

K.T.S Tree Shear 14, 20 and 30 cm

1

Tree Shears are vulnerable to considerable strain, especially when the shear is mounted on an excavator.

To withstand this, K.T.S Tree Shear is FEM-estimated and manufactured with high-tensile steel in order to withstand **professional use** as well. *Pictures 1 - 3: 30 cm shear Picture 4: 20 cm shear on timber trailer with crane. There are 6 bolt attachments on the rotator; in the pictures, it is additionally equipped with adapter from 6-bolt to 50 mm-sleeve.*

2

When we at K.T.S designed the tree shears, we started, as usual, by asking our customers what is important in order for the shear to be as effective as possible. When we compiled the answers, it became clear that above all, it is very important to fell, gather and cut, but also to load everything, from trees and brushwood to bushes and stumps.

3

The shear is available in two variants: for forestry cranes (see picture 4 as example) or for excavators (see picture 3 as example). There is a built-in tilt function for mounting on a crane. The only thing the machine needs to have is a double-acting hydraulic outlet.

20 and 30 cm shears are primarily intended for excavators. In the winter, many machine owners install a K.T.S tree shear on the excavator when it is not appropriate to dig, thereby being able to use their machine all year round.



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Picture 4 shows the shear mounted on the timber trailer with crane in the position when the shear takes several stems simultaneously.

As you read further, you will get answers to most of your questions.



