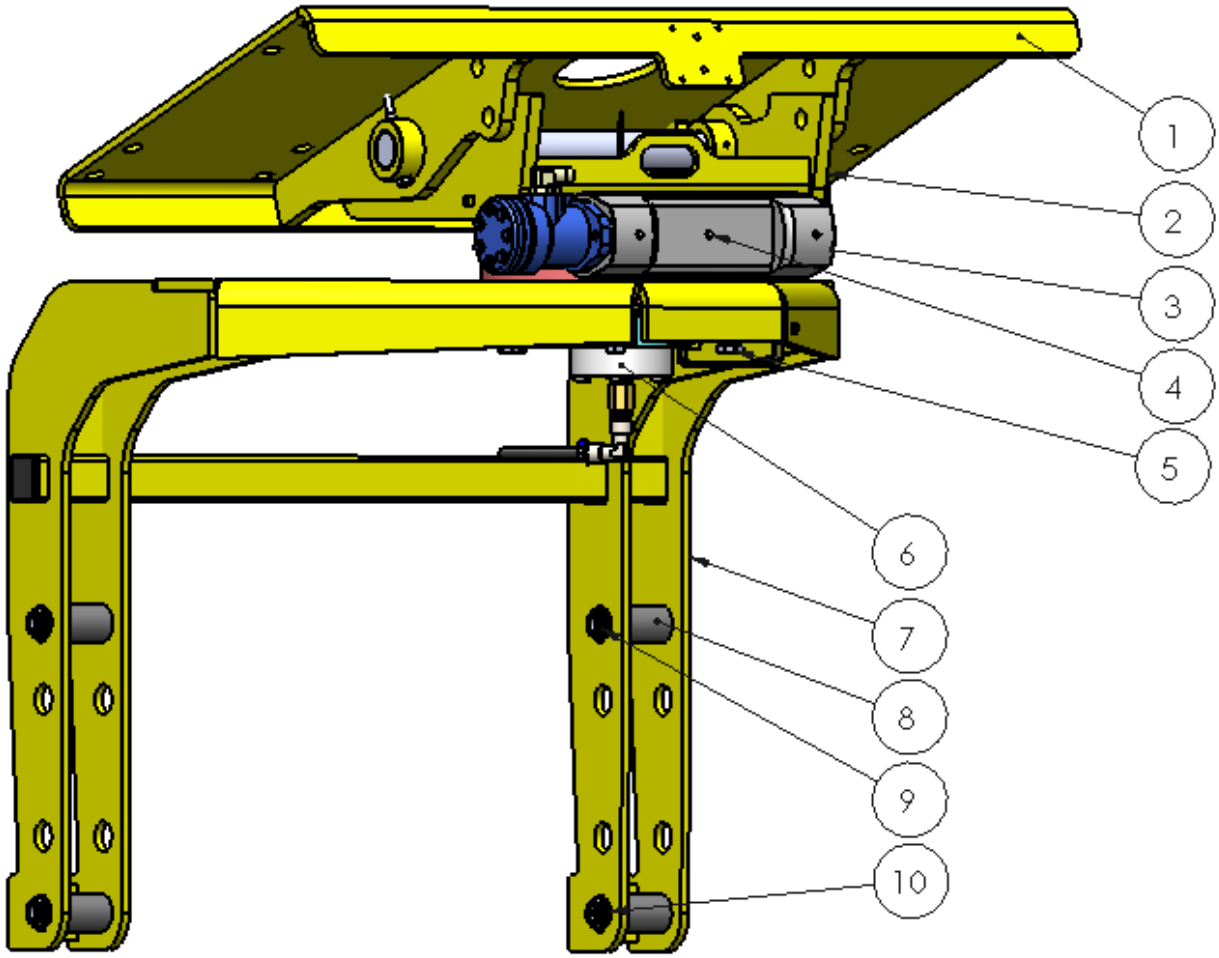
Product _____Serial number_____

4.2. Maintenance and parts service

Only original parts should be used when making repairs. By using original parts, you can ensure proper operation and warranty coverage. When inquiring and ordering parts please give the product model and serial number from the identification plate to facilitate service.
STARK maintenance and parts service as well as your dealer can answer your questions on maintenance and parts.
Please contact your dealer or
STARK maintenance service:
tel. +358 (0)17 731 565, email info@stark.fi
STARK parts service:
tel. +358 (0)44 758 6221, email parts@stark.fi

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5. MAIN PARTS OF ROTATING DEVICE



Picture 2. Main parts of Rotating Device

1) Bracket
2) Middle fit frame
3) Rotating gear
4) Grease nipple
5) Tightening bolt
6) Rotating connector
7) Bracket frame
8) Bushing
9) Mounting pin
10) Locking ring

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6. USING THE ROTATING DEVICE

When attaching the device 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.

