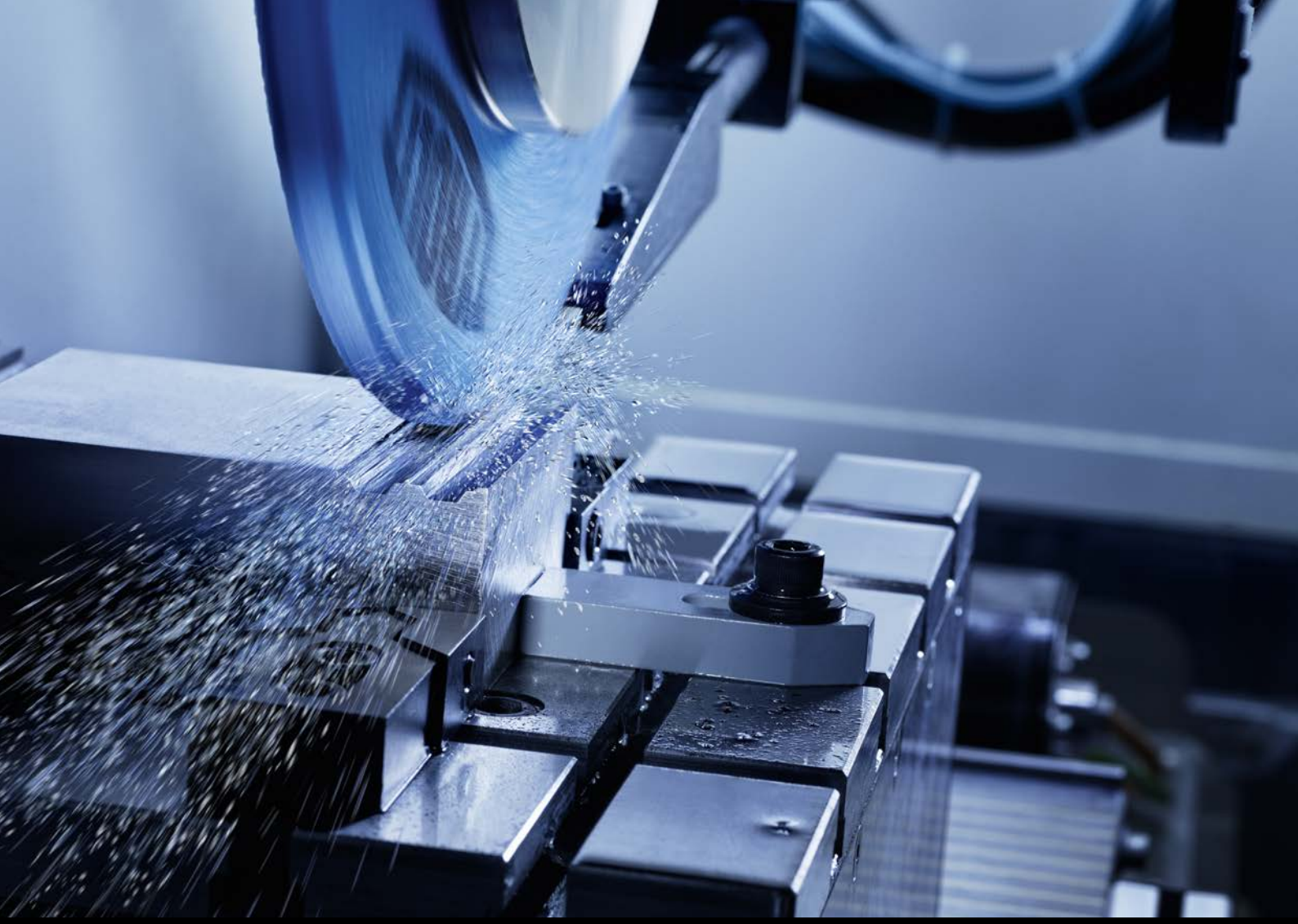


Precision grinding
Product catalogue

English | 2022

Premium grinding tools since 1919
www.tyrolit.com

The TYROLIT Group

TYROLIT is one of the world's leading manufacturers of grinding and dressing tools as well as a system provider for the construction industry.

Since 1919, our innovative tools have made an important contribution to the technological development in many industries. TYROLIT offers tailored grinding solutions for various applications, as well as a comprehensive assortment of standard tools for customers all over the world.

Headquartered in Schwaz (Austria), the family-owned business combines the strengths of being a part of the dynamic Swarovski Group with a century's worth of individual corporate and technological experience.

TYROLIT headquarters in Schwaz (Austria)

Facts & Figures

80,000+
products

29
production sites

4,600+
employees worldwide

37
sales locations

500+
worldwide patents

Sales companies in Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, India, Indonesia, Italy, the Netherlands, Norway, Poland, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, the UAE, the UK and the USA. Distributors in 65 other countries.

Business units

METAL INDUSTRIES

Automotive industry

Our leading grinding solutions are used for the production of automotive parts with highest precision.

Steel & Foundry

With many years of experience in the machining of high alloyed steel we are the market-leader in the steel industry.

Precision industries

The extensive field of precision industries includes tools and system solutions for various highly specialised applications.

Industrial trade

Our comprehensive assortment for cutting, grinding and surface treatment for professional end users is available worldwide.

CONSTRUCTION

Construction industry

The assortment of high efficency diamond tools is tailored for the specific needs of customers in the construction industry.

Trade & Rental

Our wide range of professional system solutions for construction-related applications is available worldwide.

Construction professionals

We impress users with extensive know-how in the creation of perfectly optimised machines and tools and a fast repair service.

Project services

Our project services team develops individual system solutions for customer-specific special construction applications.

100 years of advanced thinking

A passion for technology, many years of experience and a strong innovative spirit have been incorporated into the manufacture of outstanding grinding solutions.

Pioneer in the field of cut-off grinding — We created the first fibre-reinforced cut-off discs in Europe and invented the super-thin technology, which is today's global market standard for hiqh quality cut-off discs.

Technology leader in precision grinding — We are one of the worlds leading providers of high-precision grinding tools in the automotive, turbine and tooling industry as well as in various other precision industries.

Market leader in the steel industry — We are the most sought-after producer of the world's biggest cut-off wheels with diameters of up to 2,000 mm for cutting hot semi-finished steel products.

Leading solutions for construction professionals — Our innovative system solutions and the patented diamond technology (TGD®) set new standards in performance and comfort for applications in the construction industry.

Diamond tools for grinding of automotive glass — We were the first company to produce diamond tools for grinding automotive glass at 40 m/min and successfully established an industry-changing concept for edge grinding in the market.

Creator of innovative wire sawing technology — We strongly pursued the development of the wire sawing technology for applications in the stone and construction industry which is still the industry reference today.

International production and sales locations

TYROLIT is represented in 29 countries through its own production and sales companies and cooperates in a further 65 countries with local partners.

Production location in Suzhou (China)

The European logistics centre in Benátky (Czechia)

Symbols

Safety


Wear gloves


Wear a mask


Only permitted for wet grinding


Not permitted for wet grinding


Wear eye protection


Wear protective clothing


Do not use damaged wheels


Wear ear protection


Observe the instructions


Not permitted for side grinding

Material


Steel

Carbide metal

High-speed steel

Nonferrous metals


Abrasive materials

Plastic


Tiles

Stainless steel


Cast iron


Stone

Titanium

Machines


Floorstand grinder


Internal-cylindrical grinding


Tool grinding


Stationary cutting machine


Surface grinding


Saw sharpening


External-cylindrical grinding


Hand held grinding


Dressing and sharpening

Precision tool specific **Information**

Product label

Flange ID

Registered trademark

Shape and specification

Dimensions DxTxH
Type number

Production order
with item number

Declaration of conformity,
EN safety standard

Observe maximum permissible operating speed, max. speed, as well as colour coding on grinding wheel and accompanying documentation

Registered trademark

Type number

Shape

Specification

Maximum permissible operating speed

Production order with item number

Precision tool specification
Conventional ceramic

89A 60 M 5 V 217

Bond designation	Internal code, which defines bond type
Bond	
V	vitrified bonded
B	resin bonded
E	elastic bonded
G	galvanic bonded
Structure	The higher the number, the more open the wheel
Hardness	Hardness ascends alphabetically e.g.
G	Soft
R	Hard
Grit size description	Grit size indication in mesh (sieve size per inch)
14 – 36	COARSE
46 – 60	MEDIUM
80 – 220	FINE
800 – 1 200	VERY FINE

Abrasive description	
10A	Regular aluminium oxide
50A	Mixture of 89A and 10A
52A	Semi-friable aluminium oxide
80A	Mixture of 88A and special aluminium oxide
87A	Mixture of 89A and 88A
88A	Pink aluminium oxide
89A	White aluminium oxide
91A	Red aluminium oxide
92A	Mixture of 89A and special aluminium oxide
93A	Mixture of 89A and 91A
97A	Special aluminium oxide
454A	Mixture of sintered aluminium oxide and 89A
455A	Mixture of sintered aluminium oxide and 89A
C	Green silicon carbide
1C	Black silicon carbide
50C	Silicon carbide mixture Green/black
SD15A*	Mixture
SD25A*	Mixture
SD33A*	Special fused aluminium oxide
SD35A*	Mixture
SD44A*	Special fused aluminium oxide
SD46A*	Mixture
SD55A*	Special fused aluminium oxide
SD56A*	Mixture
SD65A*	Mixture
SD78A*	Special aluminium oxide
SD83A*	Mixture
SD85A*	Mixture

***New specification logic - product remains unchanged**

Precision tool specification
CBN resin / Diamant

B 126 C50 B 54

Bond designation	Internal code, which defines bond type
Bond	
B	Resin bonded
M	Metal bonded
Concentration	The grain concentration shows the grain volume in carat per unit volume of the grinding layer
Grit size description	Grit size indication in µm (average grit diameter according to FEPA)
35 – 181 µm	
Abrasive description	
B	CBN
D	Diamond

Pictograms


External-
cylindrical grinding


Internal-
cylindrical grinding


Surface grinding


Floorstand grinder


Hand-guided
grinding


Tool grinding


Saw sharpening


Dressing and
sharpening

Delivery time

EXPLANATION OF TERMS	DELIVERY TIMES
Stock type All products in the chapter “Precision grinding” that are listed with type numbers are in stock.	Delivery 7 to 10 working days.
Recommended stock type A standard range created by a collaboration between our application engineers and marketing managers, which guarantees optimum grinding results for various grinding applications and for processing the materials.	
Alternative stock type Existing stock products, which – based on our global market and product experience – also guarantee good grinding results, but which are replaced in the short to medium term by recommended stock types.	
Breadth of product range Precision is our business! However, if the specifications available in stock do not provide you with the perfect solution, modifications to the recommended product range (dimensions) can also be made, i.e. grit size, hardness and structure.	The corresponding delivery times can be found in the relevant chapters, or in our quote or order confirmation documentation.

Example for breadth of product range

C	**60**	**H**	**5**	**Non-stock item**	→	**Recommended standard specification**
C	46–180	F–I	5–8	8 weeks DT	→	Possible range of modifications for grit sizes, hardness and structure
C	80	F	8		→	Example of a possible modification

Modification on request

To ensure quicker delivery times in urgent cases, existing stock types (recommended stock types) can be modified to suit customer requirements. The current delivery time and price will be provided according to the enquiry.

Packaging Unit

If the product table does not show any packaging unit, the products will be packaged individually.

	Precision data sheet		Recorded by: on:	
Customer	ATDB no.:		**Country:**	
	Target group:		**Product family:**	
	Item requirements:			
	Customer: *		Classification:	
	Department:		Customer no.:	
	Contact:		Tel. / Fax:	
Customer	**Shape: ***		**1 set = item.:**	
	Dimensions (mm): *			
	Dimensions (mm):		Tolerance:	
	Specifications:			
	Manufacturer:		**Current price:**	
	Vs max. (m / s)*		Order quantity:	
Customer	**Grinding process:**			
	Machine manufacturer:			
	Vs (m / s):			
	Coolant / lubricant:			
	Dressing tool:			
	Dressing cycle:		Dressing amount:	
Workpiece	**Workpiece: ***		**Dimensions (mm): ***	
	Material group:*		**Stock (mm):**	
	Condition: *		**Hardness: ***	
Aim	**Surface roughness:**		**Contact time:**	
	Lifetime:			
	Addition:			
Probe	Specification:			
	Specification:			
	Specification:			
Info			Drawing:	
Distributor:				

* COMPULSORY fields are marked in grey

1.1 External cylindrical grinding
External cylindrical grinding tools

External cylindrical grinding

External cylindrical grinding is one of the most frequently used grinding processes, for example, in the automotive industry. Considering the requirements of our customers, we always offer the right tool.

The high-precision external cylindrical grinding tools from TYROLIT underlie an optimal quality assurance system and are produced using the most modern manufacturing technology and production facilities. We are therefore always able to comply with the requirements of our customers.

The decisive factor in the selection of the right product is the adaptation of the grinding wheel in the overall process to the specific requirements of the grinding application. Workpiece, tool, machine, parameters, cooling lubricant and the applied dressing technology contribute to the perfect grinding result. The choice of the correct specification, as well as adaptation of the process parameters, can be optimised by TYROLIT to suit customer requirements.

Application recommendation

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A, SD33A			●	○	●	○				○		●	16, 17
92A, 97A, SD83A			○		●	●	○					●	17, 18
C					○	○	○	●		●		●	19
B			○		●	●	○					●	20
D								●	●			●	21

● Extremely suitable ○ Limited suitability

Application tips

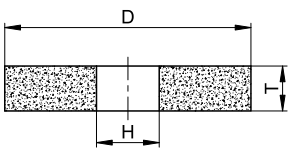
The key factor is the adjustment of the grinding wheel in the overall process (workpiece, tool, machine, parameters, coolant, dressing technology etc., as well as the specific requirements of the particular grinding applications.

- The choice of specification, such as the adjustment of process parameters, can be optimised by TYROLIT application engineers to suit customer requirements
- Recommended operating speed: 25–35 m/sec
  Workpiece peripheral speed: depends on workpiece diameter
- Overlap rate: 30–40 % of wheel width

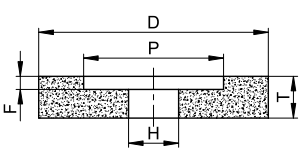
Diamond and CBN tool

- For optimised dressing, see page 138 to 147
- Longitudinal feed/overlap rate:
  30–50 % of thickness of diamond section width
- Workpiece peripheral speed: depends on workpiece diameter
- Recommended cutting speed for CBN grinding wheels for HSS and high-alloyed tool steel is 20–30 m/s
- Recommended cutting speed for diamond grinding wheels for cemented carbide and industrial ceramics is 15–25 m/s
- Concentrically trueing and sharpening of wheel before initial use with
  – unhardened structural steel shaft
  – silicon carbide grinding wheel
- Ensure sufficient coolant supply

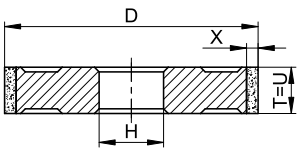
Shapes



Shape 1



Shape 5

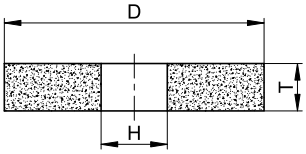


Shape 1A1

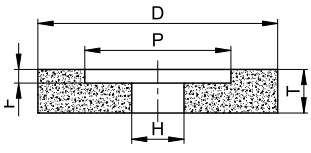
External cylindrical grinding
Conventional ceramic
for non and low-alloyed steels

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A, SD33A		●		●	●	●				●		●

Recommended stock type



Shape 1



Shape 5

In many industries, external cylindrical grinding is one of the most frequently used grinding processes. In the automotive industry, for example, camshafts, crankshafts and gear shafts are produced to meet the most stringent demands and requirements. Use of aluminium oxide especially for non and low-alloyed steels.
The grade and structure of the wheel affect the grinding result and are tailored perfectly to use on non and low-alloyed steels. Our assortment also includes wheels for angled flute grinding.

	Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	Comments
	1	690785	300x40x76.2		89A 802 J5A V217 50	50	
		889228	400x20x127		89A 802 J5A V217 50	50	
		881114	400x25x127		89A 802 J5A V217 50	50	
		39869	400x30x127		89A 802 J5A V217 50	50	
		620118	400x40x127		89A 802 J5A V217 50	50	
		71665	400x50x127		89A 802 J5A V217 50	50	Grit size 80 Ra approx. 0.20–0.35 µm
		70954	400x60x127		89A 802 J5A V217 50	50	
		713537	500x40x203.2		89A 802 J5A V217 50	50	
		655869	500x50x203.2		89A 802 J5A V217 50	50	
		39867	500x60x203.2		89A 802 J5A V217 50	50	
		655875	500x80x203.2		89A 802 J5A V217 50	50	
		119385	400x40x127		SD33A120JJ8PVK8	50	Universal/angled flute grinding
		119392	500x50x203.2		SD33A120JJ8PVK8	50	

Breadth of product range*

89A	80	J	5	Non-stock item
89A, SD33A	46–120	I–K	5–8	8 weeks DT

**For production reasons, the minimum quantity ordered may differ from non-stock types.*

▶

◀

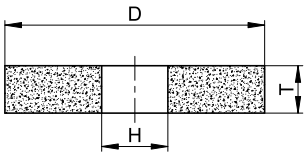
Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments
1	44866	300x25x127	89A 602 K5A V217 50	50	
	66141	300x40x127	89A 602 K5A V217 50	50	
	690784	300x40x76.2	89A 602 K5A V217 50	50	
	34172115	300x30x127	89A 602 K5A V217 50	50	
	42216	350x40x127	89A 602 K5A V217 50	50	
	485430	356x50x127	89A 60 K5A V217 50	50	Grit size 60 Ra approx. 0.35–0.50 µm
	170606	350x32x127	89A 602 K5A V217 50	50	
	25473	400x40x127	89A 602 K5A V217 50	50	
	170608	400x32x127	89A 602 K5A V217 50	50	
	523430	450x50x203.2	89A 601 K5A V217 50	50	
	523437	450x25x203.2	89A 601 K5A V217 50	50	
	523435	610x50x304.8	89A 601 K5A V217 50	50	

External cylindrical grinding
Conventional ceramic
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
97A, SD83A			●		●	●	●					●

Recommended stock type



Shape 1

With this wheel we guarantee a tailored selection of high-performance aluminium oxides together with special bond systems. This ensures universal use on all high-alloyed steels and HSS.
With a sintered aluminium oxide mixture, for example 454A, it is possible to achieve the maximum stock removal rate for vitrified bonded grinding wheels. Improved performance can be achieved by resin-bonded CBN tools, such as the VIB STAR.

		Type no.	DxTxH	Specification	Vmax m/s	Comments
	1	664561	400x20x127	SD83A80II7PVK8F	50	
		655916	400x25x127	SD83A80II7PVK8F	50	
		655918	400x30x127	SD83A80II7PVK8F	50	Grit size 80 Ra approx. 0.20–0.35 µm
		655919	400x40x127	SD83A80II7PVK8F	50	
		216066	400x50x127	SD83A80II7PVK8F	50	

▶

◀

		Type no.	DxTxH	Specification	Vmax m/s	Comments
	1	655921	400x60x127	SD83A80II7PVK8F	50	
		655927	500x40x203.2	SD83A80II7PVK8F	50	
		655929	500x50x203.2	SD83A80II7PVK8F	50	
		216068	500x60x203.2	SD83A80II7PVK8F	50	
		655935	500x80x203.2	SD83A80II7PVK8F	50	
		664564	400x20x127	97A 802 J5A V237 50	50	Grit size 80 Ra approx. 0.20–0.35 µm
		664571	400x25x127	97A 802 J5A V237 50	50	
		664573	400x30x127	97A 802 J5A V237 50	50	
		664575	400x40x127	97A 802 J5A V237 50	50	
		664578	400x50x127	97A 802 J5A V237 50	50	
		664583	500x40x203.2	97A 802 J5A V237 50	50	
		664585	500x50x203.2	97A 802 J5A V237 50	50	
		664587	500x60x203.2	97A 802 J5A V237 50	50	
		664588	500x80x203.2	97A 802 J5A V237 50	50	

Breadth of product range*

454A, SD83A	80	J	10	Non-stock item	97A	80	J	5	Non-stock item
454A, SD83A	80–120	I–K	6–10	8 weeks DT	97A	46–120	I–K	5–8	8 weeks DT

**For production reasons, the minimum quantity ordered may differ from non-stock types.*

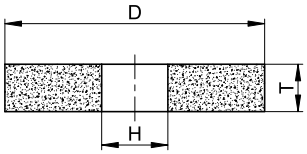
Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	690233	400x40x127	92A 602 I5A V217 50	50
	293789	500x50x203.2	92A 60 I5A V217 50	50
	494271	355x25x127	454A 601 L7G V3 50	50

External cylindrical grinding
Conventional ceramic
for tungsten carbide and grey cast iron

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C	●			●		●	●	●		●		●

Recommended stock type



Shape 1

This silicon carbide wheel is a cost-effective variant for machining tungsten carbide for secondary applications. It is primarily used for working on castings and nonferrous metals. This wheel is a good alternative for working on nitrified workpieces and wear-resistant thermal sprayed alloys in particular. Profiling is possible using standard diamond dressing tools.

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	655957	400x40x127	C 60 H5A V18 50	50
	655958	400x50x127	C 60 H5A V18 50	50
	656023	400x40x127	C 100 H5A V18 50	50

Breadth of product range*

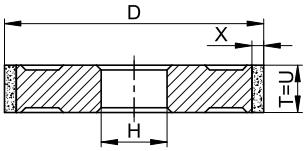
C	60/100	H	5	Non-stock item
C	60–180	H–J	5–8	8 weeks DT

**For production reasons, the minimum quantity ordered may differ from non–stock types.*

VIB STAR External cylindrical grinding
CBN resin
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
B			●		●	●	●					●

Recommended stock type



Shape 1A1

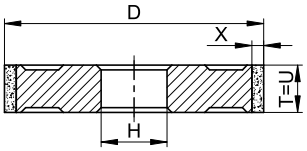
The VIB STAR external grinding wheel is made with a vibration-reducing core. This enables a consistent and quiet grinding process. A constant self-sharpening effect also guarantees consistent power consumption and therefore high economic efficiency of the tool.
Low wear results in a high level of dimensional accuracy on the workpiece, thereby reducing dimensional inspections to a minimum.

	Shape	Type no.	DxTxH	U-X	Specification	Vmax m/s
	1A1	34448295	200x15x51	15-3	51B 126 C50 B VIB-STAR	63
		34448296	250x15x51	15-3	51B 126 C50 B VIB-STAR	63
		34448298	300x20x76,2	20-3	51B 126 C50 B VIB-STAR	63
		34448299	300x20x127	20-3	51B 126 C50 B VIB-STAR	63
		34448297	300x20x76,2	20-5	51B 126 C50 B VIB-STAR	63
		34448311	350x20x127	20-3	51B 126 C50 B VIB-STAR	63
		34448312	350x20x127	20-3	51B 126 C75 B VIB-STAR	63
		34448300	350x20x127	20-5	51B 126 C50 B VIB-STAR	63
		34447898	400x20x127	20-3	51B 126 C50 B VIB-STAR	63
		34448314	400x20x127	20-5	51B 126 C50 B VIB-STAR	63
		34448313	400x30x127	30-3	51B 126 C50 B VIB-STAR	63

VIB STAR External cylindrical grinding
Diamond resin
for tungsten carbide and industrial ceramics

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
D								●	●			●

Recommended stock type



Shape 1A1

The resin-bonded diamond wheel with VIB STAR core is a particularly cost-effective solution for machining tungsten carbide. Low wear and a high level of dimensional accuracy are achieved by a constant self-sharpening effect.
A high stock removal rate due to synthetic diamonds in resinoid bonds provides a significant advantage over less expensive silicon carbide wheels.

	Shape	Type no.	DxTxH	U-X	Specification	Vmax m/s
	1A1	34448315	200x10x51	10-3	11D 126 C75 B VIB-STAR	63
		34448316	250x15x51	15-3	11D 126 C75 B VIB-STAR	63
		34448317	300x20x76.2	20-3	11D 126 C75 B VIB-STAR	63
		34448318	300x15x127	15-3	11D 126 C75 B VIB-STAR	63
		34448319	300x20x127	20-3	11D 126 C75 B VIB-STAR	63
		34448320	350x20x127	20-3	11D 126 C75 B VIB-STAR	63
		34448322	400x20x127	20-3	11D 126 C75 B VIB-STAR	63

Please find information on dressing and sharpening from page 138.

1.2 Reciprocating surface grinding
Reciprocating surface grinding tool

Reciprocating surface grinding

Reciprocating surface grinding is the most frequently used surface grinding process. Especially in this process, a high stock removal rate with an adequate surface finish is required. Due to the relatively large contact area between the grinding wheel and the workpiece, a special grinding wheel composition is necessary.

The high-precision reciprocating surface grinding tools from TYROLIT underlie an optimal quality assurance system and are produced using the most modern manufacturing technology and production facilities. We are therefore always able to comply with the requirements of our customers. The decisive factor in the selection of the right product is the adaptation of the grinding wheel in the overall process to the specific requirements of the grinding application. Workpiece, tool, machine, parameters, cooling lubricant and the applied dressing technology contribute to the perfect grinding result. The choice of the correct specification, as well as adaptation of the process parameters, can be optimised by TYROLIT to suit customer requirements.

Application recommendation

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A, SD33A		●	●	●	●	●						●	26, 27, 28, 29, 32
SD56A			●		●	●						●	27, 28, 29
F13A			●	●	●	●						●	27, 28
454A, SD83A, SD78A			●		●	●	●					●	30, 31, 32, 33, 34
SD46A		●	●	●	●		●					●	34
454A, SD83A				●	●	●	●					●	34
C	●				●	●	●	●	●	●		●	35
B			●		●	●	●					●	36
D								●	●			●	37

● Extremely suitable ● Limited suitability

Application tips

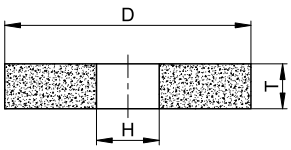
Conventional tool

- Recommended operating speed: 20–30 m/s
- Table traverse speed: 10–20 m/min
- Infeed when roughing: 0.01–0.03 mm/stroke
- Infeed when finishing: 0.002–0.004 mm/stroke
- Transverse stroke (contact width in %): 30–40 % of wheel width
- Finishing: 1–3 strokes (without infeed)
- Ensure good coolant supply

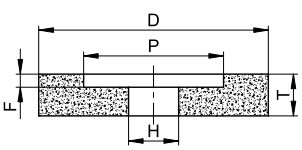
Diamond and CBN tool

- Table traverse speed: 10–20 m/min
- Transverse stroke/overlap rate: 30–40 % of thickness of diamond section
- Standard value for infeed: 1/10 of grinding grit size (e.g. D126 → infeed 12 µm)
- Recommended cutting speed for CBN grinding wheels for HSS and high-alloyed tool steel is 20–25 m/s
- Recommended cutting speed for diamond grinding wheels for cemented carbide and industrial ceramics is 15–25 m/s
- Concentrically trueing and sharpening of wheel before initial use with
  - unhardened structural steel block
  - AV500 dressing device with silicon carbide grinding wheel (see chapter “Dressing and sharpening”, page 143)
- Ensure good coolant supply

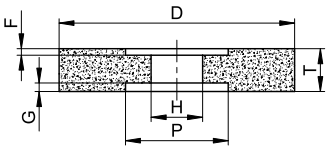
Shapes



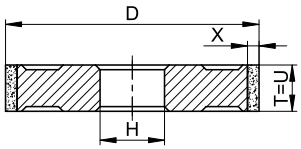
Shape 1



Shape 5



Shape 7

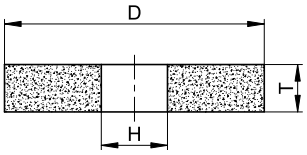


Shape 1A1

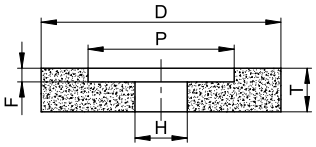
Reciprocating surface grinding
Conventional ceramic
for non and low-alloyed steels

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
SD33A		●	●	●	●	●						●
SD56A			●		●	●						●
F13A			●	●	●	●						●

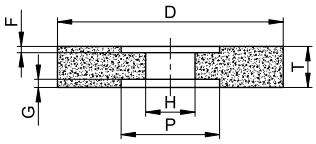
Recommended stock type



Shape 1



Shape 5



Shape 7

Reciprocating grinding wheels are primarily used for rough and fine grinding in machine construction and mould making. The aim is to achieve even and straight workpiece surfaces. Using highly porous grinding wheels and special aluminium oxides leads to an optimum surface result and a high stock removal rate.

Exceptional grinding results are achieved thanks to grade and structure specifications tailored to non and low-alloyed steels.

	Shape	Type no.	DxTxH	PxF	Specification	Comments
	1	566308	205x13x31,75		SD33A46JJ8PVK3F	
		498701	225x25x51		SD33A46JJ8PVK3F	
		331692	250x25x76,2		SD33A46JJ8PVK3F	
		351901	300x30x76,2		SD33A46JJ8PVK3F	
		936929	300x50x127		SD33A46JJ8PVK3F	
		56484	350x50x127		SD33A46JJ8PVK3F	For rough grinding operations
		215986	350x40x127		SD33A46JJ8PVK3F	
		302416	355x50x127		SD33A46JJ8PVK3F	
		803992	400x40x127		SD33A46JJ8PVK3F	
		64598	400x50x127		SD33A46JJ8PVK3F	
		140088	400x60x127		SD33A46JJ8PVK3F	
		295600	400x80x127		SD33A46JJ8PVK3F	
		664544	205x13x31,75		SD33A80JJ8PVK3F	
		664545	225x25x51		SD33A80JJ8PVK3F	
		664546	250x25x51		SD33A80JJ8PVK3F	
		664548	250x25x76,2		SD33A80JJ8PVK3F	For finer surface finishes
		664549	300x30x76,2		SD33A80JJ8PVK3F	
		664552	300x50x76,2		SD33A80JJ8PVK3F	
		666533	350x40x127		SD33A80JJ8PVK3F	
		664558	350x50x127		SD33A80JJ8PVK3F	

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	Shape	Type no.	DxTxH	PxF	Specification	Comments
	1	666530	400x40x127		SD33A80JJ8PVK3F	For finer surface finishes
	1	441403	200x20x51		F13A46HH11PV	
		441401	225x25x51		F13A46HH11PV	
		441399	250x25x51		F13A46HH11PV	
		469827	250x25x76,2		F13A46HH11PV	
		365997	300x30x76,2		F13A46HH11PV	
		665267	300x50x76,2		F13A46HH11PV	
		665269	300x50x127		F13A46HH11PV	
		665282	350x40x127		F13A46HH11PV	
		665294	350x50x127		F13A46HH11PV	For rough grinding operations
		665295	400x40x127		F13A46HH11PV	
		665296	400x50x127		F13A46HH11PV	
	1	664563	225x25x51		SD56A46II8PVK3F	
		664566	250x25x76,2		SD56A46II8PVK3F	
		849597	300x30x76,2		SD56A46II8PVK3F	
		524016	350x40x127		SD56A46II8PVK3F	
		357751	355x50x127		SD56A46II8PVK3F	
		117241	400x50x127		SD56A46II8PVK3F	
		793338	400x60x127		SD56A46II8PVK3F	
	5	467466	350x50x127	200x10	SD33A46JJ8PVK3F	
		548613	400x50x127	200x10	SD33A46JJ8PVK3F	
		664574	300x50x127	190x10	SD33A46II8PVK3	
		664584	300x50x76,2	155x10	SD33A80JJ8PVK3F	For finer surface finishes
	5	593712	400x50x127	200x10	F13A46HH11PV	For rough grinding operations
		665297	350x50x127	200x10	F13A46HH11PV	

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Recommended stock type

	Shape	Type no.	DxTxH	PxF	Specification	Comments
	5	664642	300x50x127	190x10	SD56A46II8PVK3F	For rough grinding operations
		231513	350x50x127	200x10	SD56A46II8PVK3F	
		557153	400x50x127	200x10	SD56A46II8PVK3F	
		664643	400x60x127	200x10	SD56A46II8PVK3F	

	Shape	Type no.	DxTxH	PxF/G	Specification	Comments
	7	665281	300x50x76.2	155x10/10	SD33A46JJ8PVK3F	For rough grinding operations
		665287	350x50x127	200x10/10	SD33A46JJ8PVK3F	
		664646	400x80x127	190x15/15	SD33A46JJ8PVK3F	
		664647	400x100x127	200x20/30	SD33A46JJ8PVK3F	
		664645	400x60x127	200x10/10	SD33A46JJ8PVK3F	
		664648	300x50x76.2	155x10/10	SD33A80JJ8PVK3F	For finer surface finishes
	7	664506	300x50x76.2	155x10/10	F13A46HH11PV	For rough grinding operations
		665278	400x80x127	190x15/15	F13A46HH11PV	
	7	109336	300x50x76.2	155x10/10	SD56A46II8PVK3F	
		664657	400x60x127	200x10/10	SD56A46II8PVK3F	
		664658	400x80x127	190x15/15	SD56A46II8PVK3F	

Breadth of product range*

SD33A	46	I	8	Non-stock item	SD33A	80	J	8	Non-stock item
SD33A	46–100	H–J	5–9	8 weeks DT	SD33A	46–100	H–J	5–9	8 weeks DT

SD56A	46	H	8	Non-stock item	F13A	46	HH	11	Non-stock item
SD56A	46–100	H–J	5–9	8 weeks DT	F13A	46–120	FF–HH	11–12	8 weeks DT

SD33A	46	I	8	Non-stock item	SD33A	80	J	8	Non-stock item
SD33A	46–60	H–J	5–9	8 weeks DT	SD33A	70–100	H–J	5–9	8 weeks DT

**For production reasons, the minimum quantity ordered may differ from non-stock types.*

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Alternative stock type

Shape	Type no.	DxTxH	PxF	Specification
1	96235	350x40x127		SD35A36JJ7PVK3F
	12950	400x50x127		SD35A36JJ7PVK3F
	33502	250x40x76,2		SD44A46JJ7PVK3F
	61571	350x50x127		SD44A46JJ7PVK3F
	32965	150x13x32		SD33A60JJ7PVK3F
	850504	180x13x31,75		89A 60 K5A V217
	228819	250x40x76,2		SD33A46JJ7PVK3F
5	235264	400x50x127	200x10	SD35A36JJ8PVK3F
	369514	350x50x127	190x10	SD33A46JJ8PVB3
	123064	400x50x127	200x10	SD33A46JJ8PVB3

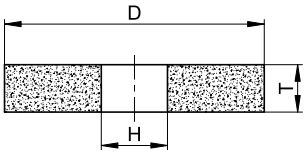
Alternative stock type

Shape	Type no.	DxTxH	PxF/G	Specification
7	8749	300x50x76.2	155x10/10	SD15A36JJ8PVK3F
	641286	300x50x76.2	155x10/10	SD33A60JJ11PVK3F
	493780	400x63x127	200x10/10	SD33A46JJ11PVB3F
	34211468	400x100x127	190x40/10	SD33A46JJ8PVO3F
	67472	400x100x127	200x20/35	SD33A46II8PVK3F
	122991	400x75x127	200x10/20	SD33A46II8PVO3F
	235260	400x75x127	200x10/20	SD33A46JJ8PVB3
	63824	400x100x152.4	220x15/15	SD33A46JJ8PVB3
	235261	400x75x127	200x10/20	SD56A46JJ8PVK3F
	34291849	600x100x304.8 3	90x15/15	SD56A46JJ8PVB3

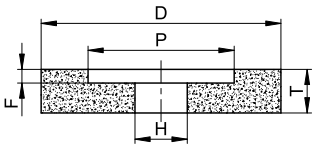
Reciprocating surface grinding
Conventional ceramic
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
454A, 92A, SD83A, SD78A		●		●		●	●					●

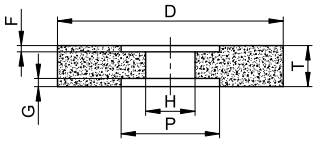
Recommended stock type



Shape 1



Shape 5



Shape 7

This reciprocating grinding wheel can be used universally on all high-alloyed steels and HSS. This is achieved by using special aluminium oxides and mixtures with sintered aluminium oxides combined with special bond systems.
Maximum stock removal rates can be achieved with sintered aluminium oxide mixtures such as 454A. The next highest quality line is the resin-bonded VIB STAR CBN wheel from TYROLIT.

