



KSC 710

CNC-controlled sharpening machine for CBN-abrasive grinding combined with a saw blade magazine and integrated loading system.

- Fully automatic sharpening, re-toothing and chamfering of metal circular saw blades
- Fully automatic cutting in of chip breaker grooves on metal cutting circular saw blades
- Ideal High-Tec solution for service and production

KSC 710

The compact and innovative Service Center for the automatic re-toothing, sharpening and chamfering of metal circular saw blades.

The Revolutionary Idea

To develop a flexible and space saving high-tech solution for the grinding of metal circular saw blades with different diameters, bores and tooth pitches.

At the same time reduce set-up times and minimize maintenance costs. Optimal grinding quality and grinding wheel life are achieved through integration of the sharpening machine, grinding wheel and coolant.

Implementation

The new KSC 710 Service Center for sharpening and automatic chamfering of saw blades with a diameter between 40 – 710 mm in manual mode and 75 – 520 mm in automatic operation. Parallel development of the efficient Loroach TurboGrind grinding wheels and Loroach TurboCool coolant specifically for Loroach machines.

With this system any stack can be loaded with saw blades of different diameters, tooth geometry, tooth pitch and bore sizes without requiring sorting of the saw blades based upon diameter or bore sizes. Due to this improvement saw blades can be ground in automatic operation. High quality reducing rings are snapped into the bores to compensate for different sizes. An optimized concentricity of the saw blade is always guaranteed since these reducing rings work like a mechanical spring.

The saw blades to be ground are placed on the stack. The saw blade data is then entered directly into the Windows-based machine control panel. The control panel automatically suggests the parameters for each grinding task.

A robot arm transfers the saw blades between the grinding machine and the magazine. Short loading paths guarantee a fast saw blade change.

The saw blade is clamped tight in the sharpening machine by means of hydraulic clamping. An additional robot arm supplies the required clamping flange. The tooth contour is scanned with the help of the grinding wheel. This procedure determines the correct start of the grinding process. If saw blade data, such as diameter or number of teeth, has been entered incorrectly the machine recognizes the error. The saw blade will be put back into the magazine without being ground and a corresponding report will be created. The next saw blade will be handled without interruption to the automatic operation.

The magazine can be loaded and unloaded during operation. In combination with the turn table magazine, a production without interruption is possible, especially for small batch sizes.

Options

The chamfering or cutting in of chip breaker grooves of the saw blades can be done fully automatically. An additional saw blade clamping at the grinding point ensures symmetrical chamfering even for blades with axial runout.

Using a laser measuring system the machine independently determines the respective saw blade diameter, the saw blade thickness and the number of teeth, eliminating operator programming.

By incorporating the CAD program different tooth shapes and any tooth pitch combinations (variable tooth pitch) can be achieved. Faulty operations are shown in plain text.

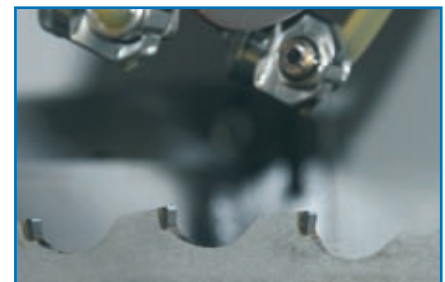
In addition the machine has a self-diagnostic program. With the built in modem, which is standard, new software installation, tele-diagnosis, and even online-training can be done. An optional dialing device automatically calls the operator if the machine has ground all saw blades or if a problem occurs.



Control



Re-toothing



Carbide tipped saw blade ta



Direct drive of the grinding spindle

Standard Innovations

The saw blades are loaded vertically, in a hanging position. This saves space and at the same time the excess coolant can drip from the saw blades. Due to this the saw blade does not need to be wiped dry or this inconvenient process is at least reduced to a minimum. The displaced coolant is fed back to the grinding machine.

Very high grinding quality and long grinding wheel lifetimes are guaranteed due to an efficient cooling system, optimized grinding process, automatically suggested operation parameters, the powerful direct drive of the grinding wheel and the stability of the machine.

