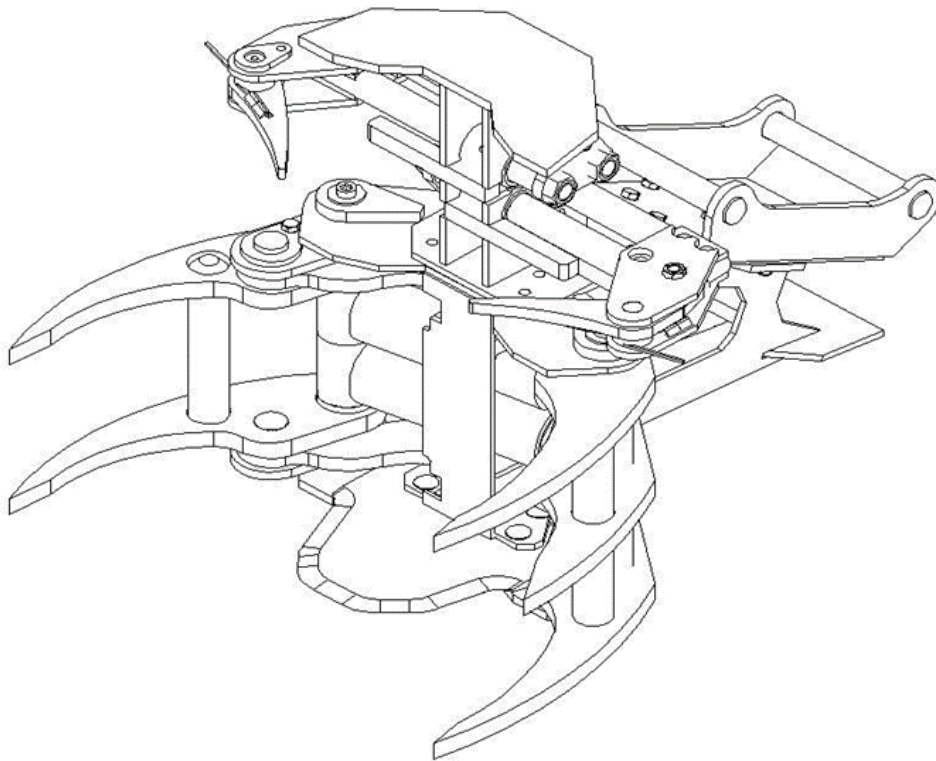




KX-Treeshears Oy
Yrittäjänkatu 3
FI-44150 Äänekoski

KX Tree Shear User Manual



10.10.2023
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Read the whole user manual before using the Tree Shear

1. General information of KX Tree Shear

KX Tree Shear is used in efficient tree felling and stacking. The Tree Shear uses a guillotine-type cutting method.

The KX Tree Shears are divided into the following model designations:

KX210, KX280 and KX350 are Tree Shears for excavators.

KXZ210 + E210, KXZ280 + E280 and KXZ350 + E350 are Rotating Tree Shears for excavators.

KXZ210 + W210, KXZ280 + W280 and KXZ350 + W350 are Rotating Tree Shears for wheel loaders, skid steer loaders and telehandlers.

KXK210, KXK280 and KXK350 are Tree Shears with tilting mechanisms for tractors, forest machines and cranes with rotating devices.

The number in the model marking is the maximum diameter of the tree to be cut in millimeters. In practice, the actual cutting diameter can be smaller due to the hardness of the tree and pressure in the hydraulic system.

NOTE! Never exceed the maximum cutting diameter.

2. Warranty

KX Tree Shear has a 1-year warranty, from the day of purchase.

Warranty does not include:

- The blade, screws or hydraulic hoses.
- Damages caused by natural wear and tear.
- Damage due to contrary use to the instruction manual (note: read instruction manual before use).
- Damages caused by lack of maintenance.
- If the Tree Shear is welded, drilled, grinded or cut.
- If other than original parts are used in the device.
- Usage below -15 degrees Celsius (5 degrees Fahrenheit).
- Loss of earnings or other indirect costs due to downtime.

Warranty repairs will be performed by KX-Treeshears Oy or by an authorized workshop.

If the issue for warranty is a broken part, the part can be sent to the client who themselves will replace the part. These cases are considered on a case-by-case basis during our warranty processing.

Any shipping costs for the Tree Shear sent for warranty repairs is the client's responsibility. The warranty period of the replaced part will end when the normal warranty period of the Tree Shear ends.

Warranty repairs will be performed in reasonable time.

