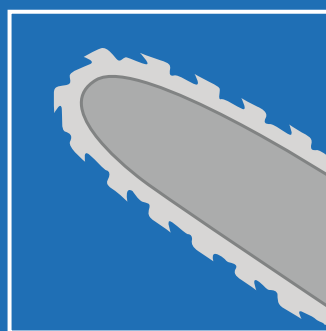
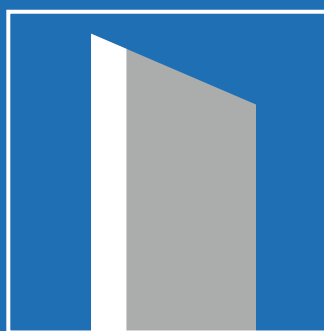
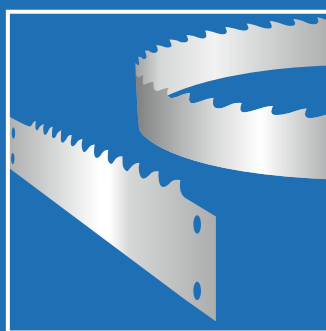




QUALITÄT, PRÄZISION UND EFFIZIENZ

QUALITY, PRECISION AND EFFICIENCY



www.iseli-swiss.com

We devise your sharpening solutions

With innovative technologies and precision engineering, we repeatedly lay the foundation for new sharpening and automation solutions. Sharpening service providers, tool manufacturers and sawmills all benefit from this.

ISELI is the most advanced system technology

In our comprehensive view of filing rooms, we place great value on offering our customers a special all-round service: from project planning to equipping with the latest sharpening machines and automation solutions to global after-sales service. Our goal: practical solutions that can be flexibly and economically adapted to future requirements. Your suggestions drive us!

Your added value is powered by ISELI

Everything from a single source: from the planning of the filing room to its equipping

State-of-the-art mechanical engineering

Software and hardware solutions from a single source

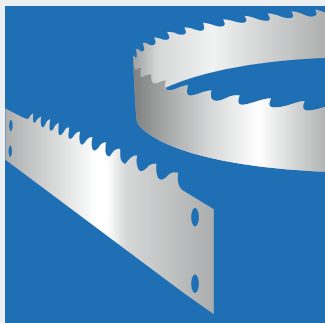
Professional commissioning of our machines

Software updates can be downloaded by customers.

Our team of experts supports you comprehensively in theory and practice.

We are a global player with a worldwide service and sales network.

Content



**Sharpening solutions for
band and frame saws**

4 – 39



**Sharpening solutions for
circular saws**

40 – 57



**Sharpening solutions for
straight and circular knives**

58 – 59

Our corporate concept – innovative and forward thinking

ISELI has been an owner-managed Swiss company since its foundation and is now in its third generation.

With more than 80 years of experience, we are pioneers in practice-oriented sharpening technology and complete solutions for band, gang and circular saw blades. As a system provider for an efficient and modern filing room, our portfolio includes much more: our customers have at their disposal machines for efficient Stellite tipping, swaging, straightening and tensioning as well as measuring solutions for band, gang and circular saw blades. In addition, machines for sharpening industrial knives and chain saws as well as coolant cleaning systems, practical filing room accessories and consumables.

Our success is based on the high-quality "Made in Switzerland" technical standard. At our location in Schötz, in the heart of Switzerland, we deliberately rely on a high level of vertical integration, which makes us largely independent of suppliers.

Practical customer orientation is our focus. With a lot of enthusiasm, our team does everything in its power to always find the best individual solutions for our customers. We see challenges as an opportunity to grow together with our customers.

Dear customers and partners,

We develop our sharpening machines and complete solutions with a lot of know-how, commitment and passion. For example, we offer our customers the world's largest range of sharpening machines for band saws! With the latest technologies and modern machinery, we work on short decision-making paths in uncompromising Swiss quality and always take economic and ecological requirements into account. With exemplary proximity to customers, we are the first choice for filing room optimization solutions worldwide.

Our goal is to be a technology leader and achieve customer satisfaction in everything we do!

Philipp Iseli, Managing Director

ISEL-Machining solutions for band and frame saws. Sharpen, process and maintain

With the world's largest range of specialized sharpening and processing machines for all common band and gang saw blades, we set standards in terms of precision, safety and efficiency. Our modular machine solutions implement these key factors effectively and practically. They ensure high product quality and valuable cost advantages in the long term!

Precise sharpening, Stellite tipping, straightening and tensioning, levelling, swaging and measuring: this is what counts in the precision machining of saw blades. With ISEL state-of-the-art machine and control technology, this is achieved effectively and with high quality. Our solutions ensure that, with maximum productivity, the filing rooms of tool manufacturers, sawmills and wood, plastic and metal processing companies achieve efficiency and precision.

Precision

The precision of a processing machine is crucial for the sharpness and the service life of band and gang saw blades, in any environment and even under the toughest operating conditions. Our processing machines win over with a high degree of mechanical precision, paired with the most modern control through proven software solutions.

Reliability

In everyday industrial life, top performance must not depend on the conditions of the moment. It must be ensured on a permanent basis, seamlessly, even in shifts. So it is good to know that ISEL sharpening and processing machines fulfill their function without any ifs or buts in a wide variety of applications and right down to the last component. The end result is maximum process reliability, minimum tolerances and the shortest possible downtimes.

Long term accuracy

Reproducibility and long-term precision in the machining of band and gang saw blades are the most important factors to ensure consistent product quality. Our machines exceed the standards in many aspects and are therefore thus also convince particularly demanding users at tool manufacturers, sharpening service providers and sawmills.

Service concept

You can completely rely on an ISEL sharpening and processing machines, because our service is at your side around the world. Even the best machines can break down after a long period of use. Investing in an ISEL machine will prove to be a good decision. Whether by remote maintenance or personally on site, we do everything we can to ensure that your ISEL machine fulfills its task as quickly as possible.

Customer relationship

In addition to technical and economic aspects, a successful customer and supplier relationship also includes trust and friendliness. We take our customer's wishes seriously. We help wherever we can, quickly and unbureaucratically. We are always a strong partner for our customers, something we set a high value on.

Global player

Strong relationships with well-known companies around the globe are part of the ISEL strategic thrust in terms of quality and customer satisfaction. Through strategic and fair partnerships, ISEL can maintain and expand its leading position worldwide.

Commitment to location

At ISEL, tradition and know-how in sharpening and processing band, gang and circular saw blades has been at home in Schötz, Switzerland, for over 80 years. Here in our company we develop and manufacture our machines which many customers even say are the best sharpening machines in the world.

Our sharpening and machining skills for band and frame saws

At home in precision! Anyone who wants to get their tools for the perfect cut quickly and with high precision, even under pressure, needs - especially when safety and reliability are required - uncomplicated all-round talents with perfect technology. ISEL stands for real passion when it comes to the perfect filing room. As the world market leader in the field of processing machines for band and frame saw blades, we offer our customers around the world practical quality products.

STRAIGHTENING/TENSIONING



PROFILE GRINDING



SIDE GRINDING



DEEP-GRINDING PRODUCTION CENTER



STELLITE TIPPING/SWAGING



WELDING/REPAIR



Levelling, straightening and tensioning

The perfect saw blade is of crucial importance for a clean cut and performance in woodworking. Therefore the working steps of blade processing, whether manual or fully automatic, are the same. The difference lies in the repeatable accuracy, which is 100 percent guaranteed, for example, with our fully automatic RZ 1 levelling center for levelling, straightening and tensioning.

1 Check

Check the band saw blade for damage such as cracks, broken teeth and noticeable deformations on the back and blade body

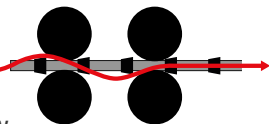
2 Level

Levelling removes bumps and dents to get a flat blade, which is essential for a perfectly smooth cut.

On the one hand, an uneven blade leads to incorrect measurement results in further processing, since these lead to an incorrect assessment of the actual blade tension when the band saw blade is tensioned. On the other hand, bumps and dents have a negative effect on the surface quality of the cut material.

The ISEL solution

Two CNC metal carbide roller pairs, positive and negative, remove any unevenness of the blade proportionally to its size.



3 Tensioning

Tensioning the band saw blade means lengthening the band saw blade, in accordance with the crowning of the band saw roller, as specified by the manufacturer.

A band saw blade that is not correctly tensioned tends to slide on the band saw roller and leads to uncontrolled wandering on the roller. This means that the optimal position is no longer guaranteed and the band saw runs either too forward or behind the roller therefore damage is inevitable. This leads to:

- wear of the rollers
- wear of the pressure guides
- irreparable damage to the band saw blade

The ISEL solution

The tensioning curve of the saw blade and the straightening curve of the back of the blade can be freely programmed and saved.

The measurement of tensioning with ISEL tensiometer provides information about the correct relationship between straightening and tensioning.

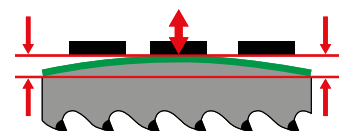


4 Straightening

When straightening, the back of the band saw blade is extended. In this way, the blade tension is correctly distributed on the tooth side in order to achieve the optimum tension in that area.

Since the band saw blade becomes narrower with each grinding process, the maximum tension shifts towards the back. This is compensated for by lengthening the back of the bandsaw blade. In order to maintain the optimal performance of the band saw blade over the long term, the back should never be concave, but always convex or at least straight.

The extent of stretching of the back of the blade can vary and should be carefully assessed. As a rule, the band saw blade manufacturer should determine the optimal back extension together with the customer in order to guarantee a reproducible result in the recurring repair process.



The ISEL solution

The saw blade is CNC straightened by means of a separately driven pair of rollers. The process is proportionally controlled electro-hydraulically.

Only optimally LEVELLED, STRAIGHTENED and TENSIONED band saws ensure economical and precise cutting!

Our specialists for the economical processing of band and gang saw blades

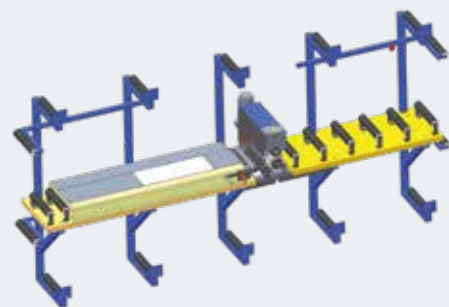
With maximum productivity and ease of use, they ensure that filing rooms at tool manufacturers, sawmills and wood, plastic and metal processing companies work more profitably. With the world's largest range of specialized sharpening and processing machines for all common band and gang saw blades, we set high standards in terms of precision, safety and efficiency.

Our modular machine solutions and comprehensive services implement these key factors effectively and practically, thus ensuring product quality and valuable cost advantages worldwide!



BNR 100

Fully automatic straightening center for the complete machining of band saw blades



R 410 – R 610 / WVB 360

for manual straightening and tensioning of band and gang saw blades



BAR 100

Fully automatic levelling machine for bandsaw blades

BNR 100

Auto bench for Bandsaw blades Fully automatic complete processing



ISELI has set new standards on the world market with its fully automatic straightening centre.

The band saw blades can be clamped, levelled and straightened in one set-up. The measurement takes place over the entire saw blade by means of high-resolution sensors.

This process is patent-protected and guarantees the best results.

Highlights

The machine is equipped with a high-performance control system and the reliable LINUX operating system.

During the leveling process, two CNC-controlled pairs of rollers (positive/negative) are used to process and remove dents and bumps.

The tensioning curve of the bandsaw blade and the straightening curve of the saw blade back are freely programmable and storable. These two operations are carried out via a separately arranged pair of tensioning rollers.

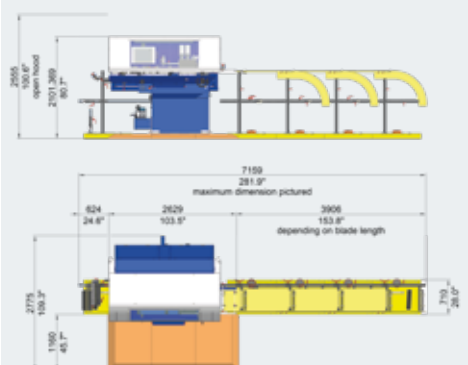
The user-friendly user interface with a complete overview of the "leveling", "tensioning" and "straightening" processes offers a maximum overview and even more control.

The work sequence of the leveling, tensioning and straightening processes can be freely configured and called up.

New "Expert-program": Everything on one page for extra time savings in manual intervention.

With optimized weld-seam program for the production of new bandsaw blades.

Technical Data



GENERAL INFORMATION:

Working speed	approx. 18 m / min
Measuring station (sensor technology)	patented

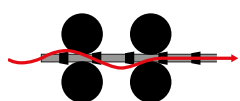
BAND SAWS:

Blade width (Standard)	70 – 210 mm
Blade width (Option)	up to 360 mm
Blade width (Option)	from 50 mm
Blade thickness	0.7 - 2.0 mm
Blade length (Standard)	from 8'000 mm
Blade length (Option)	from 5'000 mm

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	5.0 kVA
Compr. air supply	6 bar
Weight	approx. 2'550 kg

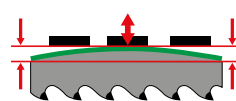
Application programmes



Levelling



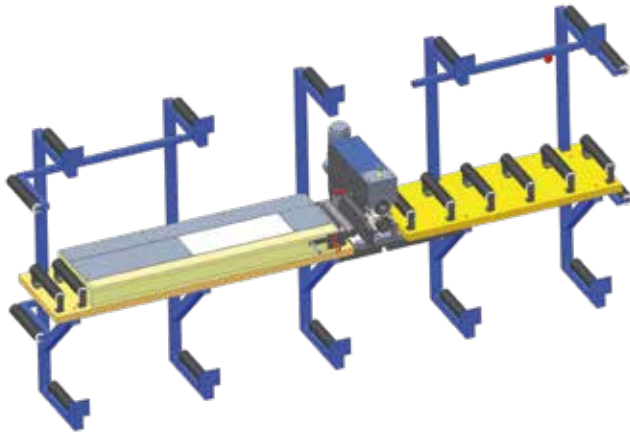
Tensioning



Straightening

RB / WVB

Levelling bench and tensioning machine ISEL for manual aligning, levelling and tensioning



With the manual bench and the tensioning machine you straighten and tension band and gang saw blades up to a blade width of 360 mm. A robust design, perfect results, simple operation and high safety.

Equipped with a large dimensioned anvil plate made of wear-free tool steel, integrated light for checking the back straightness and extendable roller carriers.

