

# Users' Guide

## Hydraulic chain mulchers



Read the Users' Guide prior to utilisation of the machine!

Applies to the following models / from CE number

Revision D

H110L H130L H130LT H160L H160HD H160HDE H160HDB	8221001	→
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### Tokvam AS

Vestre Totenvei 1135, N-2840 Reinsvoll, Norway

Organisation number: 979 746 156

Tel.: +47 61 19 63 77, Email: [info@tokvam.no](mailto:info@tokvam.no), web [www.tokvam.no](http://www.tokvam.no)

Original language: Norwegian

## DECLARATION OF CONFORMITY

Manufacturer: Tokvam AS  
Vestre Totenvei 1135  
N-2840 REINSVOLL  
Norway

Organisation number: 979 746 156  
Telephone: +47 61 19 63 77  
Email: info@tokvam.no

We hereby declare that the following product:

Chain mulcher	Model: H110L, H130L, H130LT, H160L, H160HD, H160HDE, 160HDB	Serial number: / 8221001 ->
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to which this declaration relates is in conformity with the relevant provisions of the following standard or other normative documents:

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

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Finn Kristian Tokvam (Managing Director)

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## 2 Technical Data

Table 1 Technical data

Machine	H110L	H130L	H130LT	H160L	H160HD	H160HDE	H160HDB
Working width	110 cm	130 cm	130 cm	160 cm	160 cm	160 cm	160 cm
Weight Basic machine	395 kg	459 kg	478 kg	535 kg	610 kg	620 kg	697 kg
Total width	126 cm	146 cm	146 cm	176 cm	176 cm	176 cm	176 cm
Cutting height	10 cm	10 cm					
Oil requirement, l/min	60-90	70-110	70-110	90-150	90-150	90-150	90-150
Oil pressure, bar	200-350	200-350	200-350	200-350	200-350	200-350	200-350
Connection for drive/return hose	3/4" BSP	3/4" BSP					
Connection for leak oil hose	1/2" BSP	1/2" BSP					
Transmission	Belt drive + gear	Belt drive					
Chain size, cutting unit	10 mm and 13 mm	13 mm					
Drive source	Carrier	Carrier	Carrier	Carrier	Carrier	Carrier	Carrier

### 2.1 Machine label / CE mark

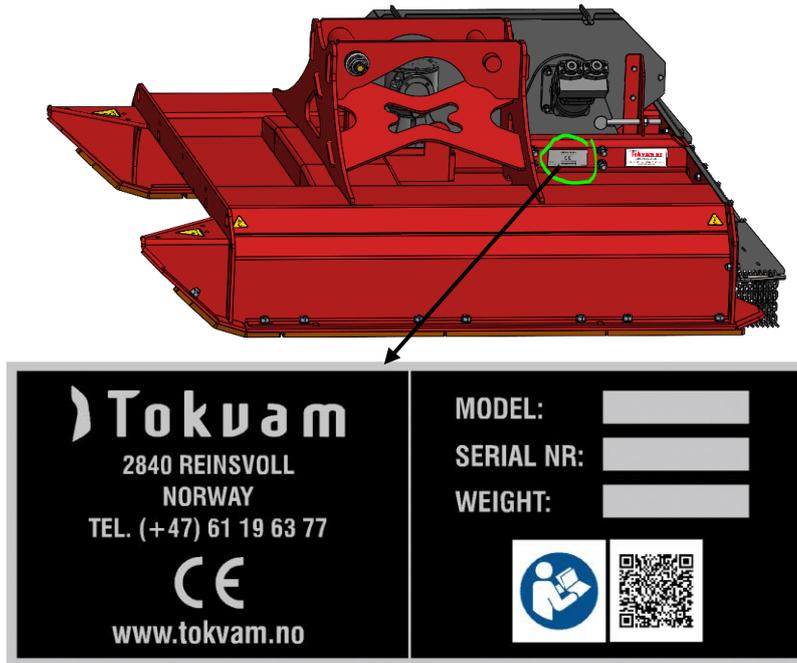
All machines carry a machine label. The machine label is fitted below the oil engine at the centre of the machine (see illustration below).

The following information is provided on the machine label:

Model (machine type)

Serial no.: The number is made up of the machine number (2 digits) + production year (2 digits) + production number (3 digits).

CE mark contains a QR code with link to this user manual.



### 3 Warning labels on the machine – significance of the symbols

Please read and learn the warning symbols.

	<p>Lifting point The machine can be lifted using the holes beside this mark</p>
	<p>Risk of loose objects There is a risk that loose objects such as stones may be ejected by the machine</p>
	<p>Risk within a 50-metre-radius There is a risk involved in being closer to the machine than a 50-metre-radius. Make sure that persons and animals are outside this radius when using the machine.</p>

#### Read the Users' Guide carefully prior to utilisation of the machine!

Read the Users' Guide in detail before starting the machine and prior to preventive maintenance. Get to know the equipment and read all the instructions. Store the Users' Guide so that it is easy to find during use of the machine. **NB!** This Users' Guide has been published for all markets. Please note that optional equipment may therefore vary. Please ignore information on any equipment not found on your machine.

We make constant improvements to our products and therefore reserve the right to make changes and amendments as we see fit. Improvements and changes are not implemented on products (machines or extra equipment) that have already been delivered and are in use. We reserve the right to amend data and specifications for new machines without prior notice. The same applies to instructions for maintenance and other service initiatives.

## 4 Safety

 **The driver is responsible for ensuring that the tool is not utilised or handled incorrectly.**

Make sure that the tool has the correct dimensions for the relevant type of carrier. Factors of particular importance are power requirement, weight and working width. Any nonconformities in this area may result in a limited product warranty. Pay special attention to the chain mulcher's weight and length of the crane arm. There is a risk of the carrier tipping over.

- Children must not be allowed near the machine.
- Never start the carrier unless all persons are at a safe distance from the machine.
- In all events, make sure there are no persons nearby the machine when it is in operation.
- Never allow persons to stand between the machine and its carrier when the machine has been fitted to the carrier. Unintended events may result in crushing injuries.
- Pay special attention to loose objects such as stones being ejected from the machine during operation.

Modifications, amendments and reconstructions that have not been approved by the manufacturer may lead to limitations in the warranty or render the warranty void. This also applies to the use of spare parts or optional equipment that have not been delivered or approved by the manufacturer. Tokvam AS cannot be held liable for personal injuries or damage to property which has occurred due to the above.

When ordering spare parts or optional equipment, please state the machine type and serial number. Use of non-original spare parts on the chain mulcher is prohibited.