Service contact information:

KX-Treeshears Oy
Yrittäjänkatu 3
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3. Operation

3.1. Tree Shear introduction

Tree Shear types

1. **KX210, KX280** and **KX350** are Tree Shears for excavators. Wood cutting, bundling and loading can be performed with them.
2. **KXZ210 + E210, KXZ280 + E280** and **KXZ350 + E350** are Rotating Tree Shears for excavators. Wood cutting, bundling and loading can be performed with them.
3. **KXZ210 + W NAM210, KXZ210 + W210, KXZ280 + W280** and **KXZ350 + W350** are Rotating Tree Shears for wheel loaders, skid steer loaders and telehandlers. Wood cutting, bundling and loading can be performed with them.

4. **KXK210, KXK280 and KXK350** are Tree Shears for tractors, forest machines and cranes. Wood cutting, bundling and loading can be performed with them.

Attaching to machine

KX Tree Shear is attached to the machine with the machine's own coupling. Tree Shear is delivered with installed couplings or that the client or the importer manufactures the coupling themselves (in these situations, we are not responsible for the durability of the coupling).

Hydraulic connection

When connecting the hydraulics, achieving sufficient flow and pressure must be considered. Sufficient oil flow to the Tree Shear should be ensured during the hydraulic installation. By doing this, sufficient speed for the Tree Shear can be achieved. It is a good idea to check the hydraulic pressure by measuring.

If you are unfamiliar with the hydraulics systems, request a professional to help with the installation.

For **KXK210, KXK280 and KXK350** see [Double pressure relief valve adjustment](#).

If your Tree Shear is equipped with a regenerative valve, see [Regenerative valve adjustment](#).

NOTE! Ensure that the hydraulic pressure of the machine does not exceed maximum pressure of **300 bar (4351 psi)**.

3.2. Wood felling

Wood felling with **KX210, KX280, KX350, KXZ-210 + E210, KXZ280 + E280, KXZ350 + E350, KXZ210 + WNAM210, KXZ210 + W210, KXZ280 + W280 and KXZ350 + W350** Tree Shears is performed as follows:

Tree Shear is set at the base of the tree so that the tree will be between the left side of the Tree Shear (from the point of view of the machine) between the blade and the jaw, and so that the blade is at a 90-degree angle relative to the tree.

After this the Tree Shear is pressed, causing the jaws to press the wood against the blade, and the wood is cut, leaving it pressed in between the jaws and the frame. With big and hard wood types, it is a good idea to press the Tree Shear a bit

towards the tree, so that the tree is firmly in the jaws and can't escape to the blade's tip where the cutting power is weaker.

After this, the wood can be bundled by moving the wood to the desired location parallel to the ground and by opening the jaws.

We recommend cutting several trees in whole from base to bundle and cutting them on the ground, so that the danger of falling pieces of wood is reduced. In addition to this, working speed is increased.

The Tree Shear can be used for loading by removing the blade. The blade is removed by loosening the 5 blade screws, after that tighten the 2 Top-screws that open the gap between the blade by pulling the blade out from the base plate. After this, the screws are lightly tightened again.

Video: [How to detach the blade from KX Tree Shear](#)

Wood felling with **KXK210**, **KXK280** and **KXK350** Tree Shears is performed as follows.

When the Tree Shear is open, the upright positioned Tree Shear is moved to the base of the tree so that the tree will be between the left side of the Tree Shear (from the point of view of the machine) between the blade and the jaw, the Tree Shear is set on the opposite side of the felling direction of the tree, and so, that the blade is at a 90-degree angle relative to the tree.

After this the Tree Shear is pressed, causing the jaws to press the wood against the blade, and the wood is cut, leaving it pressed in between the jaws and the frame.

When pressing is continued, the tree will fall in the opposite direction due the Tree Shear utilizing the tilting mechanism.

After this, the wood can be bundled by moving the wood to the desired location and by opening the jaws.

After opening the Tree Shear, it will rotate back to an upright position when the pressure increases, and a new work phase can be initiated.

We recommend cutting several trees in whole from base to bundle and cutting them on the ground, so that the danger of falling pieces of wood is reduced. In addition to this, working speed is increased.

KXK210, KXK280 and **KXK350** Tree Shear can be used for loading by removing the blade. The blade is removed by loosening the 5 blade screws, after that tighten the 2 Top-Screws that open the gap between the blade, then remove the blade by pulling the blade out from the base plate. After this, the screws are lightly tightened again.

