

Before you start grinding



First steps and checks:

- Check if the grinding wheel is out of balance
- Does the grinding wheel run stably?
- Profile the grinding wheel mounted on the flange
- After that, open up the grinding wheel using the correct conditioning stone
- Align the cooling lubricant nozzles and check their geometry
- Is the cooling lubricant system working properly?

Profile the grinding wheel:

It is essential to dress the grinding wheel to obtain good results. A radial or axial impact of the grinding wheel causes vibrations, which produce a poor cutting edge and surface as a consequence. It is best to profile the grinding wheels externally in a separate profiling machine using silicon carbide grinding wheels.

Recommended dressing parameters:

- Circumferential speed of the grinding wheel: 3–5 m/s
- Circumferential speed of the silicon carbide grinding wheel: 15–25 m/s
- Oscillation speed: 200–1000 mm/min
- Feed increment: 0.01–0.07 mm per stroke

Important!

- The grinding wheel should be profiled on the same holder that will be used when grinding
- If possible, profile with cooling
- Marking the periphery of the grinding wheel with a felt-tip pen helps you determine if the entire circumference of the grinding wheel was profiled
- After profiling, the grinding wheel must be sharpened using the recommended conditioning stone

As one of the leading manufacturers in the market, we offer you complete grinding systems from a single company: grinding and dressing tools as well as grinding and dressing machines for demanding applications. Our business division has its own, globally active sales and customer service network. The international team of technical consultants as well as regional sales staff work out custom solutions in close cooperation with you that are tailor-made to solve your particular problem. Use our many years of experience and our technical expertise. Our extensive product range of innovative grinding solutions will help you to meet the highest quality and productivity requirements. We are your expert system specialist for precision grinding.

For additional information:

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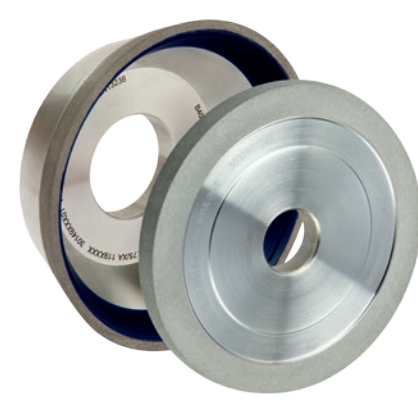
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A new generation of grinding wheels



We set new standards for the development of grinding wheels used to manufacture cutting tools.

Modern cutting tools like drills and milling machines often have complicated geometries with very tight tolerances and high requirements on the surface finish quality. To meet these requirements and be in the position to grind with high quality at low prices, the demands on the grinding machine and especially on the grinding wheels have risen dramatically.

To meet these demands, CNC tool grinding machines must have significantly higher performance and be more stable, flexible and equipped with an efficient cooling system. At the same time, though, this also increases the demands placed on the grinding wheels used.

Our products and services

- Competent application consultants at your production site
- Technical cooperation in order to increase productivity
- Calculation of the total costs
- Grinding seminars

We provide quality grinding wheels to meet every challenge.

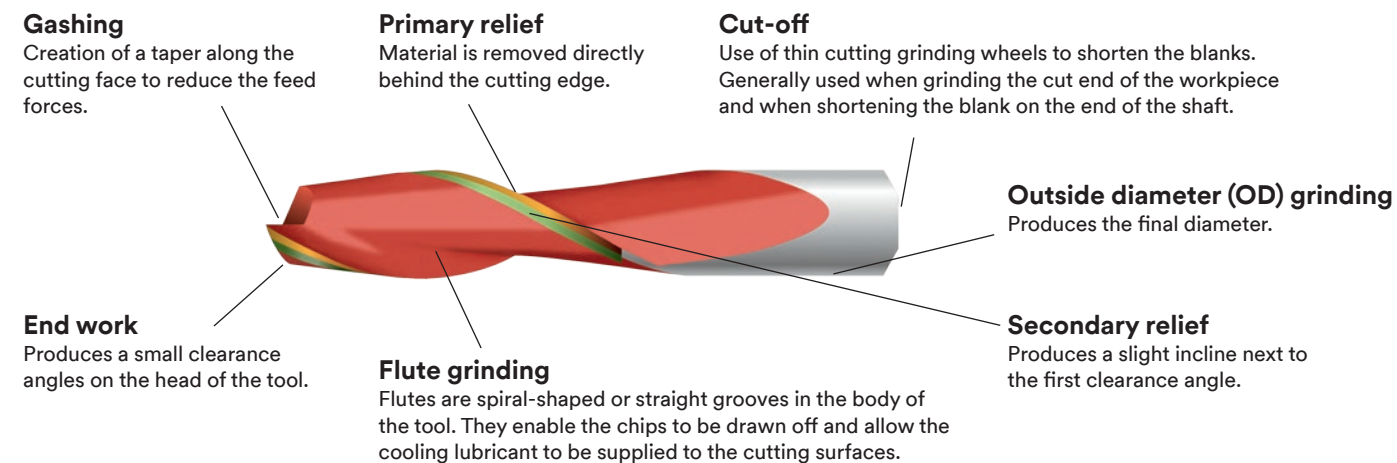
The correct combination of cutting speed, feed rate, and feed increment are essential in order to fully utilize the performance offered by a grinding wheel. In

addition, the type of machine and its stiffness, the workpiece data, the cooling lubricant, and how the cooling lubricant is supplied need to be considered.