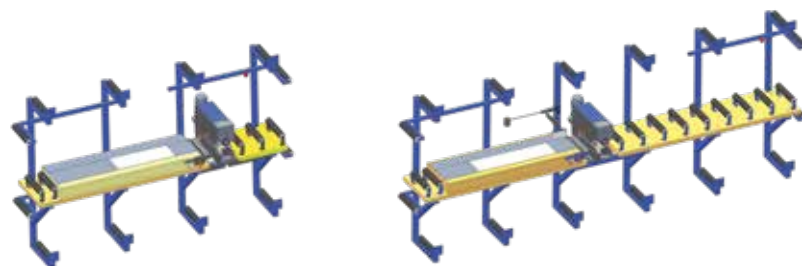
Highlights levelling bench RB

- R 410 (4 stands): Levelling bench for band saws, blade length 6 - 10 m
- R 510 (5 stands): Levelling bench for band saws, blade length 6 - 12 m
- R 610 (6 stands): Levelling bench for band saws, blade length 6 - 14 m

- Modular extension up to 14 m blade length possible
- 5 supports with rollers
- 4 movable deflection rollers
- 1 Adjustable counter roll

Highlights tensioning machine WVB 360

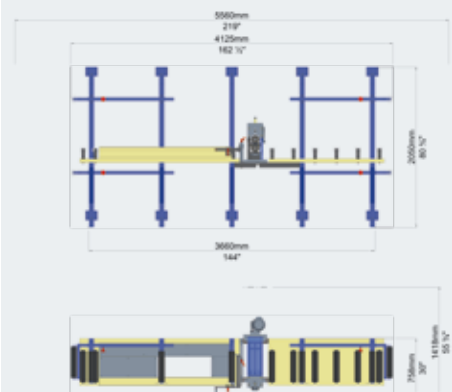
- Band saw blades up to 360 mm width
- Axial displacement of the machine by handwheel
- Adjustable counter roller
- Upper swing tensioning roller for twisted band saws



R 410 (4 Stands)

R 610 (6 Stands)

Technical Data



BAND SAW BLADES:

R410	6'000 – 10'000 mm
R510	6'000 – 12'000 mm
R610	6'000 – 14'000 mm

Blade width: Depending on the anvil plate

ANVIL PLATE:

Variant 1	1'000 x 220 mm
Variant 2	700 x 270 mm
Variant 3	1'000 x 270 mm

ROLLER UNIT:

Roller unit adjustable up to 380 mm

CONNECTION VALUES:

Electrical connection 400V, 3PH, 50Hz

BAR 100

Fully automatic levelling machine for band saw blades



Timber cutting in the sawmill is always associated with precise tools. Our Mecomat levelling machine removes unevenness on the saw blade.

Via the four levelling rollers, the levelling is done convexly and concavely from both sides of the saw blade, which leads to better results and thus increases the quality of the tools.

Highlights

Intelligent programmable controller with digital recording for all cycles and operations

The band saw blades are machined according to their blade thickness and elasticity until the result corresponds to your desired result or corresponds to the specified tolerances

The roller pressure is adjusted by means of a scale for different saw blade thicknesses.

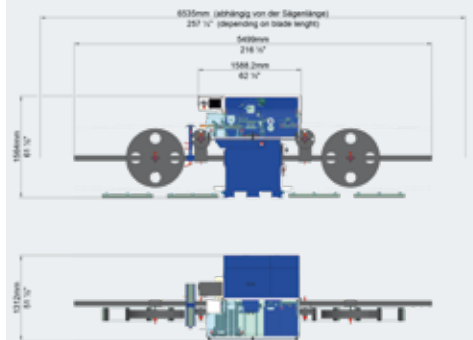
Levelling: Two CNC-controlled pairs of rollers, positive and negative, level out the unevenness (bumps & dents) depending on the size

The band saw blade is flattened on both sides at the same time, which leads to better results

The saw blade is straightened in several passes until the set values are reached.

The working speed is around 10 m / min

Technical Data



GENERAL INFORMATION:

Working speed	approx. 10 m / min
---------------	--------------------

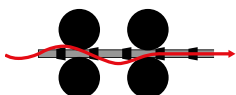
BAND SAWS:

Blade width	50 – 300 mm
Blade thickness	0.8 – 2.0 mm
Blade length	5'800 – 14'000 mm

PROPERTIES:

Electrical connection	400 V 3Ph N
Connected load	2.5 kVA
Working pressure	2.5 – 3.0 bar
Compr. air supply	5 bar
Weight	approx. 850 kg

Application programmes



Levelling



Profile sharpening

For a precise cut and maximum performance, band saw blades must be resharpened at regular intervals. Blunted teeth place a great deal of stress on the saw blade and result in damage and breakage. When resharpening, the entire tooth shape, including the gullet, should be sharpened – even if the usual degree of dullness has not yet been achieved. If this is not done professionally, irreparable cracks can form in the gullet, where the tensile stress load is highest.

Two types of grinding are used for profile sharpening: preferably CBN Borazon or high-grade corundum (diamond) grinding wheels. These wheels are used especially for Stellite and when higher accuracy, better surface quality and long service life are required.

1 Control

Check the bandsaw blade for damage

- Is the band saw blade correctly straightened and tensioned?
- Is the band saw blade free of cracks?
- Do the cutting edges have sufficient projection?
- Are there broken teeth?

2 Grinding machine

The equipment of the grinding machine should include:

- The right grinding wheel
- The right profile to match the band saw blade
- The correct feed speed (mm/s)
- The exact positioning of all positions: X-axis, Y-axis and/or W-axis
- The coolant should wet the grinding position cleanly and with sufficient pressure (bar).

3 You should keep this in mind when sharpening profiles

Grinding wheel:

- Correct choice of grinding wheel for Stellite tipped or swaged saw blades
- CBN grinding wheel or high-grade corundum (diamond) grinding wheel

The advantages of the CBN grinding wheel:

- Good choice when no automatic dresser is available
- Very fine surface quality if settings are correct
- Protects the machine as the cooling water is not contaminated with corundum particles

The disadvantages of the CBN grinding wheel:

- Wheel profile loss lead to alteration of the tooth profile.
- The wheel must be promptly removed and re-profiled by the manufacturer.
- The costs may be higher than a new blade.

The advantages of the high-grade corundum grinding wheel:

- Low acquisition costs
- Profiling on the machine is possible if an automatic dresser is available
- Constant wheel profile to match the tooth profile

The disadvantages of the high-grade corundum grinding wheel:

- Higher fouling of the machine
- Tooth surface can be worse

4 Choice of coolant

The choice of oil or emulsion depends on machine setup. Both coolants can be used with a CBN or high-grade corundum wheel.

Our recommendation:

In our sharpening machines, we only use oil as a coolant, since oil increases the grinding quality and the service life of the machine that processes carbide.

For fast, precise sharpening with the best cooling, we recommend using one of our mobile or stationary coolant cleaning stations. They ensure a long service life for the coolant and reduce the wear of the sharpening machine.

Basically, the following must be observed when grinding profiles:

- Do not blue grind the steel, otherwise friction martensite will develop that can lead to cracks in the band saw blade.
- A good basic rule is: only grind as much as necessary.
- Multiple passes with shorter infeed are better than one pass with large infeed.
- The feed rate of the grinding speed per tooth should not be too high.
- Feed rate and grinding wheel speed should match each other.
- The pressure and purity of the coolant are crucial, not just the quantity.
- The band saw blade should be firmly clamped with the blade clamp and guided smoothly.
- The setting of the grinding wheel center point should match the blade thickness and be corrected if necessary.
- Grinding wheels should be constantly monitored for their performance and, if necessary, replaced in good time.

Our profile sharpening machines for the wet grinding of band and frame saws

Precision, quality, efficiency: this is what counts for profile sharpening of band and frame saws. The modular machine solutions from ISEL implement these key factors effectively and practically with the latest machine and control technology. With maximum productivity and ease of use, they ensure that filing rooms at tool manufacturers, sawmills and wood, plastic and metal processing companies work more profitably.

With the world's largest range of specialized sharpening and processing machines for all common band saw blades, we set standards in every respect: ISEL offers its customers the highest levels of precision, safety and efficiency. In this way, ISEL solutions ensure long-term and reliable product quality and valuable cost advantages.



BAP 110

Automatic profile sharpening machine for band saw blades in wet grinding execution



BNP 100

Fully automatic 2-axis-control profile sharpening machine for band saw blades in wet grinding execution



BNP 110

Fully automatic 2-axis-control profile sharpening machine for band saw blades in wet grinding execution



BNP 200 [G2]

Fully automatic 4-axis-control profile sharpening machine for band saws in wet grinding design



BNP 210 [G2]

Fully automatic 4-axis-control profile sharpening machine for band saw blades in wet grinding execution



BNP 300

Fully automatic 5-axis-control profile sharpening machine for band saw blades in wet grinding execution



GAP 100

Automatic-control profile sharpening machine for gang saw blades in wet grinding execution



GNP 100

Fully automatic 2-axis-control profile sharpening machine for gang saw blades in wet grinding execution

BAP 110

Automatic profile sharpening machine with cam control system in wet grinding execution



With fully automatic of the grinding process and the possibility of tooth shape and tooth pitch adjustment.

Highlights

Extremely stable constructed grinding machine, manufactured in a robust steel construction

Tooth pitch and tooth form adjustment are possible on this machine

The entire feed unit runs in an oil bath and is therefore maintenance-free

Mechanism and grinding head guide are mounted with hardened shafts and ball sleeves, easy to maintain and without lubrication points

Direct drive of the grinding wheel, including grinding wheel flange

Including frequency converter for adjustable feed speed

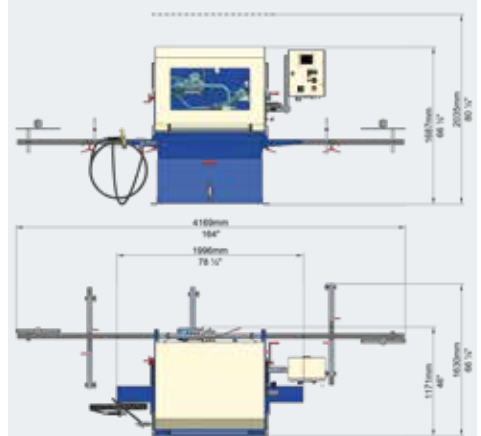
Application programmes



Grinding of standard tooth forms

The selection of the tooth shape is generated via a tooth form cam that matches the profile.

Technical Data



GENERAL INFORMATION:

Tooth pitch (Var 1)	25 – 60 mm
Tooth pitch (Var 2)	18 – 50 mm
Tooth height	6 – 20 mm
Rake angle	5 – 35°
Tooth shapes	1 - 3 Profile eccentric

BAND SAWS:

Saw blade width (standard)	70 – 360 mm
Saw blade width (optional)	25 – 360 mm
Saw blade length (standard)	from 6'000 mm
Saw blade length (optional)	from 4'000 mm

GRINDING WHEEL:

Bakelite grinding wheel	Ø 300 mm
Grinding wheel CBN	Ø 250 – 300 mm
Bore	Ø 32 mm
Peripheral speed	adjustable

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	3.6 kVA
Grinding wheel motor	2.2 kW
Weight	approx. 1'000 kg
Coolant tank	approx. 200 l

BNP 100

Fully automatic profile sharpening machine for band saw blades controlled with 2 CNC axes



With innovative operating concept, large grinding wheel diameter, servo drives and optional remote maintenance access for maximum performance when sharpening of band saws.

Highlights

Profile-grinding of standard and Stellite-tipped band saw blades by means of CNC axes "X" & "Y" (several complete cycles of the band saw blade)

Use of linear roller guides for all CNC axes (stiffer engineering and maximized lifetime)

"LINUX Debian 10" control unit with multicore processor

Pneumatic saw blade clamping, with force relief during feed

Tooth profiles retrievable via control unit (standard memory for 99'999 tooth profiles)

Re-treated machine parts for longer service life and corrosion protection

Drive by means of servo motors with state-of-the-art safety control system

Large grinding wheel diameter of 350 mm

Application programmes



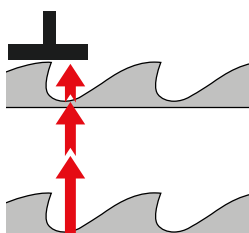
Grinding of standard tooth forms



Grinding of constant and / or variable tooth pitches and shapes

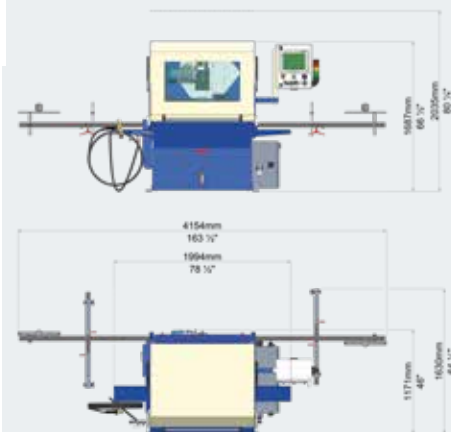


Grinding the winter tooth



Variable height measurement with Analogue sensor

Technical Data



GENERAL INFORMATION:

Tooth pitch	10 – 100 mm
Tooth height	up to 30 mm
Rake angle	0 – 35°
Tooth shapes	programmable

BAND SAWS:

Saw blade width (standard)	75 – 360 mm
Saw blade width (optional)	30 – 360 mm
Saw blade length (standard)	from 5'600 mm
Saw blade length (optional)	from 4'000 mm

GRINDING WHEEL::

Bakelite grinding wheel	Ø 350 mm
Grinding wheel CBN	Ø 300 / 350 mm
Bore	Ø 32 mm
Peripheral speed	adjustable

PROPERTIES::

Grinding wheel motor	2.2 kW
Electrical connection	400V 3Ph N
Connected load	4.2 kVA
Compr. air supply	6 bar
Weight	approx. 1'250 kg
Coolant tank	approx. 150 l

BNP 110

Fully automatic profile sharpening machine for band saw blades controlled with 2 CNC axes



The BNP 110 combines the technology of the BNP 100 with the design of the BNP 200.

The ergonomic machine housing allows electrically controlled saw blade height adjustment.

Highlights

Profile-grinding of standard and Stellite-tipped band saw blades by means of CNC axes "X" & "Y" (several complete cycles of the band saw blade)

Use of linear roller guides for all CNC axes (stiffer engineering and maximized lifetime)

"LINUX Debian 10" control unit with multicore processor

Pneumatic saw blade clamping, with force relief during feed

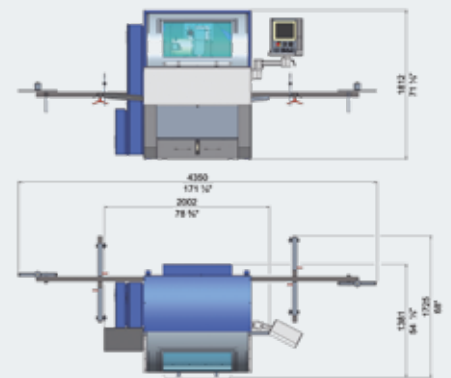
Tooth profiles retrievable via control unit (standard memory for 99'999 tooth profiles)

Re-treated machine parts for longer service life and corrosion protection

Drive by means of servo motors with state-of-the-art safety control system

Large grinding wheel diameter of 350 mm

Technical Data



GENERAL INFORMATION:

Tooth pitch	10 – 100 mm
Tooth height	up to 30 mm
Rake angle	0 – 35°
Tooth shapes	programmable

BAND SAWS:

Saw blade width (standard)	75 – 360 mm
Saw blade width (optional)	25 – 360 mm
Saw blade length (standard)	from 6'000 mm
Saw blade length (optional)	from 4'300 mm

GRINDING WHEEL:

Bakelite grinding wheel	Ø 350 mm
Grinding wheel CBN	Ø 300 / 350 mm
Bore	Ø 32 mm
Peripheral speed	adjustable

PROPERTIES:

Grinding wheel motor	2.2 kW
Electrical connection	400V 3Ph N
Connected load	4.2 kVA
Compr. air supply	6 bar
Weight	approx. 1'250 kg
Coolant tank	approx. 150 l

Application programmes



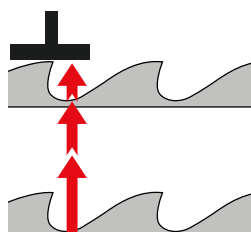
Grinding of standard tooth forms



Grinding of constant and / or variable tooth pitches and shapes



Grinding the winter tooth



Variable height measurement with Analogue sensor

BNP 200 [G2] Fully automatic profile sharpening machine for band saw blades controlled with 4 CNC axes



The ISEL BNP 200 line combines technology that can be precision grinded and finish grinded against the cutting edge.