	Shape	Type no.	DxTxH	PxF	Specification	Comments
	1	306283	200x20x32		SD83A60II7PVK8F	
		34074562	200x20x51		SD83A60II7PVK8F	
		162057	200x25x76,2		SD83A60II7PVK8F	
		664623	205x13x31,75		SD83A60II7PVK8F	
		664383	225x25x51		SD83A60II7PVK8F	
		664384	250x25x51		SD83A60II7PVK8F	
		664389	250x25x76,2		SD83A60II7PVK8F	
		664390	300x30x76,2		SD83A60II7PVK8F	
		664393	300x50x127		SD83A60II7PVK8F	
		664391	300x50x76,2		SD83A60II7PVK8F	
		494874	350x40x127		SD83A60II7PVK8F	
		664394	350x50x127		SD83A60II7PVK8F	
		664396	400x40x127		SD83A60II7PVK8F	
		664397	400x50x127		SD83A60II7PVK8F	
		333396	400x60x127		SD83A60II7PVK8F	
		664398	400x80x127		SD83A60II7PVK8F	
	1	441342	200x20x51		SD78A46II8PVB3F	For rough grinding operations
		664401	205x13x31,75		SD78A46II8PVB3F	
		228481	225x25x51		SD78A46II8PVB3F	
		85536	250x25x51		SD78A46II8PVB3F	
		248826	250x25x76,2		SD78A46II8PVB3F	
		664402	300x30x76,2		SD78A46II8PVB3F	

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	Shape	Type no.	DxTxH	PxF	Specification	Comments
	1	635305	300x50x76,2		SD78A46II8PVB3F	
		441348	300x50x127		SD78A46II8PVB3F	
		441350	350x40x127		SD78A46II8PVB3F	
		441351	350x50x127		SD78A46II8PVB3F	For rough grinding operations
		524159	400x40x127		SD78A46II8PVB3F	
		630054	400x50x127		SD78A46II8PVB3F	
		476380	400x80x127		SD78A46II8PVB3F	
		664406	225x25x51		SD78A80II8PVB3F	
		664407	250x25x51		SD78A80II8PVB3F	
		664409	250x25x76,2		SD78A80II8PVB3F	
		664410	300x30x76,2		SD78A80II8PVB3F	
		311791	300x50x76,2		SD78A80II8PVB3F	For finer surface finishes
		664412	300x50x127		SD78A80II8PVB3F	
		664419	350x40x127		SD78A80II8PVB3F	
		664420	350x50x127		SD78A80II8PVB3F	
		664423	400x40x127		SD78A80II8PVB3F	
		664426	400x50x127		SD78A80II8PVB3F	
	5	664451	300x50x127	190x10	SD83A60II7PVK8F	
		664452	350x50x127	200x10	SD83A60II7PVK8F	
		664453	400x50x127	200x10	SD83A60II7PVK8F	
		664455	400x60x127	200x10	SD83A60II7PVK8F	
	5	664459	300x50x127	190x10	SD78A46II8PVB3F	
		664465	300x50x76,2	155x10	SD78A80II8PVB3F	
		441352	350x50x127	200x10	SD78A46II8PVB3F	
		664474	350x50x127	200x10	SD78A80II8PVB3F	
		593711	400x50x127	200x10	SD78A46II8PVB3F	
		664476	400x50x127	200x10	SD78A80II8PVB3F	
		664463	400x60x127	200x10	SD78A46II8PVB3F	

	Shape	Type no.	DxTxH	PxF/G	Specification
	7	664485	300x50x76,2	155x10/10	SD83A60II7PVK8F
		664490	400x60x127	200x10/10	SD83A60II7PVK8F
		664493	400x80x127	190x15/15	SD83A60II7PVK8F
		359403	300x50x76,2	155x10/10	SD78A46II8PVB3F
		664498	300x50x76,2	155x10/10	SD78A80II8PVB3F
		566387	350x50x127	200x10/10	SD78A46II8PVB3F
		512393	400x80x127	190x15/15	SD78A46II8PVB3F
		664497	400x60x127	200x10/10	SD78A46II8PVB3F
		664504	400x80x127	190x15/15	SD78A80II8PVB3F
		34291850	400x75x127	200x10/20	SD78A46II8PVB3F
		34291911	450x76x203,2	280x10/20	SD78A46II8PVB3F

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Breadth of product range*

SD83A	60	J	10	Non-stock item	SD78A	46	H	8	Non-stock item
SD83A	46–80	I–K	8–11	8 weeks DT	SD78A	46–100	H–J	5–9	8 weeks DT

**For production reasons, the minimum quantity ordered may differ from non-stock types.*

Alternative stock type

Shape	Type no.	DxTxH	PxF	Specification
1	34074549	180x13x32		SD83A60II7PVK8F
	34074262	180x20x32		SD83A60HH7PVK8F
	180994	200x10x51		454A 601 L5 V3
	494254	200x20x31,75		454A 601 L7G V3
	305260	200x20x32		454A 461 L7G V3
	294602	200x20x51		SD83A46II8PVK8
	34162515	200x20x51		SD83A46JJ9PVK8
	30271	250x25x76		454A 601 L5 V3 40
	311922	250x25x76		SD83A46II8PVK8F
	34162514	250x25x76		SD83A46JJ9PVK8
	34062640	250x25x76,2		SD83A60II7PVK8F
	212627	250x25x76,2		454A 601 L7G V3
	305269	300x32x127		454A 462 H5 V3
	305279	350x40x127		454A 462 H5 V3
	305281	350x50x127		454A 462 H5 V3
	305285	400x50x127		454A 462 H5 V3
	314990	180x13x32		SD33A60II7PVB3F
	344194	180x16x32		SD33A46JJ7PVB3F
	344195	180x20x32		SD33A46JJ7PVB3F
	361668	500x80x203,2		SD33A54II10PVK3F
	307001	400x50x127		SD33A46II8PVB3S
	749042	180x16x32		92A 602 H23 V237 W4 32
	749043	200x20x32		92A 602 H23 V237 W4
	713071	250x25x76,2		SD78A46II8PVK3F

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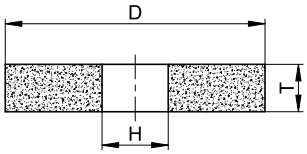
Shape	Type no.	DxTxH	PxF	Specification
1	590725	300x50x127		92A 462 H23 V237 W2
	577274	300x50x76,2		SD65A46II8PVK3F
	57038	350x50x127		SD78A46JJ8PVK3F
	259325	400x50x127		SD65A46II8PVK3F
	733646	400x50x127		SD78A46II8PVK3F
	554635	400x50x127		SD78A46JJ9PVK3
5	494274	180x25x31,75	105x12	454A 601 L7G V3
	197044	350x50x127	200x10	SD83A54II8PVK8
	293802	400x50x127	190x10	SD83A46II8PVK8F
	36579	400x50x127	200x10	SD83A60II7PVK8F
	657669	400x50x127	190x10	SD65A46II8PVK3F
	280358	300x50x127	190x10	F16A60HH11PV
	12696	350x50x127	190x10	F16A60HH12PV
	110964	350x50x127	190x10	F18A80GG11PV
	12695	400x50x127	200x10	F16A60HH12PV
	92284	400x50x127	200x10	F18A80GG11PV
Shape	**Type no.**	**DxTxH**	**PxF/G**	**Specification**
7	293865	300x50x76,2	155x10/10	SD83A46II8PVK8F
	232678	400x75x127	215x10/20	SD83A54JJ9PVK8
	232665	400x100x152,4	220x15/10	F18A70GG11PV
	94720	400x75x127	200x10/20	F16A60HH12PV
	114648	450x76x203,2	280x10/20	F16A60HH12PV

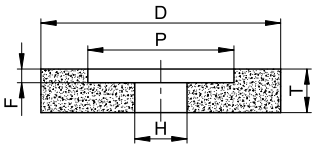
Reciprocating surface grinding
Conventional ceramic
for stainless steel

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
SD46A		●	●	●	●		●					●
SD83A				●	●	●	●					●

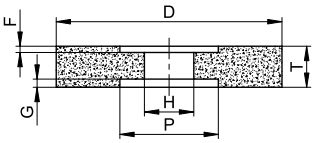
Recommended stock type



Shape 1



Shape 5



Shape 7

The granulation SD46 and SD83A are a cost-effective solution for reciprocating surface grinding of stainless steel/INOX. Thanks to their special grain shape they offer cool grinding as well as high cutting ability.

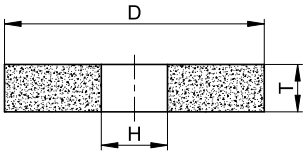
Due to a variety of shapes and dimensions, a large part of applications can be covered.

	Shape	Type no.	DxTxH	PxF/G	Specification
	1	664383	225x25x51		SD83A60II7PVK8F
		664384	250x25x51		SD83A60II7PVK8F
		664397	400x50x127		SD83A60II7PVK8F
	1	27420	400x50x127		SD46A54II9PVK3
	5	36579	400x50x127	200x10	SD83A60II7PVK8F
		657665	400x50x127	190x10	SD46A54II9PVK3
	7	10845	300x50x76.2	155x10/10	SD46A54II9PVK3

Reciprocating surface grinding
Conventional ceramic
for tungsten carbide and cast iron

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C	●	●			●	●	●	●	●	●		●

Recommended stock type



Shape 1

The silicon carbide wheel is a cost-effective variant for machining tungsten carbide for secondary applications. It really comes into its own when machining castings and nonferrous metals.
This silicon carbide wheel is a good alternative for working on nitrified workpieces with simple profiles or wear-resistant thermal sprayed alloys, as it can be profiled with standard diamond dressing tools.

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	664530	300x40x127	C 801 H8A V18 50	50
		664535	400x40x127	C 801 H8A V18 50 A	50
		664536	400x50x127	C 801 H8A V18 50 A	50
		36890	300x20x127	C 60 J11 V18	40
		36918	300x40x127	C 60 J11 V18	40

Breadth of product range*

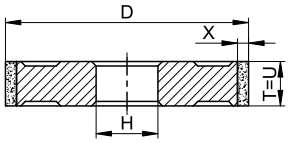
C	80	H	8	Non-stock item
C	46–180	F–I	5–8	8 weeks DT

**For production reasons, the minimum quantity ordered may differ from non-stock types.*

VIB STAR reciprocating surface grinding
CBN resin
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
B		●		●		●	●					●

Recommended stock type



Shape 1A1

The VIB STAR reciprocating grinding wheel is equipped with a vibration-reducing core that ensures a consistent and quiet grinding process.The constant self-sharpening effect guarantees consistent power consumption and therefore high economic efficiency.
Low wear results in a high level of dimensional accuracy on the workpiece, thereby reducing dimensional inspections to a minimum.

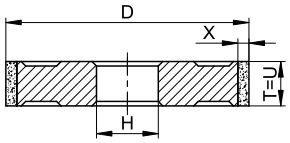
	Shape	Type no.	DxTxH	U-X	Specification	Vmax m/s
	1A1	34448295	200x15x51	15-3	51B 126 C50 B VIB-STAR	63
		34448296	250x15x51	15-3	51B 126 C50 B VIB-STAR	63
		34448298	300x20x76,2	20-3	51B 126 C50 B VIB-STAR	63
		34448299	300x20x127	20-3	51B 126 C50 B VIB-STAR	63
		34448297	300x20x76,2	20-5	51B 126 C50 B VIB-STAR	63
		34448311	350x20x127	20-3	51B 126 C50 B VIB-STAR	63
		34448312	350x20x127	20-3	51B 126 C75 B VIB-STAR	63
		34448300	350x20x127	20-5	51B 126 C50 B VIB-STAR	63
		34447898	400x20x127	20-3	51B 126 C50 B VIB-STAR	63
		34448314	400x20x127	20-5	51B 126 C50 B VIB-STAR	63
		34448313	400x30x127	30-3	51B 126 C50 B VIB-STAR	63

Please find information on dressing and sharpening from page 138.

VIB STAR reciprocating surface grinding
Diamond resin
for tungsten carbide and industrial ceramics

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
D						●	●			●

Recommended stock type



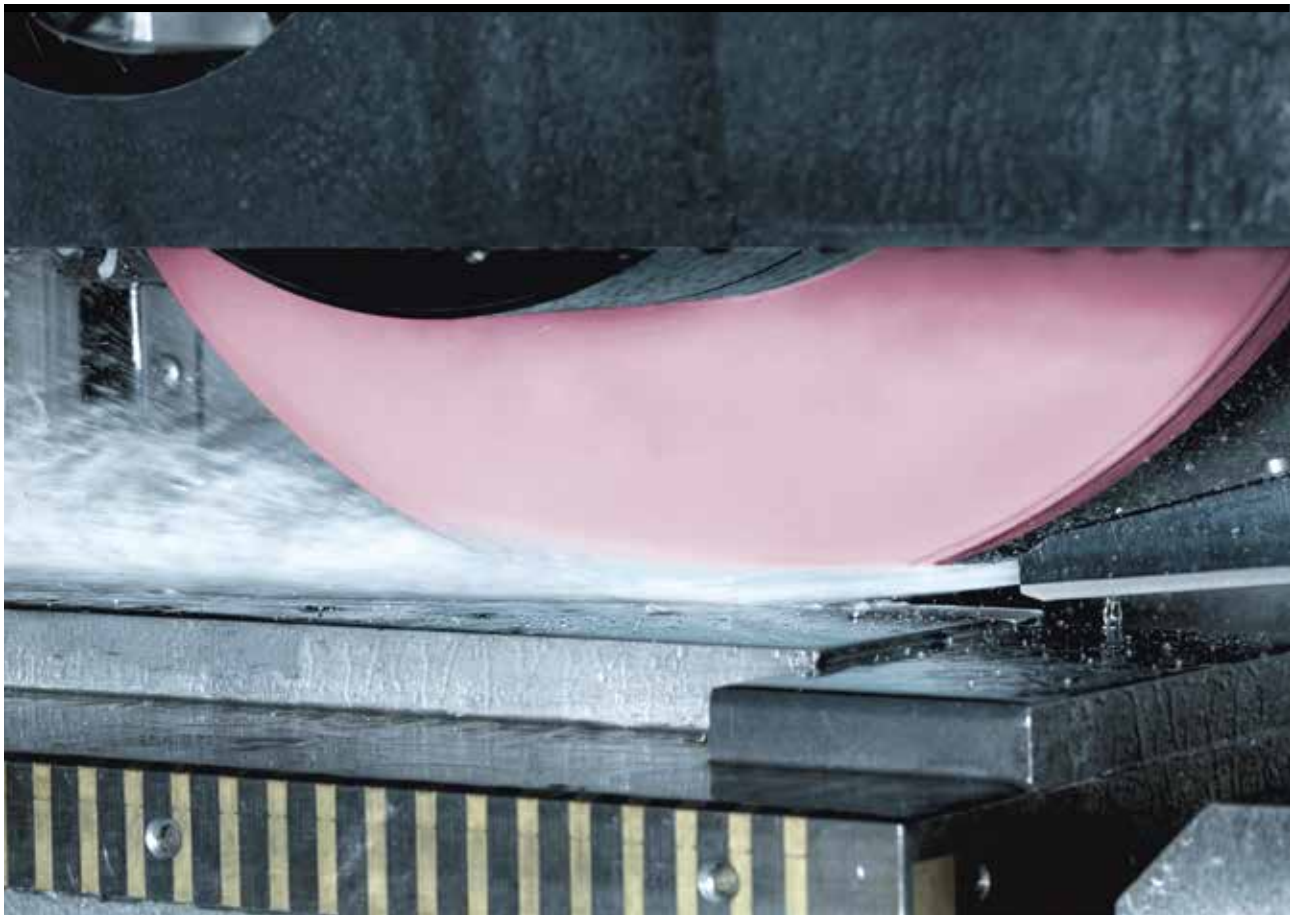
Shape 1A1

The resin-bonded diamond wheel with VIB STAR core is a particularly cost-effective solution for machining tungsten carbide. Low wear and a high level of dimensional accuracy are achieved by a constant self-sharpening effect.
The high stock removal rate of synthetic diamond in resinoid bonds provides a significant advantage over less expensive silicon carbide grinding wheels.

