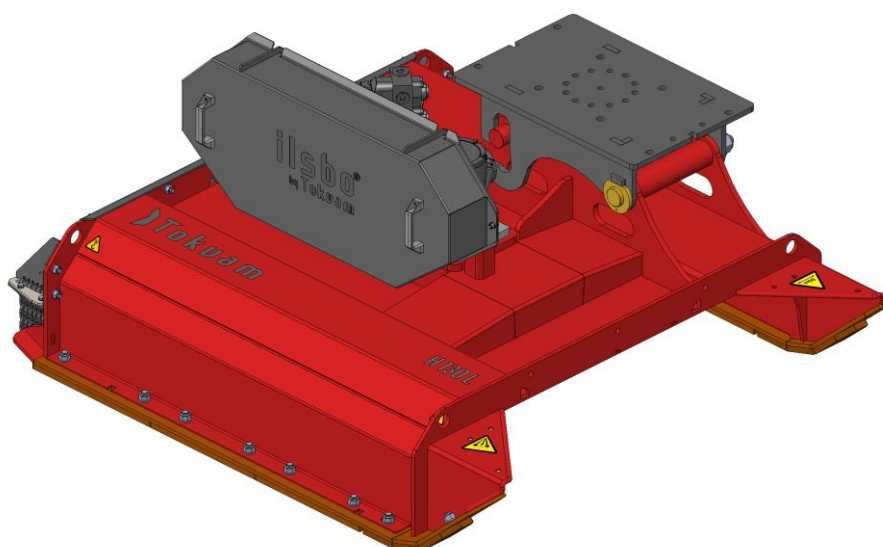




# USER GUIDE

## HYDRAULIC CHAIN MULCHERS



Valid for models / starting with CE number

|         |           |
|---------|-----------|
| H110L   | 8221001 ▶ |
| H130L   |           |
| H160HD  |           |
| H160HDE |           |
| H160HDB |           |

Date: 05.03.2026 Revision: E

 The user manual must be read before using the machine!

## DECLARATION OF CONFIRMITY

**Manufacturer:** Tokvam AS  
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Norway

Company number: 979 746 156  
Phone: +47 61 19 63 77  
E-mail: info@tokvam.no

We hereby declare that the following product:

Models:

Serial number:

H110L, H130L, H160HD, H160HDE, H160HDB / 8221001 ->

Which are covered by this statement are in accordance with the following standard or other normative documents:

- Machinery Directive 2006/42/EC
- NS-EN ISO 12100:2010

Place and date: Reinsvoll, 30 June 2022



Finn Kristian Tokvam (Managing Director)

Read the manual carefully before starting and before performing preventive maintenance. Familiarize yourself with the equipment and all instructions and keep the user manual so that it is accessible when using the machine.

This user guide is designed to apply to all markets. Please note that optional extras may vary. We therefore ask you to disregard the equipment that is not on your machine.

We continuously improve our products and reserve the right to make improvements and changes we deem appropriate. Improvements and changes are not implemented on products (machines or optional equipment) that have already been delivered or put into service. We reserve the right to change data and specifications on new machines without prior notice, the same applies to regulations for maintenance and other service measures.

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# 1 TECHNICAL DATA

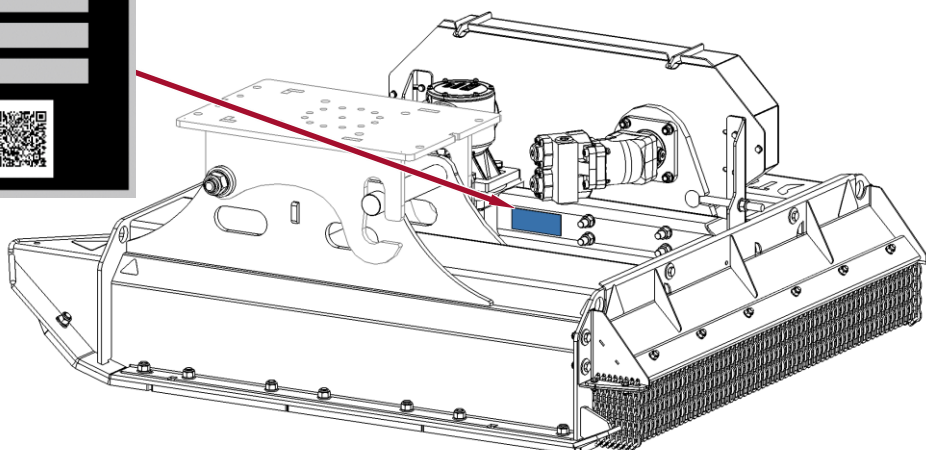
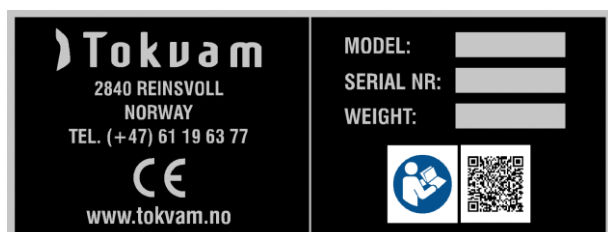
| Machine                          | H110L             | H130L      | H160HD     | H160HDE    | H160HDB    |
|----------------------------------|-------------------|------------|------------|------------|------------|
| Weight (kg)*                     | 390               | 460        | 610        | 625        | 700        |
| Dimensions (LxWxH)(cm)*          | 159x126x72        | 170x146x74 | 193x176x74 | 193x176x74 | 188x176x77 |
| Working width (cm)               | 110               | 130        | 160        | 160        | 160        |
| Cutting height (cm)              | 10                | 10         | 10         | 10         | 10         |
| Transmission                     | Belt drive + gear |            |            |            | Belt drive |
| Chain size cutting unit          | 10mm & 13mm       |            |            |            | 13mm       |
| Drive source                     | Carrier           |            |            |            |            |
| Oil flow (l/min)                 | 60-90             | 70-110     | 90-150     |            |            |
| Oil pressure (bar)               | 200-350           |            |            |            |            |
| Connection, pressure/return hose | 3/4" BSP          |            |            |            |            |
| Connection leak oil hose         | 1/2" BSP          |            |            |            |            |

\*Only machine without attachment.




## 1.1 MACHINE PLATE / CE MARKING

All machines have a machine plate. The machine plate is located under the oil motor of the machine (see picture below). On the machine plate you will find the following information:

- Model (machine type)
- Serial number: Number is made up of machine number (2 digits) + year of manufacture (2 digits) + production number (3 digits)
- QR code that links to the latest current user manual



## 2 WARNINGS ON MACHINE – MEANING OF SYMBOLS

|   |   |
|---|---|
|  | <b>Lifting Point</b><br>In the holes that are at this mark, the machine can be lifted   |
|  | <b>Risk of splashing</b><br>There is a risk that loose objects such as stones are shot out of the machine   |
|  | <b>Danger within 50m</b><br>There is a danger associated with staying within a radius of 50m from the machine. Make sure people and animals are out of this area when Using the machine |

## 3 SECURITY

- ⚠ It is the operator's responsibility to ensure that the implement is not used or handled improperly.**

Make sure that the attachment is correctly sized for your carrier. Particularly important are power requirements, weight and working width. Any discrepancy may result in a reduction of warranty. Pay special attention to the weight of the chain mulcher and the length of the arm crane. There is a risk that the carrier may tip over!

- Always keep children away from the machine.
- Do not start the carrier until all persons are at a safe distance from the carrier.
- Make sure that no one is in the vicinity of the machine under any circumstances when it is in operation.
- Never allow anyone to stay between the machine and the carrier when the machine is attached. An unintentional action can result in the person being trapped.
- Pay special attention to splashes of, for example, stones and the like from the machine during operation

Modifications, alterations and alterations that have not been approved by the manufacturer may result in the warranty being limited or voided. This also applies to the use of spare parts or accessories that are not supplied by or approved by the manufacturer. Tokvam AS also does not compensate for any damage to people or objects that may have occurred as a result of the above.

When ordering spare parts or additional equipment, please provide the machine type and serial number. It is forbidden to use anything other than original spare parts for the chain mulcher.