Correct selection of the grinding parameters lead to:

Higher productivity & lower total cost

Typical grinding processes

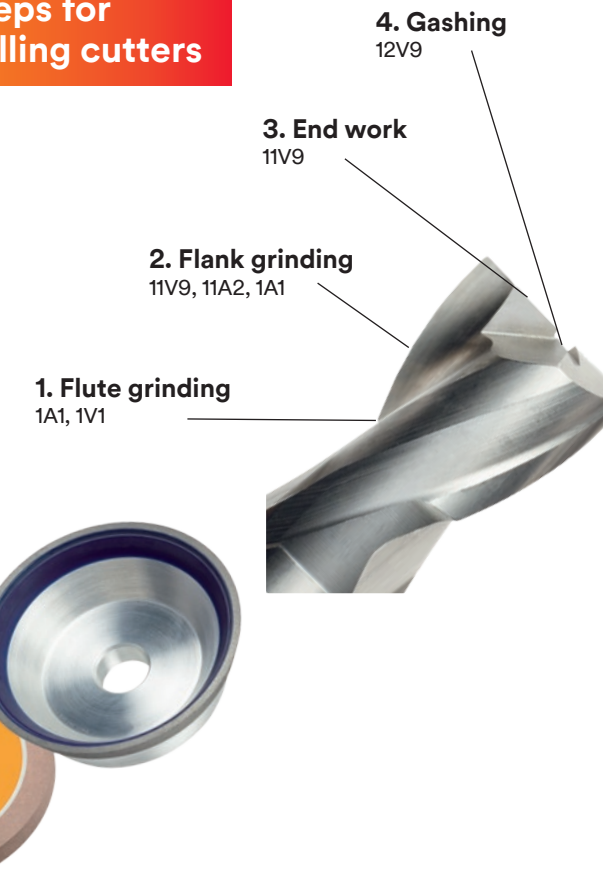


Steps for tool grinding

Steps for drill bits



Steps for milling cutters



What is the difference between resharpening and production?

	Used	New
• Starting material:	Worn material	Blank
• Preparatory measures:	Visual inspection, possibly cleaning, shaft preparation, determine amount of wear to specify amount of stock to be removed, measure on a measuring machine	There may be a broken edge at the end of the shaft
• Clamping precision (concentricity):	Depends on previous history (cannot be influenced)	Depends on blank (can be influenced)
• Grinding operations:	Resharpen the flank or cutting faces without influencing the function of the tool	Specifications according to drawing, grinding from the solid, OD grinding, flutes, ...
• Determine the position of the tool in the grinding machine:	Complicated sensing operations to detect the helix, angular position, exposed length, longer cutter, etc.	Only necessary to detect the exposed length; possibly detect position of IK holes

If problems arise

Problem	Possible cause	Possible solution
• Clogging of the grinding wheel	<ul style="list-style-type: none"> • Poor conditioning • Low filter performance, poor cooling • Cutting speed of the grinding wheel is too high • Feed rate too low or too high • Grinding wheel is too hard 	<ul style="list-style-type: none"> • Reconditioning the grinding wheel according to application recommendations • Adjust cooling optimally for contact zone • Reduction of the cutting speed of the grinding wheel • Change the feed rate • Use a softer grinding wheel
• Too much wear on the grinding wheel	<ul style="list-style-type: none"> • Insufficient cooling on the contact zone • Low cutting speed of the grinding wheel • Feed rate too high • Grinding wheel is too soft 	<ul style="list-style-type: none"> • Adjust cooling optimally for contact zone • Increasing the cutting speed makes the grinding wheel appear harder • Reduction of the feed rate • Switch to a harder grinding wheel. Increasing the cutting speed so makes the grinding wheel appear harder
• Overheating of the tool	<ul style="list-style-type: none"> • Insufficient cooling on the contact zone • Cutting speed of the grinding wheel is too high • Feed rate too high • Grinding wheel is too hard 	<ul style="list-style-type: none"> • Adjust cooling optimally for contact zone • Reduction of the cutting speed of the grinding wheel • Reduction of the feed rate • Switch to a softer grinding wheel. Reducing the cutting speed also makes the grinding wheel appear softer
• Poor surface quality on the workpiece	<ul style="list-style-type: none"> • Out of balance, concentricity error, vibrations • Grinding wheel is too coarse-grained • Abrasive coating is clogged or covered with lubricant • Low filter performance, poor cooling • Grinding wheel is too soft 	<ul style="list-style-type: none"> • Check the spindle bearing or other machine components. Test the grinding wheel for imbalances and concentricity • Switch to a finer grained grinding wheel • Roughen surface with a sharpening stone • Adjust cooling optimally for contact zone • Switch to a harder or wider grinding wheel. Increasing the cutting speed makes the grinding wheel appear harder