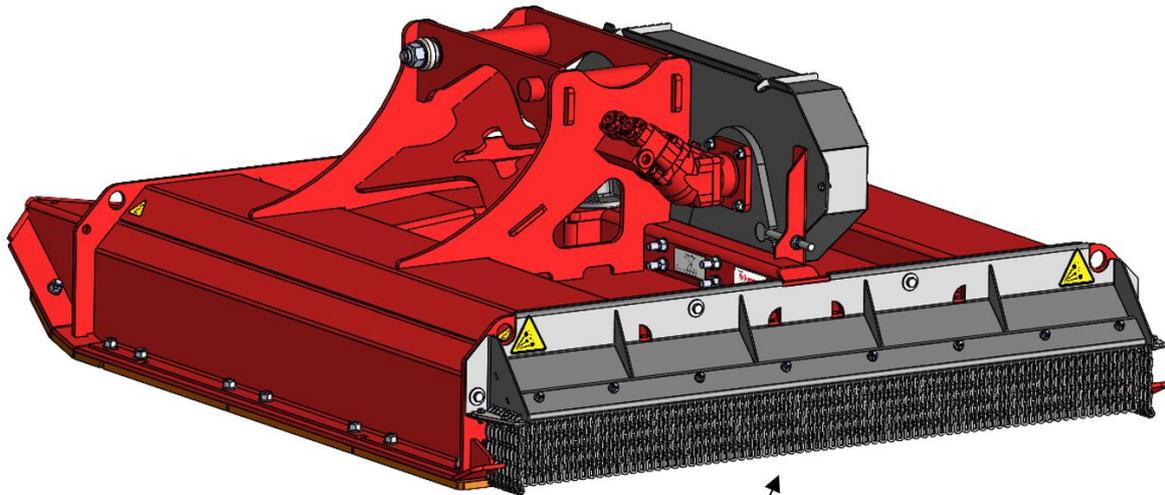
## 5 Product description

The machine has been designed to remove vegetation such as grass, scrub and bushes from ditches, roadsides, cultivated fields, power lines etc.

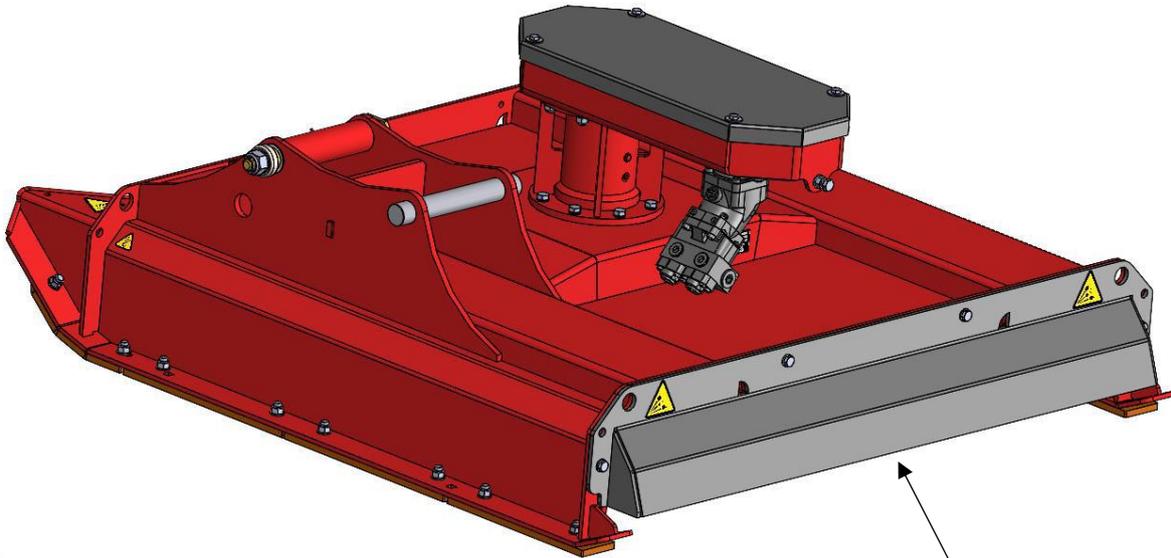
### 5.1 Safety equipment

 The following safety equipment is provided with the machine and **utilisation is obligatory**:

### 5.1.1 Splash guard rear.



Splash guard rear

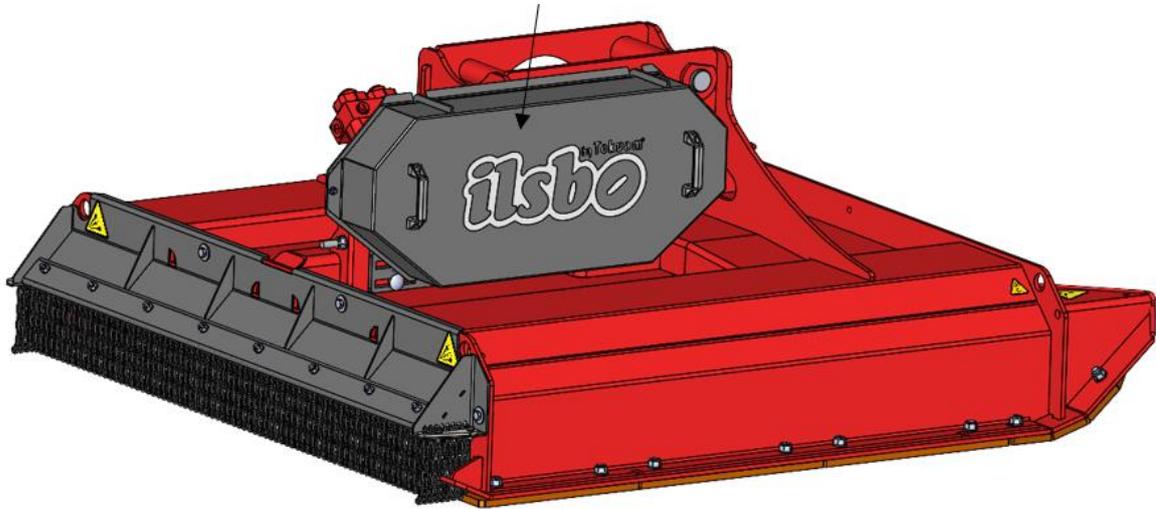


Splash guard rear, H160HDB

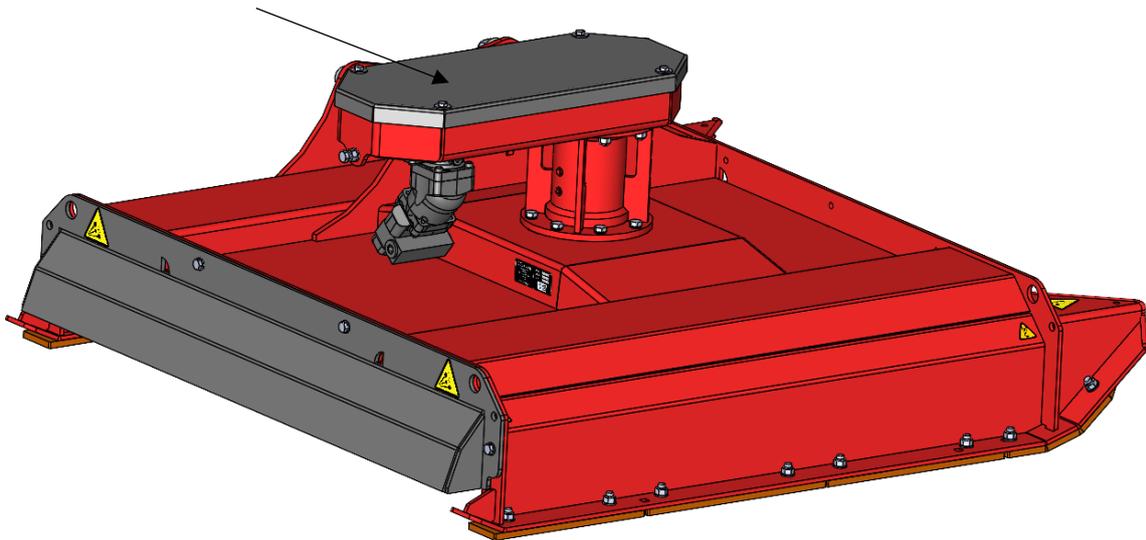
The purpose of the rear splash guard is to reduce the risk of loose objects being ejected from the machine and must always be in place.

5.1.2 Cover over belts and belt pulleys.

Cover over belts and belt wheel



Cover over belts and belt pulleys, H160HDB



The cover prevents access to belts and belt pulleys during operation, and protects the drive gear from branches etc., and must always be in place.

## 5.2 Standard and available optional equipment

The table below provides an overview of the equipment supplied as standard on most markets (S) and extra optional equipment (E).

For fitting instructions for optional equipment, please refer to the Users' Guide which accompanies the extra equipment when delivered with the machine. If extra equipment is ordered after the machine order, the Users' Guide will be supplied with the extra equipment.

Table 2 Available optional equipment

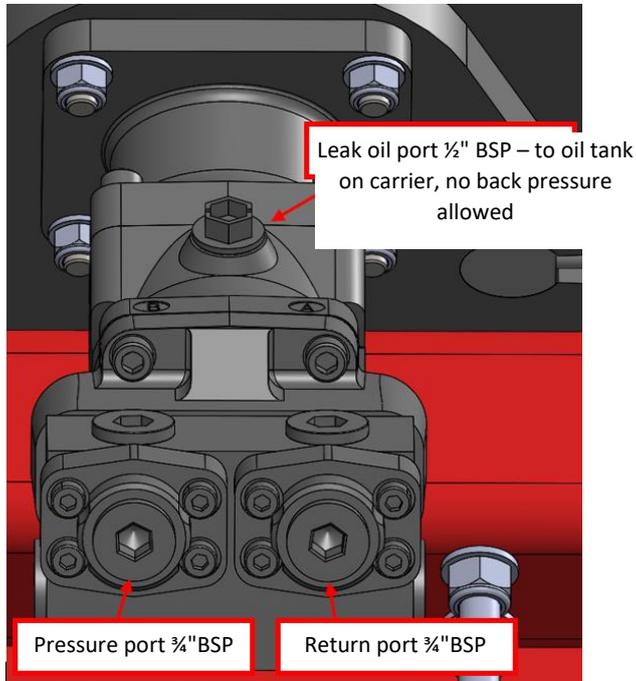
Equipment	Brief description	H110L	H130L	H130LT	H160L	H160HD	H160HDE	H160HDB
Splash guard, front	Reduces the risk of loose objects being ejected at front of machine	E	E	E	E	E	E	E
Basic attachment	Attachment for welding on required attachment to carrier	E	E	E	E	E	E	E
S45 Attachment	Excavator attachment S45	E	E	-*	E	E	E	E
S50 Attachment	Excavator attachment S50	E	E	-*	E	E	E	E
S60 Attachment	Excavator attachment S60	-	E	-*	E	E	E	E
D-link chain, 1 pair	Optimal function when cutting grass where there are also a lot of stones.	E	E	E	E	E	E	-
Replaceable wear skid shoe	Protects the machine hull from wear and tear	E	S	S	S	S	S	S

\*The H130LT is supplied with an attachment for a timber crane with "Sit Right Quick Connector"

## 6 Preparations prior to use

### 6.1 Hydraulic hoses for operation and leak oil

Hydraulic hoses are not included in the machine, and must be fitted for operation and leak oil:



Hoses for operation: min. ¾" hoses, but preferably larger, for example 1". The oil engine has ¾" BSP internal threads. The hoses are adapted to the pressure from the carrier. The max. permitted pressure for the oil motor to the chain mulcher is 350 bar.

Hose for leak oil: min ½" hose – shall be connected to the carrier without pressure to the tank below the oil level and at the greatest possible distance from the suction hose for the oil pump. The oil engine has ½" BSP internal threads. NB! The leak oil hose must always be used, even when carrying out a test run of the chain mulcher without operation of the actual mulcher. The drain oil volume for the oil engine is approx. 1-2 litres/min when the engine is running at 200 rpm.

The hose lengths must be adapted to allow for full mobility for the chain mulcher and arm, or the crane on the carrier.

The hydraulic motor must be filled with oil before assembling the hoses. It is important that air trapped in the oil in the motor and hoses are released before use. To do so, start the chain mulcher engine and let it run for 15-20 seconds, then wait for three minutes before re-starting the chain mulcher. This will allow all the air to float to the surface in the tank.

Adjust the oil volume from the carrier so that the rotational speed of the chain storage is approx. 1,500 rpm. NB! The chain storage must not be allowed to run at more than 2,000 rpm to prevent chain breakage.