Optionally, the tool zero point can be set automatically by means of an acoustic sensor or the tooth profile can be scanned via the Tooth Tracing System.

Highlights

Profile-grinding of standard and Stellite-tipped band saw blades

- by means of CNC axes "X" & "Y" (several complete cycles of the band saw blade)
- by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)

Top/Face-grinding of Stellite- and Carbide-tipped band saw blades

- by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)

Automatic set up of the saw

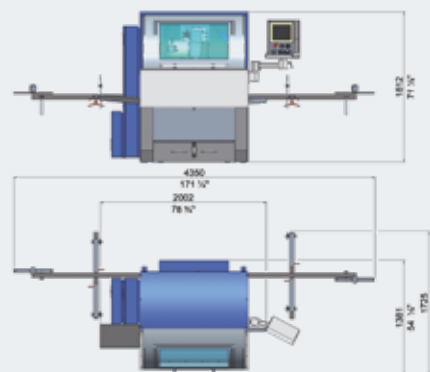
- Positioning the saw to the workpiece grinding position (automatic)
- Positioning the saw to the workpiece change position (automatic)
- Automatic recognition of the tooth group and measurement of the tooth pitch

CNC controlled cutting angle Adjustment ("S" axis)

Automatic probing of the grinding wheel at the saw tooth

Automatic tooth shape tracing "Tooth Tracing System - TTS"

Technical Data



GENERAL INFORMATION:

Tooth pitch	10 – 100 mm
Tooth height	up to 30 mm
Rake angle	0 – 35°
Tooth shapes	programmable

BAND SAWS:

Saw blade width (standard)	70 – 360 mm
Saw blade width (optional)	30 – 360 mm
Saw blade length (standard)	from 6'000 mm
Saw blade length (optional)	from 4'300 mm

GRINDING WHEEL:

Bakelite grinding wheel	Ø 350 mm
Grinding wheel CBN	Ø 300 – 350 mm
Bore	Ø 32 mm
Peripheral speed	adjustable

PROPERTIES:

Electrical connection	400V 3Ph N
Compr. air supply	6 bar
Connected load	3.6 kVA
Grinding wheel motor	2.2 kW
Weight	approx. 1'700 kg
Coolant tank	approx. 170 l

Application programmes



Grinding of standard tooth forms
Grinding of variable tooth forms



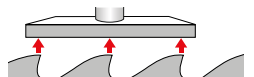
Alternating grinding on the
tooth face and back



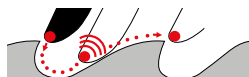
Grinding the winter tooth



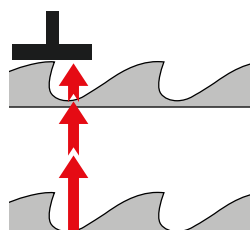
Automatic probing of the tool zero point
with acoustic sensor



Automatic setup of the saws



Automatic tooth shape tracing
"Tooth Tracing System"



Variable height measurement
with Analogue sensor

BNP 210 [G2]

Fully automatic profile sharpening machine for band saw blades controlled with 4 CNC axes



The ISEL BNP 210 complements the advantages of the BNP 200 with a water-cooled grinding wheel motor and offers a large grinding wheel diameter of 400 mm as standard.

Highlights

Profile-grinding of standard and Stellite-tipped band saw blades

- by means of CNC axes "X" & "Y" (several complete cycles of the band saw blade)
- by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)

Top/Face-grinding of Stellite- and Carbide-tipped band saw blades

- by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)

Automatic set up of the saw

- Positioning the saw to the workpiece grinding position (automatic)
- Positioning the saw to the workpiece change position (automatic)
- Automatic recognition of the tooth group and measurement of the tooth pitch

CNC controlled cutting angle Adjustment ("S" axis)

Automatic probing of the grinding wheel at the saw tooth

Automatic tooth shape tracing "Tooth Tracing System - TTS"

Application programmes



Grinding of standard tooth forms
Grinding of variable tooth forms



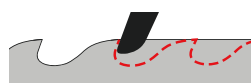
Alternating grinding on the
tooth face and back



Grinding the winter tooth



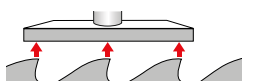
Automatic probing of the tool zero
point with acoustic sensor



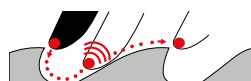
Deep grinding / re-tooth grinding



Variable height measurement
with Analogue sensor

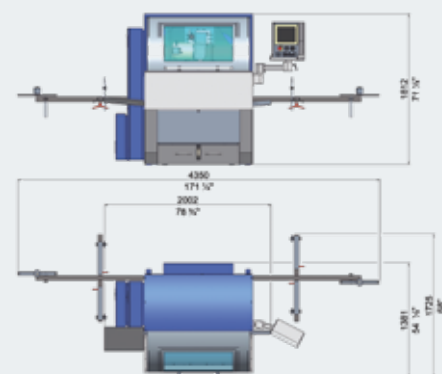


Automatic setup of the saws



Automatic tooth shape tracing
"Tooth Tracing System"

Technical Data



GENERAL INFORMATION:

Tooth pitch	10 – 100 mm
Tooth height	up to 30 mm
Rake angle	0 – 35°
Tooth shapes	programmable

BAND SAWS:

Saw blade width (standard)	70 – 360 mm
Saw blade width (optional)	30 – 360 mm
Saw blade length (standard)	from 6'000 mm
Saw blade length (optional)	from 4'300 mm

GRINDING WHEEL:

Bakelite grinding wheel	Ø 350 mm
Grinding wheel CBN	Ø 300 – 350 mm
Bore	Ø 32 mm
Peripheral speed	adjustable

PROPERTIES:

Electrical connection	400V 3Ph N
Compr. air supply	6 bar
Connected load	4.6 kVA
Grinding wheel motor	9.0 kW
Weight	approx. 1'700 kg
Coolant tank	approx.. 170 l

BNP 300

Fully automatic profile sharpening machine for
band saw blades controlled with 5 CNC axes



The BNP 300 meets all requirements for machining stellite and carbide tipped band saws. In convincing quality, with a long service life.

Triplechip with tooth height difference and 45° chamfering can be ground in one pass.

Highlights

Profile-grinding of standard and Stellite-tipped band saw blades

- by means of CNC axes "X" & "Y" (several complete cycles of the band saw blade)
- by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)

Top/Face-grinding of Stellite- and Carbide-tipped band saw blades

- by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)

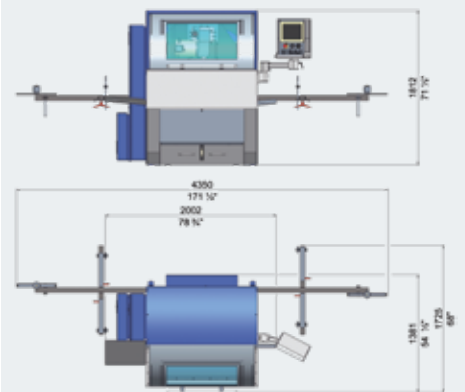
Chamfering and bevel grinding of the tooth back

- by switching in the CNC axis "U"
(for triplechip with tooth height difference and 45° chamfering)

Automatic set up of the saw

- Positioning the saw to the workpiece grinding position (automatic)
- Positioning the saw to the workpiece change position (automatic)
- Automatic recognition of the tooth group and measurement of the tooth pitch

Technical Data



GENERAL INFORMATION:

Tooth pitch	10 – 100 mm
Tooth height	up to 30 mm
Rake angle	0 – 35°
Tooth shapes	programmable

BAND SAWS:

Saw blade width (standard)	75 – 360 mm
Saw blade width (optional)	30 – 360 mm
Saw blade length (standard)	from 6'000 mm
Saw blade length (optional)	from 4'300 mm
Blade thickness	0.6 – 0.3 mm

GRINDING WHEEL:

Grinding wheel	Ø 200 / 250 mm
Bore	Ø 32 mm
Grinding wheel motor	2.2 kW

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	3.9 kVA
Compr. air supply	6 bar
Coolant tank	approx. 170 l

Application programmes



Grinding of standard tooth forms
Grinding of variable tooth forms



Alternating grinding on the
tooth face and back



Grinding the winter tooth



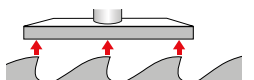
Automatic probing of the tool zero
point with acoustic sensor



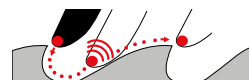
Flat tooth



Roof tooth



Automatic setup of the saws



Automatic tooth shape tracing
"Tooth Tracing System"

GAP 100

Automatic sharpening machine for gang saw blades



The GAP 100 automatic profile sharpening machine sharpens your gang saws and features a compact, extremely stable design, high functionality and excellent value for money.

Highlights

- Hydro pneumatic return stroke of saw carriage
- Pneumatic saw blade clamping
- Precision linear guide for saw carriage
- Precision spindle height adjustment for saw blade width
- Fully enclosed protection hood with powerful water-cooling
- Feed speed regulator with frequency converter

Options

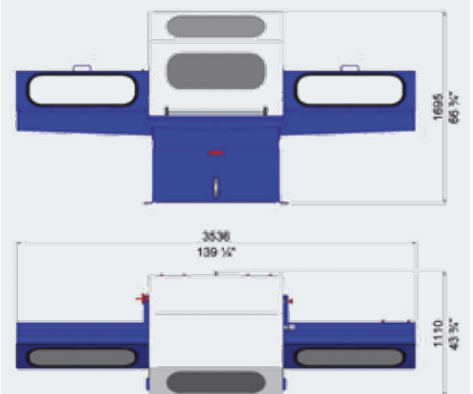
- Grinding wheel dressing device
- Dust mist exhaust
- Lever control for 3 different tooth shapes
- Continuous tooth pitch adjustment
- Speed regulator for grinding wheel
- Optical signaling device for process status recognition (3-color signal lamp)

Application programmes



Grinding of standard tooth forms

Technical Data



GENERAL INFORMATION:

Tooth shape	pointed, curved or hooked
Tooth pitch	18 – 35 mm
Tooth height	up to 30 mm
Rake angle	5 – 25°

GANG SAWS:

Blade width	80 – 160 mm
Blade length (Tooth length)	up to 1'400 mm

GRINDING WHEEL:

Bakelite grinding wheel	Ø 300 mm
Bore	Ø 32 mm

GNP 100

Fully automatic profile sharpening machine for gang saw blades controlled with 2 CNC axes



Highlights

- Profile-grinding of standard and Stellite-tipped band saw blades by means of CNC axes "W" & "Y" (grinding of the positioned and clamped saw tooth)
- Pneumatic saw blade clamping all over the whole saw blade length
- Precision spindle height adjustment for saw width
- Full-space cover with intensive water cooling
- "LINUX Debian 10" control unit with multicore processor
- Drive by means of servo motors
- Use of linear roller guides for all CNC axes (stiffer engineering and maximized lifetime)
- Extensive grinding programmes
- Automatic probing of the grinding wheel at the saw tooth
- Tooth profiles retrievable via control unit (standard memory for 99'999 tooth profiles)

Application programmes



Grinding of standard tooth forms
Grinding of variable tooth forms



Alternating grinding on the
tooth face and back



Grinding the winter tooth



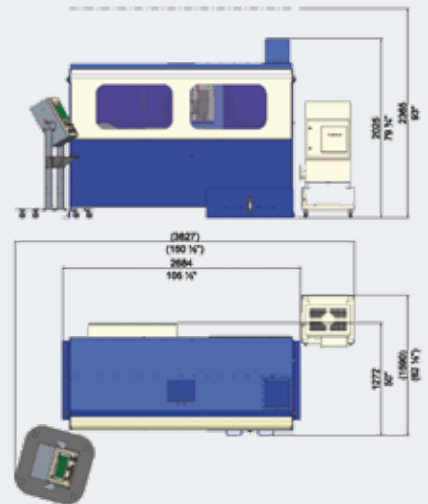
Automatic probing of the tool zero
point with acoustic sensor

The space-saving GNP 100 sets new standards in the grinding of gang saw blades.

By means of the acoustic sensor and the W-axis, the zero points can be measured automatically.

The saw neck can be programmed and can be machined automatically.

Technical Data



GENERAL INFORMATION:

Tooth pitch	5 – 60 mm
Tooth height	up to 30 mm
Rake angle	0 – 25°
Tooth shape	programmable

GANG SAWS::

Blade width	80 – 180 mm
Blade length (Tooth length)	up to 1'500 mm

GRINDING WHEEL:

Bakelite grinding wheel	Ø 350 mm
Bore	Ø 32 mm
Peripheral speed	adjustable
Grinding wheel motor	2.2 kW

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	2.4 kVA
Compr. air supply	6 bar
Coolant tank	approx. 170 l

Swaging and levelling

With new band saw blades, the teeth should be ground before swaging. This prevents possible errors, such as burrs, which can result from tooth punching and swaging. Swaging takes place in two work steps: forming and levelling by equalizing jaws or grinding. In swaging, the steel in the upper area of the tooth tip is pressed backwards and outwards. This is done with the help of a ground, rounded swaging bar. The anvil should rest against the back of the tooth up to the tip of the tooth.

The main advantages of swaging and levelling in comparison with setting are:

longer operating times thanks to the improved wear resistance and the higher hardness during cold forming
better sawing accuracy and surface quality thanks to the symmetry achieved with levelling or grinding

1 Swaging

Check the band saw blade for damage

Large and small swaging is possible.

Large swaging has the advantage that several regrinds are allowed before re-swaging. The advantage of small swaging is the reduction of friction on the teeth in comparison with large swaging.

We recommend removing all traces of the previous swaging by grinding before re-swaging. This simultaneously removes the cold-formed steel from the earlier swaging. This is important, because remaining cold deformations can lead to cracks in the tooth during new swaging.

Please note that when swaging the clearance angle decreases with each sharpening process.

2 Levelling

The tooth is laterally aligned by levelling using equalizing jaws or side grinding. The swaged tooth is given the desired shape and greater hardness.

Swaging and levelling increases the hardness of the tooth tip by around 7 to 8 HRC.

Pay attention to the following points:

Do not burn the steel during swaging and levelling as this can lead to cracks during the swaging process.

The teeth should never be bent because of a faulty punching process.

Lubricate the teeth in the swaging process with wax crayons or molybdenum disulfide (Molykote).

Bad swaging may be caused by:

The size of the swaging anvil does not match the thickness of the band.

Swaging sticks or anvils are worn out.

Swaging sticks or anvils are poorly adjusted.

The swaging anvil is ground at an angle.

Equalizing jaws or grinding wheels are not aligned at the same angle.

Remnants of previous swaging were not removed beforehand.

Friction martensite (burned steel) due to rough grinding with insufficient lubrication

Guide values for swaged teeth

Tooth projection on each side

Very soft wood (poplar)	0.5 – 0.7 mm
Softwood (spruce)	0.4 – 0.6 mm
Hardwood (oak, mahogany)	0.3 – 0.5 mm
Frozen or dry softwood	0.3 – 0.5 mm

BAS 100

Fully automatic, hydraulic controlled swaging machine for band and gang saw blades



Highlights

The ISELI BAS 100 has a robust steel design. The machine is hydraulically controlled and equipped for band saws.