	Shape	Type no.	DxTxH	U-X	Specification	Vmax m/s
	1A1	34448315	200x10x51	10-3	11D 126 C75 B VIB-STAR	63
		34448316	250x15x51	15-3	11D 126 C75 B VIB-STAR	63
		34448317	300x20x76,2	20-3	11D 126 C75 B VIB-STAR	63
		34448318	300x15x127	15-3	11D 126 C75 B VIB-STAR	63
		34448319	300x20x127	20-3	11D 126 C75 B VIB-STAR	63
		34448320	350x20x127	20-3	11D 126 C75 B VIB-STAR	63
		34448322	400x20x127	20-3	11D 126 C75 B VIB-STAR	63

Please find information on dressing and sharpening from page 138.

1.3 Profile surface grinding
Profile surface grinding tool



Profile surface grinding

In the profile surface grinding process, pre-defined profiles are ground into the material. In order to achieve this, it is important to apply a “negative profile” through dressing the wheel. As a system supplier, TYROLIT offers not only suitable grinding wheels, but also an appropriate dresser for this purpose.

The precise profile surface grinding tools underlie an optimal quality assurance system and are produced using the most modern manufacturing technology and production facilities. We are therefore always able to comply with the requirements of our customers.
TYROLIT produces this tool with a highly porous structure and special aluminium oxides. This enables us to offer you optimum profile retention with minimum dressing diamond wear.

Application recommendation

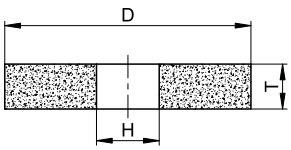
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
80A, SD46A		●	●	●	●		●					●	42, 43
C (nitriding-steel)					●	●	●	●	●			●	42

● Extremely suitable ● Limited suitability

Application tips

- Recommended operating speed: 25–30 m/s
- Infeed: 0.003–0.1 mm/stroke
- Traverse speed: 10–20 m/min
- Ensure good coolant supply
- For optimised dressing, see page 138 to 147

Shapes

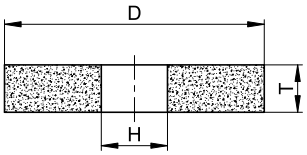


Shape 1

Profile surface grinding
Conventional ceramic
for high-alloyed steels

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
80A, SD46A		●	●	●	●		●					●
C (Nitriding steel)					●	●	●	●		●		●

Recommended stock type



Shape 1

For profile grinding we offer wheels with a high porous structure. For reciprocating grinding available in the grit sizes 80 and 120; for creep feed grinding in silicon carbide in grit size C180.

	Shape	Type no.	DxTxH	Specification
	1	148656	250x20x51	SD46A120JJ9PVK3
		163110	225x25x51	SD46A80JJ9PVK3
		337183*	250x20x51	C 180 F8A V18 P8

** For nitriding steel.*

Breadth of product range*

C	180	F	8	Non-stock item
C	120–180	F	8	8 weeks DT

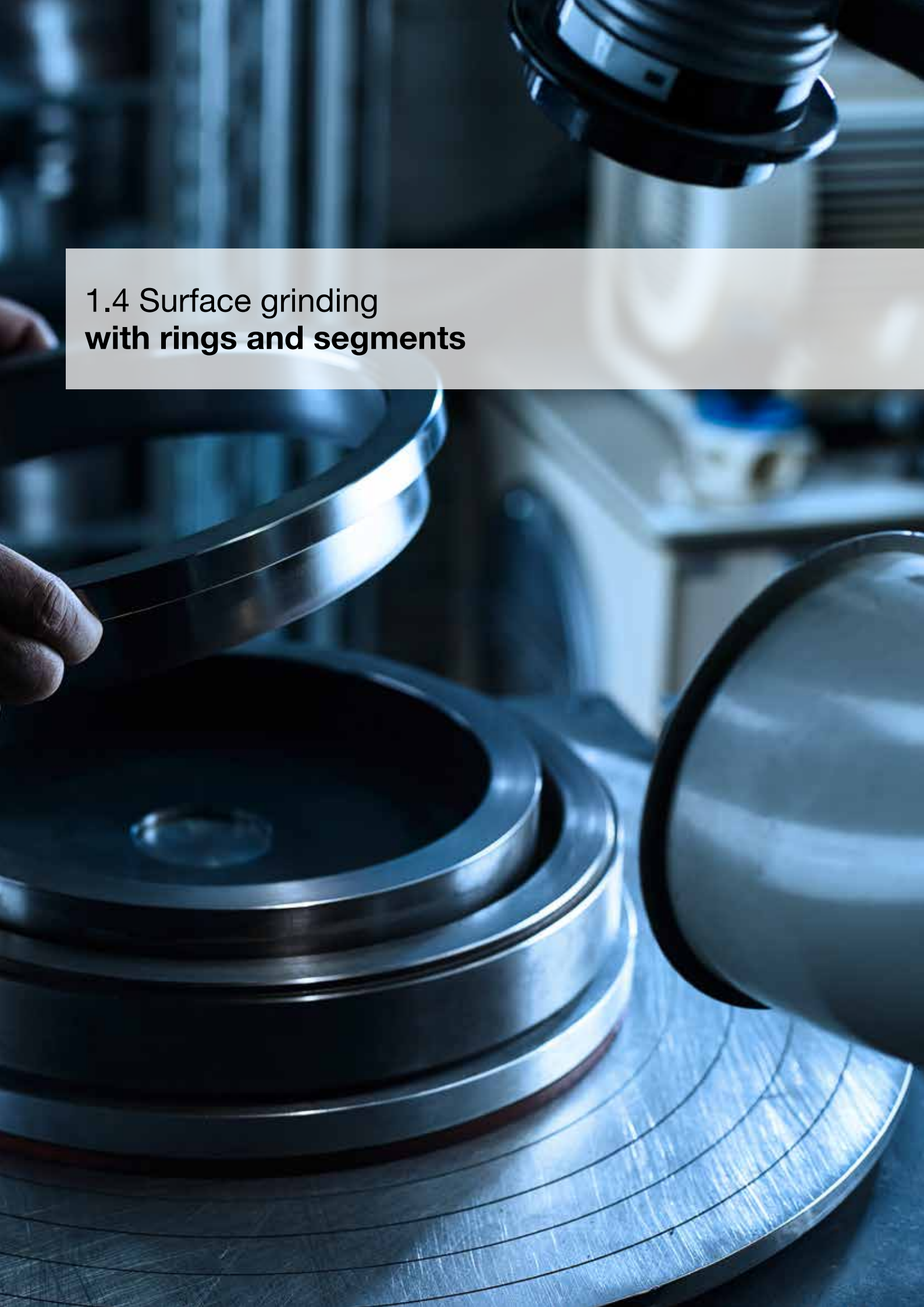
**For production reasons, the minimum quantity ordered may differ from non-stock types.*

▶

◀

Alternative stock type

Shape	Type no.	DxTxH	Specification
1	876610	180x13x32	80A 1209 I7G V112
	876616	180x6x32	80A 1209 I7G V112
	876611	200x13x32	80A 1209 I7G V112
	876618	180x10x32	80A 809 J7G V111
	688752	200x10x32	80A 809 J7G V111



1.4 Surface grinding **with rings and segments**

Surface grinding **with rings and segments**

In contrast to peripheral surface grinding, grinding is performed on the side when using rings and segments. This is often necessary because of the machine's construction and the workpiece dimensions which require a reduction in the permissible operating speed.

This process offers a particularly high grinding performance due to the coarse grit sizes used. To avoid breaks in the segments, which often occur during grinding, sufficient coolant supply is beneficial. However, not only particularly cool grinding, but also the self-sharpening effect of these tools make them extremely popular, especially for the grinding of planer knives. Here too, coarse and extremely porous tools with low hardness are used.

Application recommendation

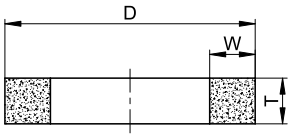
Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
SD33A		●		●	●	●						●
89A		●			●	●						●
SD83A, SD85A		●			●	●	●					●
SD65A, SD55A		●			●	●						●

● Extremely suitable ● Limited suitability

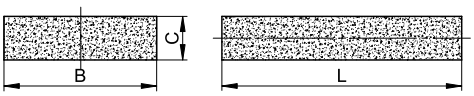
Application tips

- Recommended operating speed: 25–30 m/s
- Traverse speed: 2–10 m/min
- Infeed 0.005–0.03 mm/stroke
- Sparking out without infeed 1–3 strokes
- Ensure good coolant supply

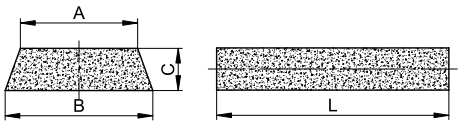
Shapes



Shape 2



Shape 3101

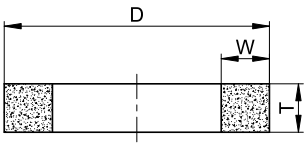


Shape 3109

Surface grinding with rings
Ceramic / Conventional resin
for high-alloyed steels and HSS

Specification	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Wet grinding
	Unhardened	Hardened	Unhardened	Hardened			
SD33A		●	●	●	●		●
89A		●		●	●		●
SD85A, SD83A		●		●	●	●	●
SD55A, SD65A		●		●	●		●

Recommended stock type

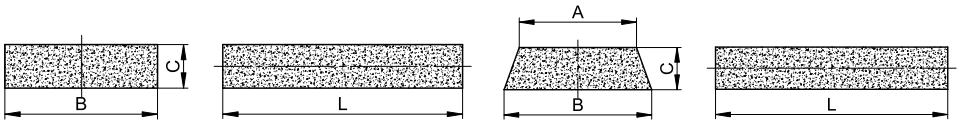


Shape 2

Rings for surface grinding are made of a highly porous vitrified bond in grit size 46 or resinoid bond in grit size 60. They are ideally suited for high-alloyed steels and HSS, and meet the most exacting surface quality requirements.
Ring wheels with a high stock removal rate are required above all for paper and planer knives.
Please be aware that resin-bonded ring wheels only feature limited coolant resistance.

Shape	Type no.	DxT-W	Specification	Comments
2	323627	200x90-W=20	89A 46 K14 B10 LW42	
	469614	200x100-W=20	89A 602 G4 B22 W4E	
	469619	250x100-W=25	89A 602 G4 B22 W4E	
	461733	200x90-W=20	SD55A46HH9PVK3F	
	468751	200x100-W=20	SD33A46II11PVK3F	
	664621	200x90-W=20	SD65A46II11PVB3F	Göckel, Reform (Planer and chopper knives)
	664622	200x100-W=20	SD65A46II11PVB3F	
103	709899		103K02	Accessories: Vinapas adhesive 0.5 kg

Surface grinding with segments
Conventional ceramic
for high-alloyed steels and HSS



Shape 3101 Shape 3109

Segments for surface grinding consist of an abrasive mixture like SD83 or SD85A for high-alloyed steels and HSS or SD33A for softer and low-alloyed steels. They offer high stock removal and are self-sharpening.

	Shape	Type no.	BxCxL / B/AxCxL	Specification
	3101	34040293	80x25x150	SD83A36II8PVK8
		664628	120x40x200	SD83A46JJ9PVK8F
	3109	570156	60/54x22x110	SD85A46KK7PVK8
		285743	70/64x25x150	SD33A46GG11PVK3F
		229899	103/94x38x200	SD83A46JJ9PVK8F
		664654	103/94x38x200	SD33A36II8PVK3F

1.5 Internal cylindrical grinding

Internal cylindrical grinding tools

Internal cylindrical grinding

The internal cylindrical grinding process is mainly used for the finishing of internal functional surfaces. The process is especially often used for the connection with an axle or a shaft. For example, gears, steering systems, injection systems or hollow shafts can be machined.

With vitrified-bonded tools, TYROLIT offers you optimum profile retention and, through cool grinding, a particularly low thermal load.

Depending on the application, we recommend our diamond and CBN wheels instead of conventional grinding tools.

Application recommendation

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A		●	●	●	●	●				●		●	54
97A, AT			●		●	●	●					●	55, 56
B			●		●	●	●				●	●	57, 58
D								●	●		●	●	58, 59

● Extremely suitable ● Limited suitability

Application tips

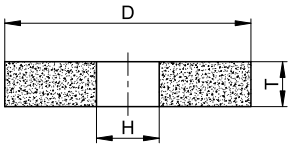
Conventional tool

- Recommended operating speed: 30–50 m/s
- Pre-grinding infeed: 0.02–0.05 mm/stroke
- Semi-finish grinding infeed: 0.01–0.005 mm/stroke
- Finish grinding infeed: 0.001–0.002 mm/stroke
- Spark-out infeed: 5 strokes
- Ensure good coolant supply

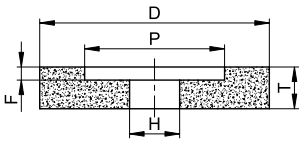
Diamond and CBN tool

- Recommended cutting speed for HSS and high-alloyed tool steel is 15–35 m/s
- Recommended cutting speed for cemented carbide and industrial ceramics is 15–25 m/s
- Cooling with emulsion recommended

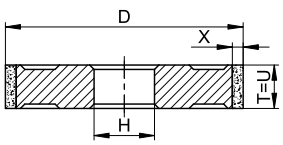
Shapes



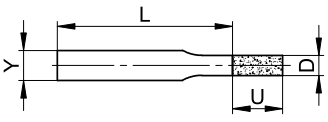
Shape 1



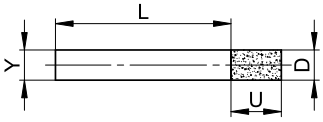
Shape 5



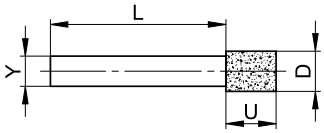
Shape 1A1



Shape 1A1W



Shape 1A1W 2

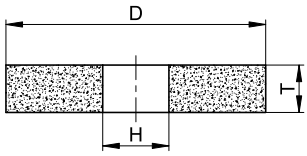


Shape 1A1W 3

Internal cylindrical grinding
Conventional ceramic
for non and low-alloyed steels

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A		●	●	●	●	●				●		●

Recommended stock type



Shape 1 Shape 5

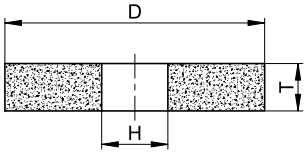
These universal internal cylindrical grinding wheels made from special aluminium oxide are used for the grinding of through-holes and alignment holes. They offer high stock removal rates and excellent shape retention.
Specification 89A60 is used primarily for soft steels and 89A80 for hardened steels.

	Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU
	1	234391	15x15x6		89A 602 J5 V111 50	50	25
		807005	15x15x6		89A 802 I5 V111 50	50	25
		234390	20x20x6		89A 602 J5 V111 50	50	25
		795621	25x25x10		89A 602 J5 V111 50	50	10
		664715	25x25x8		89A 802 I5 V111 50	50	10
		807013	25x25x8		89A 602 J5 V111 50	50	10
		664704	32x32x10		89A 602 J5 V111 50	50	10
		664706	40x40x13		89A 602 J5 V111 50	50	10
		664708	50x50x16		89A 602 J5 V111 50	50	10
	5	664768	20x20x6	13x7	89A 602 J5 V111 50	50	25
		664787	20x20x6	13x7	89A 802 I5 V111 50	50	25
		664772	25x25x10	16x10	89A 602 J5 V111 50	50	10
		664792	25x25x10	16x10	89A 802 I5 V111 50	50	10
	5	664793	32x32x10	18x16	89A 802 I5 V111 50	50	10
		664780	40x40x13	20x20	89A 602 J5 V111 50	50	10
		664794	40x40x13	20x20	89A 802 I5 V111 50	50	10
		664783	50x40x16	30x13	89A 602 J5 V111 50	50	10
		664785	50x50x16	25x25	89A 602 J5 V111 50	50	10
		664796	50x50x16	25x25	89A 802 I5 V111 50	50	10

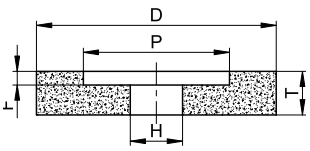
Internal cylindrical grinding
Conventional ceramic
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
97A, AT			●		●	●	●					●

Recommended stock type



Shape 1



Shape 5

This vitrified internal cylindrical grinding tool offers a cost effective alternative to CBN tools with good stock removal. The specification AT60 can be used universally. Our wide range means you can choose exactly the right tool for the application.

	Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU
	1	781647	15x15x6		97A 802 I5 V112 80	80	25
		781649	20x20x6		97A 802 I5 V112 80	80	25
		664669	25x25x10		97A 802 I5 V112 80	80	10
		664666	25x25x6		97A 802 I5 V112 80	80	10
		664668	25x25x8		97A 802 I5 V112 80	80	10
		664670	30x30x10		97A 802 I5 V112 80	80	10
		664672	32x25x10		97A 802 I5 V112 80	80	10
		747519	32x32x10		97A 602 K6 V112 80	80	10
		664673	32x32x10		97A 802 I5 V112 80	80	10
		747522	40x25x10		97A 602 K6 V112 80	80	10
		664675	40x40x13		97A 802 I5 V112 80	80	10
		664677	50x40x16		97A 802 I5 V112 80	80	10
		664679	50x50x16		97A 802 I5 V112 80	80	10
	1	664683	15x15x6		AT 60 J6 VCOL 80	80	25
		664684	20x20x6		AT 60 J6 VCOL 80	80	25
		664689	25x25x10		AT 60 J6 VCOL 80	80	10
		664686	25x25x8		AT 60 J6 VCOL 80	80	10
		664695	40x40x13		AT 60 J6 VCOL 80	80	10
		664696	50x40x16		AT 60 J6 VCOL 80	80	10
		664697	50x50x16		AT 60 J6 VCOL 80	80	10

▶

◀

Recommended stock type

	Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU
	5	664728	20x20x6	13x7	97A 802 I5 V112 80	80	10
		664738	25x25x10	16x10	97A 802 I5 V112 80	80	10
		664737	25x25x6	12x13	97A 802 I5 V112 80	80	10
		664742	32x32x10	18x16	97A 802 I5 V112 80	80	10
		664744	40x40x13	20x20	97A 802 I5 V112 80	80	10
		664746	50x40x16	30x13	97A 802 I5 V112 80	80	10
		664749	50x50x16	25x25	97A 802 I5 V112 80	80	10
	5	664757	20x20x6	13x7	AT 60 J6 VCOL 80	80	10
		664760	25x25x10	16x10	AT 60 J6 VCOL 80	80	10
		664759	25x25x6	12x13	AT 60 J6 VCOL 80	80	10
		664761	32x32x10	18x16	AT 60 J6 VCOL 80	80	10
		664764	40x40x13	20x20	AT 60 J6 VCOL 80	80	10
		664766	50x40x16	30x13	AT 60 J6 VCOL 80	80	10
		664767	50x50x16	25x25	AT 60 J6 VCOL 80	80	10

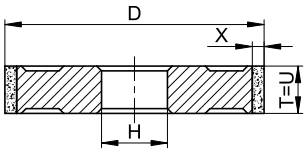
Alternative stock type

Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU
5	293798	25x25x10	16x10	454A 1002 K9 V3 80	80	10
	232811	40x40x10	16x20	455A 801 L6 V3 80	80	10
	747511	20x20x6	13x7	97A 602 K6 V112 80	80	10
	747516	25x25x10	16x10	97A 602 K6 V112 80	80	10
	747526	40x32x16	25x13	97A 602 K6 V112 80	80	10
	747530	50x40x16	30x13	97A 602 K6 V112 80	80	10

Internal cylindrical grinding
CBN resin-bonded
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
B			●		●	●	●				●	●

Recommended stock type



Shape 1A1

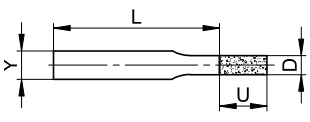
Compared to conventional ceramic grinding tools, CBN tools are characterised by a long lifetime and much shorter grinding times. They also offer a high level of dimensional accuracy.
This resin-bonded tool is primarily used for machining high-alloyed steels and HSS, but it can also be used for machining INOX.

	Shape	Type no.	DxTxH	U-X	Specification
	1A1	384481	12x10x6	10-2	B 126 C75 B 54 AL
		34937	15x10x6	10-2	B 126 C75 B 54 AL
		127356	20x10x6	10-2	B 126 C75 B 54 AL
		55282	25x10x8	10-3	B 126 C75 B 54 AL
		43017	30x10x10	10-3	B 126 C75 B 54 AL
		467422	40x10x10	10-3	B 126 C75 B 54 AL

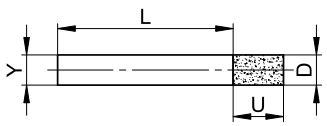
Internal cylindrical grinding
CBN electroplated
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
B			●		●	●	●				●	●

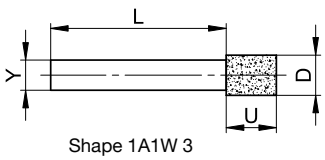
Recommended stock type



Shape 1A1W



Shape 1A1W 2



Shape 1A1W 3

▶

◀

Recommended stock type

Compared to conventional ceramic grinding tools, CBN tools are characterised by a long lifetime and much shorter grinding times. They also offer a high level of dimensional accuracy.

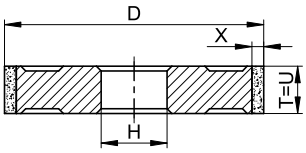
This electroplated tool is primarily used for machining high-alloyed steels and HSS, but it can also be used for machining INOX.

	Shape	Type no.	DxU	YxL	Specification	PU	Comments
	1A1W	477406	2x4	S3x50	B 91 GST	5	CBN, single layer
		477409	3x5	S3x50	B 91 GST	5	
		477411	4x5	S3x50	B 126 GST	5	
		477412	5x7	S3x50	B 126 GST	5	
		477413	6x7	S6x50	B 126 GST	5	
		477416	8x10	S6x50	B 126 GST	5	
		477418	12x10	S6x50	B 151 GST	5	

Internal cylindrical grinding
Diamond resin-bonded
for tungsten carbide and industrial ceramics

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
D						●	●		●	●

Recommended stock type



Shape 1A1

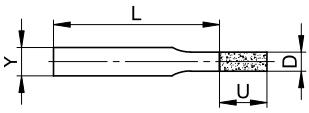
Compared to conventional ceramic grinding tools, diamond tools are characterised by a long lifetime and much shorter grinding times. They also offer a high level of dimensional accuracy.
This resin-bonded tool is primarily used for the machining of tungsten carbide and industrial ceramics.

	Shape	Type no.	DxTxH	U-X	Specification
	1A1	319980	30x10x10	10-3	D 91 C75 B 52 AL
		34172349	40x10x10	10-3	D 91 C75 B 52 AL

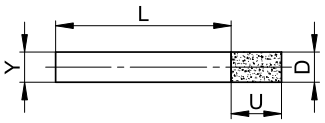
Internal cylindrical grinding
Diamond electroplated
for tungsten carbide and industrial ceramics

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
D								●	●		●	●

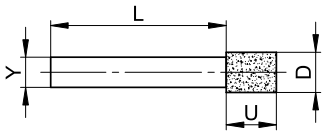
Recommended stock type



Shape 1A1W



Shape 1A1W 2



Shape 1A1W 3

This electroplated tool is primarily used for the machining of tungsten carbide and industrial ceramics. Compared to conventional ceramic grinding tools, diamond tools are characterised by a long lifetime and much shorter grinding times.

They also offer a high level of dimensional accuracy and exert a low grinding pressure. They are therefore ideally suited for machining small diameters.

	Shape	Type no.	DxU	YxL	Specification	PU	Comments
	1A1W	477335	1x4	S3x51	D 91 X GST	5	Diamond layer, single
		477342	2x4	S3x51	D 91 X GST	5	
		477346	3x5	S3x50	D 91 X GST	5	
		477349	4x5	S3x50	D 126 X GST	5	
		477352	6x7	S6x53	D 126 X GST	5	
		477356	8x10	S6x50	D 126 X GST	5	
		477358	10x10	S6x50	D 151 X GST	5	
		477360	15x10	S6x50	D 151 X GST	5	


TYROLIT
FA 92283539 89AFEIN

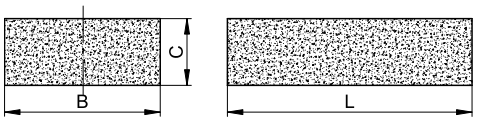
1.6 Hand-guided grinding
Files and stones

Hand-guided grinding

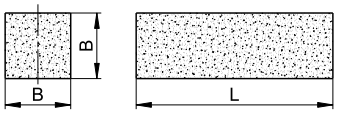
In the area of hand-guided tools, TYROLIT offers a wide selection of files, stones and hand rubbing bricks. We offer these tools in both aluminium oxide as well as silicon carbide.

Our files, bench stones, knife blade files and hollow chisel stones are available in different grit sizes from coarse to “Super”, depending on your intended area of application. A tool that is a must have for every workshop is the TYFIX hand rubbing brick. This enables easy removal of dirt, rust and paint from your surfaces.

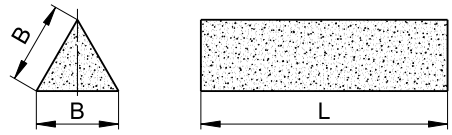
Shapes



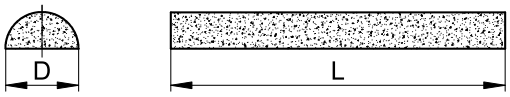
Shape 9010



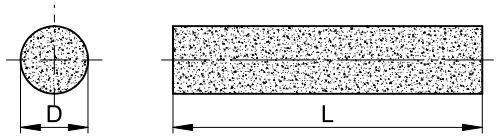
Shape 9011



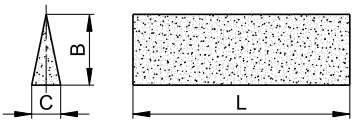
Shape 9020



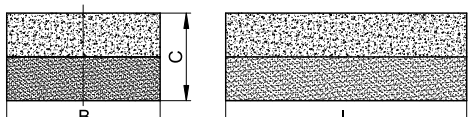
Shape 9040



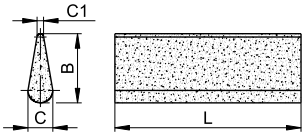
Shape 9030



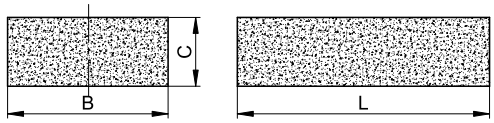
Shape 90FMK



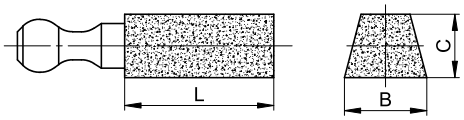
Shape 90K



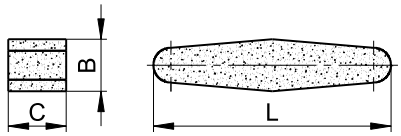
Shape 90HM



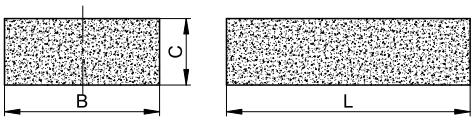
Shape 90B



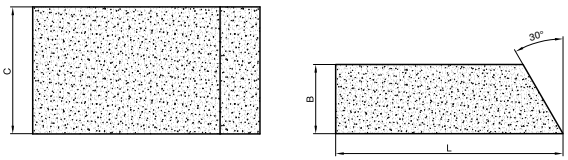
Shape 90FHG



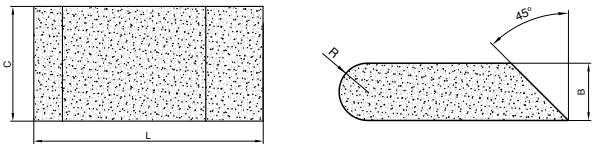
Shape 90W



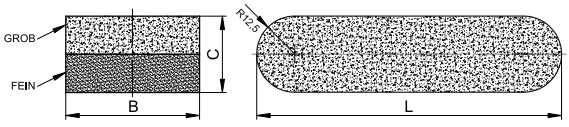
Shape 90TY



Shape 90TY-1003A

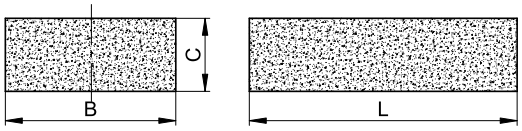


Shape 90TY-1002A



Shape 90SK

Flat stick
Vitrified-bonded

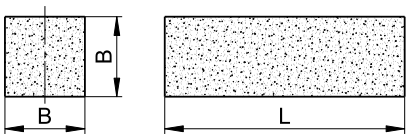


Shape 9010

These files are used in particular for machining tools in the wood and machine construction industries. Thanks to the varying grit sizes you can select the perfect tool for your application.
Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	9010	734089	19,1x9,5x100	89A 80 J4A V227		10
		734090	19,1x12,7x100	89A 80 J4A V227		10
		34369031	20x6x150	SD33A100GG8PVK3		10
		290181	20x8x150	SD44A100GG7PVK3F		10
		557	6x3x100	C MEDIUM	240	10
		556	6x3x100	C COARSE	120	10
		555	6x3x100	C FINE	400	10
		548	6x3x100	89A MEDIUM	240	10
		547	6x3x100	89A FINE	400	10
		566	30x13x200	C MEDIUM	240	10
		564	30x13x200	C FINE	400	10
		554	30x13x200	89A MEDIUM	240	10
		563	13x6x150	C MEDIUM	240	10
		562	13x6x150	C COARSE	120	10
		561	13x6x150	C FINE	400	10
		552	13x6x150	89A MEDIUM	240	10
		551	13x6x150	89A FINE	400	10
		560	10x5x100	C MEDIUM	240	10
		559	10x5x100	C COARSE	120	10
		558	10x5x100	C FINE	400	10
		550	10x5x100	89A MEDIUM	240	10
		549	10x5x100	89A FINE	400	10

Square file
Vitrified-bonded

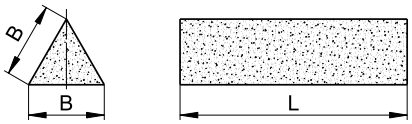


Shape 9011

The square files are used primarily for efficient machining of tools in the wood and machine construction industries. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.
Thanks to the varying grit sizes you can select the perfect tool for your application.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	9011	285090	19,1x100	89A 80 J4A V237		10
		290183	20x150	SD44A100GG7PVK3F		10
		728	6x100	89A FINE	400	10
		729	6x100	89A MEDIUM	240	10
		747	6x100	C FINE	400	10
		749	6x100	C MEDIUM	240	10
		732	10x100	89A MEDIUM	240	10
		733	10x100	89A FINE	400	10
		752	10x100	C FINE	400	10
		754	10x100	C MEDIUM	240	10
		738	13x150	89A FINE	400	10
		739	13x150	89A MEDIUM	240	10
		758	13x150	C FINE	400	10
		760	13x150	C MEDIUM	240	10
		741	16x150	89A FINE	400	10
		742	16x150	89A MEDIUM	240	10
		761	16x150	C FINE	400	10
		763	16x150	C MEDIUM	240	10
		746	20x200	89A MEDIUM	240	10
		767	20x200	C FINE	400	10
		768	20x200	C COARSE	120	10
		769	20x200	C MEDIUM	240	10
		6341	20x200	89A FINE	400	10

Triangular file
Vitrified-bonded

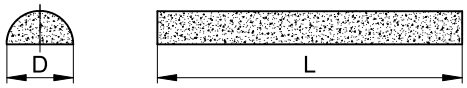


Shape 9020

These files are used in particular for machining tools in the wood and machine construction industries. Thanks to the varying grit sizes you can select the perfect tool for your application. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

	Shape	Type no.	BxL	Specification	Grit size	PU
	9020	501	6x100	89A MEDIUM	240	10
		518	6x100	C FINE	400	10
		519	6x100	C MEDIUM	240	10
		505	10x100	89A FINE	400	10
		504	10x100	89A MEDIUM	240	10
		523	10x100	C FINE	400	10
		525	10x100	C MEDIUM	240	10
		511	13x150	89A FINE	400	10
		510	13x150	89A MEDIUM	240	10
		531	13x150	C FINE	400	10
		533	13x150	C MEDIUM	240	10
		8807	16x150	89A FINE	400	10
		512	16x150	89A MEDIUM	240	10
		534	16x150	C FINE	400	10
		536	16x150	C MEDIUM	240	10
		8808	20x200	89A FINE	400	10
		516	20x200	89A MEDIUM	240	10
		542	20x200	C MEDIUM	240	10

Half round file
Vitrified-bonded

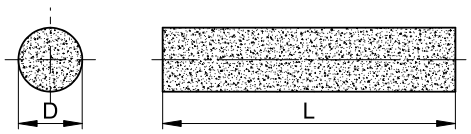


Shape 9040

The half round files are used primarily for efficient machining of tools in the wood and machine construction industries. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.
Thanks to the varying grit sizes you can select your tool based on the application.