Rotating device is attached to base machine by bolt-on STARK FIT quick hitcher system. Base machine fit is bolted on to bracket.

Remember to properly mount the hydraulic hoses from Rotating device to base machine!

6.1. Attaching the rotating device to a base machine

The machine is connected to a hydraulic system. Hydraulic circuit diagrams can be found in a later section in this manual. **Before using the bucket sweeper, MAKE SURE** all locking cotters are secured and intact.

When coupling the bucket sweeper 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. Apply parking brake. The bucket sweeper is attached to the coupler on the base machine (e.g. a loader). Attach the bucket sweeper to the base machine, and make sure the locking cotters 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 carefully the movement paths between the coupling mechanism, the base machine and the attachment for collisions. Check also the space needed for hydraulic hoses and connectors.

6. Rotating device needs one double-action hydraulic valve to operate. In bucket sweeper is equipped with two-hose hydraulic system and Rotating device/ Bucket Sweeper combination is also needed to be maintained suitable to two-hose hydraulic system, functions can be operated with optional electrical hydraulic valve. In this case, one function is operating the bucket sweeper as before and second function is turning Rotating device.

7. During first hours of operating the attachment, bolts, nuts and connectors might loosen up. **Retighten them** after the first day of operating the attachment.

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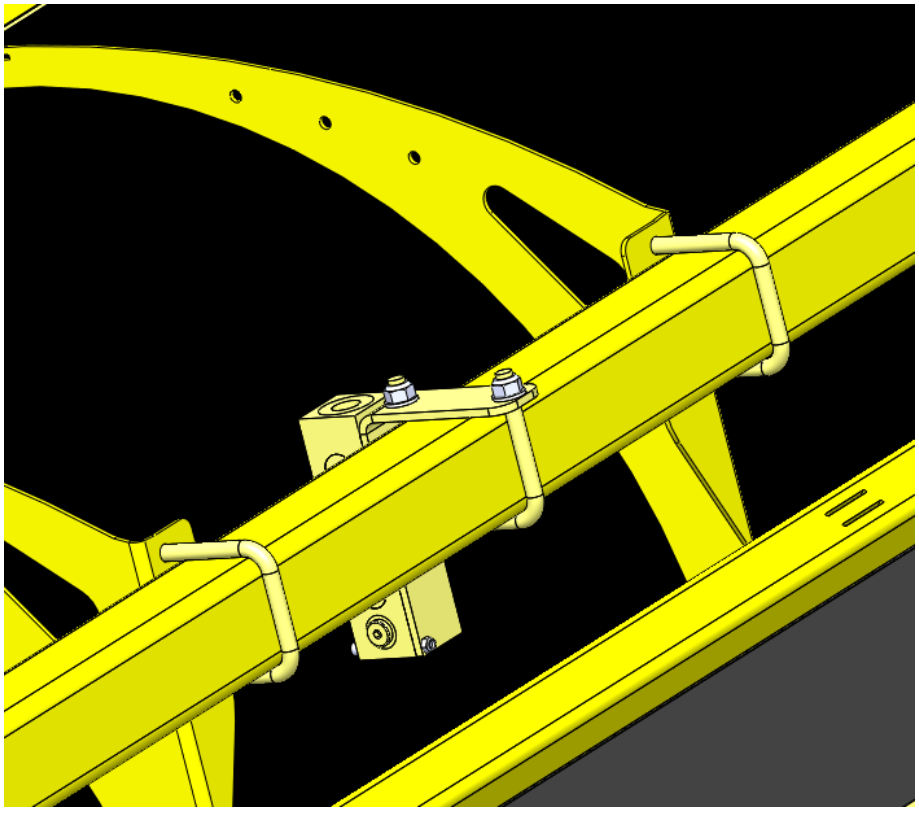
7. OPERATING THE BUCKET SPREADER

Check before driving, that:

- the machine is correctly installed
- all locking pins are in place
- hydraulic connectors are correctly installed
- hoses are intact
- there are no oil leaks
- all functions work properly
- learn to use the rotating device on closed area before actual usage