The same tooth can be swaged once or twice and shaped in a single pass

All the work processes are hydraulically controlled

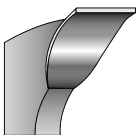
The blade feed is effected by the swage die so that accurate positioning of the saw tooth is guaranteed

Swaging densifies the tooth point of the saw tooth of what results in a smoother and more accurate cut of the wood and a higher production

By swaging, the tooth tip of the saw tooth is compressed, thus achieving a longer working life

The swaging excenter is mounted on both sides and can be moved axially. It can be used in 10 different positions

The clearance- and the rake angle, the width to be shaped and the tooth pitch are easily set according to scales, without changing any machinery parts



SWAGED TOOTH



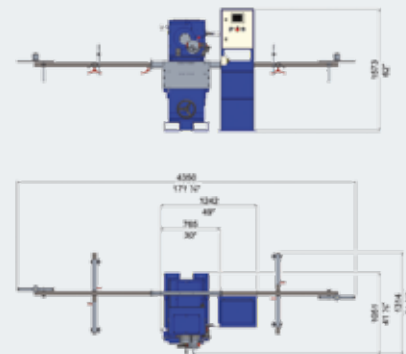
SWAGED TOOTH
SHAPED



SWAGED TOOTH
GRINDED

The swaging of saw teeth is, in addition to setting, another way of ensuring that the saw is cut free during cutting. For the swaging process, an swaging excenter is placed in front of the saw tooth. The saw tooth is held against it with an anvil. By turning the swaging excenter, the saw material is displaced towards the tooth tip. When the swaging process is finished, the swaging excenter turns back to its original position.

Technical Data



GENERAL INFORMATION:

Tooth pitch	18 – 76 mm
Tooth height	from 10 mm
Clearance angle	5° – 28°
Rake angle	5° – 35°
Working speed	approx. 6 T / min

BAND SAW BLADES:

Blade length	from 5'300 mm
Blade width (Standard)	81 – 360 mm
Blade width (Option)	from 50 mm

GANG SAW BLADES:

Tooth length	up to 1'500 mm
Blade width (Standard)	75 – 180 mm

SPECIAL ACCESSORIES:

Swaging excenter (Standard)	Ø 10, 12, 14 mm
Side dies set, clearance angle	5° or 7°

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	3.0 kVA

AIR (ONLY FOR LUBRICATION UNIT):

Compr. air supply	6 bar
-------------------	-------

Stellite tipping

The service life of a band saw blade can be considerably improved by covering the tooth tips with wear-resistant alloys such as Stellite. This applies in particular to hardwood, but also to softwood such as fir and spruce; Stellite tooth tips ensure a significantly longer service life for the saw blade and better surface quality.

Stellite has proven a suitable alloy for the tipping of band saw blades. Stellite type No. 12 is currently the most widely used alloy, as it meets almost all requirements.

Properties of Stellite No. 12: HRC 48, Melting Range 1280 – 1315 °C:

- wear-resistant
- less brittle
- can be processed with all conventional machines
- long service life
- Application: soft and hard wood

Properties of Stellite No. 1: HRC 55, Melting Range 1250 – 1290 °C:

- even more wear-resistant
- brittler
- Tooth tips break faster
- Application: woods with siliceous components and exotic woods

Other alloys are also used that achieve very long service lives. With correct blade treatment, the service life of a saw blade can vary from 8 to 30 hours of service life. Precise tipping with the plasma welding process, such as with our fully automatic BNA-100 Stellite welding machine, is crucial.



Two processing methods are used for Stellite tipping

Plasma welding process

The most common method for welding band saw blades is MSG (metal shielding gas) welding. The necessary heat for Stellite tipping is achieved in a controlled protective gas atmosphere with high conductivity between the gas nozzle and the band saw blade. The high temperature melts the Stellite and binds it strongly to saw tooth. The concentrated arc ensures that the Stellite bead has the desired size and is applied to the precisely established location. The gas, argon, not only contributes to the formation of plasma, but also protects the Stellite, as well as the base material, from the contact with air and the consequent oxidation.



Stellited tooth in
plasma welding process

For the plasma welding process under protective gas, the fully automatic, robust Stellite welding machine BNA 100 offers not only sophisticated technology, but also practical, simple operation with the best price-performance ratio.

The high availability and operational reliability make this machine the ideal Stellite tipping machine for all applications in sawmills, for sharpening service providers and saw manufacturers.

Resistance welding

In contrast to the plasma welding process, the Stellite is applied to the saw tooth by resistance welding. The fusion takes place only on the contacting surfaces of the sawtooth and Stellite. At the same time, the materials are welded together under pressure. The Stellite which forms the tip of the tooth does not melt completely, but only in the contact area. It is important that the Stellite and the thickness of the saw blade are matched to prevent excessive deviations when the two materials are fused.

For this welding process, the fully automatic Stellite welding machine SAA offers the optimal technology for sawmills, sharpening service providers and saw manufacturers. It succeeds with simple operation and robustness in daily use.



Stellited tooth in resis-
tance welding process

Our Stellite tipping machines for Band, gang and circular saws

Precision tooth by tooth! For the tipping of the teeth of band saw blades with Stellite, we offer the ultimate solutions for every welding process, whether plasma or resistance welding. Our products succeed with precision, ease of use and an excellent price-performance ratio. Thanks to the increased stability of Stellite saw blades, especially when cutting hard, abrasive types of wood such as mahogany, teak, oak and types of wood with siliceous components, our Stellite machines are part of the basic equipment of sawmills, furniture manufacturers, as well as sharpening service providers and saw manufacturers.

As a system provider with the world's largest range of specialized sharpening and processing machines for all common band saw blades, we set standards in terms of precision, safety and efficiency. Our modular machine solutions implement these key factors effectively and practically and thus ensure long-term product quality and cost advantages over competitors!



BNA 100

Fully automatic Stellite welding machine for the tipping of teeth of band, gang and circular saw blades



SAM

Manual Stellite welding machine for the tipping of the teeth of band, circular and gang saw blades



SAA

Fully automatic Stellite welding machine for the tipping of the teeth of band saws



STELLITE™

Trapezoidal, shaped, round and wire Stellite

BNA 100

Fully automatic Stellite tipping machine for equipping of the saw teeth by plasma welding process



Highlights

All components integrated in the machine: welding unit, complete cooling, annealing station (optional)

Encapsulated machine - welding fumes can be extracted

Stable and centred machine design. Robust, precise and low-vibration

Simplest repair of broken teeth

Annealing of the welded joint with the torch or optionally with a high-frequency annealing device

Stelliting machine using the plasma welding process:

- Secure, homogeneous connection with the parent material
- Shorter grinding times / lower grinding wheel consumption
- Use of low-cost stellite
- Higher stelliting speed
- Highest economic efficiency
- Designed for rod as well as wire stellite



Stellited tooth in plasma welding process

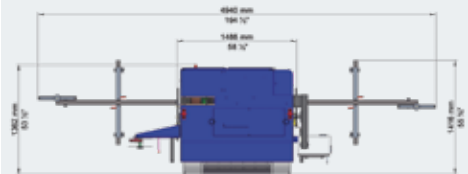
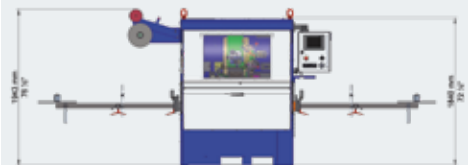


Stellited tooth in resistance welding process

The BNA 100 stellites your saw blades using the plasma welding process. The plasma welding process with inert gas guarantees a very strong connection between the stellite and the base body.

In addition to sophisticated technology, the BNA 100 is particularly characterised by its robust design, its ease of operation and its price-performance ratio.

Technical Data



GENERAL INFORMATION:

Rake angle	10 – 40°
Working speed	up to 10 T / min

BAND SAW BLADES:

Tooth pitch	10 – 100 mm
Blade length	from 6'000 mm
Blade width (Standard)	75 - 340 mm
Blade width (Option)	35 - 290 mm
Blade thickness	from 0.6 mm

CIRCULAR SAW BLADES:

Tooth pitch	10 - 40 mm
Diameter	Ø 220 - 900 mm
Bore	Ø 20 - 240 mm
Blade thickness	1.0 - 6.0 mm

GANG SAW BLADES:

Tooth pitch	10 - 100 mm
Blade length (Total)	from min. 800 mm
Blade length (Tooth length)	up to max. 1800 mm
Blade width	80 - 240 mm
Blade thickness	from 1.6 mm

PROPERTIES:

Connected load without annealing	6.3 kVA / 5.0 kW
Connected load with annealing	8.5 kVA / 7.1 kW
Compressed air	6 bar, 30 l/min
Weight	approx. 1'350 kg



The SAM manually stellites your band, gang and circular saw blades using the resistance welding process.

The SAM is suitable for small sawmills, is easy to operate and impresses with an outstanding price-performance ratio.

Highlights

The stelliting of the saws is done manually. These are automatically re-annealed in a second work step.

The structure of the stellite is not changed during welding, therefore no cracks or holes occur in the stellite

The stellite is welded in horizontally and can be adjusted in width

No need to clip tooth tips before welding

No expert is required

If the band and gang saws are stellited repeatedly, the residual stellite does not have to be ground away

The central height adjustment ensures convenient insertion of the saws guaranteed

Up to 12 teeth per minute can be stellited

Technical Data

GENERAL INFORMATION:

Blade thickness	0.8 – 3.2 mm
Tooth pitch	13 – 115 mm
Tooth height	up to 30 mm
Rake angle	10 – 30°
Working speed	approx. 12 T / min

BAND SAW BLADES:

Blade width	80 – 300 mm
Blade length	from 5'600 mm

CIRCULAR SAW BLADES:

Circular saw outer Ø	250 – 1'000 mm
Circular saw bore Ø	22 – 210 mm

GANG SAW BLADES:

Blade width	80 – 180 mm
Weight	approx. 1'500 kg

STELLIT:

Round Stellite	Ø 3.2 / 4.0 / 5.0 / 6.4 / 8.0 mm
Shape stellite (prism)	P 5.0 / P 6.5 mm

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	13.5 kVA
Welding transformer	300 A



ISELI stellites your saw blades using the plasma welding process as well as the resistance welding process.

The stellinging process, which has been tried and tested thousands of times, is used to fit band, circular and gang saws.

Highlights

The structure of the stellite is not changed during welding, therefore no cracks or holes occur in the stellite

No tooth tips need to be cut before stellinging. If the saws are stelled repeatedly, the residual stellite does not have to be grinded away.

The loading of band saws is fully automatic. These are annealed in the same annealed via high frequency in the same operation.

The machine is equipped with a programmable control, which ensures very easy operation of the machine

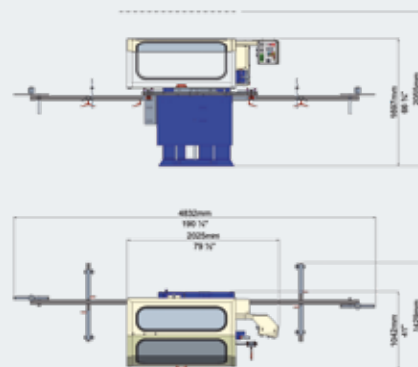
No expert is required

The hydraulic control makes it possible to set each working speed individually set

The stellite is welded in vertically and can be adjusted in length from 4 - 10 mm. can be adjusted

With the same machine, band, circular and gang saws can be stelled by simple can be set up by simple retooling

Technical Data



GENERAL INFORMATION:

Blade thickness	0.8 – 3.2 mm
Tooth pitch	13 – 115 mm
Tooth height	up to 30 mm
Rake angle	10 – 30°
Working speed	approx. 8 T / min**

BAND SAW BLADES:

Blade width (Standard)	60 – 360 mm
Blade width	from 5'600 mm
Blade width (Option)	25 – 80 mm

CIRCULAR SAW BLADES:

Diameter	250 – 1'200 mm
Bores	22 – 210 mm

GANG SAW BLADES:

Blade width	80 – 180 mm
Tooth length	up to 1'500 mm

PROPERTIES:

Electrical connection	400V 3Ph N
Connected load	9.6 kVA
Welding transformer	300 A



Stellited tooth in plasma welding process



Stellited tooth in resistance welding process

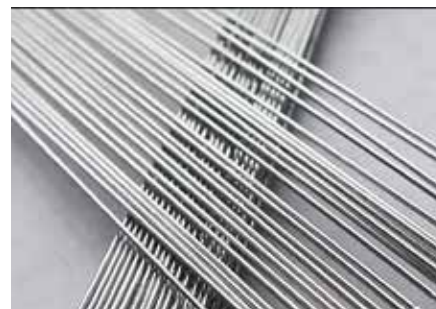
STELLITE™

Trapezoidal- / Rod- / Round- and wire stellite

The service life of a wood band saw steel blade can be considerably improved by covering the tooth tips with wear-resistant alloys, such as stellite. This is particularly true for hardwood, but in recent years it has also proved successful for machining softwood such as fir and spruce. Stellite-covered tooth tips achieve better surface qualities and much longer durability. The subsequent careful sanding work on wet sanding machines with the appropriate sanding discs is of particular importance. To make full use of all the advantages of stellite facing, the steel material for the band saw must be of the highest quality; only then can a longer uninterrupted sawing process be achieved.

Stellite is an alloy that mainly contains cobalt. According to the composition of this alloy, there are a number of different degrees of hardness with different mechanical properties.

Although Stellite has a lower hardness than carbide (67 - 82 HRC), Stellite grade No. 12 is extremely wear-resistant, yet not too brittle and can be ground without problems. In some cases, Stellite grade No. 1 is used, a very hard alloy, mainly for sawing wood with large amounts of gravel, which is found in some exotic wood species of Africa and Southeast Asia.



STELLITE™



Stelliting with resistance welding process



Stelliting with plasma welding process

Trapezoidal stellite for ISEL machines

4.STE05.1109	Stellite T 12 - 2.5 mm
4.STE05.1101	Stellite T 12 - 3.0 mm
4.STE05.1102	Stellite T 12 - 3.5 mm
4.STE05.1103	Stellite T 12 - 4.0 mm
4.STE05.1104	Stellite T 12 - 4.5 mm
4.STE05.1105	Stellite T 12 - 5.0 mm
4.STE05.1106	Stellite T 12 - 5.5 mm
4.STE05.1107	Stellite T 12 - 6.0 mm

Round Stellite redensified

4.STE05.1001	Round Ø 5.0 mm, redensified
4.STE05.1002	Round Ø 4.0 mm, redensified
4.STE05.1003	Round Ø 6.4 mm, redensified
4.STE05.1005	Round Ø 3.2 mm, redensified

Rod Stellite for ISEL BNA / Vollmer GPA

ROD STELLITE FOR ISEL BNA / VOLLMER GPA

4.STE05.1010	Rod 2.4 x 2'000 mm
4.STE05.1011	Rod 3.2 x 2'000 mm
4.STE05.1012	Rod 4.0 x 2'000 mm
4.STE05.1013	Rod 3.2 x 4'000 mm

Wire Stellite for ISEL BNA / Vollmer GPA

4.STE05.1009	Wire 1T // Coil Ø1.6 mm
4.STE05.1008	Wire 12PM // Coil Ø1.6 mm
4.STE05.1007	Wire 12PM // Coil Ø2.0 mm

Side grinding (levelling) the cutting teeth

The professional side grinding of saw teeth, especially when Stellite-tipped, but also when swaged, ensures the maximum precision of the final tooth shape. This is also crucial for the symmetry of the lateral clearance spaces and the needed clearance angles that are required for a perfect cut.

Teeth tipped with Stellite and swaged teeth can be processed on conventional grinding machines with ceramic wheels. Modern fully automatic grinding machines with CBN grinding wheels can carry out the same process too. While ceramic grinding wheels produce a rougher surface and should only be used when removing large amounts of material, CBN grinding wheels ensure maximum precision and optimal surfaces. Two grinding wheels, one on each side, work synchronously. They can be set individually or programmed in advance for the correct clearance angle of the tooth back and tooth face.