Video: [How to detach the blade from KX Tree Shear](#)



IMAGE 1. Tree between the blade and jaw at a 90-degree angle.



IMAGE 2. Tree pressed between the jaws and bumper plate.

4. Choosing the correct Tree Shear for your machine

KX Tree Shears selection table:

Excavators

- KX210** Excavators 1.5–6t (3 307-13228 lbs)
- KXZ210 + E210** Excavators 2.5–6t (5511-13228 lbs)
- KX280** Excavators 5–15t (11 023-33 069 lbs)
- KXZ280 + E280** Excavators 6–15t (13228-33 069 lbs)
- KX350** Excavators 13–25 t (28 660-55 116 lbs)
- KXZ350 + E350** Excavators 15-25t (33 069-55 116 lbs)

Wheel loaders, skid steer loaders and telehandlers

KXZ210 + WNAM210 wheel loader, skid steer loader or telehandler (Norcan, Avant, Multione S7695). Telehandler with a minimum of 400 kg (882 lbs) lifting capacity at maximum reach.

KXZ210 + W210 wheel loader, skid steer loader or telehandler with a minimum of 400 kg (882 lbs) lifting capacity at maximum reach.

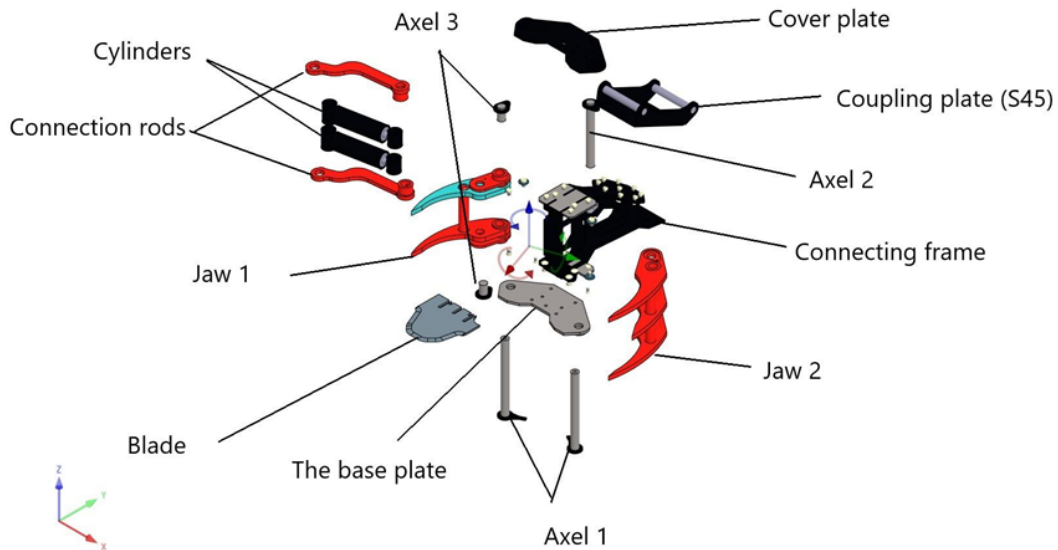
KXZ280 + W280 wheel loader, skid steer loader or telehandler with a minimum of 600 kg (1 323 lbs) lifting capacity at maximum reach.

KXZ350 + W350 wheel loader, skid steer loader or telehandler with a minimum of 1100 kg (2 425 lbs) lifting capacity at maximum reach.

Harvesters, forwarders, and tractors

- KXK210** Tractor wood loaders
- KXK280** Forwarders and big tractor loaders
- KXK350** Big forwarders and harvesters

5. KX Tree Shear main parts



6. Service and maintenance

6.1. Daily

- Check that all screws and nuts are tightened (tighten if needed).
- Check that no leaks are present in hydraulics systems (fix if needed).
- Apply grease on the Tree Shear. Use high quality NLGI.2 Vaseline only.

6.2. Weekly

- Sharpen the blade, we recommend using a battery powered grinder with a flap grinding wheel. Note that excess heating removes the hardening of the blade (you can test the blade with your hand and if it feels hot, resume sharpening after a while). Move the flap wheel constantly during sharpening. Sharpen the blade following the original angle from both sides. NOTE! Be careful with the sharp blade, it can cause incised wounds.

Watch the video: [How to sharpen the KX Tree shear blade](#)

If outer damage or tears are visible in the Tree Shear, STOP USING THE TREE SHEAR and contact our maintenance service.