## 4 PRODUCT DESCRIPTION

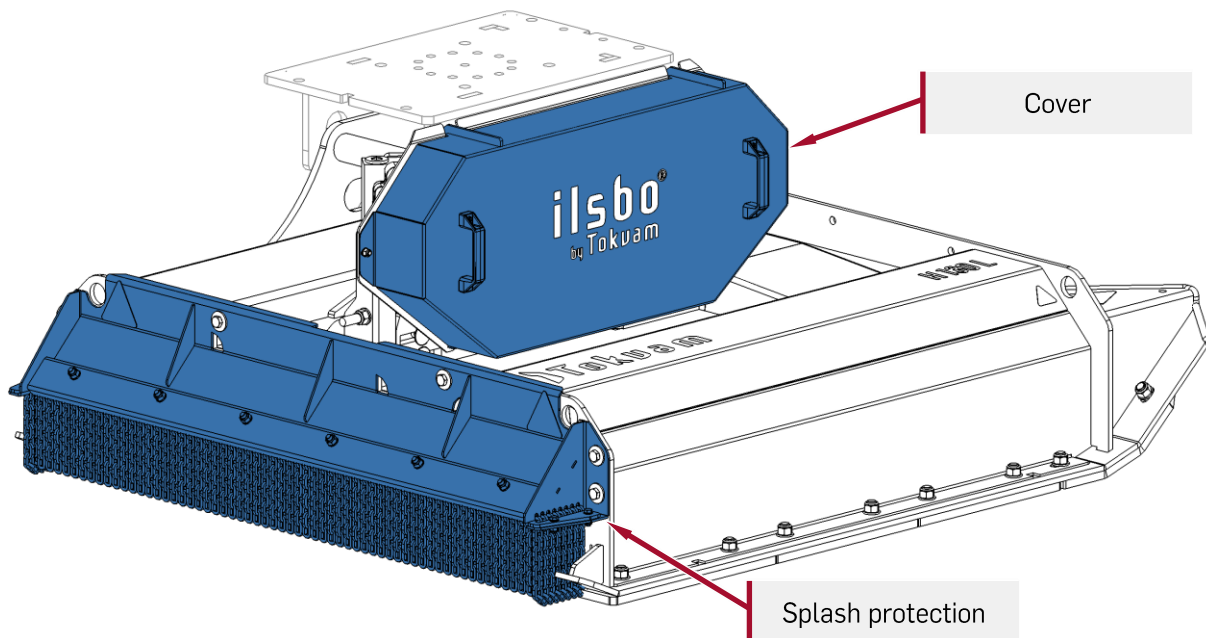
The machine is designed to remove vegetation such as grass, scrub and shrubs from ditches, roadsides, cultivated land, power lines, etc.

### 4.1 SAFETY EQUIPMENT

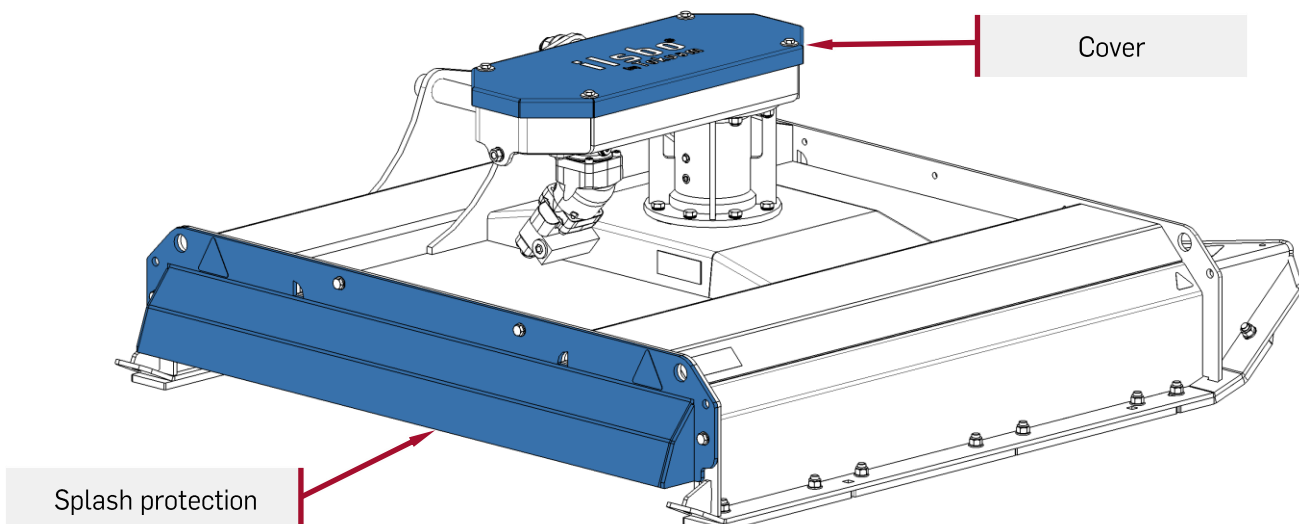
The following safety equipment is available on the machine, and **must always be used**:

- **Splash guard**  
The rear splash guard is used to reduce the risk of splashing out of the machine and should always be used to protect people and property.
- **Cover over belts and pulleys**  
The cover prevents access to belts and pulleys during operation, protects the drivetrain from branches and the like and must always be fitted during use.

All machines except H160HDB:



Only H160HDB:



## 4.2 STANDARD AND AVAILABLE OPTIONS

The table below provides an overview of what is supplied as standard in most markets (S) and what is available as an option (E).

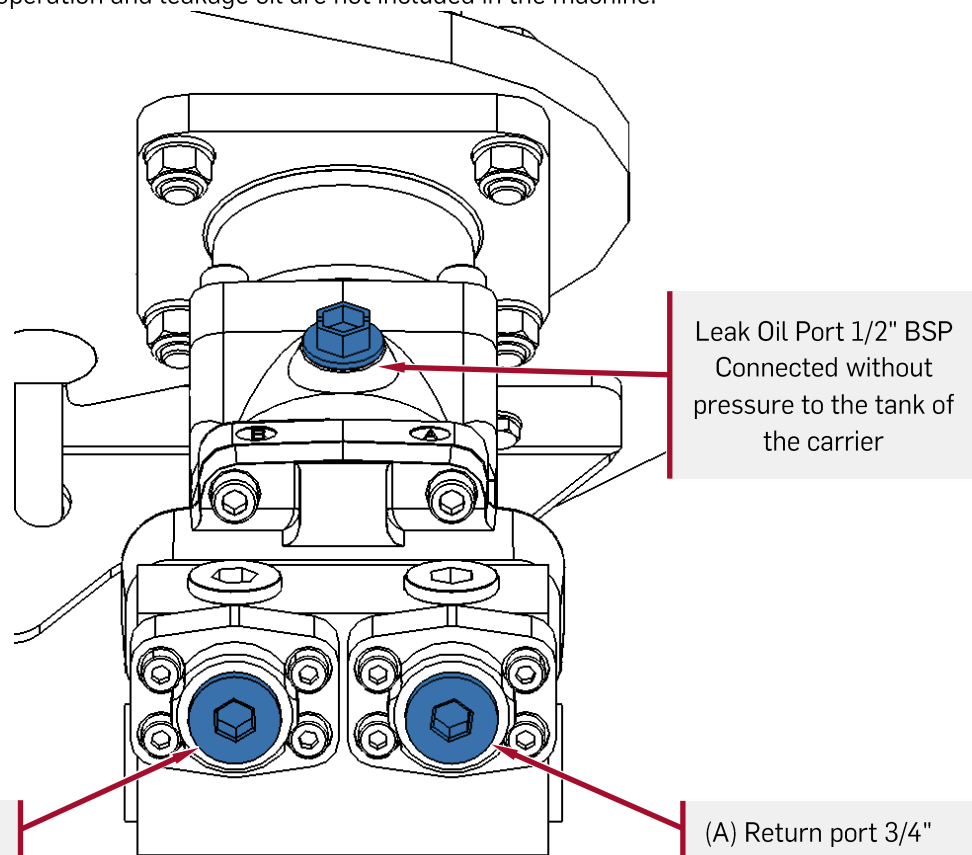
For installation instructions for optional equipment, refer to the user manual that is enclosed when the equipment is supplied with the machine. In the event of a retrofitting of the equipment, a user guide for this will be included.

| <b>Equipment</b>          | <b>Quick description</b>   | <b>H110L</b> | <b>H130L</b> | <b>H160HD</b> | <b>H160HDE</b> | <b>H160HDB</b> |
|---------------------------|--|--------------|--------------|---------------|----------------|----------------|
| Splash guard at the front | Reduces forward spatter  | E            | E            | E             | E              | E              |
| Welding bracket           | Attachment for welding the desired attachment to the carrier       | E            | E            | E             | E              | E              |
| S45 Attachment bracket    | Excavator attachment S45. Art.nr 24735                             | E            | E            | E             | E              | E              |
| S50 Attachment bracket    | Excavator Attachment S50. Art.nr 24736                             | E            | E            | E             | E              | E              |
| S60 Attachment bracket    | Excavator Attachment S60. Art.nr 24740                             | -            | E            | E             | E              | E              |
| Chain D-link 1.pair       | Recommended for grass. Withstands environment with a lot of stone. | E            | E            | E             | E              | E              |
| Replaceable skid shoes    | Protects the machine hull from wear and tear                       | E            | S            | S             | S              | S              |

## 5 PREPARATION BEFORE USE

### 5.1 HYDRAULIC HOSES FOR OPERATION AND LEAK OIL

Hydraulic hoses for operation and leakage oil are not included in the machine.