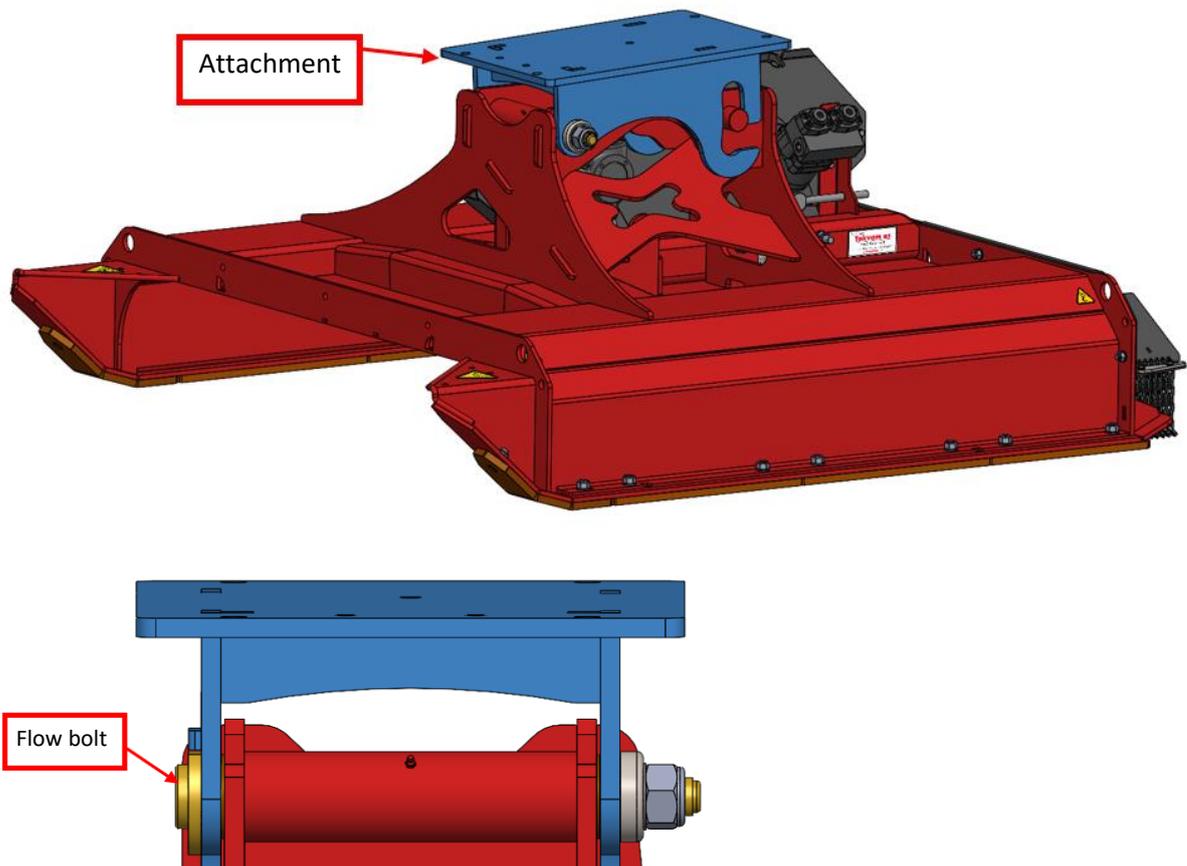
1,500 rpm is achieved with the following oil volume:

Machine size	H110 (47 ccm motor)	H130 (56 ccm motor)	H160 (64 ccm motor)
Oil volume	80-90 l/min	100-110 l/min	120-130 l/min

You can also adjust the rotational speed of the chain by removing the chain from the chain storage and installing a revolution counter on the chain storage. Adjust the oil volume from the carrier until you achieve a rotational speed of 1,700 rpm (without chain). This will allow the chain to reach a rotational speed of approx. 1,500 rpm during load.

## 6.2 Attachment to carrier

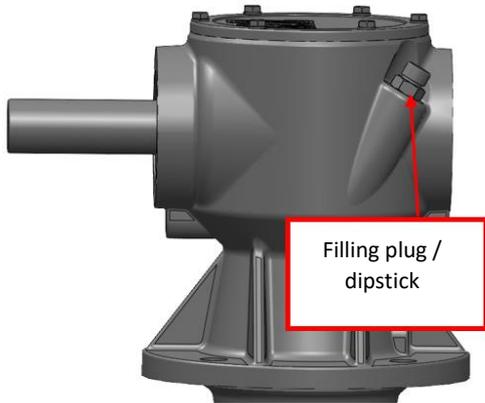
The attachment must be adapted to the arm or crane on the carrier. If the carrier's arm or crane has a rotation and/or tilt function, this must be inspected for any conflict with the chain mulcher. The basic attachment must be used as a minimum in order to safeguard the flow function to the chain mulcher. Ref. also Table 2 for original attachments. To attach, remove the flow bolt, fit the attachment and re-install the flow bolt.



### 6.3 Check the gear oil level (does not apply til H160HDB)

Check to make sure there is enough oil on the chain mulcher gear. The oil level shall be at the same height as the dipstick on the oil filling plug.

On delivery from the factory, the gear is filled with 1.4 litres of oil: Mobilgear 600 XP 150



### 6.4 Loosen the impact chain

The impact chains are wound around the chain attachment and are held in place with cable ties. Cut the cable ties before starting.



## 7 Transport

The machine shall always be placed on a level, stable surface which can withstand the weight of the machine. Ref. technical data for the machine in question to find the weight of the machine.

### 7.1 Placing the machine on a pallet

The pallet must be intact and have the correct dimensions to withstand the total weight of the machine.

### 7.2 Lifting/moving

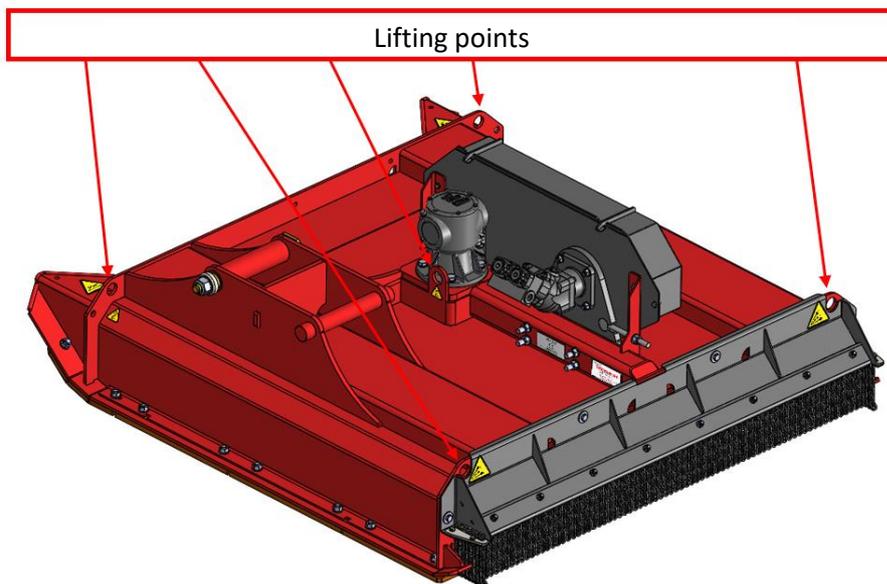
Always make sure that the tool utilised to lift the machine has the correct dimensions to lift the total weight of the machine.