Important preparations for grinding the tooth flanks

- Correct choice of the grinding wheels
- Check oil and emulsion for cleanliness, quantity and pressure
- Examine the blade to be ground for broken teeth; if broken teeth or teeth that are not tipped are found, go back to swaging or Stellite tipping
- Measure the projection to define the infeed amount
- Check tangential and radial angle settings
- Set the correct number of teeth so that all teeth are ground safely. It is better to set a tooth more than one less.
- Make sure that the band saw blade is correctly positioned so that it rests properly on the supports
- Adjust the blade height so that the blade runs smoothly through the clamp
- When setting the grinding depth, always ensure that the grinding wheel rim grinds the entire tooth..
- Now set the correct kerf
- Check the projection on both sides.

Our recommendation:

- Keep the tolerance of the right/left projections as low as possible. Practice has shown that a dimensional deviation of 1/10 mm can lead to drift of band saw blade.
- Keep the dimensional tolerance within ± 0.05 mm.

Geometry of the tooth flanks

The tangential and radial angle has a decisive influence on the cutting behaviour of the bandsaw blade. The angle setting to be selected should be discussed with the blade manufacturer before the bandsaw blade is manufactured and should be adapted to the intended use. As a rule, degrees from 2° up to 5° are used in practice.

Pros and Cons: The choice of the tangential/radial angle

For example a tangential/radial angle of 2° ensures a stable cutting edge, but offers less free cut. In addition, the band saw blade can undergo binding in the material being cut and tend to drift.

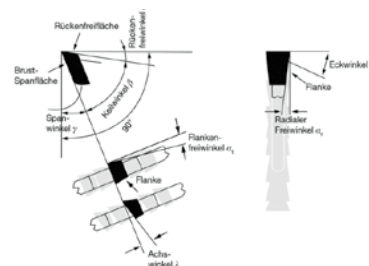
One advantage of a smaller tangential or radial angle is that the tool will reach its minimal kerf and require resharping after a longer time.

A 5° tangential/radial angle offers a large free cut and provides more distance between the material being cut and the band saw blade. This angle can ensure a cut without drift.

The disadvantage is that the wedge angles become larger and the cutting edges of the teeth can break faster as a result. The resharping cycle is also shorter with a larger angle and the band saw blade can be resharpened less until it has reached its minimum kerf.

Conclusion on the selection of the optimal tangential/radial angle

As much as necessary, as little as possible. Please adjust the tangential/radial angles so that they are suitable for your specific application.



iani GmbH & Co. KG / LEUCO

Grinding wheel

From today's perspective, only high-quality CBN grinding wheels should be used for grinding Stellite-tipped and swaged band saw blades, as their dimensional accuracy is far superior to that of high-grade corundum (diamond) grinding wheels.

Our side grinding machines – precision tooth by tooth

Regardless of the type of tipping of your band saw blades, with the right grinding machine, you can process the flanks professionally and extremely efficiently. On the one hand, the perfect sharpening increases the stability of the blade and, on the other hand, it results in the maximum cutting quality for hard and soft woods. Thanks to the precise setting options of the automatic and fully automatic ISEL side grinding machines, diagonal cuts due to unequal tooth widths are avoided.

With our modular and easy-to-use machine design for perfect side grinding, we complement our machine range - the largest in the world - of specialized sharpening and processing machines for all common band saw blades: high-tech "Made by ISEL".



BNF 100

Fully automatic 4-axis-CNC side grinding machine for band saw blades in wet grinding execution



BAF 100

Hydraulically controlled machine for automatic side grinding of band, circular and gang saws in wet grinding execution

BNF 100

Fully automatic 4-axis-CNC side grinding machine for band saw blades in wet grinding execution



The BNF 100 is suitable for all band saw blades - including thin-cutting saws.

The two stable grinding units with a grinding wheel diameter of 75, 100 or 125 millimetres ensure optimum cutting performance with high precision and grinding quality.

Highlights

Side-grinding of standard, Stellite- & Carbided-tipped band saw blades - by means of CHC axes "X", "Y" & "Z" (grinding of the positioned and clamped saw tooth)

Automatic electrically controlled saw blade height adjustment

Saw blade height stop for precise saw blade positioning

Additional auxiliary pneumatic clamping at the saw tooth (for stabilizing thin saw teeth)

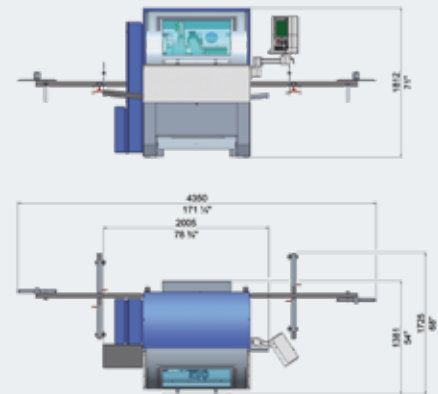
"LINUX Debian 10" control unit with multicore processor

Pneumatic saw blade clamping, with force relief during feed

Automatic probing of the grinding wheels on the saw tooth

Precision angle adjustment (nonius)

Technical Data



GENERAL INFORMATION:

Tooth pitch	13 – 100 mm
Clearance angle (face)	0° – 7°
Clearance angle (back)	0° – 7°
Tooth face angle	0° – 35°
Grinding length	programmable
Working speed	approx. 10 Zähne / min

BAND SAW BLADES:

Blade width (Standard)	70 – 360 mm
Blade width (Option)	30 – 360 mm
Blade length (Standard)	from 5'300 mm
Blade length (Optional)	from 4'300 mm

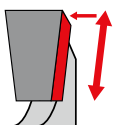
GRINDING WHEELS:

Cup grinding wheel (Var 1)	Ø 75 – 100 mm
Cup grinding wheel (Var 2)	Ø 100 – 125 mm
Bore	Ø 20 mm
Peripheral speed	adjustable
Grinding motors (2)	1.5 kW

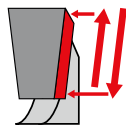
PROPERTIES:

Electrical connection	400V 3Ph N
Anschlusswert	2.1 kVA
Compr. air supply	6 bar
Weight	approx. 1'600 kg
Coolant tank	approx. 170 l

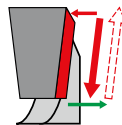
Grinding programs



Grinding-wheel feed is at the top. This process can be repeated several times



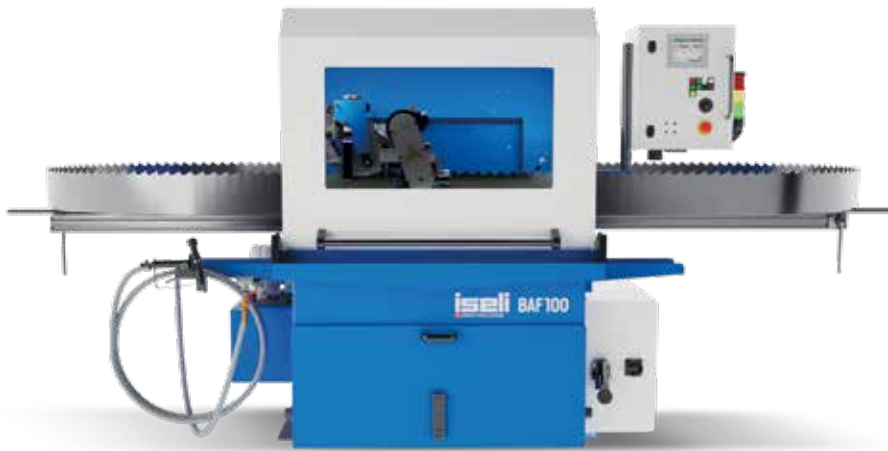
Grinding-wheel feed is at the top and at the bottom what results in 2, 4 or 6 feeds



Grinding-wheel feed is at the top. At the bottom, the grinding-wheel is moved back. The grinding head goes quickly upwards and the feed is again activated. This process can be repeated several times.

BAF 100

Hydraulically controlled machine for automatic side grinding of band, circular and gang saws in wet grinding execution



The hydraulically controlled side grinding machine type BAF 100 impresses in daily use with its easy and uncomplicated operability as well as its outstanding precision, accessibility and durability.

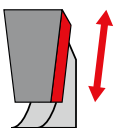
Highlights

- Compact, robust and durable mechanical engineering
- Powerful water or oil cooling system with fully enclosed coverage
- Strong blade clamping, with force relief during feed
- Automatic electrically controlled saw blade height Adjustment
- Easy operation by means of color LCD touch-panel (PLC control)
- High grinding accuracy and surface quality due to the use of CBN or diamond grinding wheels in wet grinding mode

Hydraulic drive and control system for:

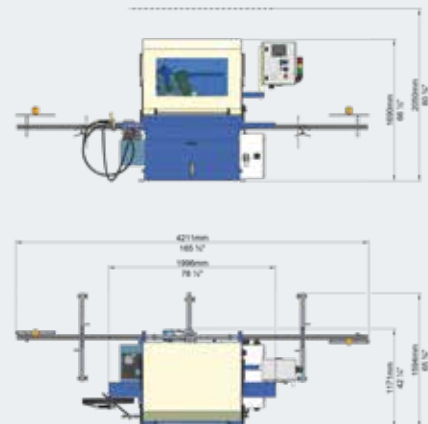
- Saw blade feed system & feed pawl lift during retraction movement
- Grinding head immersion (speed infinitely variable)
- Saw blade clamping & additional clamping

Grinding programs



Grinding-wheel feed is at the top.
This process can be repeated several times

Technical Data



GENERAL INFORMATION:

Tooth pitch	13 – 127 mm
Grinding wheel	Ø 75 – 125 mm
Flank angle	0 – 7°
Bore	Ø 20 mm

BAND SAWS:

Blade width (Standard)	60 – 360 mm
Blade width (Optional)	30 – 310 mm
Blade length (Standard)	from 5'500 mm
Blade length (Option)	from 4'300 mm
Blade thickness	from 0.7 mm

CIRCULAR SAW BLADES:

Diameter	Ø 250 – 800 mm
Bore	Ø 22 – 210 mm

GANG SAW BLADES:

Tooth length	up to 1'500 mm
Blade width	75 – 180 mm

Welding and repairing band saw blades

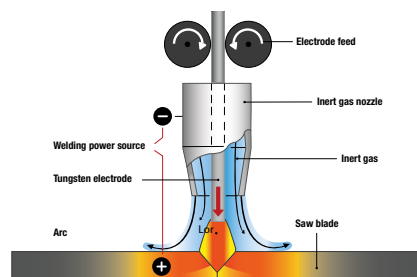
Five different types of welding technology are used to weld and repair band saw blades. The most common are MSG welding, TIG welding, MIG welding, constant-temperature pressure welding and gas welding. Generally, welding has a negative impact on the material properties of a saw blade due to the rapid heating and cooling of the welding area. In order to reduce changes in the structure of the blade, we recommend heating a wide zone around the the welding area to approx. 400 °C during the welding process. This prevents the welding area from quickly cooling down and form slag such as perlite and bainite in the area surrounding the weld. Even during repair work, the blade should be heated up to a blue-grey color.

MSG (metal shielding gas) welding

This is the most common type of welding: an electric arc is built up between the band saw blade and a continuously fed special wire electrode in a protective gas atmosphere. During the mechanical, automatically controlled feed of the electrode, it melts

at the welding point and merges into the fused metal of the saw blade in the form of drops.

The shielding gas flows out of the welding nozzle around the electrode and prevents the negative effects of oxygen, nitrogen and humidity of the ambient air on the welding point, which can lead to the failure of the weld.

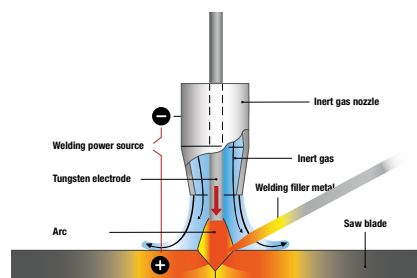


MIG welding process

TIG (metal inert gas) welding

TIG welding differs from MIG/MAG welding primarily in that in the process a welding filler material is fed in but not continuously as with the MIG/MAG welding electrode. With TIG welding, the arc burns between the saw blade and a non-melting tungsten electrode. The filler metal is fed separately and mechanically.

As with MIG/MAG welding, a shielding gas prevents the negative effect of the atmosphere on the welding point.



TIG welding process

Constant-temperature pressure welding

Constant-temperature pressure welding (butt welding) is mainly used when joining new saw blades, but can also be used for repairs. The cleaned and levelled sheet ends are brought into contact with an automatic feed at low voltage and high current and heated to a predetermined temperature. The end surfaces of the saw blade fuse and cool under pressure while the weld is tempered at intervals.

The hardness of the weld seam after constant-temperature pressure welding is much more homogeneous than with other welding methods, since no welding filler material is used.

Gas welding

This traditional welding is preferred for the repair of band saw blades in smaller sawmills and workshops. Due to the low burn-in capacity of the acetylene flame, a gap of up to 1 mm is created in practice or the blade ends are beveled to V-joint of 60° - 70°.

Our recommendation:

Start welding at the tip of the tooth and quickly guide the torch to the back of the blade.

Important for a perfect welding result:

Make sure the surfaces of the welding jaws are clean

Clean the band saw blade at the connection points

When MIG/MSG welding, lightly grind the blade ends at a 45° bevel

Load the blades correctly. The ends of the blades must not have any offset on the back, but must be flush and lay on a plane.

Very important: correctly adjust the stops on the back.

Check the tempering temperature carefully

Place metal plates on the front and the back of the blade so that no through holes are created when welding.

After welding, carry out precise leveling, straightening and tensioning of the welding point

Grind and polish perfectly the weld seam. It is essential to ensure that the welding point has approximately the same thickness as the original blade thickness after grinding.

The surface smoothness should be the same as that of the original surface of the steel band.

Our welding tables for welding of band saw blades and for blade repair

For welding on our welding machines, both ends of the saw blade are securely fixed on the welding table with a quick clamp each. Then the automatic welding process begins by guiding the torch precisely over the entire blade width. The blade remains fixed in the same position both for preheating and subsequent tempering. The preheating, welding and tempering temperatures can be adjusted according to the thickness of the blade; the tempering time can be regulated via a timer. For repairing saw blades, the welding torch can be unmounted and used manually.

With our two practice-oriented automatic welding tables, we complement our machine range - the largest in the world - of specialized sharpening and processing machines for all common band saw blades.



MIG Pro 350

Automatic welding machine for band saws



OPTIMIG 330

Automatic welding machine for band saws

MIG PRO 350

Automatic welding machine for band saws



This welding machine is ideal for manufacturing, welding, and repairing bandsaw blades up to 330 mm wide. With programmable preheating and automatic torch feed, it ensures optimal welding results. The digital control system guarantees maximum precision, while the retractable finishing table allows for clean and efficient processing. Additionally, the storage system enables the management of welding widths, ensuring consistent and repeatable results.

Highlights

Designed for manufacturing bandsaw blades, complete welding, and crack repairs

Suitable for saw blades up to 350 mm wide

Programmable preheating (tempering) for optimal welding results

Automatic torch feed with adjustable speed

Precision crack welding with an adjustable welding torch for accurate positioning

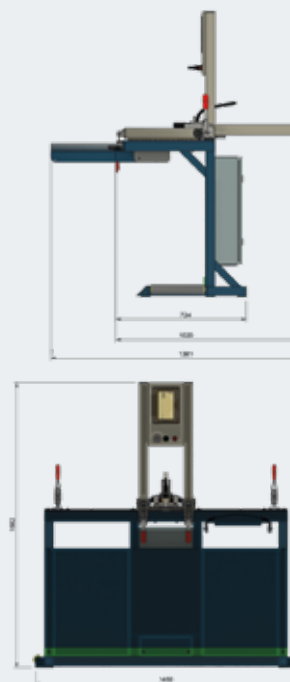
Digital control system for maximum accuracy

Retractable finishing table for clean and efficient processing

Storage system for managing welding widths, ensuring consistent and repeatable results



Technical Data



GENERAL INFORMATION:

Blade width	up to 330 mm (welding), optional up to 300 mm (shearing)
Heating resistors	6 resistors 10 x 350 mm 1000 W per unit
Maximum temperature	450° C
Power supply	380 V / 50 Hz + neutral conductor for welding unit and machine, with a safety system for generator operation (Africa)
Welding unit	MIG, 180A

OPTIMIG 330

Automatic welding machine for band saws



OPTIMIG was developed for welding band saw blades and consists of an electric preheating and tempering system that provides improved temperature control to avoid overheating of the steel.