Hoses for operation: min 3/4" hoses, but preferably larger, e.g. 1". On the oil motor, there are 3/4" BSP internal threads. The hoses are adapted to the pressure of the carrier. The maximum permissible pressure on the oil motor of the chain mulcher is 350 bar.

Hose for leaking oil: minimum 1/2" hose – connected without pressure to the tank of the carrier that is below the oil level and as far away as possible from the suction hose to the oil pump. Drainage oil flow approx. 1-2 L/min at 2000 RPM.

- ⚠ **Hose lengths must be adjusted so that there is full mobility on the chain mulcher and the arm or crane on the carrier.**
- ⚠ **A leak oil hose must be used, even if the mulcher is only to be tested.**

The hydraulic motor must be filled with oil before the hoses are installed. It is important that the motor and hoses are vented before use. This is done by starting the motor of the chain mulcher for 15-20 seconds and then waiting for 3 minutes before starting the chain mulcher again. Then all the air has time to flow to the surface in the tank.

The amount of oil from the carrier is adjusted so that the speed of the chain storage is about 1500 RPM.

- ⚠ **The chain storage must not be run above 2000 RPM, as the chain may break.**

1500rpm on the chain storage is achieved by the following oil volume:

| Machine Size         | H110 (47ccm motor) | H130 (56ccm motor) | H160 (64ccm motor) |
|----------------------|--------------------|--------------------|--------------------|
| Oil flow at 1500 RPM | 80-90 l/min        | 100-110 l/min      | 120-130 l/min      |

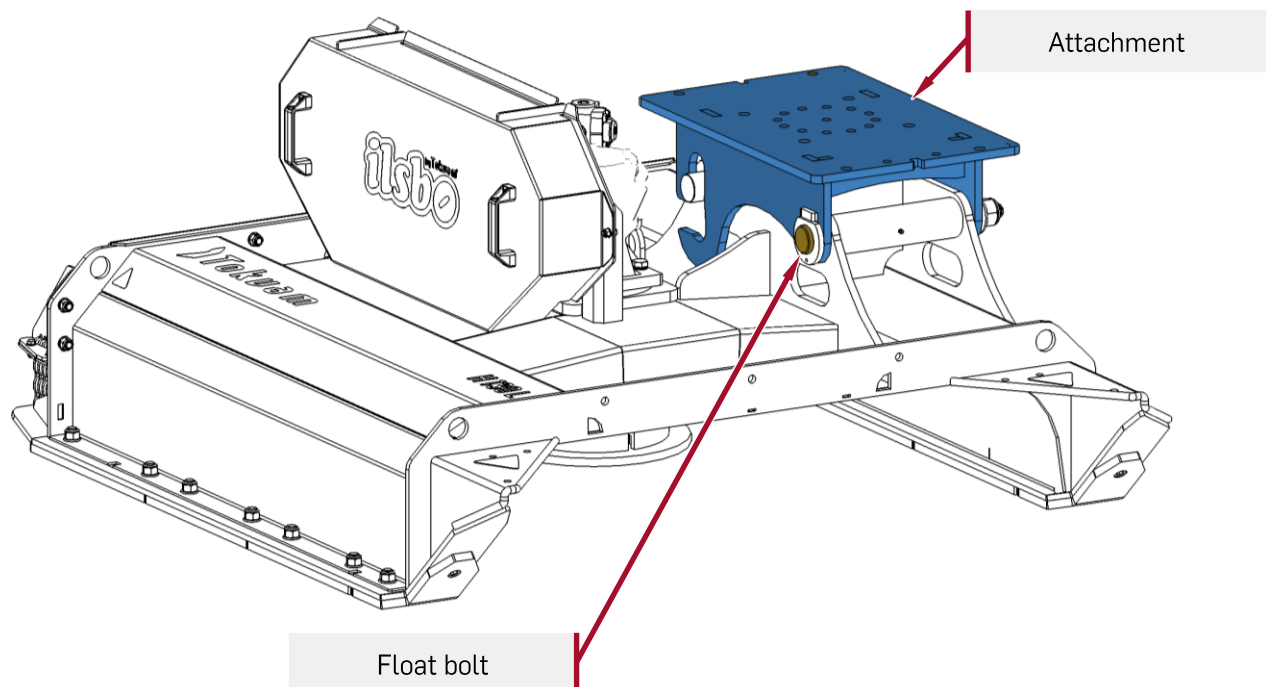
Adjustment of the speed of the chain can also be done by removing the chain from the chain storage and placing a tachometer on the chain storage. Adjust the amount of oil from the carrier until you reach a rpm of 1700rpm (without chain). Then the chain will reach a speed of approx. 1500 RPM under load.

## 5.2 ATTACHMENT TO A CARRIER

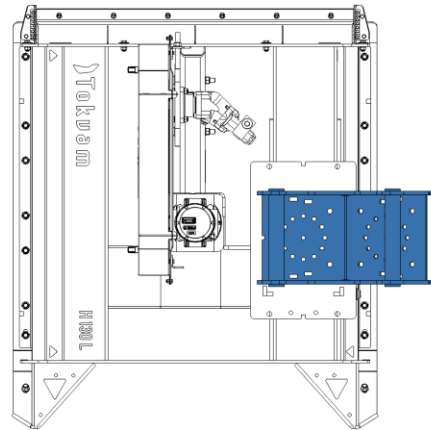
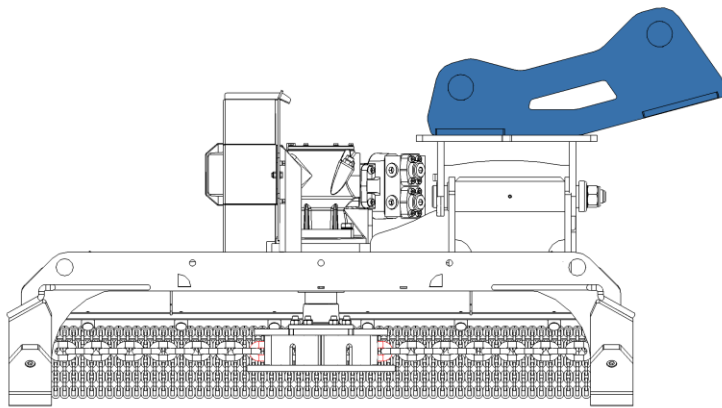
The attachment must be adapted to the arm or crane of the carrier. If the product is used on a carrier with an arm or crane that has rotation and/or tilt functions, the attachment must be adapted in accordance with chapter 5.2a, b and c.

**⚠ Check for any collisions that may occur between the chain mulcher and the carrier.**

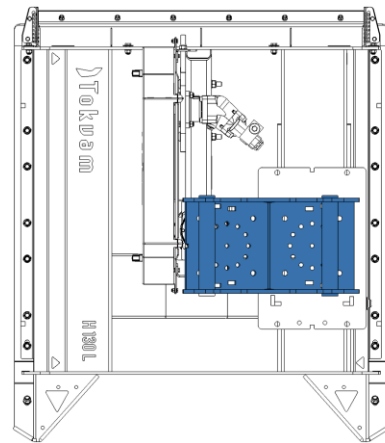
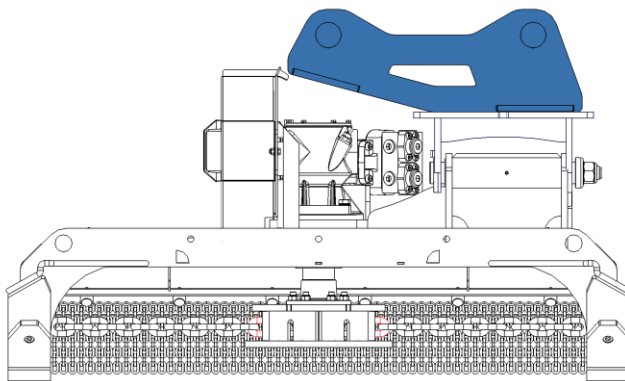
At a minimum, a foundation must be used to maintain the flow function of the chain mulcher. The attachment is attached by removing the float bolt, attaching the attachment, and putting the float bolt back in place.