	Shape	Type no.	DxL	Specification	Grit size	PU
	9040	6313	6x100	89A MEDIUM	240	10
		603	10x100	89A MEDIUM	240	10
		607	13x150	89A MEDIUM	240	10
		629	13x150	C FINE	400	10
		610	16x150	89A MEDIUM	240	10
		632	16x150	C FINE	400	10
		633	16x150	C MEDIUM	240	10
		637	20x200	C MEDIUM	240	10

Round file
Vitrified-bonded

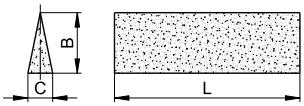


Shape 9030

These files are used in particular for machining tools in the wood and machine construction industries. Thanks to the varying grit sizes you can select the perfect tool for your application. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

	Shape	Type no.	DxL	Specification	Grit size	PU
	9030	614	6x100	C FINE	400	10
		616	6x100	C MEDIUM	240	10
		660	6x100	89A FINE	400	10
		656	10x100	C FINE	400	10
		664	10x100	89A FINE	400	10
		666	10x100	89A MEDIUM	240	10
		657	13x150	89A FINE	400	10
		671	13x150	89A MEDIUM	240	10
		691	13x150	C FINE	400	10
		693	13x150	C MEDIUM	240	10
		674	16x150	89A MEDIUM	240	10
		696	16x150	C FINE	400	10
		698	16x150	C MEDIUM	240	10

Knife blade file
Vitrified-bonded

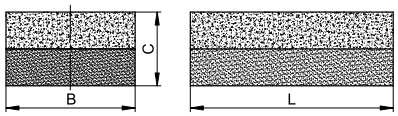


Shape 90FMK

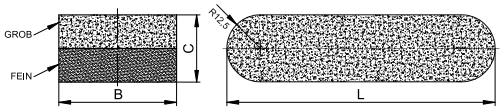
The ceramic knife blade file is used for grinding and whetting knife blades. It is ideally suited for machining blades made of HSS and high-alloyed steels.
Thanks to the varying grit sizes you can select your tool based on the application.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90FMK	6321	25x3x100	89A FINE	400	10
		6322	25x3x100	89A MEDIUM	240	10
		6324	25x3x100	C MEDIUM	240	10

Combination stone
Vitrified-bonded



Shape 90K

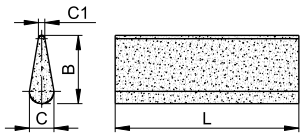


Shape 90SK

You can use the TYROLIT combination stone for deburring various workpieces. Due to its two different grit sizes, you will always be equipped for the respective application.
This product can also be used for whetting magnetic tables.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90K	185988	18x10x75	89A KOMBI	120/400	10
		186109	18x10x75	C KOMBI	120/400	10
		642	25x13x100	C KOMBI	120/400	10
		6314	25x13x100	89A KOMBI	120/400	10
		6317	40x20x125	C KOMBI	120/400	10
		640	40x20x125	89A KOMBI	120/400	10
		644	50x25x150	C KOMBI	120/400	10
		645	50x25x200	C KOMBI	120/400	10
		6315	50x25x150	89A KOMBI	120/400	10
		6316	50x25x200	89A KOMBI	120/400	10
	90SK	6318	25x20x100	C KOMBI	150/400	10

Hollow chisel stone
Vitrified-bonded

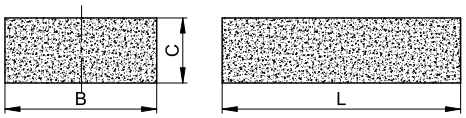


Shape 90HM

The ceramic hollow chisel stones are ideally suited for whetting narrow-toothed tools. Thanks to the varying grit sizes you can select your tool based on the individual application. Due to the conical shape it is possible for you to grind and deburr right down to the tooth base.

Shape	Type no.	BxC/C1xL	Specification	Grit size	PU
90HM	576	25x6/1x100	89A FINE	400	10
	577	25x6/1x100	89A MEDIUM	240	10
	583	25x6/1x100	C FINE	400	10
	584	25x6/1x100	C MEDIUM	240	10
	579	45x6/2x115	89A MEDIUM	240	10
	587	45x6/2x115	C MEDIUM	240	10
	9017	45x6/2x115	C FINE	400	10
	15885	45x6/2x115	89A FINE	400	10
	578	45x10/3x100	89A FINE	400	10
	586	45x10/3x100	C MEDIUM	240	10
	6309	45x10/3x100	89A MEDIUM	240	10
	6310	45x10/3x100	C FINE	400	10
	28465	45x10/3x100	89A SUPER T3	1200	10

Bench stone
Vitrified-bonded



Shape 90B

The TYROLIT bench stones are primarily used for sharpening and whetting knives and blades. They are therefore perfectly suited for all gardening and woodworking tools. Thanks to the varying grit sizes you can select your tool based on the individual application.

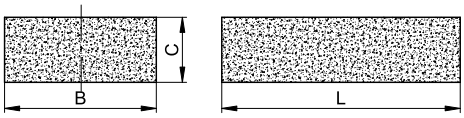
Shape	Type no.	BxCxL	Specification	Grit size	PU
90B	486453	25x10x150	SD33A120HH7PVB3		10
	469	25x13x100	C MEDIUM	240	10
	8804	25x13x100	89A MEDIUM	240	1
	20313	25x13x100	C FINE	400	10
	20311	25x6x100	C FINE	400	10
	28466	45x13x100	89A SUPER T3	1200	1
	456	50x25x150	89A MEDIUM	240	1
	457	50x25x150	89A FINE	400	1
	479	50x25x150	C FINE	400	1

▶

Bench stone
Vitrified-bonded

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90B	481	50x25x150	C MEDIUM	240	1
		28467	50x25x150	89A SUPER T3	1200	1
		461	50x25x200	89A FINE	400	1
		462	50x25x200	89A MEDIUM	240	1
		485	50x25x200	C MEDIUM	240	1
		486	50x25x200	C FINE	400	1

COARSE bench stone
Vitrified-bonded

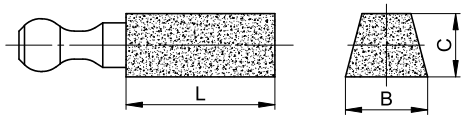


Shape 90B

Coarse bench stones from TYROLIT can be used to deburr large workpieces that have no surface quality requirements.
For example, these bench stones are used for pre-grinding large woodworking tools such as wood splitters.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90B	29382	50x25x200	1C 24 M5 V15	24	10
		103622	50x25x200	1C 36 L5 V15	36	10
		28869	50x50x200	1C 24 M5 V15	24	10

File with handle
Vitrified-bonded

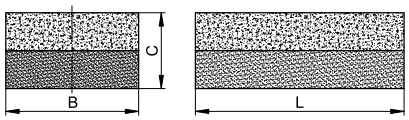


Shape 90FHG

The file with handle from TYROLIT can be used to deburr large workpieces that have no surface quality requirements.
For example, these bench stones are used for pre-grinding large woodworking tools such as wood splitters.

	Shape	Type no.	BxCxL	Specification
	90FHG	79664	40x30x230	C 70 O5 V18

Combined rubbing brick for tiles
Vitrified-bonded

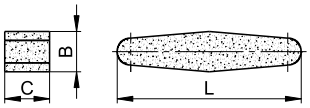


Shape 90K

The rubbing brick for tiles in shape 90K facilitates deburring and creating a bevelled edge on flags and tiles. Using the rubbing brick in shape 90RH you can machine and smooth floor screeds, concrete and plaster mixtures with ease.
You can achieve even surfaces when smoothing window and door lintels before coating them. It is also possible to work difficult-to-reach places with ease.

	Shape	Type no.	BxCxL	Specification
	90K	175220	80x30x160	C 24 M5 V15/C 70 L5 V15
		146640	120x30x200	C 24 M5 V15/C 70 L5 V15
	90RH	20450	90x40x205	1C 24 L5 V15

Whetstone
Vitrified-bonded

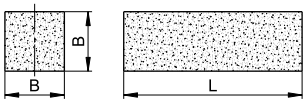


Shape 90W

Our whetstones are used for re-sharpening scythes and sickles. This tool is only available in a silicon carbide version.

	Shape	Type no.	BxCxL	Specification
	90W	362775	35x13x230	AC-V

Square file
Elastic-bonded

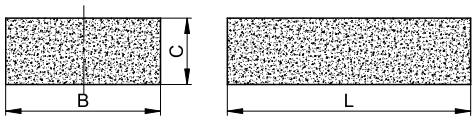


Shape 9011

The elastic-bonded square file can be used to lightly deburr and polish workpieces. Due to its composition it can be used on the widest variety of materials.
Select coarse grain for light deburring or fine grain for polishing, depending on the application.

	Shape	Type no.	BxL	Specification	PU	Comments
	9011	35677	15x100	C 80 - BE15	10	Deburring (COARSE)
		6335	20x100	C 400 - BE15	10	Polishing (FINE)

TYFIX hand rubbing brick
Elastic-bonded



Shape 90TY

The TYFIX hand rubbing brick is an eraser used to improve surfaces. Its main tasks include deburring, polishing, and removing rust, dirt and paint.
The TYFIX is especially suited for use in the home to clean domestic appliances, pans, etc. made of stainless steel and aluminium. It can also be used to clean tile joints.

	Shape	Type no.	BxCxL	Specification	Grit size	Colour
	90TY	1870	40x20x50	C 100–BE5	100	GREEN
		501861	40x20x80	C MEDIUM	100	GREY
		1872	50x20x80	C 60–BE5	60	GREEN
		1873	50x20x80	C 100–BE5	100	GREEN
		1874	50x20x80	C 240–BE5	240	GREEN
		502437	55x30x110	C MEDIUM	100	DARK-BLUE
		502457	55x30x110	C FINE	240	LIGHT-BLUE

Lappers
Resin-bonded

The resin-bonded lappers are primarily used for deburring and lapping extremely hard materials. They are therefore the common choice for whetting tungsten carbide cutting edges.

This product is only available in a diamond grain version with a grit size of D35.

	Shape	Type no.	L	L2-W-X	Specification
	90H	91963	150	40-10-2	11D 35 C50 B 52 AL
		95717	150	25-10-2	11D 35 C50 B 52 AL

Diamond files
Galvanic-bonded

These galvanic-bonded diamond files are primarily used for machining hardened steels and tungsten carbide. However, they are also suitable for glass, ceramics and materials above 40 HRC.
This product is only available in a diamond grain design with a grit size of D126 and is standard equipment for every toolmaker. Fine grit sizes are available on request.

	Shape	Type no.	L	L2-W-XxY/AUFN	Specification	File shape
	90N	477289	140	70-5-1.5x3X70	D 126 GST	Flat point
		477422	140	70-5-1.5x3X70	D 126 GST	Flat
		477430	140	70-5-2x3X70	D 126 GST	Half round

1.7 Bench grinding wheels
Bench grinders

Bench grinding wheels

The bench grinder is a versatile machine used in many workshops for machining various materials. The TYROLIT range of bench grinding wheels therefore contains the right wheel for every material.

Wheels with the universal application specification impress in particular through their smooth running and easy handling. A reduction bush set is included in each package for proper assembly. The packaging itself is suitable for stacking on racks and thus saves space and storage costs.

Application recommendation

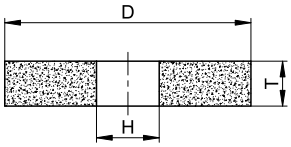
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
10A		●	●							●	●		76, 77
89A			●	●	●	●				●	●		78, 79
C					●	●	●	●		●	●		80, 81, 82

● Extremely suitable ● Limited suitability

Application tips

- Grinding unhardened, low-alloyed steels with regular aluminium oxide = 10A
- Regrinding HSS tools with white aluminium oxide = 89A
- Sharpening cemented carbide tipped tools only with silicon carbide = C

Shapes

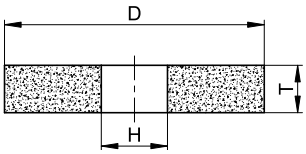


Shape 1

Bench grinding wheels
Conventional ceramic
for non and low-alloyed steels

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
10A		●	●							●	●	

Recommended stock type



Shape 1

Vitrified bonded bench grinding wheels are primarily used in workshops and repair companies. They can be used universally for grinding and sharpening various components. The specially tailored specifications enable them to be used for a wide range of applications, from coarse to fine grinding.

These wheels are delivered in packaging suitable for retailers so that they take up minimum space in storage. A reduction bush set is included in the packaging and can be reordered.

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	7205	150x20x32	10A 46 N5A V217	40
		2693	150x20x32	10A 60 M5A V217	40
		52223	150x25x32	10A 46 N5A V217	40
		2758	150x25x32	10A 60 M5A V217	40
		2962	175x25x32	10A 60 M5A V217	40
		68134	175x25x51	10A 60 M5A V217	40
		548815	175x32x32	10A 60 M5A V217	40
		600134	200x20x32	10A 36 N5A V217	40
		15842	200x20x32	10A 46 N5A V217	40
		15839	200x20x32	10A 60 M5A V217	40
		781702	200x20x51	10A 60 M5A V217	40
		31694	200x25x32	10A 46 N5A V217	40
		502978	200x25x31,75	10A 60 N5A V217	40
		9572	200x25x32	10A 60 M5A V217	40
		3217	200x25x32	10A 80 M5A V217	40
		116708	200x25x51	10A 46 N5A V217	40
		718361	200x25x51	10A 60 M5A V217	40
		664256	200x32x51	10A 36 N5A V217	40
		675264	200x32x51	10A 46 N5A V217	40
		516594	200x32x51	10A 60 M5A V217	40
		3474	250x25x32	10A 60 M5A V217	40
		664261	250x32x32	10A 36 N5A V217	40
		3538	250x32x32	10A 60 M5A V217	40
		737812	250x32x51	10A 60 M5A V217	40
		110032	300x40x51	10A 60 M5A V217	40
		34983	300x40x76	10A 60 M5A V217	40

▶

◀

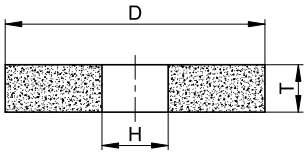
Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	34046758	125x15x32	10A 36 M5A V17	40
	34046770	125x15x32	10A 60 M5A V17	40
	147626	125x20x32	10A 60 M5A V17	40
	147698	125x20x32	10A 36 M5A V17	40
	34046759	150x15x32	10A 36 M5A V17	40
	34046772	150x15x32	10A 60 M5A V17	40
	146965	150x20x32	10A 601 M5A V217	40
	147574	150x20x32	10A 36 P5A V17	40
	147601	150x25x32	10A 36 P5A V17	40
	16577	175x20x32	10A 36 P5A V17	40
	147600	175x25x32	10A 36 P5A V17	40
	147656	200x20x40	10A 36 P5A V17	40
	146910	200x25x32	10A 361 P5A V17	40
	147652	200x25x51	10A 36 P5A V17	40
	34046763	200x32x40	10A 36 P5A V17	40
	34046781	200x32x40	10A 60 M5A V17	40
	34046764	250x25x40	10A 36 P5A V17	40
	34046765	250x32x40	10A 36 P5A V17	40
	147701	250x32x51	10A 36 P5A V17	40
	34046785	300x40x40	10A 60 M5A V17	40
	32981	350x50x127	10A 24 Q5A V17	40

Bench grinding wheels
Conventional ceramic
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A			●	●	●	●				●	●	

Recommended stock type



Shape 1

This wheel is preferable for grinding and sharpening temperature-sensitive steels and HSS tools. The use of aluminium oxide results in particularly cool grinding so that the workpiece is not subjected to additional thermal load.

We offer a wide spectrum of dimensions to cover the most common applications. A reduction bush set is included in the packaging and can be reordered.