To ensure uniform heating, the block is equipped with four clamping points with closing of the jaws from above for partial welds (cracks). The small heating width reduces the influence of the weld on the levelling of the saw.

Highlights

- Precise temperature measurement as close as possible to the weld seam
- Preheating and electric annealing
- 4-point clamping system for homogeneous tempering over the entire blade width
- Narrow heating width to limit the effects on the planarity
- Integrated cut-off scissors up to 240 mm of width (wider saws upon request)
- Clamping system open to the front for perfect welding of the cracks



The all-in-one system

The integration of the cutting and grinding station optimises the working space and thus reduces knife handling.

The geometry of the weld is ensured by the independent table adjustment system as well as the alignment of the plate to the "rear" rules.

Technical Data

GENERAL INFORMATION:

Blade width	up to 240 mm (special version up to 360 mm)
Blade length	6 m (min) up to 15 m (max)
Burner traversing speed	2 m / min
MIG source performance	400 - 415 V, 3~50/60 Hz 120 A bei 100%
Type of gas used	MIG - ARGON
Welding consumable wire	0.6 to 1 mm depending on material wire unwinding
Speed	1 up to 17 m / min
Weight	approx. 352 kg

BNT 100

Fully automatic 3-axis-control profile deep grinding machine with continuous dressing (CD grinding)

The automation sector has a long tradition at ISEL. What began with partial and full automation of side and profile sharpening machines for band and circular saw blades was further developed for automation in our robot system for the automatic handling of circular saw blades and the fully automatic production center for the package grinding of industrial saw blades. The focus is on intuitive operation, fast changeover times and absolute precision in series. In times of staff shortages, end-to-end automation is a productive alternative to partially automated machines.

Expertise der BNT 100

With this extremely robust and state-of-the-art machine, tooth profiles are ground in steel strip packages using the deep grinding process.

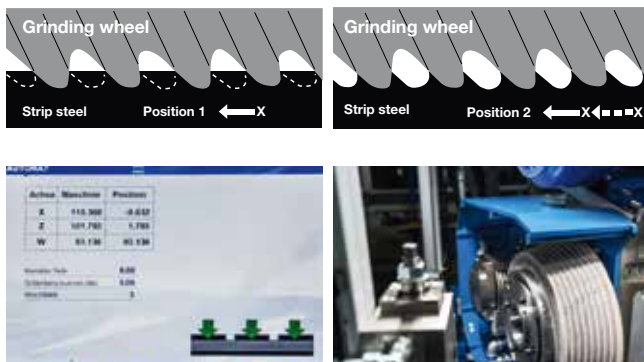
Thanks to the CNC axes, there are no limits to the deep grinding process. Feed and cutting speeds, acceleration profiles and much more can be entered on the user-friendly interface of the touch panel. In addition, the machine offers a lot of freedom with regard to the tooth geometries to be ground. The optimal geometry and equipment of the machine are determined according to the customer's product portfolio. This is an example of how close we work with our customers from the metal, wood, plastics and food industries in order to optimally cover their needs.

The handling for the grinding process of the steel strip bundles is completely automated. The individual steel strips rolled up into coils are brought together outside the machine as a steel strip bundle. The thickness of the individual steel strips can be freely selected. When stacked, it is possible to grind a thickness of 12 mm. Once the deep grinding process has been carried out in the machine, the steel strip bundle is opened and rolled up onto individual coils.

The deep grinding process (CD grinding)

In a first infeed, every second tooth of the group is ground using the deep grinding method. The grinding wheel geometry is transferred one-to-one to the workpiece. This is followed by an advance of one tooth pitch. With a further infeed, at this point in the group, the remaining teeth are ground. This is followed by a free grinding in both positions, in which the grinding burr is removed. After these infeed operations, the steel strip bundle is advanced by a whole group and the process runs through this repetitive procedure endlessly. The process is stopped by a sensor when the steel strip runs out or by pushing a button.

During the deep grinding process, the dressing diamond continuously ensures that the grinding wheel maintains its exact shape. Accordingly, in theory, endless grinding can be carried out until the minimum grinding wheel diameter is reached. In this process, the operator only takes on the role of controller and checks from time to time the dimensional accuracy of the sawtooth profile and the surface quality of the grinding surface.





System technology periphery

In order to reliably carry out the deep grinding process, the peripheral devices must harmonize as a system. In addition to the coil handling system, this includes cooling lubricant processing, mist extraction and the hydraulic system for clamping the steel strip bundles. The control system of the ISELI machine controls the process. With the appropriate monitoring systems, it ensures continuous process reliability.

Highlights of the ISELI deep grinding center

The machine downtime is extremely short. On the one hand, the setup and changeover times are reduced to a minimum thanks to optimal accessibility and ease of use; on the other hand, the machine is designed to be low-maintenance.

The metal removal rate is trimmed to an optimum. The powerful grinding wheel drive and the ingenious cooling lubricant supply set new standards in the area of grinding performance.

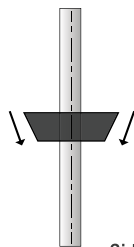
The grinding process. Thanks to CD grinding (Continuous Dressing), the grinding wheel is always precise and sharp: the basis for optimal conditions in order to ensure a constant quality of the grinding process hours after hours.

No post-processing is necessary. Each steel band comes out of the machine fully processed. Thanks to the integrated burr plate, no post-processing is necessary in the area of burr formation. In addition, a blow-off device ensures that the steel strips are rolled up without any coolant residue.

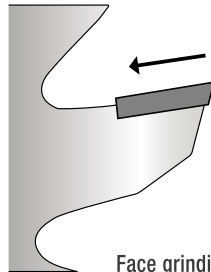
Freedom thanks to modern control technology. In the area of process technology, individual customer requests can be addressed. Processes and speeds can accordingly be adapted for each customer and product.

Sharpen, work and care for circular saw blades properly

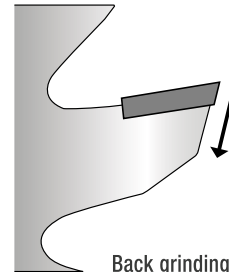
When manufacturing carbide-tipped circular saw blades, several work steps - flank grinding and face and back grinding - are carried out in sequence on different machines.



Side grinding



Face grinding



Back grinding

The area of application of the saw blade depends on the cutting geometry of the saw tooth. This includes, for example, the tooth shape or the number of teeth (tooth pitch). The selection of a saw blade depends on various factors: the material to be cut, the cutting direction along or across the grain, the moisture content of the wood, the speed of the saw shaft (cutting speed), the feed speed, the motor power and also the desired cutting quality and service life of the blade.

Circular saw blades must be professionally resharpened and maintained at regular intervals in order to maintain their productivity in terms of cutting performance, cutting quality and service life for the perfect cut. Blunt teeth lead to incorrect cuts as well as overloading and premature wear of the saw blade due to damage and breakage.

When re-sharpening, the speed of the work steps to keep the same sharpening quality is crucial to guarantee performance.

Modular, flexible and durable

Professional treatment and care is the key to the effective and productive use of circular saw blades. ISEL offers a wide-ranging portfolio of powerful, advanced sharpening and processing machines for sharpening circular saw blades.

The machine design is geared towards longevity in rough continuous use for tool production, in the sawmill or in the sharpening service. The fully automatically controlled sharpening machines have state-of-the-art mechanical engineering and high-quality system components. The design of the machine control and robotics for circular saw blade handling is modular to meet future requirements.

Thanks to the ISEL large-span door concept and intuitive operation, easy maintenance, changeover and operation are guaranteed.

The machine advantages at a glance

Precise sharpening results are required to achieve the perfect cut. The ISEL machines offer a whole range of advantages:

- a compact, stable machine construction "Made in Switzerland"
- linear roller guides
- chemically post-treated components
- maintenance friendliness
- simple operation
- low service requirements



Our sharpening and machining solutions for carbide-tipped circular saw blades

In addition to the world's largest machine program of specialized sharpening and processing machines for all common band and gang saw blades, our sharpening machines for carbide-tipped circular saw blades and robot-assisted circular saw blade handling systems set standards in terms of precision and effectiveness. Together with our worldwide service, ISEL sharpening machines are an economic investment in the future.



FACE AND BACK GRINDING



SIDE GRINDING



AUTOMATION



UNIVERSAL GRINDING

Face, back and geometry grinding of circular saw blades

For a clean, precise cut, circular saw blades must be resharpened at regular intervals. Blunted teeth place a great deal of stress on the saw blade and result in damage and breakage. On the other hand, they reduce the efficiency of the saw blade and the surface quality of the cut.

1 Control

Check the circular saw blade for damage:

- Is the circular saw blade correctly straightened and tensioned?
- Is the circular saw blade free of cracks?
- Do the cutting edges have sufficient projection?
- Are there broken teeth?
- Are the raker blades OK?
- Is the circular saw blade free from dirt?
- Is there axial or radial runout?

2 Grinding machine

What you need to pay attention to when checking and equipping the grinding machine:

- Selection of the right grinding wheel for shape and quality according to the application
- Mounting without play on the hole
- Check if the feed finger of the grinding machine matches the tooth pitch
- Selection of the right grinding program to match the circular saw blade
- Determine offset points automatically or in manual mode
- Check grinding wheel speed
- Check infeed amounts. Grind as much as necessary, as little as possible.
- Check grinding speeds (mm/s)
- Check coolant for quantity, purity and pressure
- Check clearance angle and rake angle

3 Grinding wheel

Two types of grinding wheels are used for face and back grinding: on the one hand, CBN Borazon grinding wheels for Stellite and when higher accuracy, better surface quality and long service life are required. On the other hand, high-grade corundum (diamond) grinding wheels when machining hard metal teeth.

4 Coolant

The choice of oil or emulsion depends on machine setup. Both coolants can be used with CBN or high-grade corundum (diamond) wheels.

Our recommendation:

In our sharpening machines, we only use oil as a coolant, since oil increases the grinding quality and the service life of the machines that process carbide.

For fast, precise sharpening with the best cooling, we recommend using one of our mobile or stationary coolant cleaning stations. They ensure a long service life for the coolant and reduce the wear of the sharpening machine.

Tip:

After the grinding process, you should carefully examine your grinding result under a microscope or a magnifying glass to see in detail whether your grinding parameters are correct or they require adjustment.

Success is in the details!

In order to get the best performance from a circular saw blade, the following aspects are crucial: professional grinding of the front and back in order to achieve the best cutting results. You will find a list for the correct selection of the circular saw blade under "Straightening and tensioning a circular saw blade".

Our sharpening machines for face and back grinding of circular saw blades

The perfect grinding of face and back is crucial for the effectiveness of the saw blade. With the fully automatic sharpening machines of the ISEL series KHB, the optimal machining of hook and side angle on carbide-tipped circular saw blades is achieved with excellent surface quality. The innovative CNC program machine concept enables it to efficiently sharpen the tooth in any tooth geometry (including chamfer and bevel angles) with just one setting in one or more passes. State-of-the-art system components allow unlimited storage options for all circular saw parameters for fully automatic processing. It goes without saying that our sharpening machines are easy to operate, maintain and convert.



KHB 100 / 110

Fully automatic sharpening machine for complete machining of the hook and side angles of carbide-tipped circular saw blades



KHB 200

Fully automatic sharpening machine for complete machining of the hook and side angles of carbide tipped circular saw blades [with integrated measuring system]



KHB 300

Fully automatic sharpening machine for complete machining of the hook and side angles of carbide-tipped circular saw blades [with integrated measuring system and preparation for robotization]

KHB 100/110

Fully automatic sharpening machine for complete machining of the hook and side angles of carbide-tipped circular saw blades

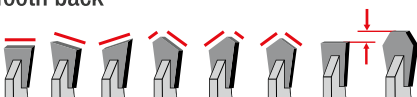


Highlights

- Tooth face and tooth top are ground against the cutting edge.
- The space-saving machine concept enables for high ergonomics and excellent operability
- Blade feed from right to left, including radius tracking
- Optimal, fast and safe programming and setting of the circular saw parameters.
- The positioned saw tooth can be finish-ground in one or several passes by automatic down feed
- Grinding of all tooth geometries, incl. bevel and chamfering, in only one setting
- The bevel and chamfering grinding angles can be selected individually

Application programmes

Tooth back



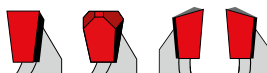
- Straight grinding
- Bevel grinding up to 45° / Chamfering
- Tooth height difference / triple-chip
- Group tooth grinding up to 8 teeth

Tooth face KHB 100



- Straight grinding
- Carbide seat

Tooth face KHB 110

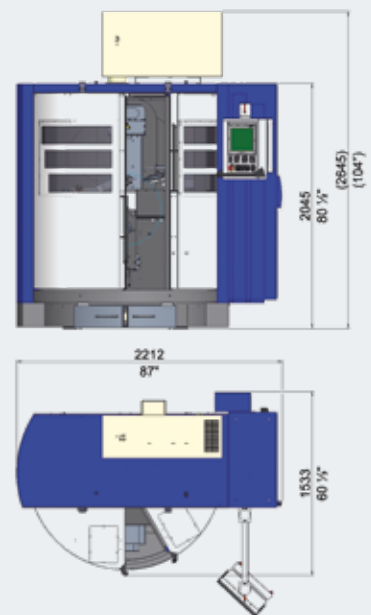


- Straight grinding
- Bevel grinding up to 30°

Machining of top and face surfaces in only one clamping.

The zero point can be determined automatically by probing the grinding wheel on the saw tooth.

Technical Data



GENERAL INFORMATION:

Tooth geometry	programmable
Tooth pitch	8° - 120° mm (*depending on parameters)
Tooth height	up to 40 mm
Blade thickness	up to 8 mm
Rake angle	-12° up to +30°
Tooth face grinding KHB100	straight
Tooth face grinding KHB110	Bevel grinding 0° up to 30°
Tooth back grinding	straight
	Bevel / Chamfering 0° to 45
Circular saw outer Ø	180 - 860 mm
Circular saw bore Ø	22 - 200 mm
Grinding wheel outer Ø	200 - 250 mm
Grinding wheel bore Ø	32 mm

PROPERTIES:

Power grinding motor	2.2 KW
Electrical connection	400V 3Ph 50Hz, 6 kVA
Compressed air	6 bar

KHB 200

Fully automatic sharpening machine for complete machining of the hook and side angles of carbide tipped circular saw blades [with integrated measuring system]



Highlights

The space-saving machine concept enables for high ergonomics and excellent operability. Easy access for maintenance work on the control cabinet, coolant pump, pneumatic and extinguishing device.

Optimal, fast and safe programming and setting of the circular saw parameters.