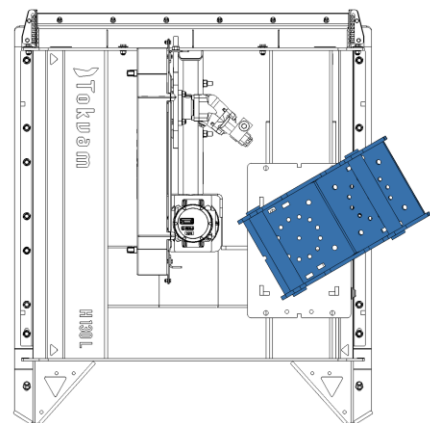
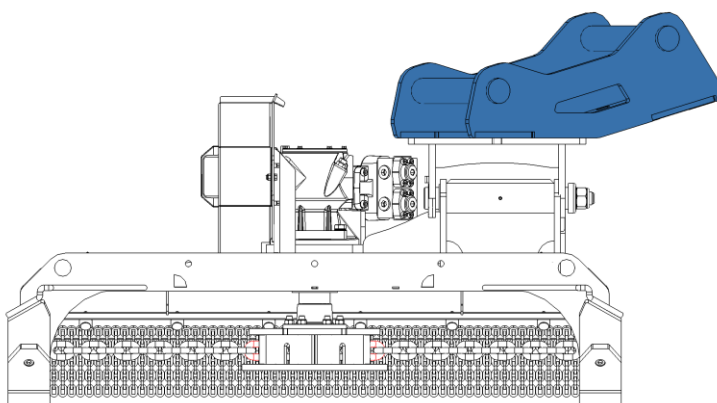
### 5.2a ATTACHMENT WITHOUT ROTOTILT



### 5.2b ATTACHMENT WITH ROTOTILT



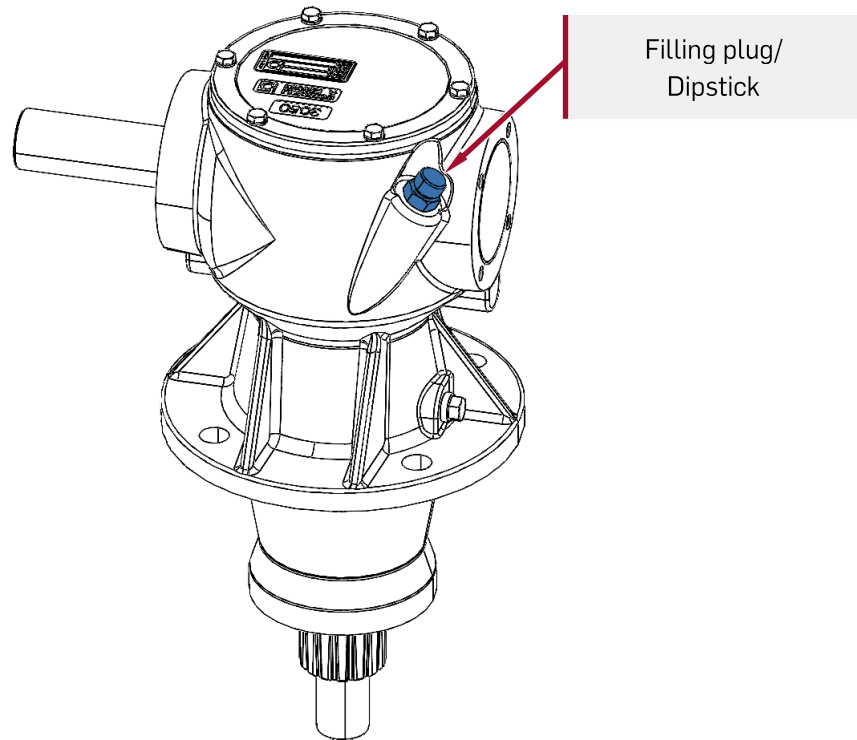
### 5.2c ALTERNATIVE ATTACHMENT WITH ROTOTILT



### 5.3 CHECK THE OIL LEVEL ON GEARS

Applies only to models with bevel gears (not H160HDB). Check that there is sufficient oil on the chain mulcher gear. The oil level should be at the height of the dipstick attached to the oil filler plug.

Gear comes filled with 1.4 litres of oil: Mobilgear 600 XP 150



### 5.4 LOOSENING THE IMPACT CHAIN

During transport, the impact chain is attached around the chain attachment with cable ties. The cable ties must be removed before the machine is used.

## 6 TRANSPORT

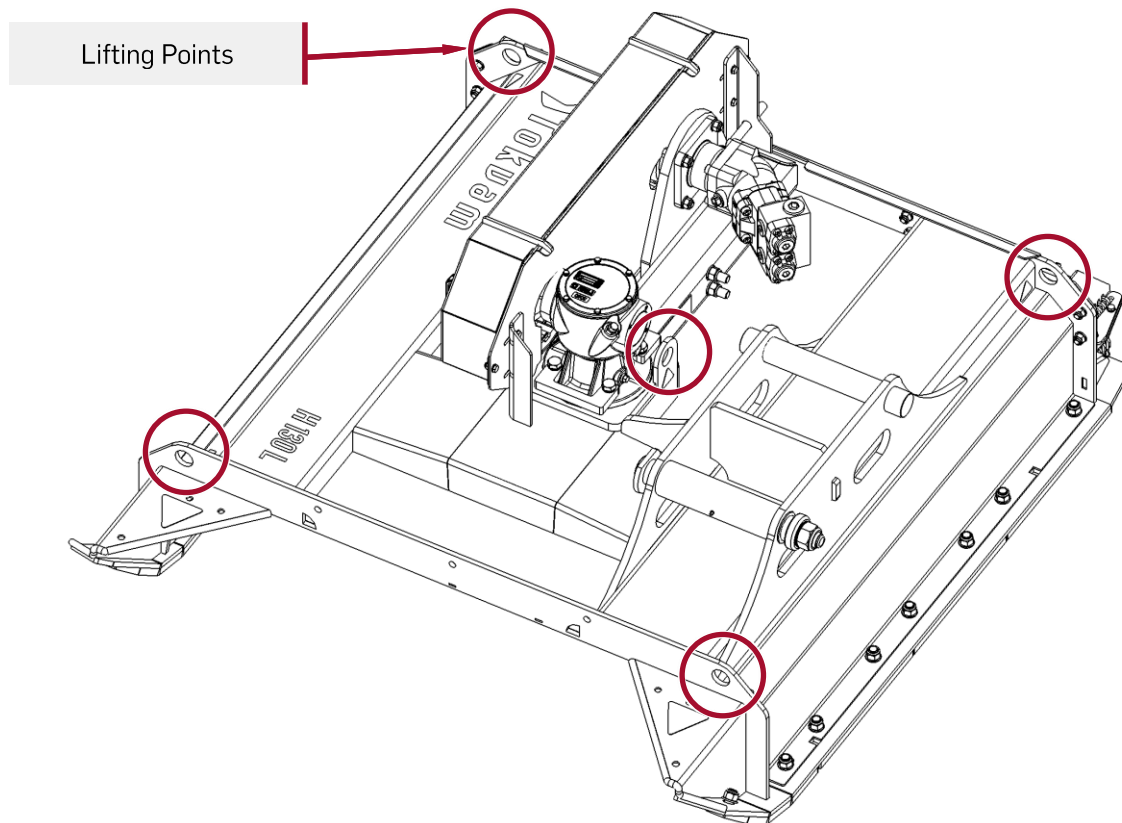
The machine must always be placed on a level and stable surface that can withstand the load of the machine. For weight, please refer to the technical data of your machine.

### 6.1 LIFTING AND MOVING

Always make sure that the lifting attachment used is sized to lift the total weight of the machine. The machine should only be lifted/moved using one of the three options below.

- Lifting the machine using a carrier connected to the machine's attachment.
- Lifting a machine on a pallet using forks on a forklift or other carrying machine.
- Lifting the machine by means of belts or similar at specified lifting points.

Belts and hooks should not be attached to any other place on the machine than referred to below.