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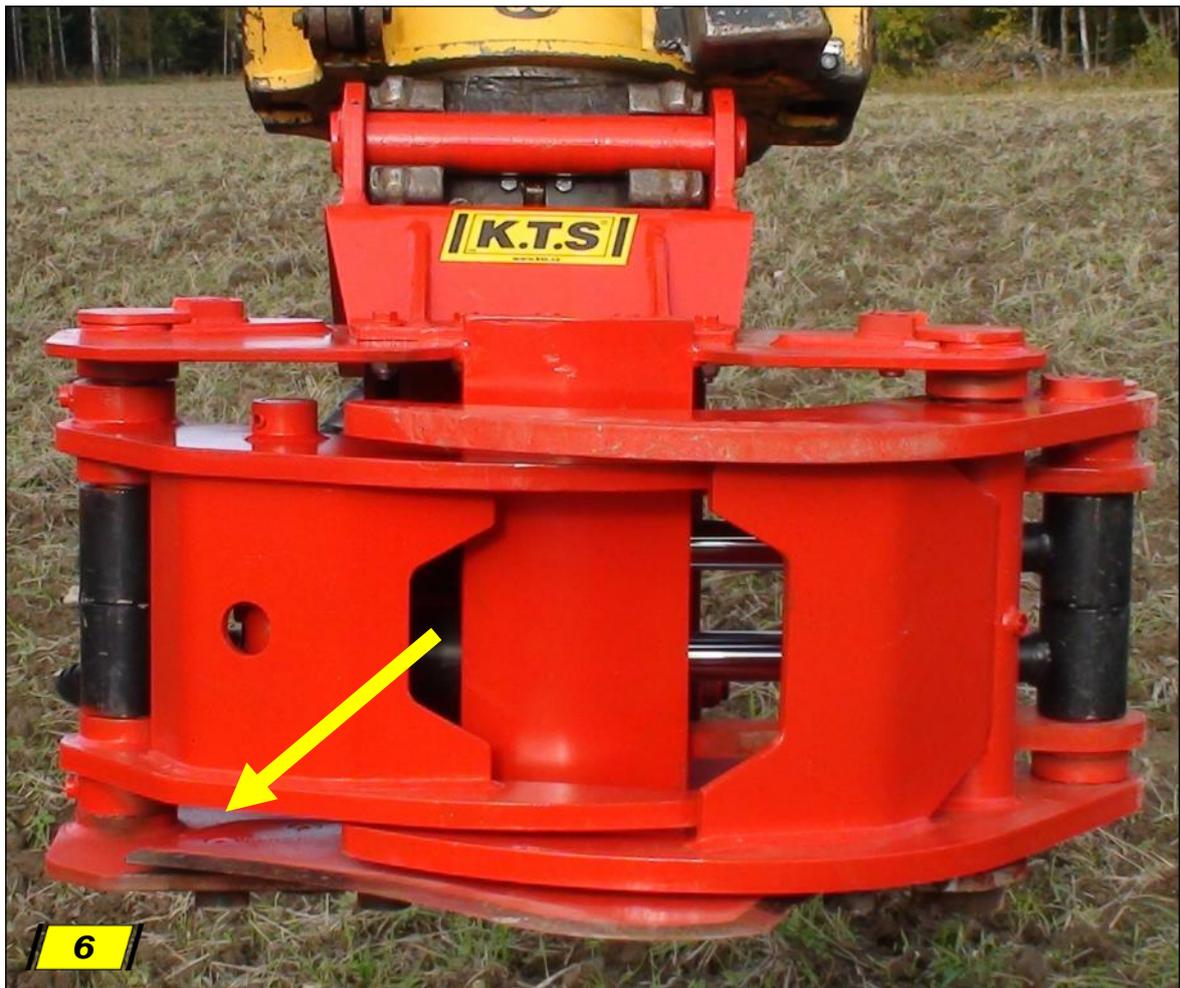
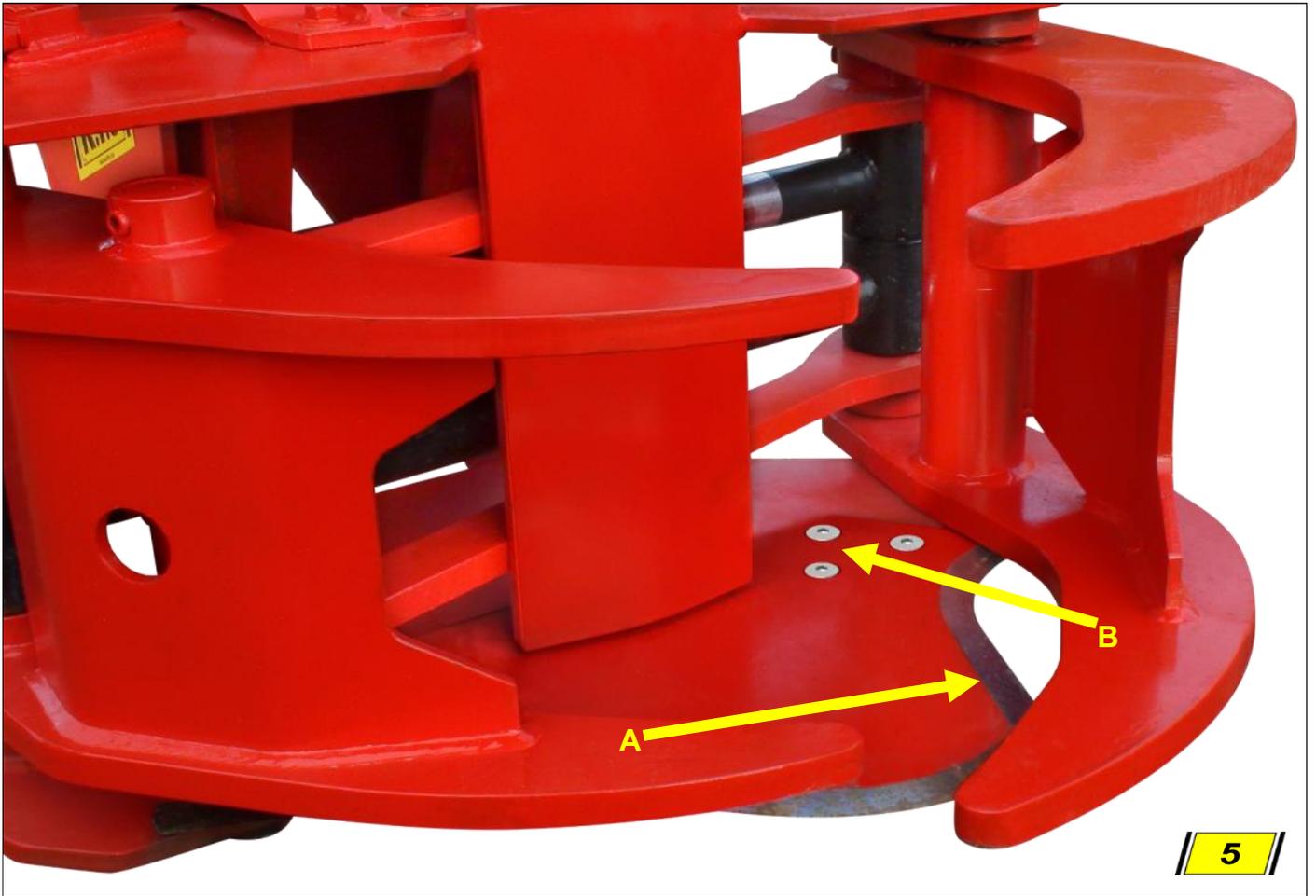
The left grapple arm (seen from the driver's seat) together with the knife are the parts of the shear that K.T.S has put most development efforts into.