7.1. Using the Rotating device

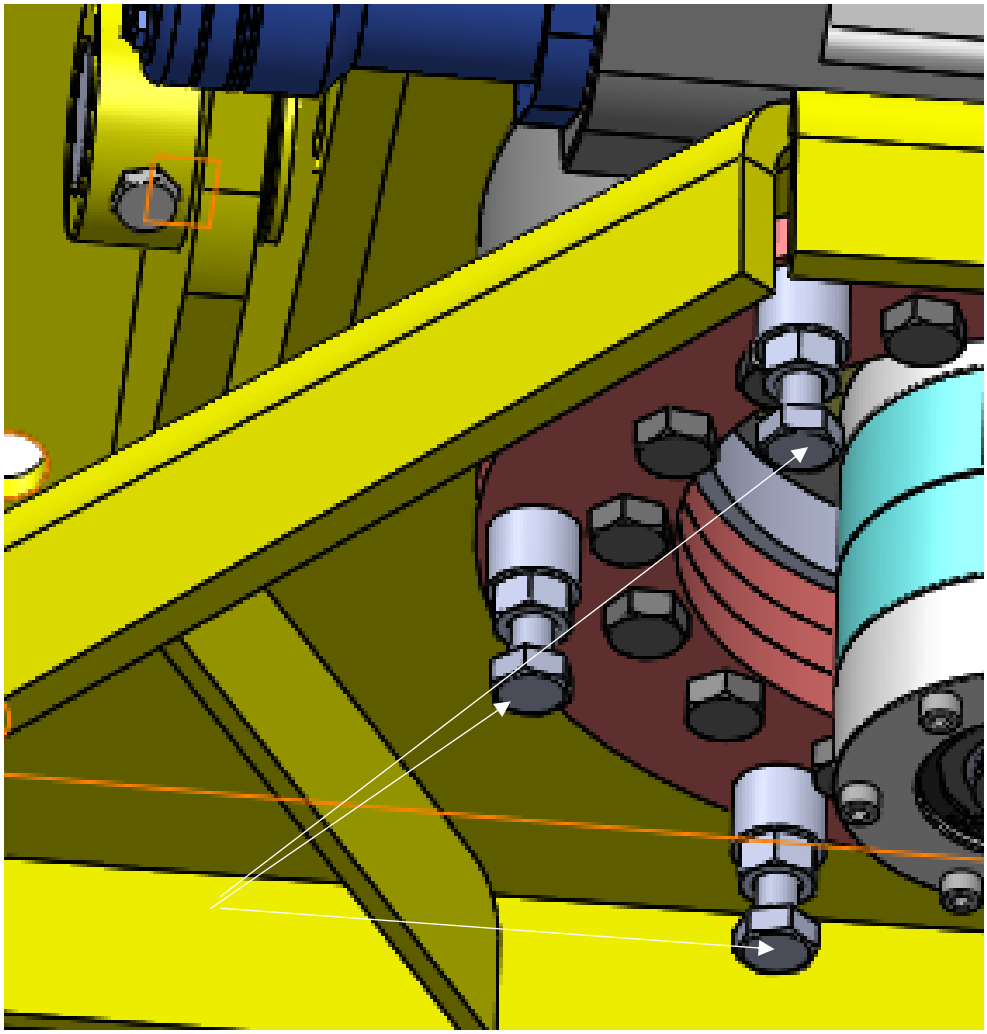
1. Check that the attachment and the base machine are compatible in terms of mechanical solutions, hydraulics and electricity.
2. The bucket sweeper is connected to the base machine's quick hitching (e.g. front loader). Apply the parking brake. Connect the bucket sweeper to the base machine and make sure the pins are properly locked.
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 installing, always check that the hydraulic fittings are clean, and hoses are intact.
5. When mounting Rotating device to bucket sweeper, lifting arm movement must be restricted by installing limiting cylinders inside lifting cylinders in aftermarket installations.
6. When ordering combination of bucket sweeper and rotating device from the factory, lifting arm are already limited.
7. Make sure, that watering system manifold is installed below the main beam, as shown in picture 3.



Picture 3. Watering system manifold correct position

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7.2. Adjusting the safety mechanism



Picture 4. Safety mechanism adjusting bolts (6pcs).