The machine shall only be lifted/moved using one of the three alternatives described below.

1. Lifting the machine using a carrier connected to the machine's attachments.
2. Lifting the machine on a pallet using the forks on a forklift truck or other carrier.
3. Lifting the machine using straps or similar\* at the specified lifting point.

\* If using straps or hooks to lift the machine, you must always use one lifting ear on the machine (1).

Straps and hooks shall not be attached to any other parts of the machine than those described here.



All lifting points are marked with 

### 7.3 Transport by vehicle/on trailer

The transport company is responsible for ensuring that the machine is attached/strapped in accordance with the prevailing requirements for the method of transport in question. Straps, ropes or other tools to attach the chain mulcher during transport are not supplied.

## 8 Connection to carrier

 Never allow any unauthorised persons to stand between the machine and carrier during connection/disconnection.

 Never allow any persons to stand between the machine and carrier when a person is seated in the driving seat in order to prevent crushing injuries.

1. The chain mulcher is attached to the carrier's arm/crane. Always use the basic attachment or S54/S50/S60 to ensure the flow function of the chain mulcher. Keep in mind the weight of the chain mulcher and the length of the crane arm, as there is a risk that the carrier may tip over.

 Risk of crushing injuries! Never expose yourself or others to the risk of crushing injuries when you are connecting the chain mulcher to the carrier.

2. Assemble the hoses in the carrier's hydraulic outlet on the carrier, ref. 6.1 NB! Always connect the leak oil hose first. The leak oil hose must always be used even when carrying out a test run of the chain mulcher without operation of the actual mulcher.

Max. pressure for operation of the chain mulcher is 350 bar.

On initial start-up, it is important that air trapped in the oil in the motor and hoses are released before use, ref. par. 6.1.

You must make sure that all hydraulic connections are sealed and that all hoses are free of damage before activating the hydraulic system.

 Never place hands or feet in the machine once it has been connected to the carrier.

 High pressure hydraulic jets may penetrate the skin and cause serious injury. Consult with a doctor immediately if hydraulic oil has penetrated the skin or if you have hydraulic oil in your eyes. Hydraulic oil can also cause allergic reactions. If you get hydraulic oil on your skin, it is essential to wash the area immediately.

For assembly of other equipment, refer to the users' guide enclosed when such equipment is provided. In principle, any optional equipment provided by the manufacturer is supplied separately and must be fitted by the customer, unless otherwise agreed.

## 9 Operation of the machine

 The driver is responsible for ensuring the safety of him/herself and others during operation of the machine.

It is essential to ensure that the carrier is suitable for the chain mulcher to be used. Ref. Table 1 for power requirement. The customer is liable and responsible for any other use than the one described in this manual.

The chain mulcher should be run without load and with a low oil volume/revolutions for around one minute to allow the engine to heat up. This will reduce wear and increase the lifetime of the oil engine.

Run the chain mulcher as close to the ground as possible to prevent loose objects being ejected from the machine. This will also provide a better result as the material will remain inside the machine for as long as possible, ensuring it is broken down into the smallest possible pieces.

The driving position should be such 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 vegetation that is too coarse. Adjust the propulsion speed of the carrier according to the amount of vegetation to be broken down.

The recommended rotational speed for the chain storage is 1,500 rpm when the chain mulcher is operating in shrub and thickets. When operating over grass, the rotational speed should be reduced to lower the air outlet from the chain, which may blow the grass away from the chain.

A 13 mm chain is the best option for breaking down shrubs and bushes.

A 10 mm chain is the best option for grass, as it has a lower air outlet than a 13 mm chain.

If there are a lot of stones or other solid objects on the ground and you have a low rotational speed, the chain may jump up and hit the pan or hit the ground before stretching out. This will cause more wear and tear to the pan and increases the risk of loose objects being ejected from the machine.

### 9.1 Safety during use – IMPORTANT!

 NB! Risk of loose objects ejected. Unauthorised persons must be kept at a defined distance from the chain mulcher. The safe distance from the machine is a radius of minimum 50 metres.

 When driving on uneven ground, pay extra caution. Reduce the speed of the carrier.

 Notify the general public before driving through populated areas

 The chain mulcher must not be used if the splash guard or belt covers are damaged/have been removed

 Never leave the driving seat until the carrier's engine has been turned off

 Make sure no part of your body is in contact with the chain mulcher's moving parts until the carrier's engine has been turned off

 There is a fire hazard when driving the machine over dry ground

-  Never place the chain mulcher on the ground/surface if persons or animals are in immediate proximity, due to the risk of crushing injuries.
-  Please note that front visibility may be impaired by the chain mulcher.
-  Never walk/crawl under the chain mulcher when it is suspended on the carrier.
-  If operating the chain mulcher in the dark, lights must be used to light up the work area
-  If the chain mulcher starts to vibrate, it must be stopped immediately, inspected and any repairs carried out
-  Only use original spare parts for the chain mulcher

## 9.2 Disconnection

After use, the machine is disconnected as follows:

1. Place the machine on a level, stable surface.
2. Disconnect the hydraulic hoses from the carrier.
3. Disconnect the chain mulcher attachment from the carrier.
4. The machine is now disconnected and can be left in this position.

# 10 Service and maintenance

 The chain mulcher shall be placed on the ground, then activate the parking brake on the carrier, turn off the engine and remove the ignition key before carrying out service and maintenance.

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

## 10.1 Inspection and maintenance intervals

### 10.1.1 Daily inspection

- Check that the belt cover and splash guard are in one piece and are fully functional
- Inspect hoses and connections for leaks
- Check the quick-release couplings for dirt during assembly
- Check that all screws and nuts are properly tightened
- Check the chain mulcher and attachment for cracks
- Check the oil level in the gear box
- Check that the belts are tight and damage-free
- Check that the cutting chain is in one piece and has the correct number of links
- Check that the spring pins for the top of the chain attachment are in place and fitted properly
- Lubricate the shaft sleeve for the bolt for the attachment