▶

Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	34046786	125x15x32	89A 60 L5A V217	40
		2536	125x20x32	89A 60 M5A V217	40
		281719	125x20x32	89A 80 M5A V217	40
		449559	125x20x32	89A 46 M5A V217	40
		664052	150x13x25	89A 80 M5A V217	40
		34046788	150x15x32	89A 60 L5A V217	40
		2697	150x20x32	89A 46 M5A V217	40
		2699	150x20x32	89A 60 M5A V217	40
		764468	150x20x32	89A 80 M5A V217	40
		2762	150x25x32	89A 60 M5A V217	40
		147614	150x25x32	89A 80 L5A V217	40
		853353	150x25x32	89A 46 M5A V217	40
		2916	175x20x32	89A 60 M5A V217	40
		543615	175x20x32	89A 80 M5A V217	40
		2973	175x25x32	89A 80 L5A V217	40
		16022	175x25x32	89A 60 M5A V217	40
		377415	175x25x51	89A 80 M5A V217	40
		723118	175x25x51	89A 60 M5A V217	40
		3020	175x32x32	89A 60 M5A V217	40
		918448	175x32x32	89A 80 M5A V217	40
		541741	200x10x32	89A 60 L5A V217	40
		471114	200x20x31,75	89A 60 M5A V217	40
		3142	200x20x32	89A 46 M5A V217	40
		3145	200x20x32	89A 60 M5A V217	40
		820958	200x20x32	89A 80 M5A V217	40
		664048	200x20x51	89A 46 M5A V217	40
		826839	200x20x51	89A 80 M5A V217	40
		841086	200x20x51	89A 60 M5A V217	40
		3224	200x25x32	89A 60 M5A V217	40
		3220	200x25x32	89A 46 M5A V217	40
		39540	200x25x32	89A 60 M5A V217	40
		129550	200x25x32	89A 80 M5A V217	40
		33435	200x25x51	89A 80 L5A V217	40
		50184	200x25x51	89A 46 M5A V217	40
		534539	200x25x51	89A 60 M5A V217	40
		34046791	200x32x40	89A 60 L5A V217	40
		78379	200x32x51	89A 80 M5A V217	40
		99864	200x32x51	89A 46 M5A V217	40

◀

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	723117	200x32x51	89A 60 M5A V217	40
		831179	250x25x32	89A 60 M5A V217	40
		3545	250x32x32	89A 60 M5A V217	40
		126665	250x32x32	89A 80 M5A V217	40
		111799	250x32x51	89A 60 M5A V217	40
		34046794	300x40x40	89A 60 L5A V217	40
		867598	300x40x51	89A 60 M5A V217	40
		30840	300x40x76	89A 60 M5A V217	40
	1F	817006	250x10x20	89A 60 L5A V217	40

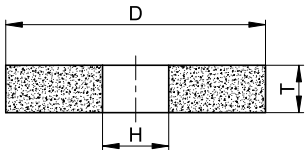
Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	73667	150x10x20	89A 80 L5A V55	40
	103872	150x20x16	89A 60 M5A V55	40
	413774	150x20x20	89A 60 L5A V217	40
	7210	150x20x32	89A 60 K5A V217	40
	122996	200x20x20	89A 60 L5A V217	40
	184247	200x20x20	89A 60 M5A V55	40
	3144	200x20x32	89A 60 K5A V217	40
	16615	200x20x32	89A 46 K5A V217	40
	68340	200x25x20	89A 60 M5A V55	40
	122997	200x25x20	89A 60 L5A V217	40
	3222	200x25x32	89A 60 K5A V217	40
	7374	200x25x32	89A 80 L5A V217	40
	146630	200x25x32	89A 461 K5A V217	40
	407610	250x10x32	89A 60 K5A V217	40
	127554	300x32x127	89A 602 K5A V217	40

Bench grinding wheels
Conventional ceramic
for tungsten carbide and cast iron

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C				●		●	●	●		●	●	

Recommended stock type



Shape 1

When sharpening solid carbide or tungsten carbide tipped tools, only wheels with silicon carbide specifications should be used. Due to their special grain shape you can achieve good results even on extremely hard workpieces.

This wheel can also be used for cast iron. A reduction bush set is included in the packaging and can be reordered.

Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	706631	125x15x32	C 602 J5 V15	40
		2529	125x20x32	C 80 J5 V15	40
		664185	150x13x25	C 80 J5 V15	40
		56155	150x16x32	C 80 J5 V15	40
		2658	150x20x20	C 80 J5 V15	40
		2680	150x20x32	C 46 K5 V15	40
		123633	150x20x32	C 80 J5 V15	40
		861009	150x20x32	C 60 K5 V15	40
		2751	150x25x32	C 46 K5 V15	40
		2753	150x25x32	C 80 J5 V15	40
		333180	150x25x32	C 60 K5 V15	40
		34165304	150x32x32	C 602 J5 V15	40
		2905	175x20x32	C 80 J5 V15	40
		2956	175x25x32	C 80 J5 V15	40
		9653	175x25x51	C 80 J5 V15	40
		76712	200x10x32	C 80 J5 V15	40
		7348	200x20x20	C 80 J5 V15	40
		3132	200x20x32	C 46 K5 V15	40
		3135	200x20x32	C 80 J5 V15	40
		596597	200x20x32	C 60 K5 V15	40

▶

◀

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	872497	200x20x51	C 80 J5 V15	40
		3186	200x25x20	C 80 J5 V15	40
		3206	200x25x32	C 46 K5 V15	40
		3210	200x25x32	C 80 J5 V15	40
		819893	200x25x32	C 60 K5 V15	40
		263506	200x25x51	C 60 K5 V15	40
		822622	200x25x51	C 80 J5 V15	40
		103851	200x25x76,2	C 80 J5 V15	40
		34165307	200x32x40	C 602 J5 V15	40
		9651	200x32x51	C 80 J5 V15	40
		879608	200x32x51	C 46 K5 V15	40
		75079	250x25x32	C 80 J5 V15	40
		49680	250x25x76	C 80 J5 V15	40
		58964	250x32x32	C 80 J5 V15	40
		822623	250x32x51	C 80 J5 V15	40
		822624	300x40x51	C 80 J5 V15	40
		9652	300x40x76	C 80 J5 V15	40

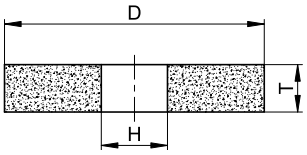
Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	11182	150x20x32	C 120 J5 V15	40
	146906	150x20x32	C 801 J5 V15	40
	450328	150x20x32	C 60 J5A V15	40
	146644	150x25x32	C 801 J5 V15	40
	3208	200x25x32	C 60 J5 V15	40
	72045	203x20x32	C 120 J5 V15	40
	59861	203x25x32	C 120 J5 V15	40
	28584	350x32x127	C 60 J5 V15	40

Bench grinding wheels
Conventional ceramic
for nonferrous metals

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
C	●					●		●	●	

Recommended stock type



Shape 1

An inhouse-developed clean-cutting specification for bench grinding wheels enables the grinding of nonferrous metals such as aluminium, aluminium base alloys, bronze, copper, copper alloys and titanium. High-quality silicon carbide provides for effortless surface grinding and deburring of workpieces. Through minimal clogging of the grinding wheel, dressing times are reduced and dressing cycles prolonged.

	Shape	Type no.	DxTxH	Specification	PU
	1	34287482	125x20x32	C46 H5A V18	1
		34287483	150x20x32	C46 H5A V18	1
		34287486	175x25x32	C46 H5A V18	1
		34287490	200x25x51	C46 H5A V18	1

Floorstand grinder accessories
Reduction bushes

The enclosed reduction bush set minimises the range of tools required and saves on storage space. Reduction bushes are available free of charge to be used with all bench grinding wheels.

	Shape	Type no.	DxTxH
	100RR	111434	32x19x16
		667841	51x10x31.75
		911408	51x9x32
		111436	76x9x40

1.8 Sharpening and polishing wheels
Bench grinders

Sharpening and polishing wheels

The bench grinder is a versatile machine used in many workshops for machining various materials. The TYROLIT range of bench grinding wheels therefore contains the right wheel for every material.

TYROLIT sharpening and polishing wheels are particularly elastic and provide for easy profiling. On the basis of their structure, they can quickly create the finest surfaces. When used at the recommended speed, they provide for a long tool lifespan and particularly cool grinding. Through their use, you improve the cutting ability of your cutting tools and benefit from the easiest handling. In this way, your tool cutting edges are quickly resharpened.

Application recommendation

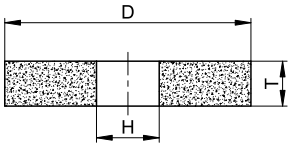
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
C		●	●	●	●	●	●	●			●		86
C	●	●	●	●	●	●	●	●	●	●	●		87

● Extremely suitable ● Limited suitability

Application tips

- Polishing steel, nonferrous heavy metal, precious metal and sintered metal or plastic (C240-BE15)
- Fine grinding of various precision mechanical components, like watches, glasses, medical technology (C150-BE13)
- Effect grinding (C46-BE16 and C46-BE19F)
- Deburring (C80-BE15)
- Whetting of all kinds of kitchen and pocket knives (C400-BE15)
- Not suitable for sharp edges, large burrs or high stock removal
- For whetting, deburring and sharpening knives, splitting tools and axes (C400-BE15)
- Dressing stone (ceramic bond) for elastic grinding wheels (see chapter “Dressing and sharpening”)
- Vs = 16–32 m/s maximum operating speed for floor-stand grinding

Shapes



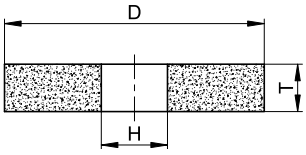
Shape 1

Sharpening wheel for cutting tool

for steel, HSS, stainless steel and tungsten carbide

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C		●	●	●	●	●	●	●			●	

Recommended stock type



Shape 1

This product was specially developed for sharpening whittlers. Its grit size and tailored bond system enable you to achieve particularly cool grinding. Its fine surface improves the cutting ability and lifetime of the cutting tools.
Ensure that you pay attention to the rotation direction of the wheel when in use. **The sharpening wheel must always move away from the cutting edge. In addition, the wheel flange diameter must be at least two thirds of the wheel diameter.**

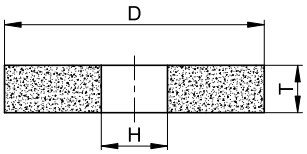
	Shape	Type no.	DxTxH	Specification	Vmax m/s	Degree of hardness	Comments
	1	10016	125x20x32	C 800 - BE11	25	Medium	Sharpening of whittlers
		7133	125x25x20	C 800 - BE11	25	Medium	
		2540	125x25x32	C 800 - BE11	25	Medium	
		669110	150x20x20	C 800 - BE11	25	Medium	
		7204	150x20x32	C 800 - BE11	25	Medium	
		669109	175x20x32	C 800 - BE11	25	Medium	

Fine grinding and polishing wheels

for steel, HSS, stainless steel, tungsten carbide and cast iron

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C	●	●	●	●	●	●	●	●	●	●	●	

Recommended stock type



Shape 1

The soft elastic specification of this wheel means it perfectly follows the contours of the workpiece and does not alter the surface geometry. It can be used for polishing, fine grinding, effect grinding, deburring, matting and whetting. However, it is not suitable for large burrs or high stock removal rates.

Shape	Type no.	DxTxH	Specification	Vmax m/s	Degree of hardness	PU	Comments
1	19435	125x20x20	C 400 - BE15	20	Medium	1	Sharpening of kitchen knives
	7203	150x20x32	C 400 - BE15	20	Medium	1	
	22411	200x25x32	C 400 - BE15	20	Medium	1	
	802276	150x10x25	C 150 - BE13	16	Soft	1	Surface improvement on pre-ground workpieces (low stock removal)
	2661	150x20x20	C 150 - BE15	20	Medium	1	
	71212	150x20x20	C 400 - BE16	32	Hard	1	
	7186	150x20x20	C 80 - BE15	20	Medium	1	
	22257	150x20x32	C 150 - BE16	32	Soft	1	
	320369	200x25x20	C 240 - BE15	20	Medium	1	
	7362	200x25x20	C 80 - BE15	20	Medium	1	
	32765	200x25x32	C 150 - BE15	20	Medium	1	

1.9 Saw sharpening tools
Saw sharpening

Saw sharpening

Only a sharp tool is a good tool. For this reason, TYROLIT produces an extensive range of grinding wheels for sharpening saws.

This spans everything from conventional grinding wheels through to diamond and CBN grinding tools. In conjunction with its proven application engineering service, TYROLIT provides specific solutions that ensure maximum customer benefit. Specially selected grain qualities and innovative bond systems with efficient grinding wheel design guarantee optimum quality at the cutting edges. TYROLIT is therefore your competent partner in the saw industry.

Application recommendation

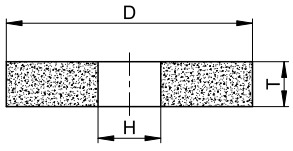
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
SA					●	●					●	●	94, 95, 96
A		●	●								●	●	95
88A, 89A, 50A			●		●	●					●	●	93, 94, 96, 97
455A, 765A					●							●	95
52A		●									●	●	95
D								●				●	98, 99, 100
B					●	●						●	101, 103
89A, 455A						●						●	102
55AC, 454A						●							104
C						●		●					103, 104

● Extremely suitable ● Limited suitability

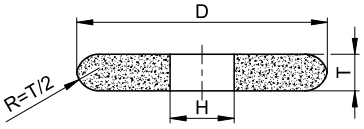
Application tips

- Operating speed: 25–40 m/s

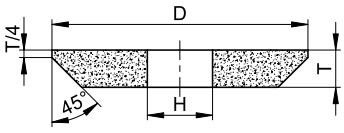
Shapes



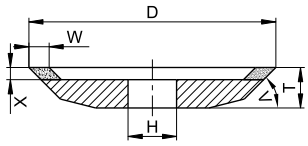
Shape 1



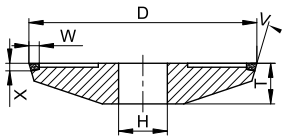
Shape 1F



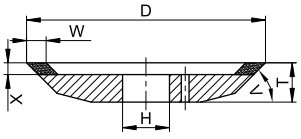
Shape 1C



Shape 4V2

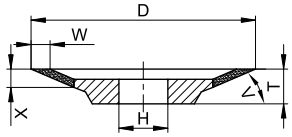


Shape 4B9

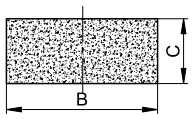


Shape 4V2H

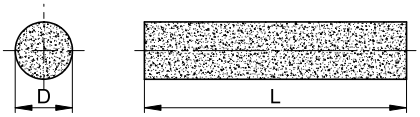
▶



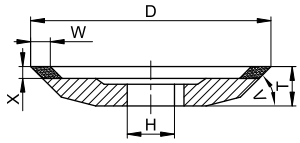
Shape 3V9



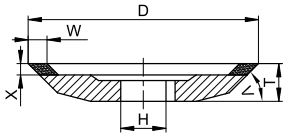
Shape 54SCHP / 90B



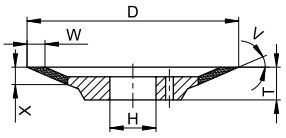
Shape 9030



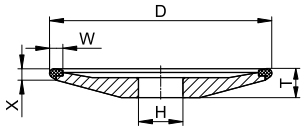
Shape 12V2



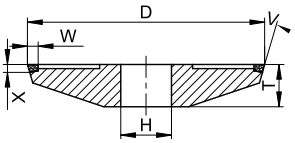
Shape 12V2N



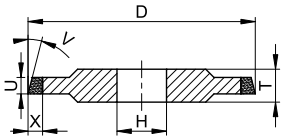
Shape 3V9H



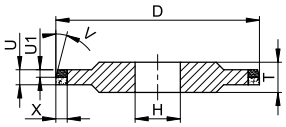
Shape 4C2



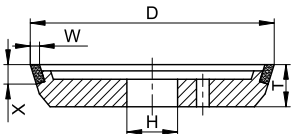
Shape 4B9N



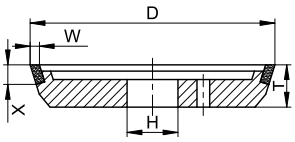
Shape 14B1



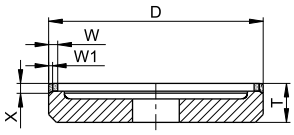
Shape 14M1Z



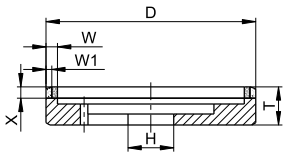
Shape 11B9H



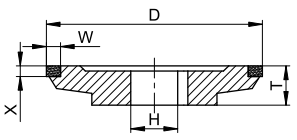
Shape 12A9Z (H)



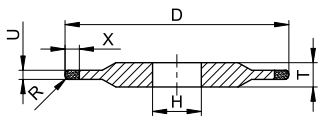
Shape 6A9Z



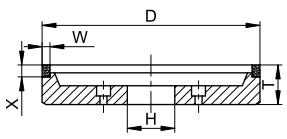
Shape 6A2ZH



Shape 12B9N



Shape 14F1



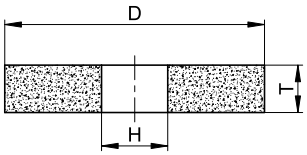
Shape 6A2B

Grinding tools for automatic saw

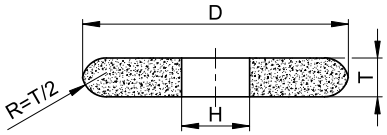
for circular saws, stellite band and gang saws

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
SA				●		●					●	●
A		●	●								●	●
88A, 89A			●	●		●					●	●
455A, 765A				●								●
52A		●									●	●

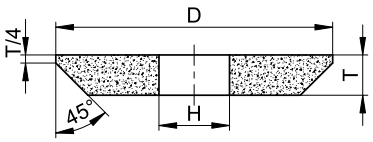
Recommended stock type



Shape 1



Shape 1F



Shape 1C

TYROLIT sells a wide assortment of tools tailored to various grinding machines and tooth pitches. They are suitable for dry and wet grinding for HSS, chrome vanadium and stellite saws.

The products are available with different edge profiles; shape 1, 1F, 1C, in diameters ranging from 150 to 350 mm.