All lifting points are marked with



### 6.2 TRANSPORT BY CAR/TRAILER

It is the carrier's responsibility to ensure that the machine is attached/belted in accordance with current requirements for the relevant means of transport. Belts, ropes or other aids for attaching the chain mulcher during transport are not included.

## 7 CONNECTION TO CARRIER

**⚠ There should never be unauthorized persons between the machine and the carrier when attaching/dismounting.**

**⚠ Due to the risk of crushing, no one should be between the machine and the carrier while another person is in the driver's seat.**

1. The chain mulcher is attached to the carrier's arm/crane. A base hitch or S45/S50/S60 must always be used to maintain the flow function of the chain mulcher. Consider the weight of the chain mulcher and the length of the arm crane, there is a risk that the carrier may tip over

**⚠ Danger of pinching! Do not expose yourself or others to the risk of crushing body parts when connecting the chain mulcher to the carrier.**

2. Install the hoses in the carrier's hydraulic outlet on the carrier, see section 6.1

**⚠ Always connect the leak oil hose first. A leak oil hose must always be used even if the chain mulcher is only to be used for test operation without it being used for brush crushing**

The maximum pressure for the operation of the chain mulcher is 350bar.

At the first start-up, the hydraulic system must be vented, see section 5.1

You must make sure that all hydraulic connections are tight and that all hoses are undamaged before activating the hydraulic system.

**⚠ Never put your hands or feet into the machine when it is connected to a carrier.**

**⚠ High-pressure hydraulic jets can penetrate the skin and cause serious injury. Seek medical attention immediately if hydraulic oil penetrates the skin or comes into contact with the eyes. Hydraulic oil can also cause allergic reactions. Wash immediately if you have hydraulic oil on your skin.**

For installation of other equipment, refer to the user manual that is enclosed when the equipment is delivered. Optional equipment is mainly delivered unassembled from the manufacturer unless otherwise agreed.

## 8 USE OF MACHINE

**⚠ It is the operator's responsibility not to endanger himself or others when using the machine.**

Please note that the carrier must be adapted to the chain mulcher to be used. See technical data for power requirements. Use beyond this is at your own risk.

The chain mulcher should run without load and at low oil rate/rpm for 1 minute to preheat the motor before use. This will reduce wear and increase the life of the oil motor.

The chain mulcher should be driven as close to the ground as possible to avoid splashing from the machine. The crushing result will then also be better, as the material remains inside the machine for as long as possible so that it is crushed into smaller pieces.

Drive in a position so that the rear part of the chain mulcher is slightly lower towards the ground than the front part. Do not force the chain mulcher through too coarse vegetation. The progress speed of the carrier is adjusted according to how much vegetation is to be crushed.

The recommended speed of the chain storage is 1500 rpm when driving in thickets. When driving on grass, the rpm should be lowered to reduce the blowing effect from the chain that can bend the grass away from the pan. For finer cutting of grass, optimal D-leak chains should be used.

The 13mm chain works best on crushing brushwood and bushes.

10mm chains are used advantageously on grass as they develop less blowing effect compared to 13mm chains.

If there are a lot of rocks or other solid objects in the ground and the speed is low, the chain can hit the mulcher or down into the ground before it stretches out. This will cause more wear on the machine and increases the risk of splashing from the machine.

## 8.1 SECURITY

- ⚠ **NB! Risk of splashing. Unauthorized persons must not be within reach of the chain mulcher. Safe distance from the machine is a minimum of 50m.**
- ⚠ **When driving on rough terrain, great caution must be exercised. Reduce the speed of progress.**
- ⚠ **When driving in densely populated areas, the public must be notified.**
- ⚠ **The chain mulcher must not be used if the splash guard or belt covers are broken/removed.**
- ⚠ **The operator's seat must never be left until the carrier's motor has stopped.**
- ⚠ **The moving parts of the chain mulcher must not be touched by any body parts until the carrier's motor is stopped.**
- ⚠ **When driving in dry areas, there is a risk of fire.**
- ⚠ **Due to the risk of crushing, the chain mulcher should never be set down on the ground/ground if people or animals are in the immediate vicinity.**
- ⚠ **Be aware that forward visibility may be limited by the chain mulcher.**
- ⚠ **Never walk/crawl under the chain mulcher when it is hanging from the carrier.**
- ⚠ **During brush crushing in the dark, the work area must be illuminated.**
- ⚠ **If vibrations occur in the chain mulcher, it must be stopped immediately for inspection and possible repair.**
- ⚠ **Use only original spare parts for the chain mulcher.**

## 8.2 DISCONNECTION

After use, disconnect the machine as follows:

1. Place the machine on a level and stable surface.
2. Hydraulic hoses are disconnected from the carrying machine.
3. The brush cutter attachment is disconnected from the carrier.
4. The machine is now unplugged and can be abandoned.

## 9 SERVICE AND MAINTENANCE

- ⚠ **The chain mulcher must be placed on the ground, the parking brake on the carrier activated, the motor stopped and the ignition key removed before service and maintenance is performed.**

Tighten all screws after the first 10 hours of use. At the same time, lubricate all moving parts with grease/oil.

### 9.1 INSPECTION AND MAINTENANCE INTERVAL

#### 9.1a DAILY INSPECTION

- Check that the belt cover and splash guard are intact and fit their function.
- Check hoses and connectors for leaks.
- Check that there is no dirt in the quick connectors when installing.
- Check that all screws and nuts are sufficiently tightened.
- Check the chain mulcher and fastener for cracks.
- Check the oil level in the transmission (for models that have a transmission).
- Make sure the belts are tight and free of damage.
- Check that the cutting chain is intact and has the correct number of links.
- Check that the chain hitch cap clamping pins are in place and properly seated.
- Lubricate the axle sleeve for the bolt to the fastener.

#### 9.1b MAINTENANCE EVERY 8 HOURS

- Lubricate the chain mulcher.

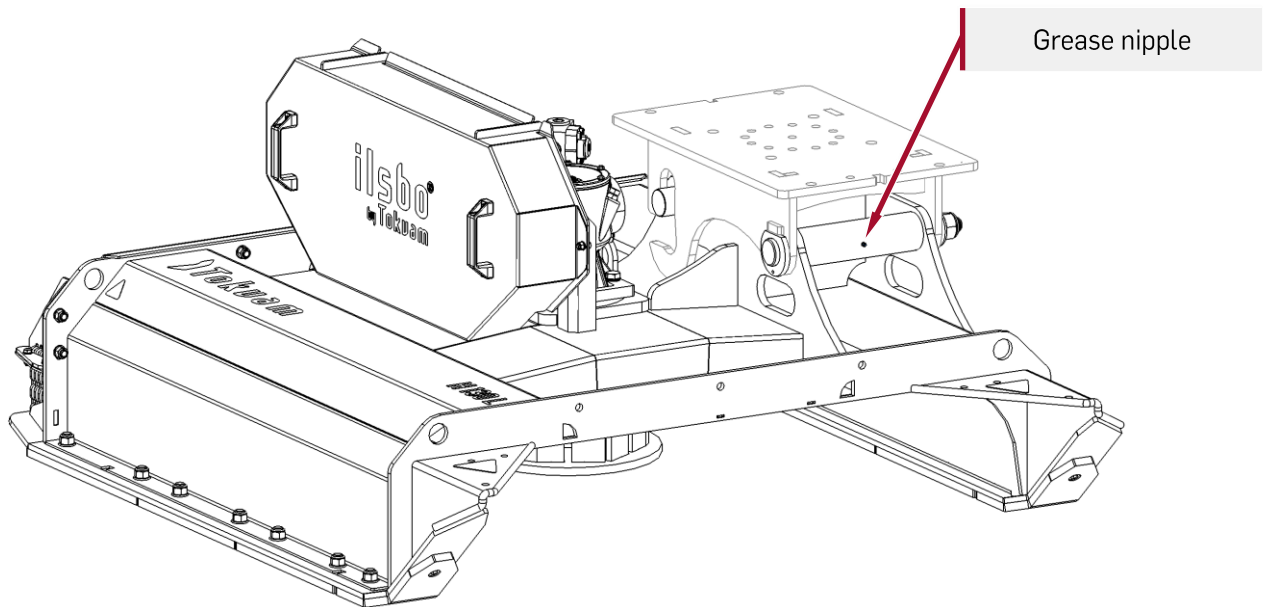
#### 9.1c MAINTENANCE EVERY 100 HOURS

- Change the oil in gearbox.