### 10.1.2 Maintenance every 8 hours

- Lubricate the chain mulcher

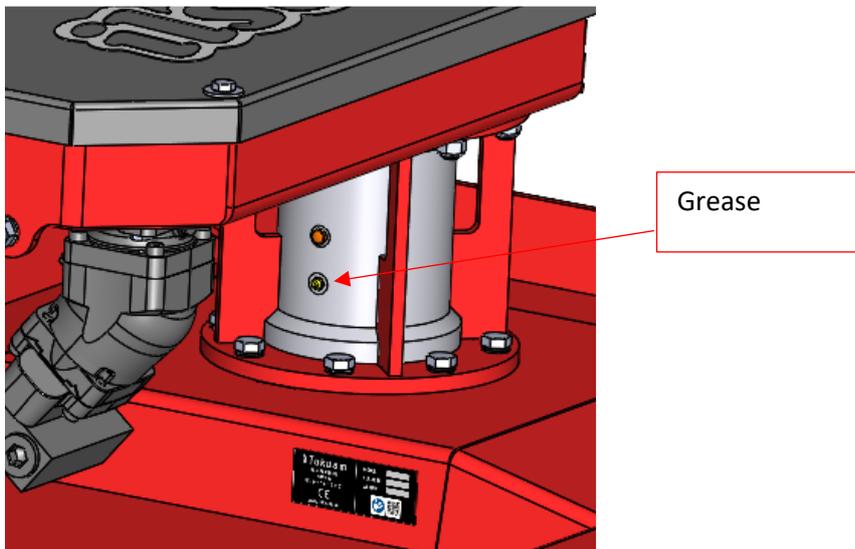
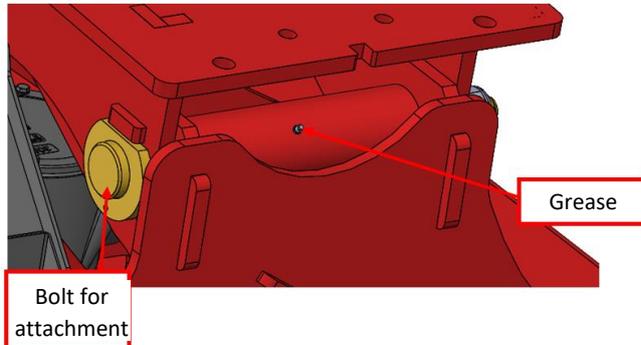
### 10.1.3 Maintenance every 100 hours

- Change the gear oil

## 10.2 Maintenance

### 10.2.1 Lubricate the shaft sleeve for the bolt for the attachment

- Clean the grease nipple
- Use a grease gun and press the grease into the grease nipple
- Use EP2 grease
- Total one lubrication point

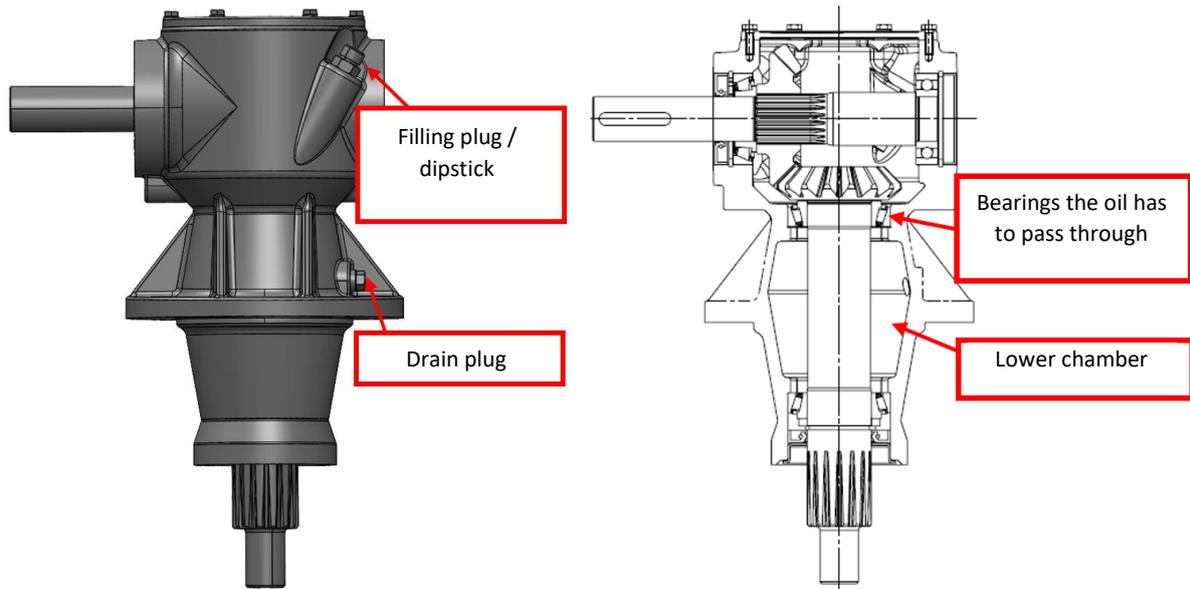


### 10.2.2 Changing the gear oil (does not apply to H160HDB)

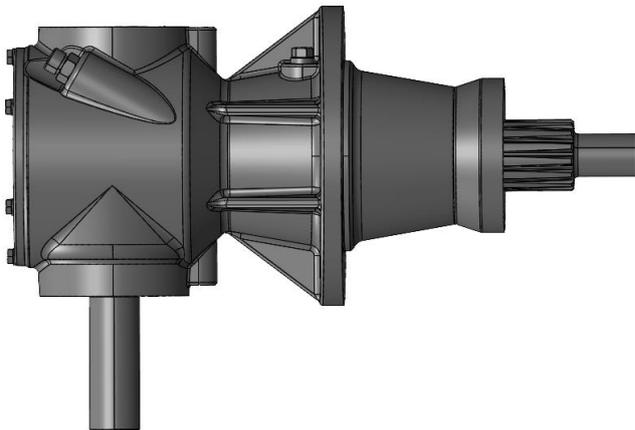
- Oil volume: 1.4 litres
- Oil type: Mobilgear 600 XP 150 or similar

#### Procedure:

- Unscrew the drain plug.
- Unscrew the filling plug / dipsticks
- Use suction to remove all the oil, through both the hole for the drain plug and the filling plug / dipsticks.



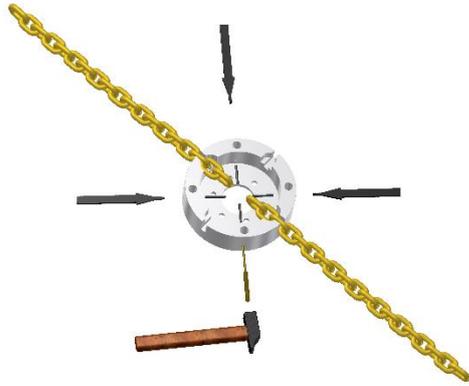
- The quickest way to fill oil is to:
  - Measure out 1.4 litres of oil.
  - Place the chain mulcher on its side so that the gear is in the position shown in the illustration below.
  - Pour some of the oil through the hole for the drain plug until the oil starts to run out of the drain plug hole.
  - Re-insert the drain plug
  - Turn the chain mulcher over again and fill the remaining volume of oil through the hole for the filling plug / dipsticks



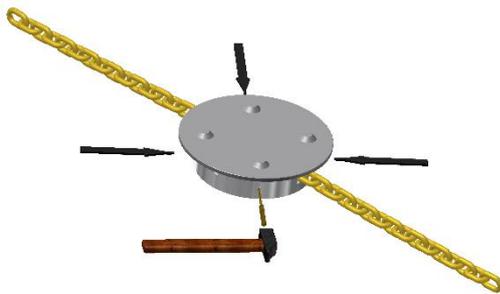
- It is also possible to fill all the oil through the hole for the filling plug / dipsticks, but this will take longer as the oil has to run down through a bearing inside the gear. You have to remove the drain plug to ventilate the air from the bottom chamber before the oil will run down through this bearing. Re-insert the drain plug when the oil starts to run out. Fill the rest of the oil. At this point, the dipstick will show too much oil, but this is because it takes so much time for the rest of the oil to flow through the bearing.