Rotating device is equipped with safety mechanism which will protect rotating gear in case of possible collision. Adjustment bolts (shown in picture 5) are tightened on factory to 20Nm, that should not be changed without reason. Due usage of the rotating device, the safety bolts may be needed to re-tighten to 20Nm. Bolts can be tightened by opening locking nuts, tightening bolts and then re-tightening locking nuts. There are 6 bolts and nuts in total.

Tightening the bolts over 20Nm tightening torque will cause expiry of warranty regarding Rotating gear. Rotating device damaged by overtightening the bolts is not covered by warranty.

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8. MAINTENANCE OF ROTATING DEVICE

8.1. General cautions concerning use and maintenance

- Comply with the applicable laws and regulations and the instructions in this manual.
- Never go under the machine if it is not supported.
- Always put on the base machine's parking brake before any servicing on the machine
- Use only tools which are in good condition.
- Watch out for pressurised hydraulic hoses and components.
- 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 machine for early detection of possible faults and to prevent further damage. Inspect the following items on the machine daily:

- Possible leaks of the hydraulic hoses and components
- General mechanical condition

8.4. Maintenance after the first 10 hours of operation

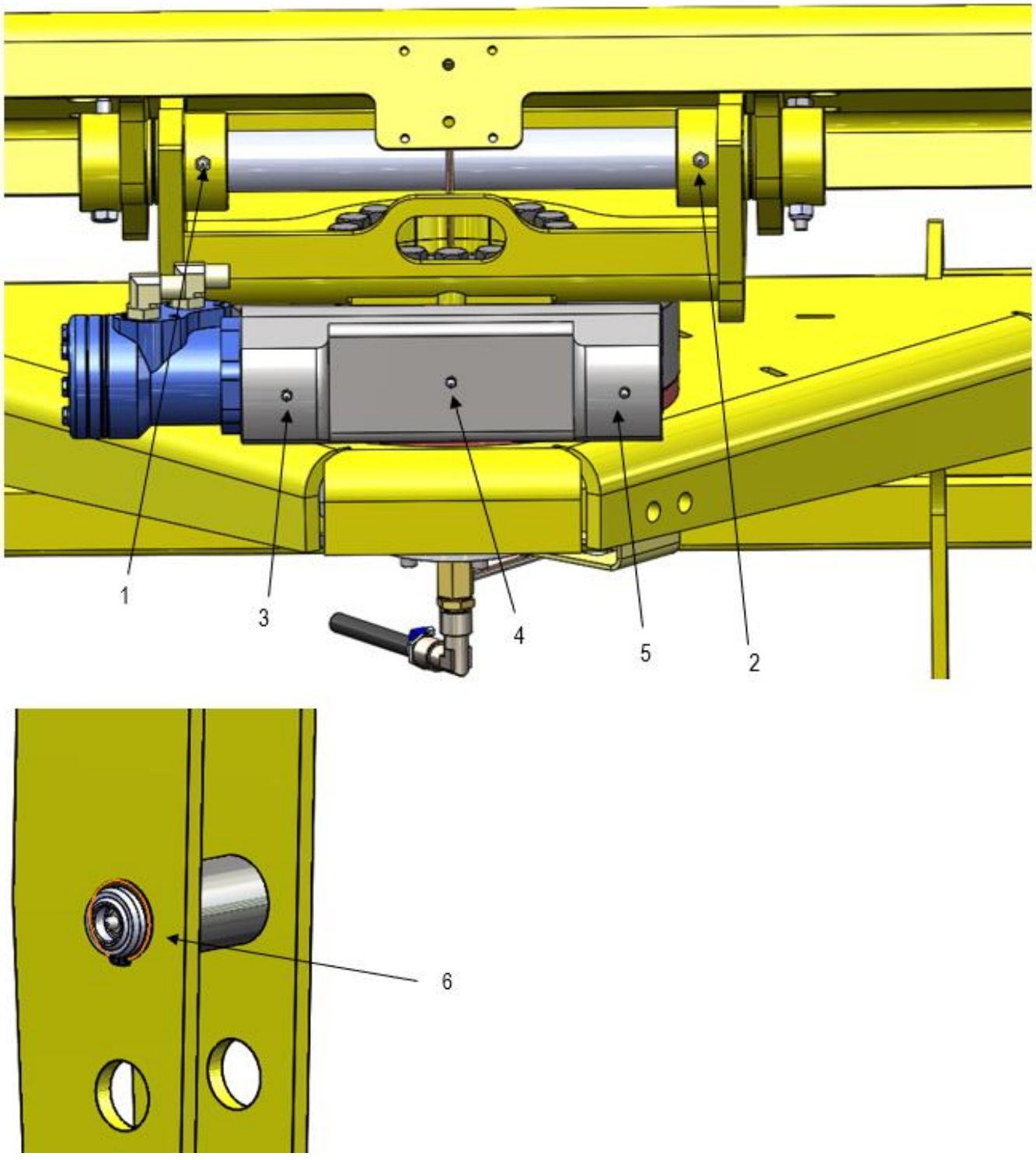
- Lubrication, recommended quality NLGI-2 grade grease or equivalent, shown in the later section
- Check the bolts for the tightness (Table 1)