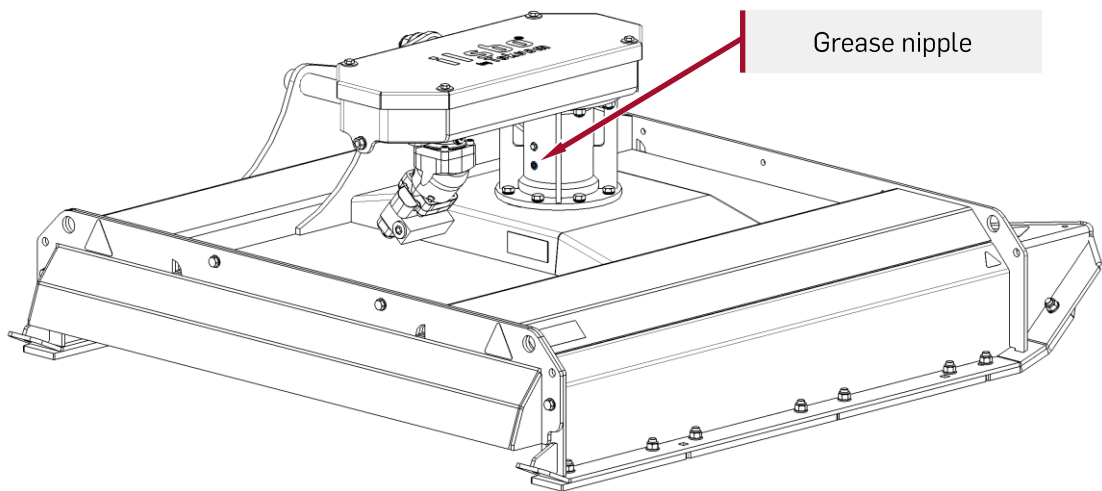
## 9.2 MAINTENANCE

### 9.2a LUBRICATION WITH GREASE

1. Clean grease nipple.
2. Use a grease press and press EP2 grease into the grease nipple.
3. H160HDB: Use a grease press with EP2 grease in the grease nipple on the bearing housing.



H160HDB:



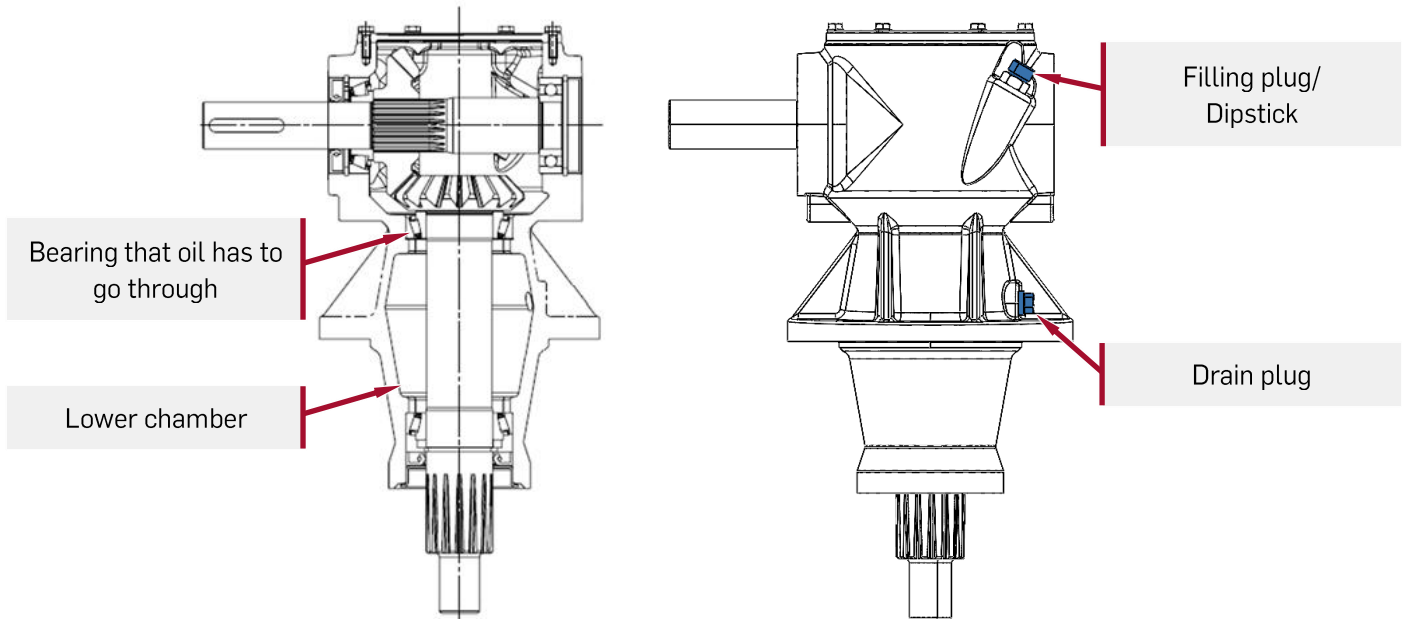
## 9.2b CHANGING THE TRANSMISSION OIL

Does not apply to H160HDB.

- Oil volume: 1.4 litres.
- Oil type: Mobilgear 600 XP 150 or equivalent.

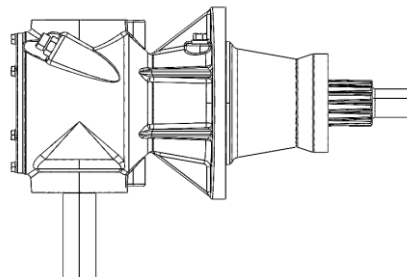
Procedure:

1. Unscrew drain plug.
2. Unscrew the filling plug/dipsticks.
3. Suck out oil both through holes for drain plug and filler plug/dipsticks to get all the oil out.



Fastest way to fill oil:

1. Measure out 1.4 liters of oil.
2. Position the chain mulcher on its side so that the gear drain plug is pointing upwards as shown in the picture below.
3. Fill up with oil through the drain plug hole.
4. Screw in the drain plug.
5. Put the chain mulcher back down and fill the rest of the oil through the filler plug/dipstick hole.



Filling all the oil through the hole for the filler plug/dipstick will take longer, as the oil must flow through the bearing inside the gear. In order for the oil to flow through the bearing, the pile must be removed so that the air can escape. Screw the drain plug back in when the oil starts to run out. Then top up the rest of the oil. The oil takes time to get through the bearing and measurement at the dipstick can therefore show that there is too much oil.

## 9.2c CHAIN REPLACEMENT 1

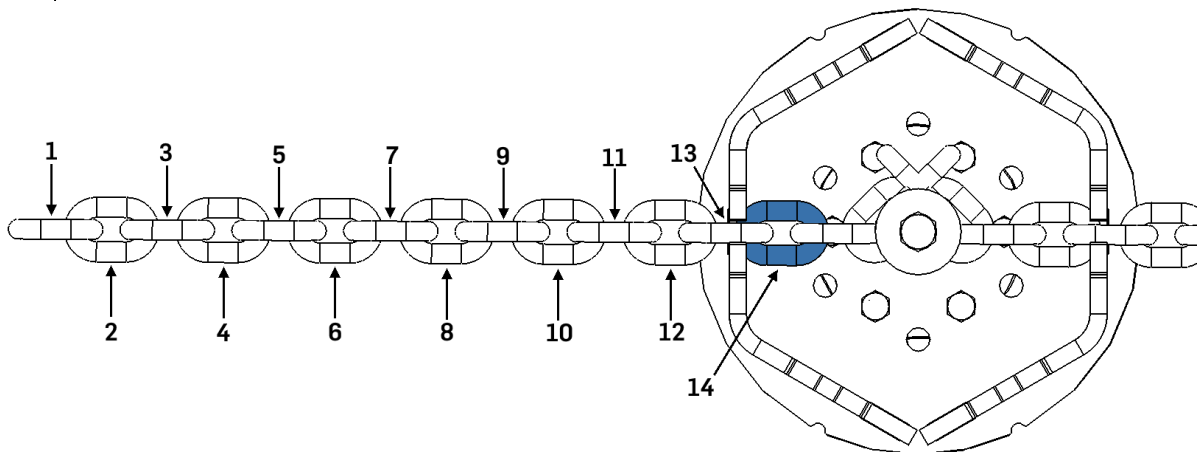
Changing the chain is done by the following steps:

1. Place the chain mulcher on a stable surface in a vertical position.
2. Stop the carrier and remove the ignition key.
3. Remove the lid of the chain hitch by unscrewing the M16 screw and Nord-Lock washer
4. Replace used chain with new original chain. Use original chains to avoid damage to the machine and surroundings. See table for the number of links used.
5. Check that the chain does not collide with the pan of the chain mulcher.
6. Screw on the lid using the M16 screw and Nord-Lock washer. Tighten the screw to 320Nm.NB!: Inspect the washer before mounting. In case of visual damage or deformation, it should be replaced!