### 10.2.3 Replacing chains

- Place the chain mulcher on a solid surface in a vertical position
- Stop the carrier and remove the ignition key



- Use a hammer and a  $\varnothing 5$  mm mandrel. Hammer in the four spring pins

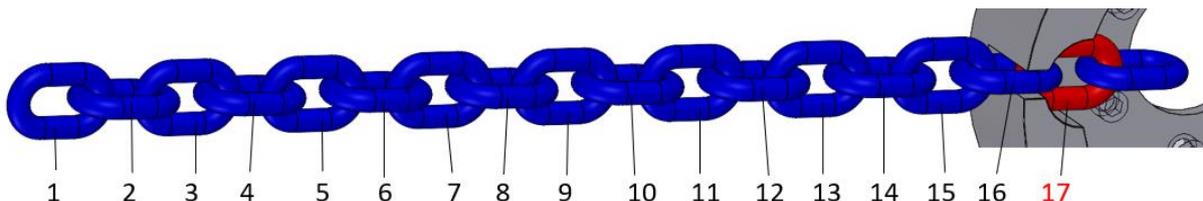


- Remove the chain cover
- Replace the chain with a new original chain. **It is important to use original chains to prevent damage to the chain mulcher and surrounding area**
- Replace the chain cover
- Hammer in **four new** spring pins. **If you use the old spring pins, there is a high risk that the chain cover and chains will fall off**

It is important to make sure you fit the chain with the correct number of chain links outside the chain attachment:

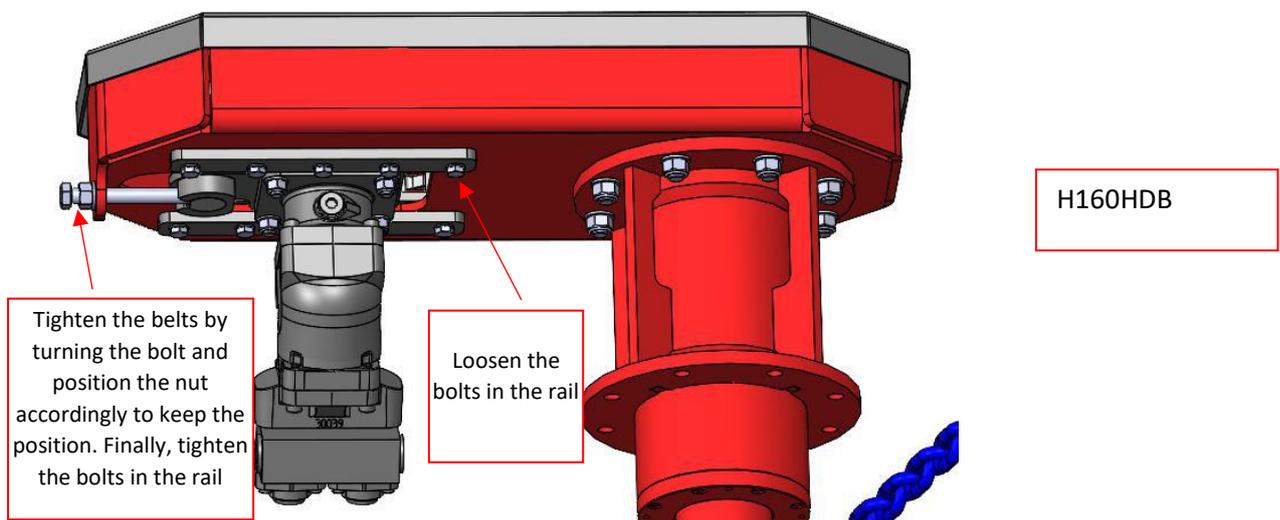
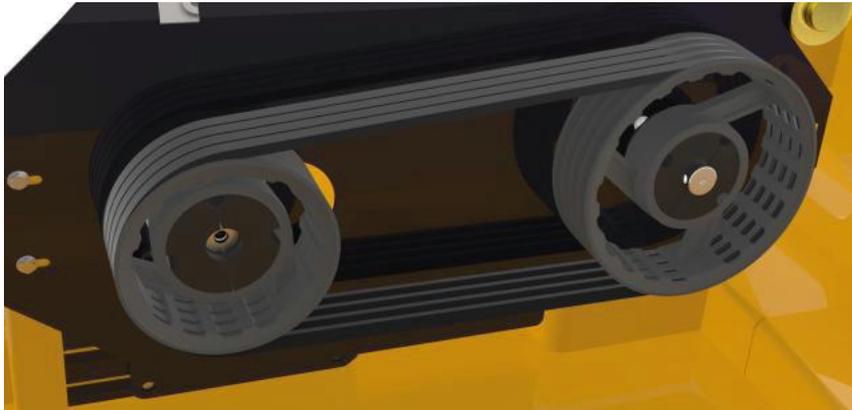
Chain / Machine size	H110	H130	H160
13 mm chain	11th link in the attachment	14th link in the attachment	17th link in the attachment
10 mm chain	15th link in the attachment	17th link in the attachment	22nd link in the attachment

**Check that the chains do not come into contact with the pan on the chain mulcher before starting**



*The example shows a 13 mm chain on the H160*

## 10.2.4 Tightening and replacing belts



### 10.2.4.1 Tightening belts – please note different procedure for H160HDB on figure above

- Stop the engine on the carrier and remove the ignition key
- Unscrew the belt cover
- Loosen the four locking nuts with two rotations
- Tighten the adjustment nuts so that the belts are significantly stretched
- Tighten the four locking nuts

### 10.2.4.2 Replacing belts

- Stop the engine on the carrier and remove the ignition key

- Unscrew the belt cover
- Loosen the four locking nuts with two rotations
- Loosen the adjustment nut so that the oil engine can be pushed far enough away to allow the belts to be removed.
- Install new belts. Always use original belts that have been tested by the manufacturer. **You must replace all the belts at the same time.**
- Tighten the adjustment nuts so that the belts are significantly stretched
- Tighten the four locking nuts
- Re-tighten the belts after 10-20 minutes of driving. New belts must be re-tightened several times when first installed. This will increase the lifetime of the belts and prevent unnecessary shut-downs

