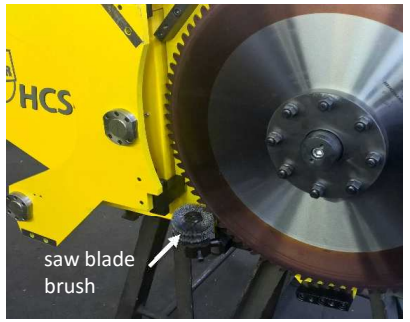
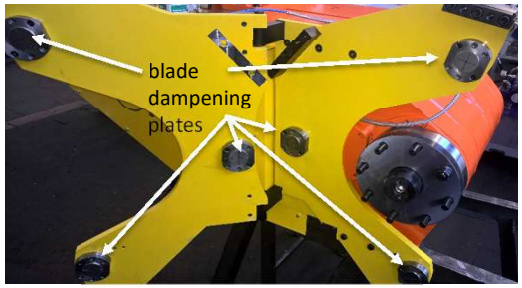
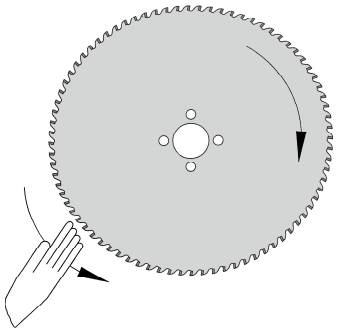
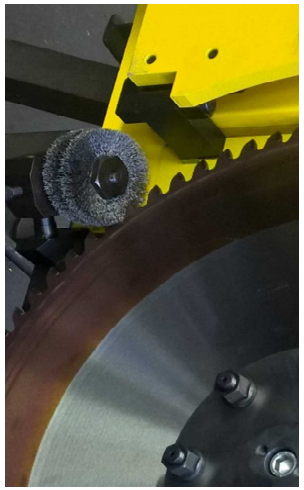
The proper handling and use of carbide tipped circular saw blades

No.			Item	Remarks
1			**Storage of blades**	
	1.1		Blades must always be stored on the appropriate saw blade rack when not in use. The cutting teeth have to be protected by rubber protection which is supplied with the blades thru the blade supplier	
2			**Setting up the machine with new saw blade**	
	2.1		***Machine***	
		2.1.1	Inspect the saw blade mounting flange. It is important to check both the outside and inside mounting flange. Both must be 100% free of chips and scratches.	
		2.1.2	Check the condition of the tooth brush. The min.-wire length should be ≥ 0,393" If not, put on a new one.	
		2.1.3	Check the condition of the saw blade damping guide plates. These are wearing plates that overtime will become thinner and thinner. If they become too thin the saw blade body will rub on the mounting plate and will damage both, the saw blade and the mounting plate.	
		2.1.4	Check the nozzles of the micro lubrication	

	2.2		***Saw blade***
		2.2.1	The saw blade must be removed from the saw rack with a crane. Put the crane-hook into the outer lifting holes.
		2.2.2	The rubber protection must remain on the blade until the blade is put on the machine.
		2.2.3	Pay attention that the blade is put on the shaft in the right direction. Blade must turn clockwise
		2.2.4	Replace clamping flange and nuts on the bolts
		2.2.5 !!	Tighten the nuts only hand tight, remove the backlash between the holes in the blade and the driving pins. To do this rotate the saw blade counter clockwise until the holes in the blades stop against the drive pins. Tighten the nuts to the correct torque.
		2.2.6	Place the chip brush to roll lightly on top off the blade teeth and tighten. Replace the nozzles of micro dosing unit with approx. 0,39" clearance of the teeth. Close the saftey door and tighten the kocking pins
		2.2.7 !!	Adjust the saw blade damping guide plates so that there is a gap between the damping plate and the saw body approximately the thickness of a sheet of paper. The paper must be movable between the damping plate and the saw body with a small amount of restistance after tightnening the nuts on the damping plates. The damping plate should not be in contact with the side of the saw blade. NOT NECESSARY. THE DAMPENING PLATES ARE PRE-SET. ONLY IF SAW BODY THICKNESS CHANGES, THE DAMPENING PLATES HAVE TO BE ADJUSTED.





3			**Setting the control**	
	3.1		***Setting the dimensions***	
		3.1.1	Set bar or tube diameter in the control	
		3.1.2	Set actual saw blade diameter in the control	
	3.2		***Setting cutting parameters***	
		3.2.1	Check material grade to cut and set the apropriate cutting speed in the control according to the specifications in the techn. sheet	see the Lennartz recommendation "cutting parameters Ti profile + shape cutting" Cutting speed Vc [m/min]
		3.2.2	Check material grade to cut and set the apropriate chip load in the control according to the specifications in the techn. sheet	see the Lennartz recommendation "cutting parameters Ti profile + shape cutting" chip load fc [mm/T]
	3.3		***Moisten the blade***	
		3.3.1 !!	Before making the first cut please let the blade rotate in neutral with the micro spraying system switched on for 1 minute. This is to ensure that all of the carbide teeth have plenty of cutting oil on them before the first cut is made.	