There are several factors that are important for getting the best results:

- The knife must be protected when not activated for cutting. Therefore, we have chosen a fixed knife that is completely protected. When not activated, a moving knife protrudes and is completely unprotected at the back, where you cannot see it. Thus, it is easily breakable.
- The moving knife storage is compact. Then the load on the bushing bearing increases, causing more wear and tear.
- The sharpened edge of the knife is mounted close to the grapple arm, ensuring that shrubs do not bend when they are to be cut; the blade "chews". With K.T.S' special knife sharpening, the knife is pressed against the grapple arm. Thanks to this, the shears cut cleaner and fell trees more easily. **See the arrow marked with A**
- The knife is made of Hardox[®] 450, thanks to which it is flexible, hard and durable much longer.
- The knife is easy to maintain/sharpen.
- Its fastening ensures that it stays in place and does not loosen during use. **See the arrow marked with B.**
- The knife is at the bottom of the grapple arm and is designed to make **the stump as short as possible.**
- The grapple arm rounding is designed to make it possible to position the tree as close to the joint as possible, where the shearing force is the greatest.
- The length of the grapple arms is adapted to ensure that they do not damage the other trees.

The 30 cm shear has two cylinders while the 20 and 14 cm models have one cylinder, adapted to ensure that the shearing force is suited to the size. See the specifications further on in this leaflet.





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The right grapple arm (seen from the driver's seat) is designed not to cut the wood as there is a gap of 55 mm between the grapple arm and the knife. On the right side, you can move and load the cut wood lying on the ground.

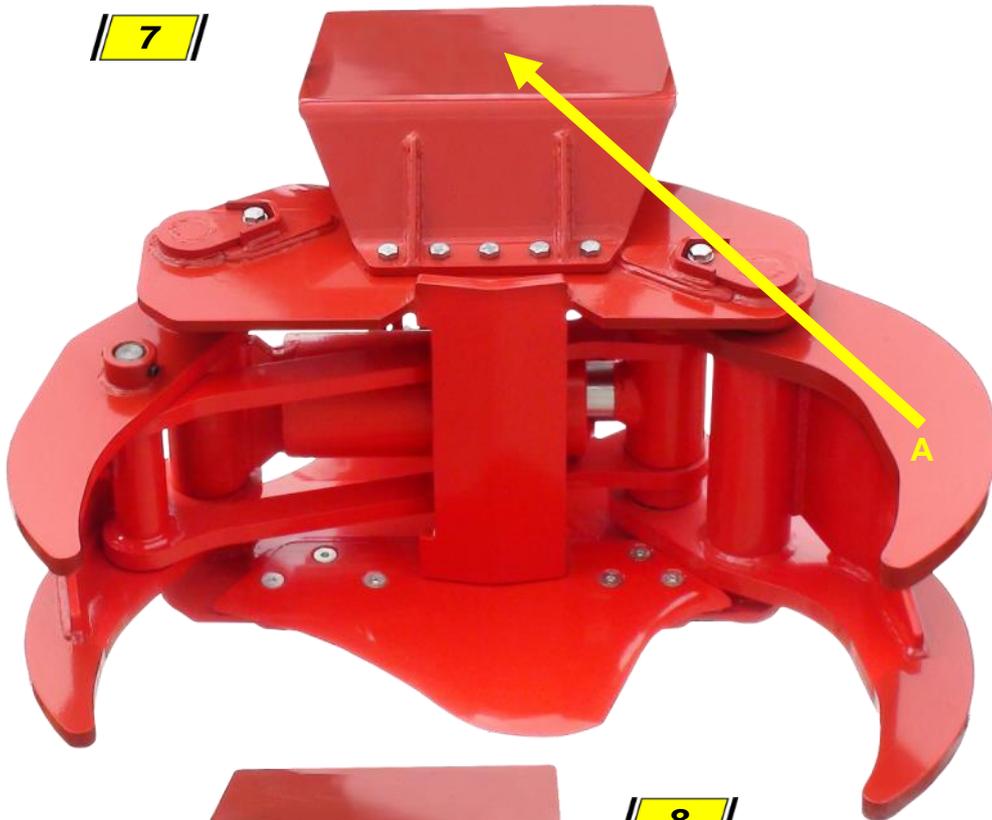
The grapple arms are developed to provide the best grip around the tree stem. Watch the video on www.kts.se