WARNING: DANGER OF COMPRESSION OR FALLING! When you service the Tree Shear, support it with i.e., a tree stump or a rock and shut down the machine before maintenance!

7. Warnings

Danger of falling

- Never go under the Tree Shear.
- Ensure that the cabin of your machine is durable enough to withstand possible trees falling on it. Ask more from the machine's local representative.
- Ensure that your machine is equipped with hose failure valves. Ask more from the machine's local representative.
- Stop working immediately if a person enters the safety area you are working in, SAFETY AREA 40m (131 ft).
- Trees should never be felled on the extremities of the machine's movement limits.

Danger of compression

- Never approach the Tree Shear when the machine is running.
- Stop working immediately if a person enters the safety area you are working in, SAFETY AREA 40m (131 ft).

Danger of leaks in the hydraulic system

- Never approach the Tree Shear when the machine is running, SAFETY AREA 40 m (131 ft).

Danger of incisions

- Service the Tree Shear calm and focused. Sharpened blade or the tips of the jaws can cause incision wounds.
- If you must remove the blade, use a battery powered impact wrench or a ratchet wrench with an over 1 m (3.3 ft) extension arm.

Danger of falling

- Walk carefully at the work site, you can easily stumble on tree stumps, watch where you step. Falling can cause puncture wounds from tree stumps.

Danger of the machine falling

-Never cut trees when the machine is on sloping terrain.

Danger of electric shock

-Working close to power lines always causes danger.

8. Spare parts and repair

If the KX Tree Shear is damaged or you have any questions about its use, contact our service department.

Service contact information:

KX-Treeshears Oy
Yrittäjänkatu 3
FI-44150 Äänekoski
Kimmo Tossavainen
kimmo@kx-treeshears.com
P. +358409662067

9. Adjustment instructions

9.1. Double pressure relief valve adjustment

This task requires:

- 2 people
- Hex keys
- Wrenches

Work steps:

- Attach **KXK210**, **KXK280** or **KXK350** Tree Shear hoses to the machine's hydraulics system.
- Press the Tree Shear closed and open a few times to remove excess air.
- Remove the protecting cover from the bottom of the Tree Shear (attached with 8 hex screws).
- Open the double pressure relief valve adjustments screws with a 13 mm (½ inch) wrench (note adjustments on both sides of the valve)
- Tighten the adjustment screws using a hex key.

- After this the second person enters the machine and presses the Tree Shear closed. By opening the adjustment screw the Tree Shear starts to tilt slowly.
- Note: Never press the Tree Shear closed and adjust the valve at the same time (Danger of compression!)
- After this the person in the machine opens the jaws. The other person opens the other screw in the valve until the Tree Shear rises calmly to vertical position.
- Note: Never adjust the valve and open the jaws at the same time (Danger of compression!)
- When the desired speed is achieved, locking and the protecting cover are tightened (Danger of compression!)
- Caution must be exercised when adjusting the valve and one must note that no limbs are inside the jaw when tipping or between the machine when rising.
- Consult a hydraulics expert for the valve adjustment if you are unsure about your know-how.

9.2. Regenerative valve adjustment

If you have ordered a KX Tree Shear with a regenerative valve and the Tree Shear is unable to cut trees of the specified diameter or the closing of the jaws is slow, the regenerative valve should be adjusted.

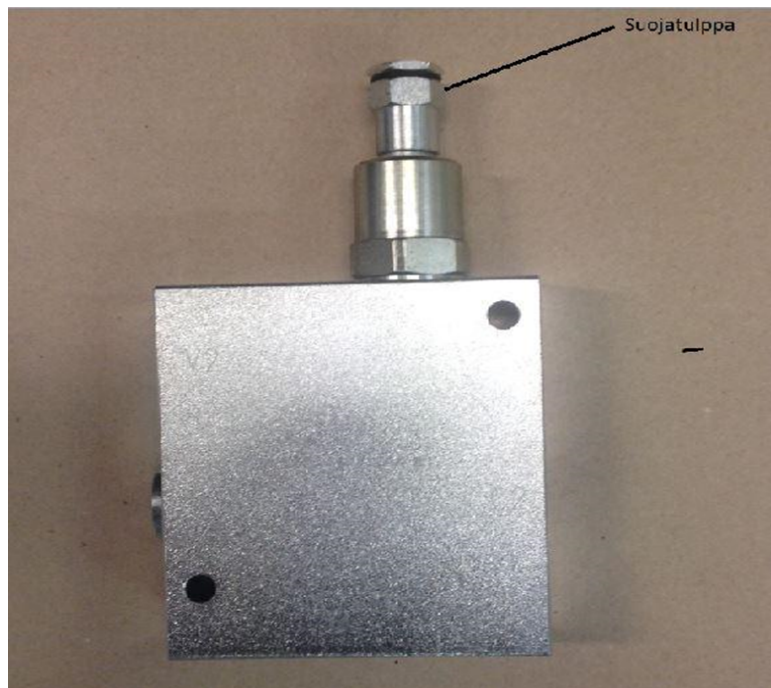


Image of a regenerative valve.