Even in manual loading the grinding machine has a high degree of automation unknown until now

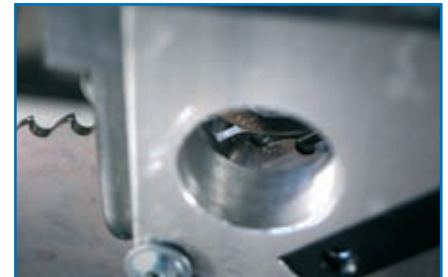
The operator places the saw blade on the saw blade holder and closes the machine door. The robot arm positions itself and the clamping flange, tensioning the saw blade, from then on everything works fully automatically.

For the first time the "Complete System Thought" has been realized

Not only a new machine has been developed but, in co-operation with their respective producers, also new grinding wheels and coolant have been matched in an optimized package.

Advantages at a glance

- ✎ 3 saw blade stacks with 230 mm height, providing 2 stacks with up to approximately 40 raw saw blades each. Extendable to 6 stacks with option.
- ✎ High flexibility because the saw blades within a stack can vary in diameter, tooth geometry, tooth pitch and bore. Saw blade diameter from 75 – 250 mm or 130 – 520 mm.
- ✎ Even small batches can be ground in automatic operation because the next stack can be loaded during grinding.
- ✎ High degree of automation even in manual operation. Clamping flange handling, tensioning, diameter adjustment, grinding wheel in-feed, sharpening and the chamfering are fully automatic.
- ✎ Comfortable and fast programming utilizing the machine control panel.
- ✎ Assortment of faulty programmed saw blades.
- ✎ Fully automatic recognition of saw blade diameter, saw blade thickness and number of teeth by the laser measuring system.
- ✎ Fully automatic cutting in of chip breaker grooves
- ✎ Operating parameters automatically suggested for each saw blade.
- ✎ Construction of different tooth shapes (CAD) and tooth pitches (Variable tooth) possible
- ✎ Outstanding grinding quality and long grinding wheel lifetime due to the stiffness of the sharpening machine, vibration free and powerful direct drive of the grinding wheel and optimum cooling.
- ✎ Maximum economic efficiency, since grinding and setup times are at a minimum.
- ✎ Coolant can be used again, since it can drip off the blades while hanging in the magazine.
- ✎ Optimum coordination of machine, grinding wheels and coolant.
- ✎ Space efficiency by vertical saw blade positioning in the machine and magazine.



Chip breaker grooves device



Laser measurement system



Saw blade magazine



Reducing Ring

KSC 710

- ✔ Integrated high pressure cooling system.
- ✔ High reliability through easy and proven construction principles, low maintenance needs, clear menu guidance and integrated self-diagnostic system.
- ✔ Practical peripheral units which are completely integrated for the machine, such as exhaust air and coolant filter, coolant chiller, etc.



Peripheral unit

Technical Data

Working range

Saw blade diameter	Ø 40 – 710 mm
In automatic mode	Ø (75) 130 – 520 mm
Autom. chamfering	Ø 130 – 520/710 mm (optionally from 100 mm possible)
Tooth pitch	1 – 55 mm
Number of teeth	2 – 998
Sawblade thickness	up to 8 mm

Grinding wheels

CBN-grinding wheel	Ø 200 mm
Bore size	Ø 32 mm

Cooling

Coolant pressure	10 bar
Coolant type	Water emulsion/Oil
Coolant quantity	400 l

Electrical installation

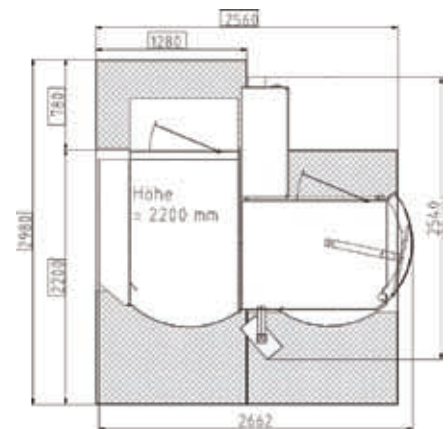
Power input grinding motor	3 kW
Power input machine	approx. 10 kW

Weight

approx. 3200 kg

Dimensions (W x D x H)

Without electro static air extractor	2662 x 2540 x 2200 mm
With electro static air extractor	2662 x 2540 x 2750 mm



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