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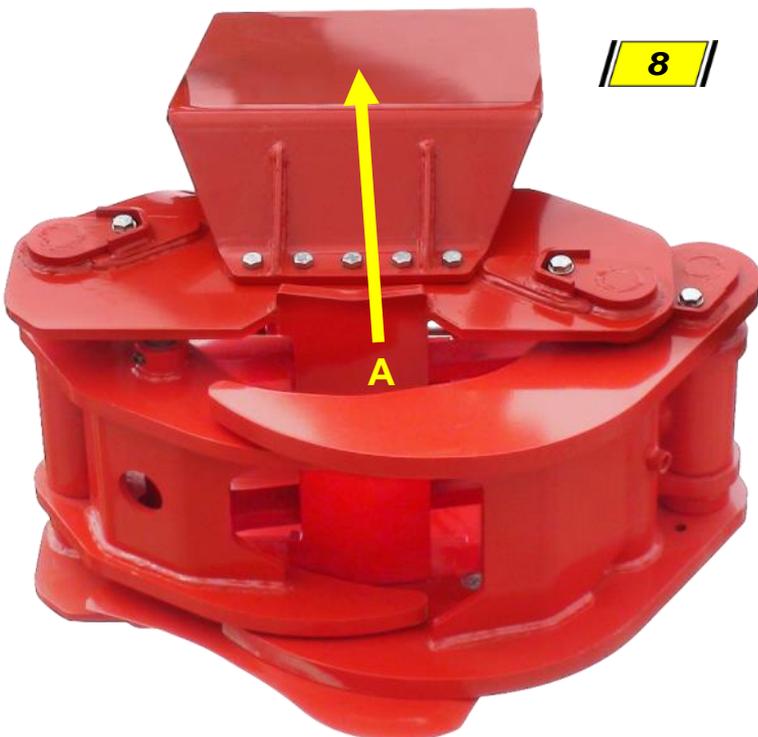
K.T.S Tree Shear can be equipped with many different brackets: S attachments (Nordic standard), Lehnhoff, Liebherr, Bofors B-brackets etc. It is also possible to order the shear with a blank plate, thereby making it possible to weld it on **any bracket**. See the arrow marked with **A**. The brackets are bolted on, thus enabling machine owners to easily replace the bracket. This is also very good for importers/retailers as it becomes **easier to keep brackets in stock**.

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**You can trust your
K.T.S Tree Shear
-
completely without
compromise!**

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ProLine

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K.T.S has chosen to manufacture the shear with **high-tensile material** to reduce the weight, which is an important aspect to consider since the shear is to be mounted on a crane.

Picture 9 shows a welded S-bracket, which is standard for the Nordic countries.

The basic model of the shears is the same. The upper part/bolted bracket is replaceable for the excavator or crane installation.

9



K.T.S Tree Shear 14 and 20 cm for mounting on cranes

10

Picture 10 shows the installation on a timber trailer with crane. Also look at picture 13 that shows the back side, which is completely clean, no knives or valves that can be damaged. You cannot see the backside of the shear while you are cutting. Therefore, it is very important to ensure that there are no protruding parts, which can be damaged.

11

The picture shows the tree shear in upright position with the grapple arms open.

The crane operator grabs the tree with the grapple arms, pressing the tree against the knife so that it is cut off.



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12

The picture shows the shear in a closed and upright position.

13

The knife is made of HARDOX® 450 in order to withstand heavy use.

The knife is devised to allow you to cut trees on the left side when the grapple arm and the knife are very close to each other. On the right side, there is a gap between the knife and the grapple arm, making it possible to load and move trees without cutting them.