"LINUX Debian 10" control with multi-core processor

Grinding of all tooth geometries, incl. bevel and chamfering, in only one setting

Repair tooth detection by means of measuring probe

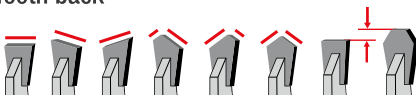
Measuring protocol for cutting angle, clearance angle, bevel grinding tooth back and supernatants

After the grinding process, the concentricity is measured on the circumference and protocolled

All axes are equipped with high-strength roller linear guides

Application programmes

Tooth back



Straight grinding

Bevel grinding up to 45° / Chamfering

Tooth height difference / triple-chip

Group toothing up to 8 teeth

Tooth face



Straight grinding

Bevel grinding up to 30°

Measuring

Width of saw blade body and cutting kerf

Side clearance back and front

Centricity offset

Height difference

Saw blade diameter

Group toothing up to 8 teeth

Tooth top clearance (overlap)

Tooth top clearance angle

Tooth top angle (alternating bevel teeth)

Tooth face angle

Functions

Automatic measurement

Automatic diameter detection

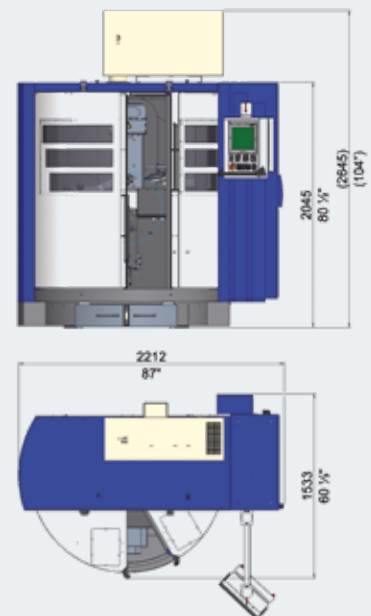
Automatic probing / tracing

Automatic saw blade positioning

The standard integrated measuring probe records all relevant parameters such as cutting width, blade thickness and rake angle.

The zero point can be determined automatically by probing the grinding wheel on the saw tooth.

Technical Data



GENERAL INFORMATION:

Tooth geometry	programmable
Tooth pitch	8° - 120° mm (*depending on parameters)

Tooth height	up to 40 mm
Blade thickness	up to 8 mm
Rake angle	-12° up to +30°
Tooth face grinding	Bevel grinding 0° up to 30°
Tooth back grinding	straight Bevel / Chamfering 0° to 45°

Circular saw outer Ø	180 - 860 mm
Circular saw bore Ø	22 - 200 mm

Grinding wheel outer Ø	200 - 250 mm
Grinding wheel bore Ø	32 mm

PROPERTIES:

Power grinding motor	2.2 KW
Electrical connection	400V 3Ph 50Hz, 6 kVA
Compressed air	6 bar

KHB 300

Fully automatic sharpening machine for complete machining of the hook and side angles of carbide-tipped circular saw blades [with integrated measuring system and preparation for robotization]



Highlights

The space-saving machine concept enables for high ergonomics and excellent operability. Easy access for maintenance work on the control cabinet, coolant pump, pneumatic and extinguishing device.

Optimal, fast and safe programming and setting of the circular saw parameters.

"LINUX Debian 10" control with multi-core processor

Grinding of all tooth geometries, incl. bevel and chamfering, in only one setting

Repair tooth detection by means of measuring probe

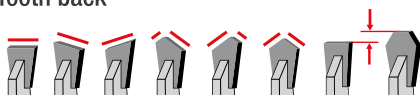
Measuring protocol for cutting angle, clearance angle, bevel grinding tooth back and supernatants

After the grinding process, the concentricity is measured on the circumference and protocolled

Preparation for the integration of a fully automatic loading system (robot)

Application programmes

Tooth back



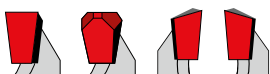
Straight grinding

Bevel grinding up to 45° / Chamfering

Tooth height difference / triple-chip

Group toothing up to 8 teeth

Tooth face



■ Straight grinding

■ Bevel grinding up to 30°

Measuring

Width of saw blade body and cutting kerf

Side clearance back and front

Centricity offset

Height difference

Saw blade diameter

Group toothing up to 8 teeth

Tooth top clearance (overlap)

Tooth top clearance angle

Tooth top angle (alternating bevel teeth)

Functions

Automatic measurement

Automatic diameter detection

Automatic probing / tracing

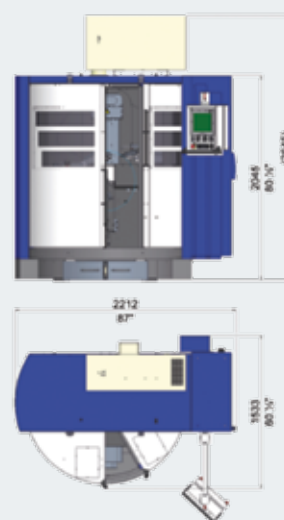
Automatic saw blade positioning

The standard integrated measuring probe records all relevant parameters such as cutting width, blade thickness and rake angle.

The zero point can be determined automatically by probing the grinding wheel on the saw tooth.

The KHB 300 is prepared for automation with ABB industrial robots.

Technical Data



GENERAL INFORMATION:

Tooth geometry	programmable
Tooth pitch	8 – 120 mm
Tooth height	up to 40 mm
Blade thickness	up to 8 mm
Tooth back chamfering / bevel grinding	0 – 45°
Tooth face rake angle	-25° up to +30°

CIRCULAR SAW BLADES:

Circular saw outer Ø	180 - 860 mm
Circular saw bore Ø	22 – 200 mm

GRINDING WHEELS:

Grinding wheel outer Ø	200 – 250 mm
Grinding wheel bore Ø	32 mm

PROPERTIES:

Electrical connection	400V 3Ph 50Hz, 6 kVA
Compressed air requirements:	6 bar



Side grinding

When grinding carbide-tipped circular saw blades for wood, aluminum, plastics and metals, the precisely ground tooth flank has a decisive influence on the surface quality of the material to be cut. Blunted teeth lead to incorrect cuts and heavy loads on the saw blade, resulting in damage and breakage. When re-sharpening, the speed of the work steps, with constant precision, has top priority in order to guarantee the effectiveness of the grinding room.

The perfect processing of carbide-tipped circular saw blades requires complex work steps in order to optimally adapt the various flank geometries in the cut to the intended use of the circular saw blade.

1 Control

Check the circular saw blade for damage:

- Is the circular saw blade correctly straightened and tensioned?
- Is the circular saw blade free of cracks?
- Do the cutting edges have sufficient projection?
- Are there broken teeth?
- Are the raker blades OK?
- Is the circular saw blade free from dirt?
- Is there axial or radial runout?

Tips that can help you!

Keep the tolerance of the right/left projections as low as possible. Practice has shown that a dimensional deviation of 0.05 mm can lead to drift or an unclear surface of the cut material.

2 Geometry of the tooth flanks

The tangential and radial angles have a decisive influence on the cutting behavior of the circular saw blade. You should discuss the best angle settings with the blade manufacturer before the circular saw blade is made and adapt it to the individual application. In principle, small tangential and radial angles are used with carbide-tipped circular saw blades, as the hard metal would break off if the angle is too large.

Important preparations for grinding the tooth flanks:

- correct choice of grinding wheel (high-grade corundum/diamond for carbide, CBN for Stellite)
- check the coolant (oil or emulsion) for cleanliness, sufficient quantity and pressure
- Examine the blade for broken teeth. In the event of broken teeth or teeth that are not tipped, the blade must go back to carbide tipping (brazing) or Stellite tipping.
- measure the projection of the rim to define the exact infeed amount
- check the tangential and radial angle setting
- set the correct number of teeth so that all teeth are ground (it is better to set one tooth more than too few)
- Adjust the blade height so that it goes cleanly through the clamp
- When setting the grinding depth, always ensure that the grinding wheel rim grinds the entire tooth. An example: 2 mm grinding wheel rim means that you move 2 mm beyond the tooth to be ground.
- Now set the correct kerf
- carry out the final inspection after grinding with a suitable measuring device

Choosing the right grinding wheel will have a positive effect on the grinding result. We recommend that you seek comprehensive advice from a grinding wheel manufacturer you trust. Your grinding wheel supplier will be happy to assist you as an end user with their specialist knowledge.

Tip:

In order to achieve consistent performance over the entire service life of your circular saw blade, it is best to contact the circular saw blade manufacturer to help you select the optimal tangential and radial angles for your application.

Our sharpening machines for flank grinding of circular saw blades

During the design phase of the ISEL KHF sharpening machine series, great importance was placed on precision grinding and easy operation and maintenance of the machines. The machine body, a robust welded construction, is vibration-free and designed for durability. With ISEL large door concept, these machines set new standards in terms of space saving and easy accessibility for setup and maintenance. For drives and control systems, great importance was given to the worldwide availability of all components, so that nothing stands in the way of in-house maintenance; a great advantage for companies with their own service department. Thanks to state-of-the-art CNC technology and precision guidance of all movement components, maintenance intervals and consumables are kept to a minimum.

With the fully automatic sharpening machines of the ISEL series KHF, the perfect machining of tooth flanks on carbide-tipped circular saw blades is achieved with excellent surface quality. The grinding process takes place in the face grinding process.



KHF 100

Fully automatic side grinding CNC machine for complete machining of the lateral angle on carbide-tipped circular saw blades



KHF 300

Fully automatic side grinding CNC machine for complete machining of the side angles of carbide-tipped circular saw blades [with integrated measuring system and preparation for robotization]

KHF 100

Fully automatic side grinding CNC machine for complete machining of the lateral angle on carbide-tipped circular saw blades



Highlights

6 CNC-controlled axes guarantee complete machining of all common tooth geometries in just one pass

The space-saving machine concept allows a high degree of ergonomics and excellent operability

Automatische Einstellung aller gängigen Winkel und automatische Erkennung der Tooth pitch mit eingebauter Sensorik an der Vorschubklinke

The positioned tooth can also be finished in several passes

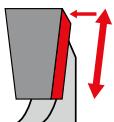
Easy access for maintenance work on control cabinet, coolant pump, pneumatics and extinguishing device

Automatic grinding wheel probing by means of acoustic sensor

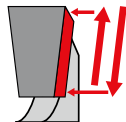
Grinding wheel compensation integrated in the basic machine

"LINUX Debian 10" control with multi-core processor

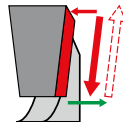
Application programmes



Grinding-wheel feed is at the top. This process can be repeated several times



Grinding-wheel feed is at the top and at the bottom what results in 2, 4 or 6 feeds



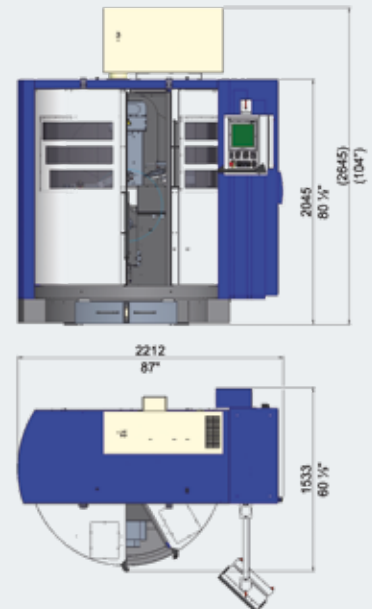
Grinding-wheel feed is at the top. At the bottom, the grinding-wheel is moved back. The grinding head goes quickly upwards and the feed is again activated. This process can be repeated several times.

When designing the machine, great importance was attached to simple and easy operability.

It ensures short programming times and allows flexible deployment of the operating personnel.

The machine is operated via a clear 15.1 inch touch screen with a Linux-based interface.

Technical Data



GENERAL INFORMATION:

Tooth geometry	programmable
Tooth pitch	10° - 120° mm (*depending on parameters)
Blade thickness	up to 8 mm
Clearance angle tooth face	0 - 5°
Clearance angle tooth back	0 - 5°
Circular saw outer Ø	180 - 860 mm
Circular saw bore Ø	22 - 200 mm optional from Ø 15 mm
Cup grinding wheel	Ø 100 mm
Bore diameter grinding wheel	Ø 32 mm

PROPERTIES:

Electrical connection	400V 3Ph 50Hz, 6 kVA
Compressed air connection:	6 bar

KHF 300

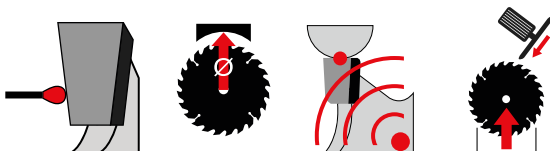
Fully automatic side grinding CNC machine for complete machining of the side angles of carbide-tipped circular saw blades [with integrated measuring system and preparation for robotization]



Highlights

- Conceived and designed for the fully automatic processing of carbide-tipped circular saws
- Blade feed from right to left, including radius tracking
- The space-saving machine design allows for high ergonomics and excellent usability
- Easy access for maintenance work to the electrical cabinet, coolant pump, pneumatics and extinguishing systems
- Unlimited storage for circular saw parameters
- Optimal, fast and safe programming and setup of circular saw parameters
- The positioned tooth can also be ground completely in several passes.
- Manual or automatic (using a probe) repairment tooth recognition
- Measurement protocol of the side clearance and centricity offset
- Ready for the integration of a fully automatic loading system (robot)

Application programmes



Modes

- Symmetrical grinding starting from the center of the blade body
- Grinding based on automatic setting of tool zero points
- Grinding based on manual setting of tool zero points

Measuring

- Blade body and cutting width
- Side clearance rear / front
- Centricity
- Diameter

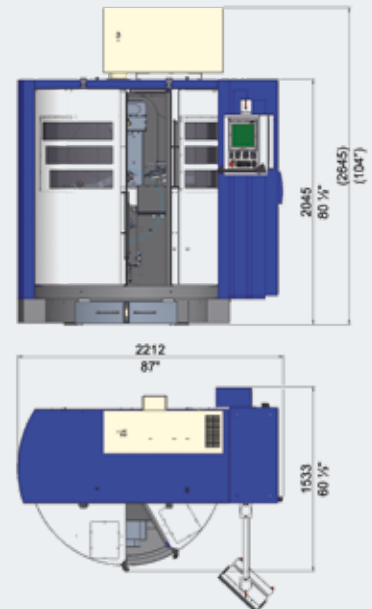
Functions

- Automatic measurement
- Automatic diameter detection
- Automatic probing / tracing
- Automatic saw blade positioning

The tooth geometry is grinded in only one setting. Each saw blade is automatically positioned independently of the diameter when it moves into the grinding position. A measuring probe then measures the tooth geometries.

High precision is a prerequisite for later exact grinding results.

Technical Data



GENERAL INFORMATION:

Tooth geometry	programmable
Tooth pitch	10° - 120° mm
Blade thickness	up to 8 mm
Tooth face clearance angle	0 - 5°
Tooth back clearance angle	0 - 5°
Circular saw outer Ø	180 - 860 mm (without Robot) 200 - 820 mm (with Robot)
Circular saw bore Ø	22 - 200 mm optional from Ø 15 mm
Cup grinding wheel Ø:	100 mm
Grinding wheel bore Ø:	32 mm

PROPERTIES:

Electrical connection:	400V 3Ph 50Hz, 6 kVA
Compressed air connection:	6 bar

Handling automation for efficient, fully automatic complete machining of circular saw blades

For companies, saw blade manufacturers or processors of a wide variety of carbide-tipped circular saw blade types and diameters, our robot-assisted handling system offers the optimal, economical automation solution with hardware and software from a single source in the smallest of spaces: from the blade loading to the fully automatic flank grinding by our KHF automatic grinders and/or our KHB geometry grinding machine for face and back. The loading of up to 80 blades per stack is carried out by one person with four or five loading carriages in the robot take-up area and in the stacking area.