8.5. Maintenance after 50hours or monthly

- Lubrication, recommended quality NLGI-2 grade grease or equivalent (see instructions further)
- Check the mechanical condition of the machine for distortion or rupture
- Check the bolts for tightness (Table 1)

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8.6. Lubrication points



Picture 5 Locations of the grease nipples

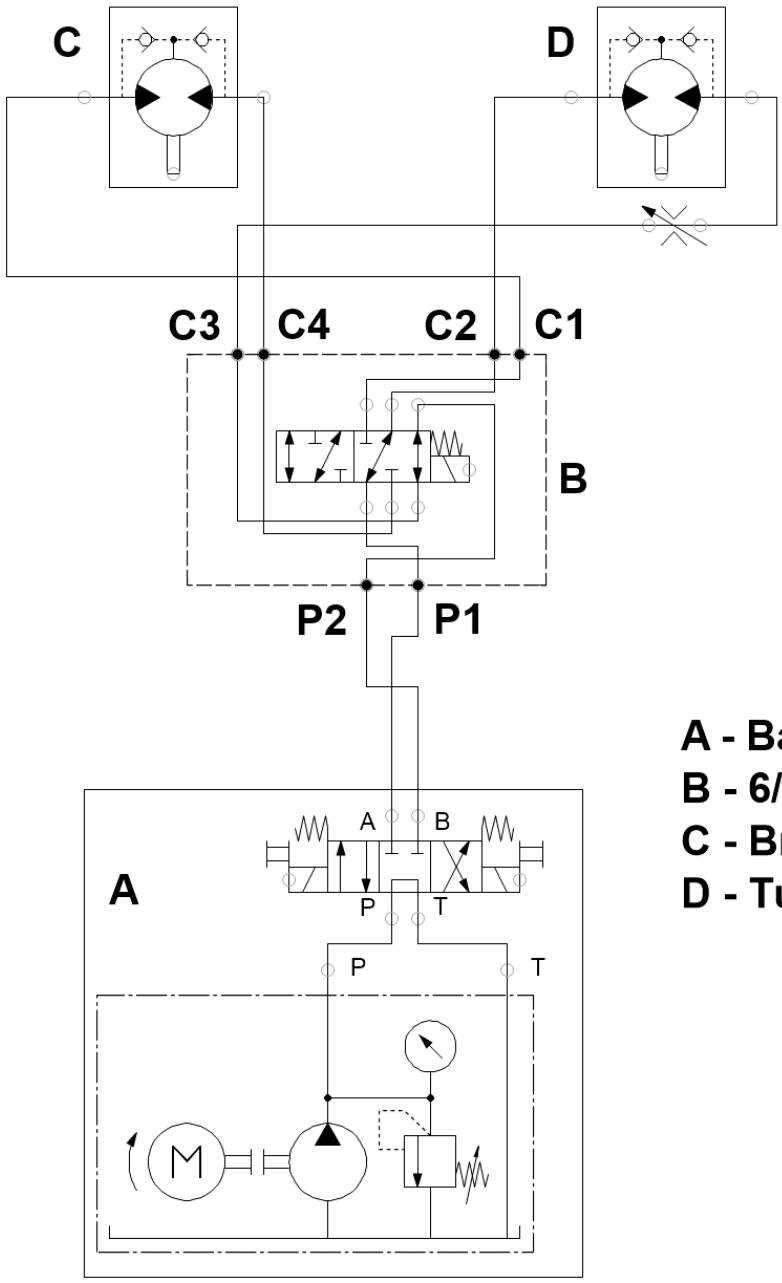
1-2) Pivot pin grease nipples
3-5) Rotating gear grease nipples
6) Floating pin grease nipples

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9. HYDRAULICS

Rotating device is possible to connect either two- or four-hose hydraulic system. Below are shown hydraulic schemes for both connections. Maximum rotational speed of the device is restricted to 1 rpm. Higher speeds are not allowed by the manufacturer of the device.