4 cutting operation

4.1 *Cutting surface*

4.1.1 After the first cut check the cutting surface
Surface must be smooth

!! Note: With new or resharpended blades the surface is a little bit wavy. Within the first 20 cuts the cutting surface should become smooth

4.1.2 If cutting surface does not become better see below

Troubleshooting bad cutting surface

probable source	solution
Wrong parameters	see the Lennartz spread sheet "cutting parameters Ti profile + shapes cutting"
improberbly adjusted damping guide or worn damping guide plates	see 2.1.3 and 2.2.7
Is the cutting geometry according to the application?	consultation with the blade supplier
Is the clamping working correctly?	checking the machine

4.1.3 When the blade starts to get dull the surface will become worse again

bad / wavy surface

good/smooth surface

4.2 ***Chip formation***

4.2.1 Look for the cutting chips / saw dust (see in the chip tray)
Chips must be curled

4.2.2 Pay attention to the cutting noise. Is there any undesired noise?
Check the burr at the end of the cut

4.2.3 If chips are deformed and the cut still has a high noise level

Troubleshooting bad cutting surface

probable source	solution
Wrong parameters	see the Lennartz spread sheet "cutting parameters TI profile + shape cutting"
improberbly adjusted damping guide or worn damping guide plates	see 2.1.3 and 2.2.7
the mechanical feed isn't constant	checking the machine
wrong blade tension/run out	consultation with the blade supplier

4.2.4 When the blade starts to get dull the noise level increases and the chips start to fray

bad chips

4.3 ***Inclined cut***

4.3.1 Pay attention for the squareness of the cut
Inclined cuts my be caused by the following

Troubleshooting bad cutting surface

probable source	solution
Wrong parameters: The blade becomes too hot and looses the tension in the saw body	see the Lennartz spread sheet "cutting parameters TI profile + shape cutting"
saw blade flange was not cleaned proberbly, something is between blade and flange	see 2.1.1
Check the micro spraying system	see 2.2.6
Improberbly adjusted damping guide.	see 2.1.3 and 2.2.7
inlet- or outlet roller table is not allined to the machine table	checking inlet and outet roller table
wrong blade tension/run out	consultation with the blade supplier
wrong cutting geometry	consultation with the blade supplier

inclined cut

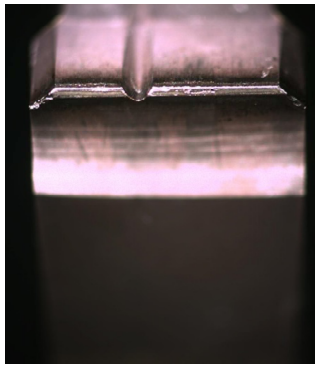
5 Wear life span

Depending of the material strength and -grade the blades achieve different life times

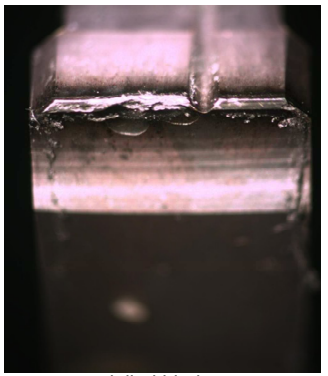
see the Lennartz technical sheet "cutting parameters Ti profile + shape cutting"

5.1 *Possible indicarors that show that the blade is damaged or dulled and a change is necessary*

	indicator	source
5.1.1	The amps of the motor current varies up and down	A tooth and/or a tooth shoulder is broken. If it is one single tooth and/ or shoulder continue running the blade. If it is two or more teeth and/or teeth shoulder in a row change the blade.
5.1.2	After an amount of a sectional cut area [m²] the amps of the motor current start to rise up constantly	The blade start to dull. Before the amp reach the motor overload (depending on the adjustment of the machine supplier) change the blade
5.1.3	The cutting surface is starting to become rough	The teeth have cracks or the blade is worn. Check the blade
5.1.4	The cutting chips start to weld on the tooth edges and don't curl so well. The amps raise up	The blade is worn
5.1.5	Vibration and noise occur during the cut	normal wear, change the blade
5.1.6	Blade is running out of square	blade is too hot and looses it's tension because it's worn or teeth are cracked. There also could be too much material built up on the blade that friction occures between blade body and material
5.1.7	Burr at the bottom of the cut increases	normal wear, change the blade
5.1.8	Sparks occur during the entire cut	normal wear, change the blade



normal wear without cracks



dulled blade

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An example which shows every single phase of tooth blunting, from light to heavy wear (standard chip breaker tooth from)