It is important that the chains are mounted with the correct number of chain links outside the chain attachment:

| Chain/Machine Size | H110                          | H130                               | H160                              |
|--------------------|-------------------------------|------------------------------------|-----------------------------------|
| 13mm Chain         | 11th Link in chain attachment | 14th. Link in the chain attachment | 17th Link in the chain attachment |
| 10mm Chain         | 15th Link chain attachment    | 17th Link in chain attachment      | 22nd Link in chain attachment     |

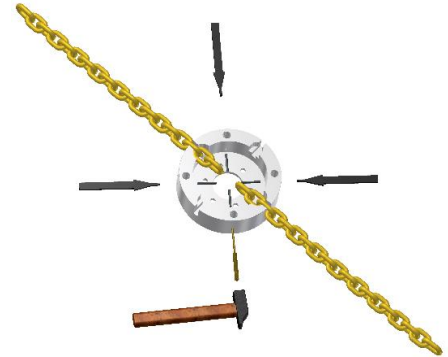
Example: H130, 13mm chain:



## 9.2d CHAIN REPLACEMENT 2

Some models (H110L until 2026 and other H-models 2025) are supplied with a different type of chain attachment. Replacement of chains on this type is done by the following:

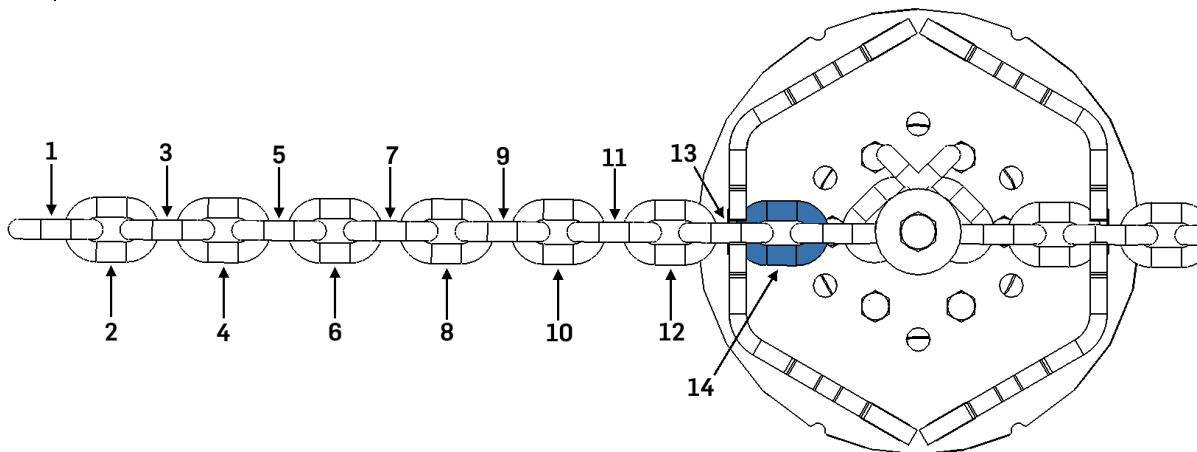
1. Place the chain mulcher on a stable surface in a vertical position
2. Stop the carrier and remove the ignition key
3. Punch in the 4 clamping pins shown in figure using hammer and a 5mm mandrel
4. Remove the chain lid
5. Replace the chain with new original chain. Use original chains to avoid damage to the chain mulcher and surroundings. See table for the number of links used.
6. Check that the chain does not collide with the pan of the chain mulcher.
7. Replace the chain lid
8. Wrap in **4 new** clamping pins. If old clamping pins are used, there is a great risk that the chain lid and chains can fall off



It is important that the chains are mounted with the correct number of chain links outside the chain attachment:

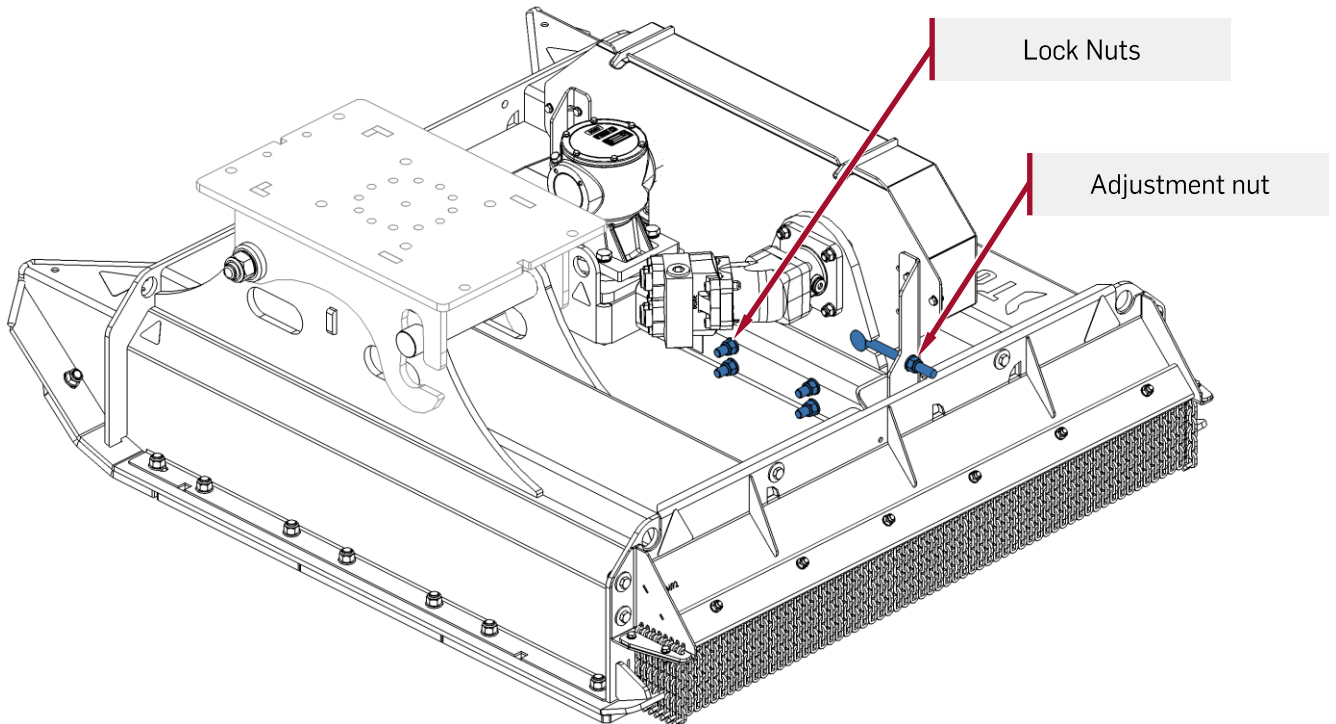
| Chain/Machine Size | H110                          | H130                          | H160                          |
|--------------------|-------------------------------|-------------------------------|-------------------------------|
| 13mm Chain         | 11th Link in chain attachment | 14th Link in chain attachment | 17th Link in chain attachment |
| 10mm Chain         | 15th Link in chain attachment | 17th Link in chain attachment | 22nd Link in chain attachment |

Example: H130, 13mm chain:



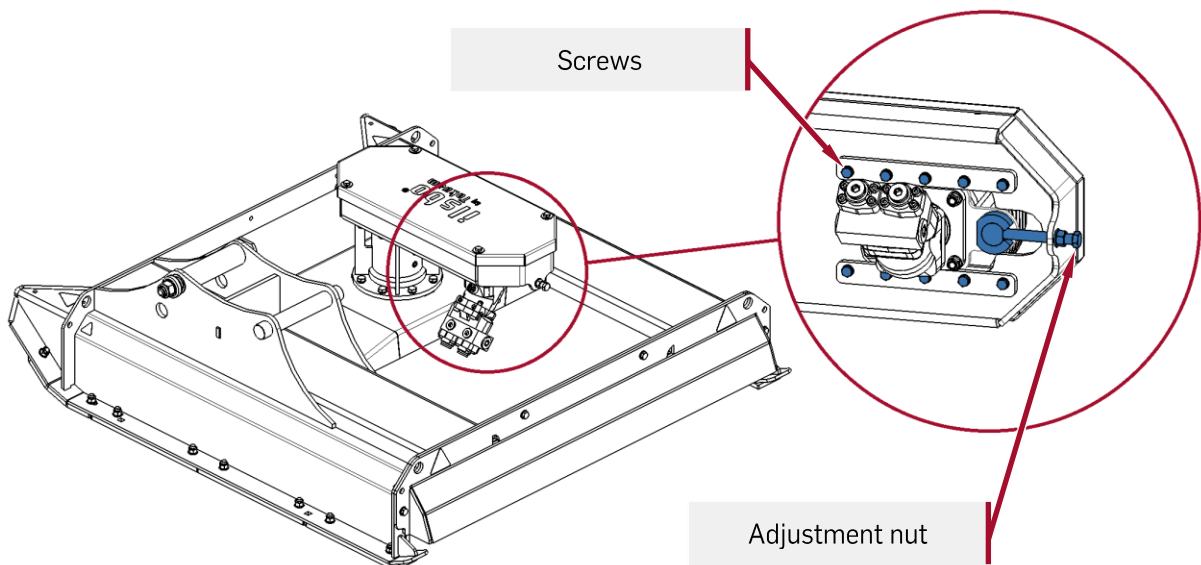
### 9.2e TENSIONING THE BELTS

- Stop the motor on the carrier and remove the ignition keys
- Removing the belt cover
- Loosen 4x lock nuts (about 2 rounds)
- Tighten the belts using the adjustment nut. The belts should be stretched strongly
- Tighten 4x lock nuts and fit belt cover.



### 9.2f TENSIONING BELTS FOR H160HDB

- Stop the motor on the carrier and remove the ignition keys
- Removing the belt cover
- Loosen up 10x screws in the rails
- Tighten the belts using the adjustment nut. The belts should be stretched strongly
- Tighten 10x screws and fit belt cover



## 9.2g CHANGING THE BELTS

⚠ When replacing belts, all belts must be replaced, and only original belts tested by the manufacturer must be used

- Stop the motor on the carrier and remove the ignition keys
- Loosen lock nuts/screws marked in figure under 9.2e/9.2f
- Slack up and take off old belt
- Fit and re-tighten the belt using the adjustment nut. The belts should be strongly stretched.
- Tighten lock nuts/screws and replace cover

After 10-20 minutes of driving, the belts need to be re-tightened further. New belts need to be re-tightened several times in the beginning. If you do this, the belts will last a long time, and you avoid unnecessary wear and downtime

If the belts slip (squeak) during operation, they must be re-tightened immediately

## 9.3 FASTENER TIGHTENING

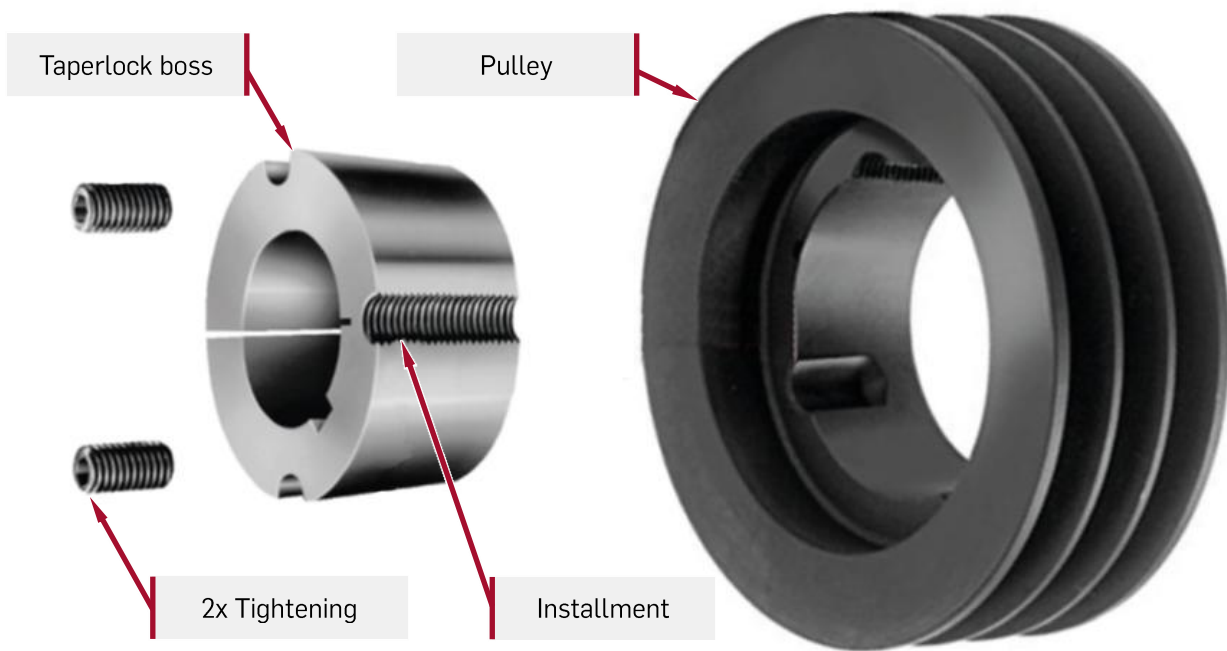
The chain mulcher is exposed to vibrations, and it is therefore important to retighten all screws and nuts at regular intervals.

Fasteners are tightened with tightening torque according to the table below (torque spread  $\pm 5\%$ )

|            | Attraction torque in the Nm Strength class: |      |      |
|------------|---|------|------|
|            | 8.8   | 10.9 | 12.9 |
| <b>M4</b>  | 2,6   | 3,9  | 4,5  |
| <b>M5</b>  | 5,2   | 7,6  | 8,9  |
| <b>M6</b>  | 9   | 13,2 | 15,4 |
| <b>M8</b>  | 21,7  | 31,8 | 37,2 |
| <b>M10</b> | 43  | 63   | 73   |
| <b>M12</b> | 73  | 108  | 126  |
| <b>M14</b> | 117   | 172  | 201  |
| <b>M16</b> | 180   | 264  | 309  |
| <b>M18</b> | 259   | 369  | 432  |
| <b>M20</b> | 363   | 517  | 605  |
| <b>M22</b> | 495   | 704  | 824  |
| <b>M24</b> | 625   | 890  | 1041 |
| <b>M27</b> | 915   | 1304 | 1526 |

*\*Does not apply to chain attachments. See Chapter 9.2c.*

## 9.4 INSTALLING AND DISASSEMBLING PULLEYS



### 9.4a PULLEY MOUNTING

- All machined contact surfaces of the taperlock boss and pulley should be thoroughly cleaned. Grease, oil and dirt are removed.
- The pulley and taperlock boss are mounted on the axle. The pulley rotates until the pulley thread holes line up with the mounting holes in the taperlock boss.
- Apply Loctite to the tensioning screws and screw them in lightly so that the pulley and taperlock boss can still be shifted axially (in and out) on the shaft.
- Make sure that the pulley is aligned with the opposing pulley.
- Alternately tighten the tightening screws with a tightening torque of 90 Nm for correct centering of the taperlock boss.

### 9.4b PULLEY DISASSEMBLY

- Unscrew both tightening screws from the taperlock boss.
- Screw one of the tensioning screws into the installment hole until the taperlock boss expands and detaches from the shaft and pulley.

## **10 END OF SEASON / FOR LONG-TERM STORAGE**

Annual inspection of the machine must be carried out by the employer in accordance with regulations (FOR 1998-06-26 no. 608). To ensure its longevity, the product should be thoroughly cleaned and lubricated before being put away for storage.

## **11 DESTRUCTION**

At the end of the machine's useful life, the machine must be disposed of in accordance with the applicable laws and regulations in the user country.

If there are oil products in the machine, these must be removed and destroyed in accordance with the applicable laws and regulations of the user country.

## **12 COMPLAINTS AND WARRANTIES**

Tokvam AS guarantees that the product is delivered from the factory without defects or defects. Warranty is provided in accordance with applicable law.

The customer must, within a reasonable time, after discovering or should have discovered the defect, notify the seller that he/she wishes to invoke it.

The warranty does not cover defects or defects resulting from the product being subjected to overload or otherwise used carelessly (cf. this user manual).

The warranty does not cover defects or defects due to lack of maintenance (cf. this user manual).

Normal wear and tear of the product and components are not covered by the warranty