If the belts slip (shriek) during operation, they must be tightened immediately

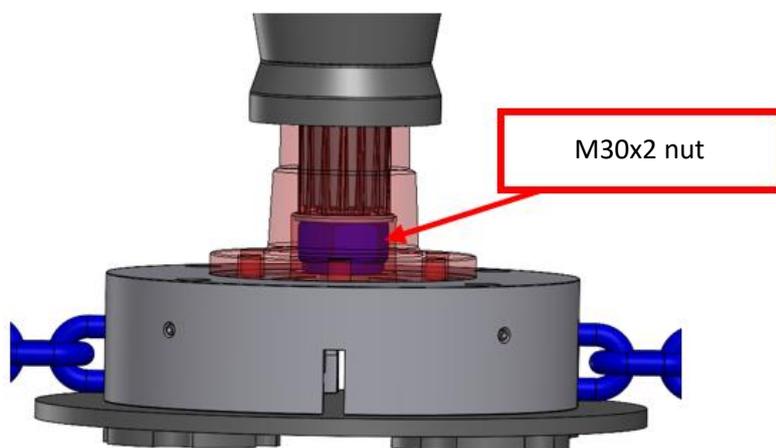
### 10.3 Tightening attachment fittings

As the chain mulcher is exposed to a lot of vibrations, it is important to tighten all screws and nuts regularly.

Tighten the attachments using the torque shown in the table below (torque range  $\pm 5\%$ )

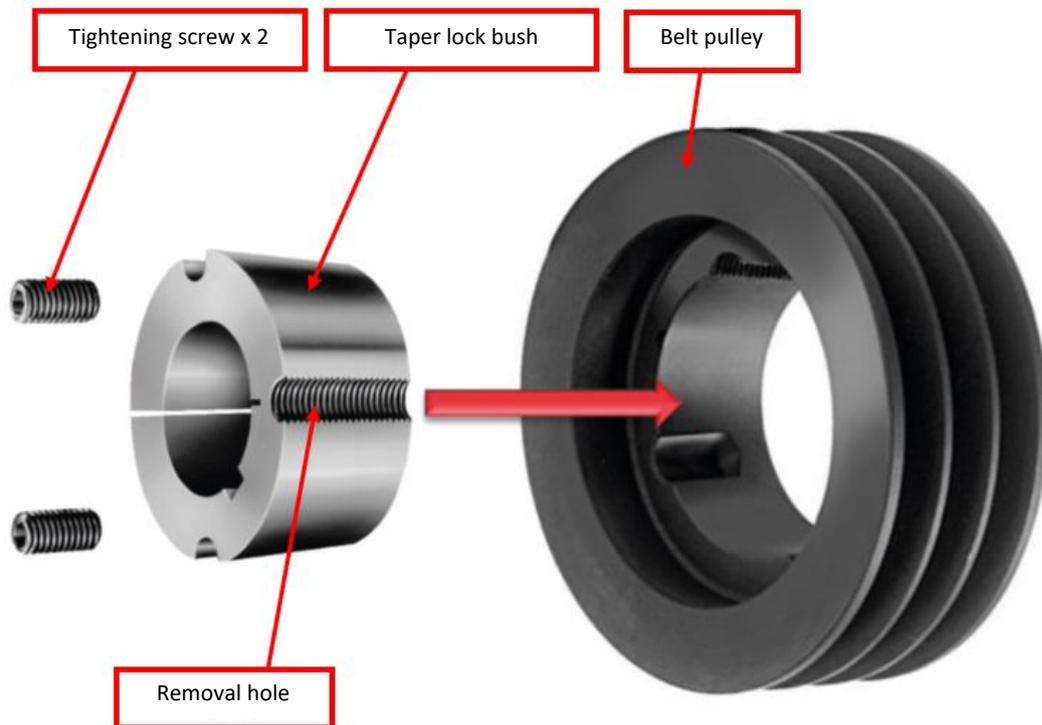
	<i>Tiltrekningsmoment i Nm Styrkeklasse:</i>		
	<i>8.8</i>	<i>10.9</i>	<i>12.9</i>
<i>M4</i>	2,6	3,9	4,5
<i>M5</i>	5,2	7,6	8,9
<i>M6</i>	9	13,2	15,4
<i>M8</i>	21,7	31,8	37,2
<i>M10</i>	43	63	73
<i>M12</i>	73	108	126
<i>M14</i>	117	172	201
<i>M16</i>	180	264	309
<i>M18</i>	259	369	432
<i>M20</i>	363	517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

The make-up torque for M30x2 nuts that attach the chain attachment flange to the gear: 1390 Nm





## 10.4 Assembly and removal of belt pulleys



### 10.4.1 Assembling the belt pulleys

- All treated surfaces on the taper lock bush and belt pulley must be cleaned and all grease wiped off
- Hang the belt pulley on the shaft
- Insert the taper lock bush in the shaft
- Rotate the belt pulley so that the threaded holes in the belt pulley fit over the assembly holes in the bush
- Insert the tightening screws. Use Loctite – screw them in loosely so that the bush and belt pulley can still be pushed in and out of the shaft.
- Check that the belt pulley is in line with the opposite belt pulley.
- Tighten the tightening screws. For correct centring of the taper lock bush, the tightening screws must be tightened alternately
- Tighten the tightening screws to 90 Nm

### 10.4.2 Removing the belt pulley

The belt pulley must be removed manually, without hammering

- Unscrew both tightening screws in the taper lock bush.
- Screw one of the tightening screws into the removal hole. The bush will expand and loosen from the shaft and the belt pulley

## 11 When the season ends / for long-term storage

Compliance with any national regulations relating to annual/periodic inspection is obligatory.

The product shall be carefully cleaned and lubricated before storage.

## 12 Scrapping

Once the machine has reached the end of its lifetime, it shall be scrapped in accordance with the prevailing legislation and regulations in the country where the machine has been used.

If there are oil products in the machine, these shall be removed and disposed of in accordance with the prevailing legislation and regulations in the country where the machine has been used.

## 13 Complaints and warranties

Tokvam AS guarantees that the product is delivered from the factory without faults or defects. A warranty is issued in accordance with prevailing legislation.

The customer must notify the seller of any complaints within reasonable time after he/she has detected or should have detected any defects.

The warranty does not cover any faults or defects caused by the product being exposed to overload or any other form of careless use (ref. this Users' Guide).

The warranty does not cover faults or defects caused by lack of maintenance (ref. this Users' Guide).

The warranty does not cover normal wear and tear to the product and its components.