KR 120

Robot-supported loading system for circular saws with 1 machine and 2 loading carriages



KR 140

Robot-operated loading system with 1 machine, 2 loading carriages and 2 additional load stations



KR 240

Robot-operated loading system with 2 machines, 2 loading carriages and 2 additional load stations

KR 120

Robot-supported loading system for circular saws with 1 machine and 2 loading carriages

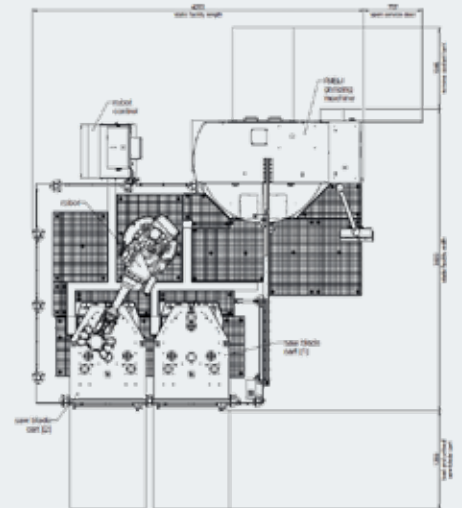


For companies, saw blade manufacturers or processors of a wide variety of carbide-tipped circular saw blade types and diameters, our robot-supported handling system offers the optimum economical automation solution with hardware and software from a single source - from blade loading to fully automatic side grinding using our KHF 300 and/or our KHB 300 for machining top and face.

Highlights

- KR 120 with two loading trolleys + two additional loading stations
- Integrated reject stack and drip-off stack
- Safe handling of carbide-tipped circular saw blades with minimal labour requirements
- Fast loading and unloading times without time-consuming empty runs
- Simple, centralised operation via an intuitive touch panel on the machines
- Additional 12-inch tablet for entering saw blade data
- 6-axis controlled industrial robot [ABB industrial robot IRB 4600-60/2.05]
- Fast loading and unloading times without time-consuming empty runs
- Individual data input of different blade sizes
- Gentle, sensor-controlled gripper system with wiper recognition
- Precise, sensor-controlled blade transfer and removal
- Can be flexibly adapted to customer-specific requirements
- Any access possible via peripheral devices in the same network (tablet, PC, telephone)

Technical Data



FOUNDATION:

Evenness of the foundation:	0.5 mm
Thickness of the floor:	min. 200 mm (250 mm)

CARRIAGE:

Number of mandrels per loading carriage:	
	- up to Ø 370: 2 pins à 500 mm rear
	+ 1 pin 200 mm front
	- from Ø 370: 1 pin à 500 mm in the middle

SYSTEM HEIGHT WITH EXHAUST UNIT:

2'645 mm

KR 140

**Robot-operated loading system with 1 machine,
2 loading carriages and 2 additional load stations**

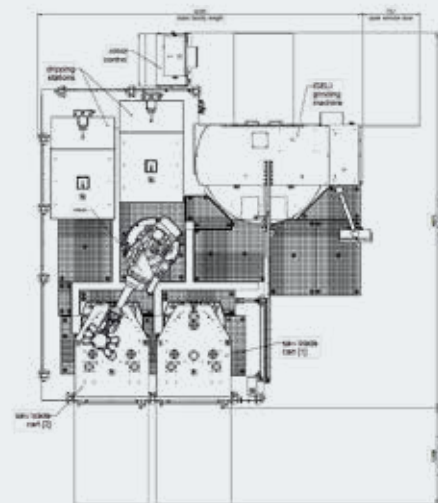


For companies, saw blade manufacturers or processors of a wide variety of carbide-tipped circular saw blade types and diameters, our robot-supported handling system offers the optimum economical automation solution with hardware and software from a single source - from blade loading to fully automatic side grinding using our KHF 300 and/or our KHB 300 for machining top and face.

Highlights

- KR 140 with two loading trolleys + two additional loading stations
- Integrated reject stack and drip-off stack
- Safe handling of carbide-tipped circular saw blades with minimal labour requirements
- Fast loading and unloading times without time-consuming empty runs
- Simple, centralised operation via an intuitive touch panel on the machines
- Additional 12-inch tablet for entering saw blade data
- 6-axis controlled industrial robot [ABB industrial robot IRB 4600-60/2.05]
- Fast loading and unloading times without time-consuming empty runs
- Individual data input of different blade sizes
- Gentle, sensor-controlled gripper system with wiper recognition
- Precise, sensor-controlled blade transfer and removal
- Can be flexibly adapted to customer-specific requirements
- Any access possible via peripheral devices in the same network (tablet, PC, telephone)

Technical Data



FOUNDATION:

Evenness of the foundation:	0.5 mm
Thickness of the floor:	min. 200 mm (250 mm)

CARRIAGE:

Number of mandrels per loading carriage:	
	- up to Ø 370: 2 pins à 500 mm rear
	+ 1 pin 200 mm front
	- from Ø 370: 1 pin à 500 mm in the middle

SYSTEM HEIGHT WITH EXHAUST UNIT:

2'645 mm

KR 240

Robot-operated loading system with 2 machines,
2 loading carriages and 2 additional load stations

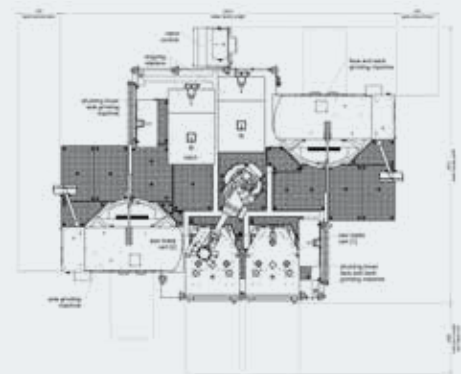


For companies, saw blade manufacturers or processors of a wide variety of carbide-tipped circular saw blade types and diameters, our robot-supported handling system offers the optimum economical automation solution with hardware and software from a single source - from blade loading to fully automatic side grinding using our KHF 300 and/or our KHB 300 for machining top and face.

Highlights

- KR 240 with two loading trolleys + two additional loading stations
- Integrated reject stack and drip-off stack
- Safe handling of carbide-tipped circular saw blades with minimal labour requirements
- Fast loading and unloading times without time-consuming empty runs
- Simple, centralised operation via an intuitive touch panel on the machines
- Additional 12-inch tablet for entering saw blade data
- 6-axis controlled industrial robot [ABB industrial robot IRB 4600-60/2.05]
- Fast loading and unloading times without time-consuming empty runs
- Individual data input of different blade sizes
- Gentle, sensor-controlled gripper system with wiper recognition
- Precise, sensor-controlled blade transfer and removal
- Can be flexibly adapted to customer-specific requirements
- Any access possible via peripheral devices in the same network (tablet, PC, telephone)

Technical Data



FOUNDATION:

Evenness of the foundation:	0.5 mm
Thickness of the floor:	min. 200 mm (250 mm)

CARRIAGE:

Number of mandrels per loading carriage:	
	- up to Ø 370: 2 pins à 500 mm rear
	+ 1 pin 200 mm front
	- from Ø 370: 1 pin à 500 mm in the middle

SYSTEM HEIGHT WITH EXHAUST UNIT:

2'645 mm

KMU 100

**Fully automatic, 8-axis-control
universal grinding machine for
circular saws up to 1,800 mm in diameter**

The KMU 100 expertise

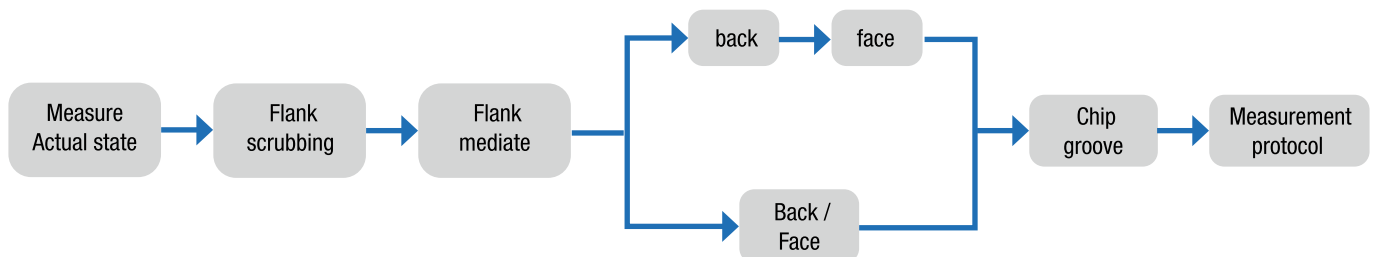
Innovation from ISEL! The KMU 100 has been equipped with numerous new technology highlights. It completely grinds carbide-tipped circular saws with a diameter range of 300 to 1800 mm. The machine controls a total of eight CNC axes. Three of them are primarily used for saw blade positioning and feed, the remaining five are used for the movement of the grinding head. The grinding head is the heart of the machine. It consists of a water-cooled grinding spindle and corresponding sensors to ensure process reliability.

The grinding spindle has two shaft ends. The face and back grinding wheel is mounted on one end, the two grinding wheels for flank and chip groove grinding on the other. This means that a total of three grinding wheels are driven. The sensors include a 3D measuring probe, with which the saw teeth can be measured precisely, and a sound sensor that carries out the sawtooth probing in automatic mode. In addition, the KMU 100 has wear compensation for the front and back grinding wheels.

In cooperation with our experienced process technicians, new sawtooth geometries were developed, especially in the field of metal saws, which set standards in terms of service life and reliability. In order to grind these sawtooth geometries, a high degree of precision and accuracy is required! A sophisticated operating system is available for the operator to enter the complicated sawtooth geometries, which can be operated intuitively and quickly. Recipes are created for the individual saw blades, which can be saved and recalled at any time. This can be done in parallel with the grinding process. A big advantage! This way there is no downtime during input.

The fully automatic grinding process

Grinding is basically carried out in the sequence shown in the figure below. Individual processes can be switched on or off individually. If desired, the machine can take over the entire grinding process: from measuring the actual condition of the saw blade to logging the control measurement.



Circular saw blade handling

The machine works as a closed system and does not require any additional peripheral devices. For handling the large and correspondingly heavy circular saw blades, however, the machine can be combined with handling systems such as a simple crane or robot equipment.



Precise blade positioning for the perfect cut



Technical Data

CONNECTION VALUES:

Cooling water pump	1.1 kW
Electrostatic extraction	0.225 kW
Mist extraction	0-75 kW

COMPRESSED AIR:

Compressed air	6 Bar
----------------	-------

GRINDING WHEEL (GEOMETRY):

Outer diameter	Ø 100 or 125 mm
Bore	Ø 32 mm
Width	10 mm

GRINDING WHEEL (SIDE GRINDING):

Outer diameter	Ø 100 or 125 mm
Bore	Ø 32 mm
Width	16 up to 35 mm

GRINDING WHEEL (CHIP BREAKER):

Outer diameter	Ø 100 oder 125 mm
Bore	Ø 32 mm
Width	0.5 mm

PROGRAMMABLE PERIPHERAL SPEEDS:

Grinding wheel for side grinding	15 - 60 m/sek.
----------------------------------	----------------

CONSTANT PERIPHERAL SPEEDS:

Grinding wheel	Standard
----------------	----------

PROPERTIES:

Weight	4'300 kg
Height ready for operation	2.28 m
Height packed (incl. transport floor)	2.50 m

Highlights of the KMU 100 Universal grinding machine

The grinding process: all in one go. Thanks to the unique machine concept, all processing steps can be carried out reliably in just one machine. Accordingly, downtimes and setup times are reduced to a minimum.

Innovative operating concept. The input of the complicated sawtooth geometries is graphics-supported and provides the operator with valuable visual support. In addition, settings and process variables are easily and clearly displayed on a touch panel.

Extensive know-how in the field of metal saws. Our expertise in the field of process technology extends far beyond grinding geometries. For example, we can support our customers in the sawing process to increase service life and reliability.

Professional processing of saw blade repair. Repairs are a troublesome issue, especially on large circular saw blades with many saw teeth. Thanks to the integrated measuring system, our machine offers the possibility of autonomous recognition of the tooth to be repaired, which is then ground accordingly. This is carried out without any external input or manual positioning of the saw blade.

Simple, open design for interconnection options. The heavy circular saws hardly allow ergonomic, healthy work for the operator. Thanks to the open design of the housing front with automatic door, loading can be carried out from the front or from above by means of a handling system.

Process security. Thanks to integrated systems such as the grinding wheel compensation, the control measurements during the grinding process or the overload protection of the grinding spindle, maximum process reliability and grinding quality are guaranteed.

MVM offers a wide range of grinding machines for processing flat and round industrial knives and has been part of the inventory of leading global companies for over 60 years. ISEL is an official dealer with an extensive portfolio: from commissioning to comprehensive service and maintenance, ISEL covers all services.

The MVM knife sharpening machines were designed for end users, e.g. carpenters, grinding centers, knife manufacturers and sharpening service providers for all common industrial flat and circular knives. These include planer knives, indexable inserts, wood chipping knives, paper knives, granulator knives for plastics, guillotine knives and other carbide-tipped knives. These grinding machines are used and appreciated all over the world.



MVM BM 650/850

Grinding machine for straight blades

Grinding length up to 850 mm

The standard MVM grinding machines are ideal for sharpening planer knives. They are supplied with a mechanical clamping system for the simultaneous grinding of four planer knives on the mechanical clamping chuck with T-slot.



MVM ZX 1000/1230

Grinding machine for straight blades

Grinding length up to 1230 mm

With the swiveling magnetic plate for carbide-tipped workpieces, this grinding machine is ideally suited for sharpening chipper knives, granulator knives for plastics, planer knives, profiled carbide-tipped indexable inserts and disposable planer knives such as Tersa knives (with the appropriate optional clamping device).



MVM PX 1000/1230

Grinding machine for straight blades

Grinding length up to 1750 mm

This MVM is available in three versions with a grinding length of 1000 mm, 1350 mm and 1750 mm. The PX grinding machine has an automatic working cycle programmable by a PLC, motorized downfeed of the grinding wheel and spark-out cycle at the end of grinding cycle.



MVM MX 150

Grinding machine for straight blades

Grinding length up to 4500 mm

The grinding machine for long knives MX 150 is available in five versions with a usable grinding length of 1000 mm, 1500 mm, 2000 mm, 3000 mm or 4500 mm. It is ideally suited for knives of all kinds such as paper knives, veneer and peeling knives, and wood chipping knives.



MVM KS 250

Grinding machine for straight blades

Grinding length up to 7100 mm

This is a professional grinding machine for all types of industrial knives, including paper knives, wood chipping knives, granulator knives for plastics, paring and veneer knives, cutting blades, guillotine knives and carbide-tipped knives.



MVM LA 300

Grinding machine for circular blades

Practical, compact and easy to use. The LA 300 can sharpen circular knives up to 300 mm in diameter and is equipped with a grinding head that can be rotated from 0° to 70°, an automatic work cycle and is, among other things, particularly suitable in the paper industry for sharpening of tissue paper knives.



MVM LA 500 PROFESSIONELL

Grinding machine for circular blades

The LA-500 grinding machine for circular blades is ideally suited for grinding circular knives and surface grinding disks as with a conventional surface grinder. It is a surface grinding machine unique in its form with a rotating and swiveling grinding head, automatic grinding wheel infeed and rotary table with speed selector.



ISELI + Co. AG Maschinenfabrik

Luzernerstrasse 31
CH-6247 Schötz

Phone: +41 41 984 00 60
sales@iseli-swiss.com
www.iseli-swiss.com



www.iseli-swiss.com