Remove the protection plug from the regenerative valve, open the locking nut and turn the hex screw.

Tree Shear is slow:

-Turn the hex screw clockwise $\frac{1}{4}$ turns at a time, and if the Tree Shear's speed is not increased, repeat as many times as the desired speed is achieved.

The Tree Shear is unable to cut trees of the specified diameter:

-Turn the hex screw counter-clockwise in $\frac{1}{4}$ turns at a time, and if the desired strength is not achieved, repeat as many times as needed so that a tree of the specified diameter is cut.

After adjustments, tighten the locking nut and screw the protection plug back in.

10. Declaration of conformity



KX-Treeshears Oy
Yrittäjänkatu 3
44150 Äänekoski
Finland

We assure that the following products manufactured by us comply with the EU Machinery Directive.

2006/42/EY

The declaration of conformity applies to the following models.

-KX210

-KX280

-KX350

-KXZ210 + E210
-KXZ280 + E280
-KXZ350 + E350
-KXZ210 + WNAM210
-KXZ210 + W210
-KXZ280 + W280
-KXZ350 + W350
-KXK210
-KXK280
-KXK350

Note: The declaration of conformity is not applicable if the Tree Shears mentioned above are used against laws, general safety regulations, or this instruction manual. Situations that are not mentioned in this instruction manual may occur when using the machine. In these situations, we recommend exercising extreme caution.

The manufacturer is not responsible for the use or damage caused by these situations.

The manufacturer is not responsible for damage caused to a third party.

The manufacturer is not responsible for damage to the machine or machinery caused by the KX Tree Shear.

The Tree Shear's owner is responsible for the proper operation, use, and maintenance of the Tree Shear unless agreed otherwise.

The owner is also responsible for providing all users of the machine with sufficient information about the handling and using the Tree Shear.

Instructions and technical information:

Kimmo Tossavainen

KX-Treeshears Oy
Yrittäjänkatu 3
FI-44150 Äänekoski

11. KX Collector instructions

General information

-KX Collector is a separately provided device that is installed as an accessory to a KX Tree Shear to streamline wood harvesting.

-The Collector works in a way that the cutting that is performed by the Tree Shear can be performed without emptying the Tree Shear between cuts, so wood cutting is streamlined.

-Model specific Collectors are available for the following Tree Shears: **KX210**, **KX280**, **KX350**, **KXK210**, **KXK280** and **KXK350**.

-When using a Collector, it is paramount to learn the use of it with smaller trees so that the uncontrolled falling of a tree can be prevented.

Installation

-The Collector is installed using the screws on the cover of the KX Tree Shear. When installing the Collector, one should note the additional weight to the Tree Shear. The lower limits of weight classes should be increased.

-One free double-action additional hydraulics is needed for the Collector. If hydraulics are already present, hydraulic hoses are connected to the connectors behind the Collector.

-If free hydraulics are not available, an electric 6/2 directional valve is needed or KX-Treeshears can supply a semi-automatic collector valve, which should be installed by a professional hydraulics expert.

Using the Collector

Watch the video: [Using KX Tree shear with the Collector](#)



Step 1

Move the Tree Shear towards the tree so that the Collector is closed, and the Tree Shear is open.



Step 2

Cut the tree by pressing the Tree Shear. (In the photo, the Collector is incorrectly open).

Step 3

When the tree is cut, the collector is opened or the KX Semi-automatic collector valve opens the collector automatically.



Step 4

The Collector is closed, the Tree Shear is opened, and moved to the next tree to be cut.



Steps **2**, **3**, and **4** are repeated until the blade can't cut any more or the collected bundle is starting to get unstable. Note that longer trees are more unstable. (Danger of tree or tree parts falling, and danger of equipment tipping!!)



Step 5

Bundle is unloaded so that the Tree Shear and Collector are opened at the desired location.



Step 6

The collected bundle is cut on the ground using the Tree Shear if the bundle is too long to be transported elsewhere.