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Once the knife has cut off the tree, and the driver continues to activate the grapple arms, the tree falls. This happens with the help of the built-in valve of the shear. See picture 16.

If the driver leaves the control levers before the felling is activated, the grapple arms hold the tree in vertical position, which can then be moved to, for instance, a subsequent cart.

16

Here, the valve, which switches automatically between cutting and felling function, is shown.

All components are well protected inside the shear.



17

The grapple arms and the knife are designed to allow you to collect trees that are close to each other and cut with the knife later.



18

Collection of trees is so effective that it is not necessary to fit “a collection attachment” on the shear. This only means higher cost and one more thing that can break.



18

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The specified cutting diameter is measured from the butt end of a birch, and only the compressive force of the grapple is required. The cutting diameter of the tree depends a lot on the wood type, knife design, wood humidity and outside temperature, but also if the tree is frozen.

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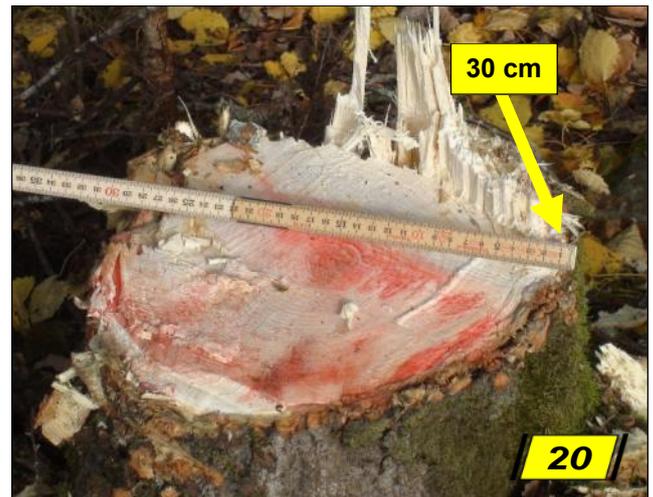
The cutting diameter is also greatly influenced by the hydraulic pressure of the crane/excavator. The cutting diameter has also been measured at a hydraulic pressure of 200 bar on all three shears. Also see the table below with different shearing forces at different hydraulic pressures.

Be observant! For us at K.T.S, it is not about the number of centimetres the shear can handle, but about how many tons of shearing force it has. Before investing, check this very carefully.



20 cm

19



30 cm

20

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Using the KTS Tree Shear, you can cut the tree and immediately load it onto the timber trailer. Is the tree too long? Cut it in the middle! Then load it with the right grapple arm on the shear, this way it will not be cut.

K.T.S has a complete range of timber trailers and cranes.



Shearing force with K.T.S Tree Shear with different hydraulic pressure

Tree diameter, birch	Shearing force at 175 bar	Shearing force at 200 bar	Shearing force at 240 bar
14 cm	8.8 tons	10.1 tons	12.1 tons
20 cm	16.6 tons	19.0 tons	22.8 tons
30 cm	22.4 tons	25.6 tons	30.7 tons

K.T.S Tree Shear for cranes

Max. tree diameter, birch	Shearing force at 200 bar	Grapple opening, cm	Recommended crane lifting capacity	Weight kg	Replaceable knife in HARDOX®	Knife type	Crane bracket	Recommended rotator size	Working pressure	Oil flow	Crane size
14 cm	10.1 tons	65	4 to 6 ton/m	91 kg	Yes/standard	Fixed knife that is better protected against collision	50 mm rotator shaft or 6-bolt	6 tons double bearing	180 to 240 bar	25 to 50 l/min	5.0 ton/m
20 cm	19.0 tons	86	5 to 7 ton/m	145 kg							7.0 ton/m

K.T.S Tree Shear for excavators

Max. tree diameter, birch	Shearing force at 200 bar	Grapple opening cm	Number of cylinders for shears	Weight kg	Replaceable knife of HARDOX®	Knife type	Working pressure	Oil flow	Size of excavator
20 cm	19.0 tons	86	1 pcs	176 kg	Yes/standard	Fixed knife that is better protected against collision	180 to 240 bar	40 to 75 l/min	2.0 to 8.0 tons
30 cm	25.6 tons	100	2 pcs	485 kg					8.0 to 17.0 tons

The size of the excavator is only indicative. Larger excavators are also possible.
The way the operator uses the machine is very important.