9.1. Two-hose hydraulics

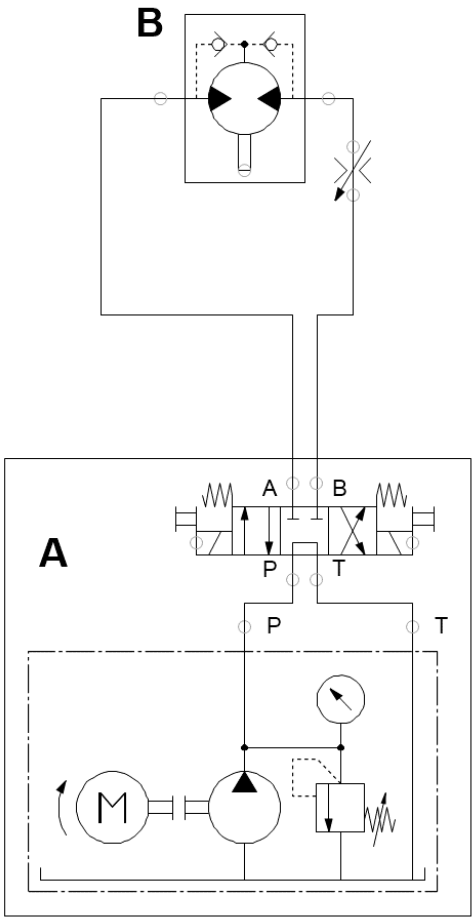


A - Base machine control block
B - 6/2-valve
C - Brush roller motor
D - Turning device motor

Figure 1. 2-hose hydraulics

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9.2. Four-hose hydraulics



A - Base machine control block
B - Turning device motor

Figure 2. 4-hose hydraulics

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10. WARRANTY TERMS AND CONDITIONS

1. Warranty coverage

The manufacturer of STARK products Lametal Oy provides warranty to new products which covers material and manufacturing failures. The limitations of the warranty are in section 7.

2. Warranty begins

Warranty begins on the date of the product delivery has been approved or on the date when installation has been completed and product taken in use. The product is considered to be taken into use when the product is delivered to the end customer according to the agreement and registered as received by the end customer. The end customer shall inspect the product upon the delivery according to the instructions in the manual. Any claim for any defect in the quality or condition of the product shall be notified in writing to the manufacturer or retailer within eight (8) days of delivery or, where the defect was not apparent, of discovery of the defect, but, in any event within one (1) year of delivery.

3. Warranty duration

STARK warranty is valid for one (1) year. If necessary, the customer and manufacturer agree separately on the warranty for repair work and for the used spare parts in the repair.

4. Warranty repair work

Warranty repair work is carried out free of charge during normal business hours at the manufacturer's facility or in a workshop which is authorised by the manufacturer. If repairs are made in another facility than is approved by the manufacturer, the costs not included in the warranty, e.g. travel and waiting time, daily allowances, travel costs or uninstalling and reinstalling work, are not reimbursed by the manufacturer. Indirect costs resulting from the warranty repair work, e.g. lost working hours, are not reimbursed by the manufacturer. Parts replaced under warranty remain as manufacturer's property. The customer shall store the replaced parts for six (6) months unless otherwise agreed and deliver them on request back to the manufacturer with no delay.

5. Conditions for warranty repair work

- Manufacturer's instructions for use, installation and maintenance are complied with.
- The failure has occurred in normal circumstances for which the product is designed to be operated.
- Genuine parts have been used in the maintenance and repairs.
- Claim report provided by the manufacturer or reseller is filled in according to instructions and returned to the handler.

6. Product warranty after repairs

Warranty continues normally to the end of the original warranty period. Warranty repair work does not prolong the warranty period.

7. Limitations of warranty

Warranty does not cover

- consequential costs arising from the failure of the product
- indirect costs e.g. lost working hours
- damage caused to a third party
- product or components which has been altered or repaired by the customer
- damage caused by normal wear, faulty maintenance, neglect, accident, fastening error, overload, user inexperience or use of non-genuine spare parts

Warranty shall not exceed the price of the product.

8. Warranty process

Requirement for processing the claim report is that the claim report provided by the manufacturer or reseller is filled in according to instructions and returned to the handler. Warranty process is carried out in Finnish or English.

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