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments	PU
	1	18825	150x3x30	88A 80 M5A V217	40		10
		55375	150x3x32	88A 80 M5A V217	40		10
		9293	150x4x20	88A 80 M5A V217	40		10
		291120	150x4x32	88A 80 M5A V217	40		10
		719904	150x6x38	88A 60 K5A V217	40		10
		490222	150x6x38	88A 80 K5A V217	40		10
		448603	200x2x32	88A 80 M5A V217	40		10
		7318	200x3x32	88A 80 M5 V217	40		10
	1	305800	150x6x32	89A 60 M5A V217	40		10
		10265	150x10x32	89A 60 M5A V217	40		10
		455124	150x8x32	89A 60 M5A V217	40		10
		719906	175x3x51	89A 60 M5A V217	40		10
		50844	175x4x51	89A 60 M5A V217	40		10
		123222	175x6x51	89A 60 M5A V217	40		10
		50845	175x8x51	89A 60 M5A V217	40		10

▶

Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments	PU
	1	3085	200x10x20	89A 60 M5A V217	40		10
		3091	200x10x32	89A 60 K5A V217	40		10
		3092	200x10x32	89A 60 M5 V217	40		10
		608080	200x10x32	89A 60 M5A V217	40		10
		762445	200x10x32	89A 60 M5A V217 E5	40	Lateral face impregnation	10
		51494	200x13x32	89A 60 M5A V217	40		10
		3070	200x6x20	89A 60 M5A V217	40		10
		110554	200x6x32	89A 60 K5A V217	40		10
		7328	200x6x32	89A 60 M5 V217	40		10
		3077	200x8x20	89A 60 M5A V217	40		10
		525686	200x8x32	89A 60 M5A V217	40		10
		461239	250x10x32	89A 60 M5A V217 E5	40	Lateral face impregnation	10
		33249	250x13x20	89A 60 M5A V217	40		10
		719922	250x13x32	89A 60 M5A V217	40		10
	1C	28549	200x10x32	89A 60 M5A V217	40		10
	1	292129	150x1,5x32	SA 80 L4 VN-M OD	63		10
		441301	150x10x32	SA 60 L5 VN-M OD	63		10
		123688	150x2,5x32	SA 80 L4 VN-M OD	63		10
		935730	150x2x32	SA 80 L4 VN-M OD	63		10
		47009	150x3x32	SA 80 L4 VN-M OD	63		10
		226295	150x3x32	SA 80 L5 VN-M OD	63		10
		47010	150x4x32	SA 80 L4 VN-M OD	63		10
		159000	150x4x32	SA 80 L5 VN-M OD	63		10
		667182	150x5x32	SA 80 L5 VN-M OD	63		10
		946904	150x6x32	SA 60 L5 VN-M OD	63		10
		47005	150x6x32	SA 80 L4 VN-M OD	63		10
		740907	150x6x38	SA 80 J5 VN-M OD	63		10
		17256	150x6x38	SA 60 K5 VN-M OD	63		10
		441302	150x8x32	SA 60 L5 VN-M OD	63		10
		922647	200x1,5x32	SA 80 L4 VN-M OD	63		10
		804963	200x1,75x32	SA 80 L4 VN-M OD	63		10
		922857	200x2x32	SA 80 L4 VN-M OD	63		10
		922860	200x3x32	SA 80 L5 VN-M OD	63		10
		804979	200x10x32	SA 60 L5 VN-M OD	63		10
		867603	200x2,5x32	SA 80 L4 VN-M OD	63		10
		804957	200x3,5x32	SA 80 L5 VN-M OD	63		10
		804945	200x4x32	SA 80 L5 VN-M OD	63		10

◀

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments	PU
		804993	200x5x32	SA 60 L5 VN-M OD	63		10
		805000	200x6x32	SA 60 L5 VN-M OD	63		10
		804976	200x8x32	SA 60 L5 VN-M OD	63		10
		901254	250x4x32	SA 80 L4 VN-M OD	63		10
		901256	250x5x32	SA 60 L5 VN-M OD	63		10
		901258	250x6x32	SA 60 L5 VN-M OD	63		10
		437634	250x10x32	52A 54 M5A V217 E5	63	Lateral face impregnation	10
		19117	150x4x20	A 60 N4 B2	50		10

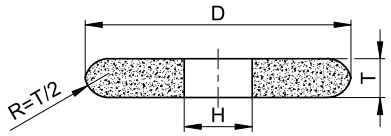
	Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments
	1	237227	250x10x32	M455A 609 M7 B82	63	
		527875	300x10x32	M455A 609 L7 B82	63	
		241857	300x10x32	M455A 809 K6 B22	63	
		313636	300x10x40	M455A 609 M7 B82	63	
		179959	300x10x40	M455A 80 M6 B22	63	
		223733	300x12x40	M455A 609 M7 B82	63	
		471747	300x12x40	M455A 802 M6 B22	63	For stellite band and gang saws
		267138	300x12x40	M455A 809 M6 B22	63	
		485953	300x8x32	M455A 80 M6 B22	63	
		487467	350x10x127	M455A 80 M6 B22	63	
		226679	350x10x127	M455A 802 M6 B22	63	
		226680	350x13x127	M455A 802 M6 B22	63	
		34340597	350x10x32	765A 609P6B100	63	
		34340600	350x13x127	765A 801P6B100	63	
	1F	150403	200x10x32	M455A 609 M7 B82	63	
		476545	250x12x32	M455A 609 M7 B82	63	
		150402	300x10x32	M455A 609 L7 B82	63	For stellite band and gang saws

▶

Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments	PU
	1F	805007	200x8x32	SA 60 K5 VN-M OD	63		10
		805008	200x10x32	SA 60 K5 VN-M OD	63		10
		805015	250x13x32	SA 60 K5 VN-M OD	63		10
		805017	250x8x32	SA 60 K5 VN-M OD	63		10
		805018	250x10x32	SA 60 K5 VN-M OD	63		10
		804983	200x10x32	SA 60 L5 VN-M OD	63		10
	1C	162874	200x12x20	88A 60 N4A V217/89A 60 M5A V217	40	two-layer wheels	10
		172352	175x8x20	88A 60 N4A V217/89A 60 M5A V217	40		10
		719918	200x10x20	88A 60 N4A V217/89A 60 M5A V217	40		10
		720012	200x10x32	88A 60 N4A V217/89A 60 M5A V217	40		10

Grinding tool for chain saw sharpening machines
for steel



Shape 1F

With this wheel you receive a precise product that will significantly increase the lifetime of your chain saws. The profile radius of this product corresponds to half the wheel width and is optimally tailored to the tooth base radius.
This tool is suited for dry grinding with an edge profile shape 1F and a 140 mm diameter.

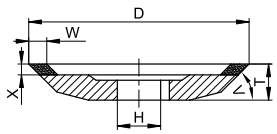
Shape	Type no.	DxTxH	Specification	Vmax m/s
1F	740908	140x3.2x12	88A 54 K5A V217	40
	244477	140x4.5x12	88A 54 K5A V217	40
	123716	140x3.8x12	50A 541 K5A V217	40

Resin-bonded diamond grinding wheels for chip surface grinding (tooth-face grinding)
for tungsten carbide

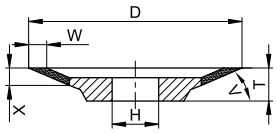
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
D								●				●

▶

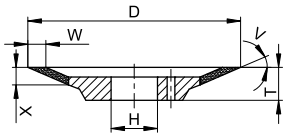
Recommended stock type



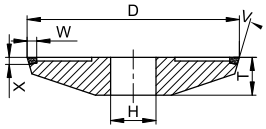
Shape 12V2



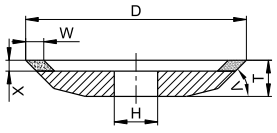
Shape 3V9



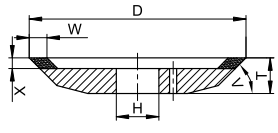
Shape 3V9H



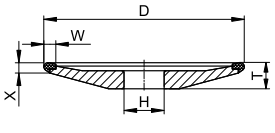
Shape 4B9



Shape 4V2



Shape 4V2H



Shape 4V2

◀

Recommended stock type

TYROLIT offers a wide assortment of tools tailored to various grinding machines for narrow and wide tooth pitches due to their adapted diamond section thicknesses and core shapes. This enables you to achieve perfect surface geometries.

This product is available for all standard sharpening machines in 100–200 mm diameters.

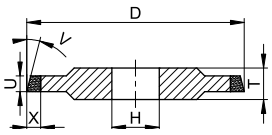
	Shape	Type no.	DxTxH	W-X V	Specification	Comments
	3V9	563857	125x13x32	2,5-5,5 V70	D 46 C100 B 48 AL	e.g. Vollmer, Biberach
		578936	150x13x32	2,5-5,5 V70	D 46 C100 B 48 AL	e.g. Akemat
	3V9H	580905	200x13x32	2,5-4,4 V70	D 46 C125 B 250 AL	tight tooth pitch
	4B9	369110	125x11,5x32	2,5-1,2 V15	D 54 C75 B 74 AL	e.g. Vollmer, Biberach
		820013	125x12x32	3-1,8 V15	D 126 C75 B 70 AL	e.g. Vollmer, Biberach
		665040	125x14x32	3-3,8 V15	D 54 C75 B 70 AL	e.g. Vollmer, Biberach, large tooth pitch
	4V2	462630	150x12x32	4-2 V30	D 76 C125 B 48 AL	e.g. Vollmer, Biberach
		462631	150x12x32	4-2 V30	D 46 C125 B 48 AL	e.g. Vollmer, Biberach, Akemat
	4V2H	379577	200x13x32	4-2 V30	D 46 C125 B 48 AL	e.g. Vollmer, Biberach, Walter
		462760	200x13x32	4-2 V30	D 76 C125 B 48 AL	e.g. Vollmer, Biberach

Resin-bonded diamond grinding wheels for clearance grinding (back grinding)

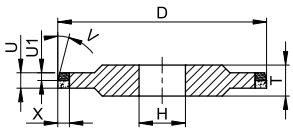
for tungsten carbide

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
D						●				●

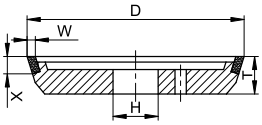
Recommended stock type



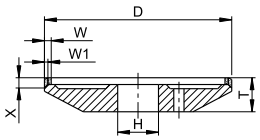
Shape 14B1



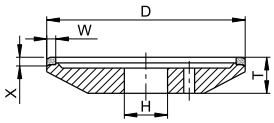
Shape 14M1Z



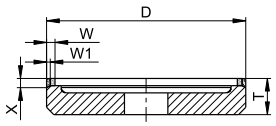
Shape 11B9H



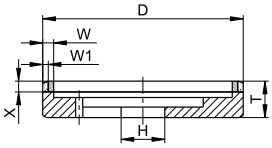
Shape 12A9Z



Shape 12A9H



Shape 6A9Z



Shape 6A2ZH

This resin-bonded diamond wheel is available as a cup wheel or peripheral wheel. It is also available as a single or D126/D46 double layer. Double layer wheels achieve an excellent level of cutting quality due to a combination of two grit sizes in a high concentration.

This product is available for all standard sharpening machines in 100–125 mm diameters.

	Shape	Type no.	DxTxH	U-U1-X V	Specification	Comments
	14M1Z	462514	127x8x32	2,5-2,5-6 V15	D 126 C125 B 48 AL/ D 54 100 B48	e.g. Akemat, two-layer wheels
		462889	150x8x32	2,5-2,5-8 V8	D 126 C100 B 48 AL/ D 76 75 B48	e.g. Walter, two-layer wheels
		462891	200x8x32	2,5-2,5-8 V8	D 126 C100 B 48 AL/ D 46 75 B48	e.g. Walter, two-layer wheels
	Shape	**Type no.**	**DxTxH**	**W-W1-X**	**Specification**	**Comments**
	12A9Z	286864	125x18x32	5-2,5-6	D 126 C125 B 65 AL/ D 46 100 B65	e.g. Vollmer Biberach, double layer
		390582	125x18x32	5-2,5-6	D 126 C100 B 65 AL/ D 46 75 B65	e.g. Vollmer Biberach, double layer
		387531	125x22x32	5-2,5-6	D 126 C100 B 65 AL/ D 46 75 B65	e.g. Vollmer Biberach, double layer
	6A9	862410	100x40x27	3-10	D 39 75 B52	
	6A9Z	389569	100x20x25	5-2,5-6	D 126 C100 B 42 AL/ D 46 75 B42	e.g. Vollmer Dornhan, double layer

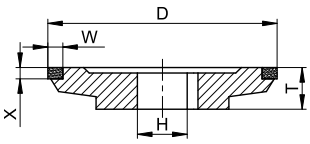
▶

Resin-bonded diamond grinding wheels for flank machining

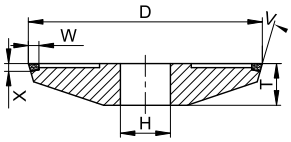
for tungsten carbide

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
D						●				●

Recommended stock type



Shape 12B9N



Shape 4B9

This TYROLIT product is suitable both for repair and production grinding and offers high stock removal rates on tungsten carbide. This is primarily achieved due to a reduced concentration and perfectly tailored bond system.

The diamond wheels are available for all standard sharpening machines in 76–100 mm diameters. It is important to note that diameters of 76–80 mm should be used especially for narrow tooth pitches.

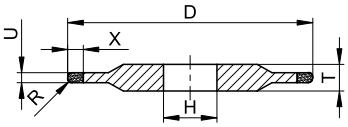
	Shape	Type no.	DxTxH	W-X	Specification	Comments
	12B9N	331135	100x14x32	4.5-4	D 64 C75 B 74 AL	e.g. Vollmer
		474564	100x14x20	4.5-4	D 91 C50 B 53 AL	e.g. Vollmer
	4B9	328027	100x10x32	5-4	D 91 C50 B 42 AL	e.g. Vollmer

CBN resin tools for tooth profile grinding

for HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
B					●	●						●

Recommended stock type



Shape 14F1

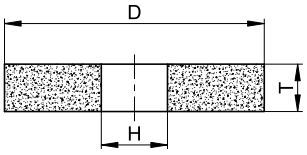
This TYROLIT product is suitable both for repair and production grinding and offers high stock removal rates on HSS. The CBN tool for tooth profile grinding has been specially designed for wet grinding with emulsion and oil.
The CBN tools are available for all standard sharpening machines in 150–200 mm diameters.

	Shape	Type no.	DxTxH	U-X R	Specification	Comments
		454693	200x8x32	1.6-8.4 R0.8	B 126 C125 B 87 ST	e.g. Loroch, Rekord, Schmidt-Tempo
		462924	200x8x32	1.3-8.4 R0.65	B 126 C125 B 87 ST	
		462928	200x8x32	2-8.4 R1	B 126 C125 B 87 ST	

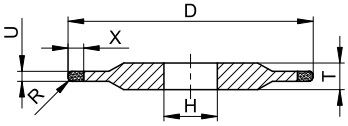
Vitrified-bonded and CBN resin-bonded profile grinding wheels
for tungsten carbide and HSS

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
89A, 455A				●						●
D						●				●
B				●					●	●

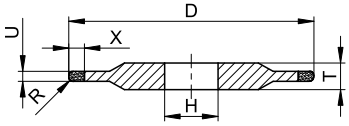
Recommended stock type



Shape 1



Shape 14F1



Shape 14F1R

For profile grinding of HSS you can use aluminium oxide or CBN wheels. Tungsten carbide should however only be ground using diamond. For pre-grinding we recommend using grit size 54 in aluminium oxide and sintered aluminium oxide mixture.

Grit size 100 should be used for finish grinding and fine profiles, or alternatively B151 in CBN. Finer grit sizes are usually used for tungsten carbide.

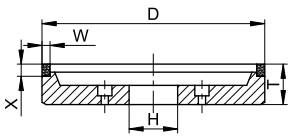
Recommended stock type

	Shape	Type no.	DxTxH	U-X R	Specification	Comments
	1	30806	225x5x60		89A 54 I5A V53	
		514038	225x5x60		97A 54 I5A V53	
		102804	225x5x60		89A 100 H5 V111	
	1	619872	225x5x60		455A 541 L6 V3 50	Weinig Rondamat for HSS tools

Resin tool for regrinding planer knives
for tungsten carbide and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
D								●				●
B						●					●	●

Recommended stock type



Shape 6A2B

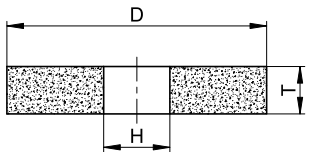
These resin tools are cup wheels with special mounting holes for Weinig Rondamats. Planer knives can be reground by wet or dry grinding.
To achieve the required cutting quality, grain B107 is used for HSS and grain D76 for tungsten carbide.

	Shape	Type no.	DxTxH	WxX	Specification	Comments
	6A2B	34480	125x18x20	3-4	B 107 C50 B 74 AL	Weinig Rondamat (clearance surface/ back grinding)

Elastic tool for effect grinding
for steel and HSS

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C		●	●	●	●	●						●

Recommended stock type



Shape 1

The TYROLIT elastic tool has been specially developed for effect grinding in production or repair. A discolored workpiece often is the result of soldering on tungsten carbide teeth - with this tool discoloration can be removed quickly.
Elastic wheels with silicon carbide are also used for cleaning and touching up used saw blades. Effect grinding is also frequently used on saw blades.

▶

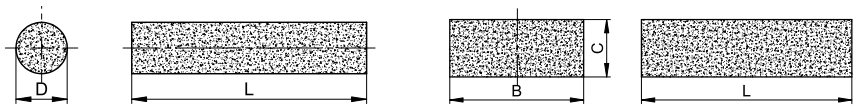
Elastic tool for effect grinding
for steel and HSS

	Shape	Type no.	DxTxH	Specification
	1	401616	250x25x32	C 46 - BE19 F

Vitrified-bonded and resin-bonded jointing stones
for tungsten carbide and HSS

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
55AC, 454A				●						
C				●		●				

Recommended stock type

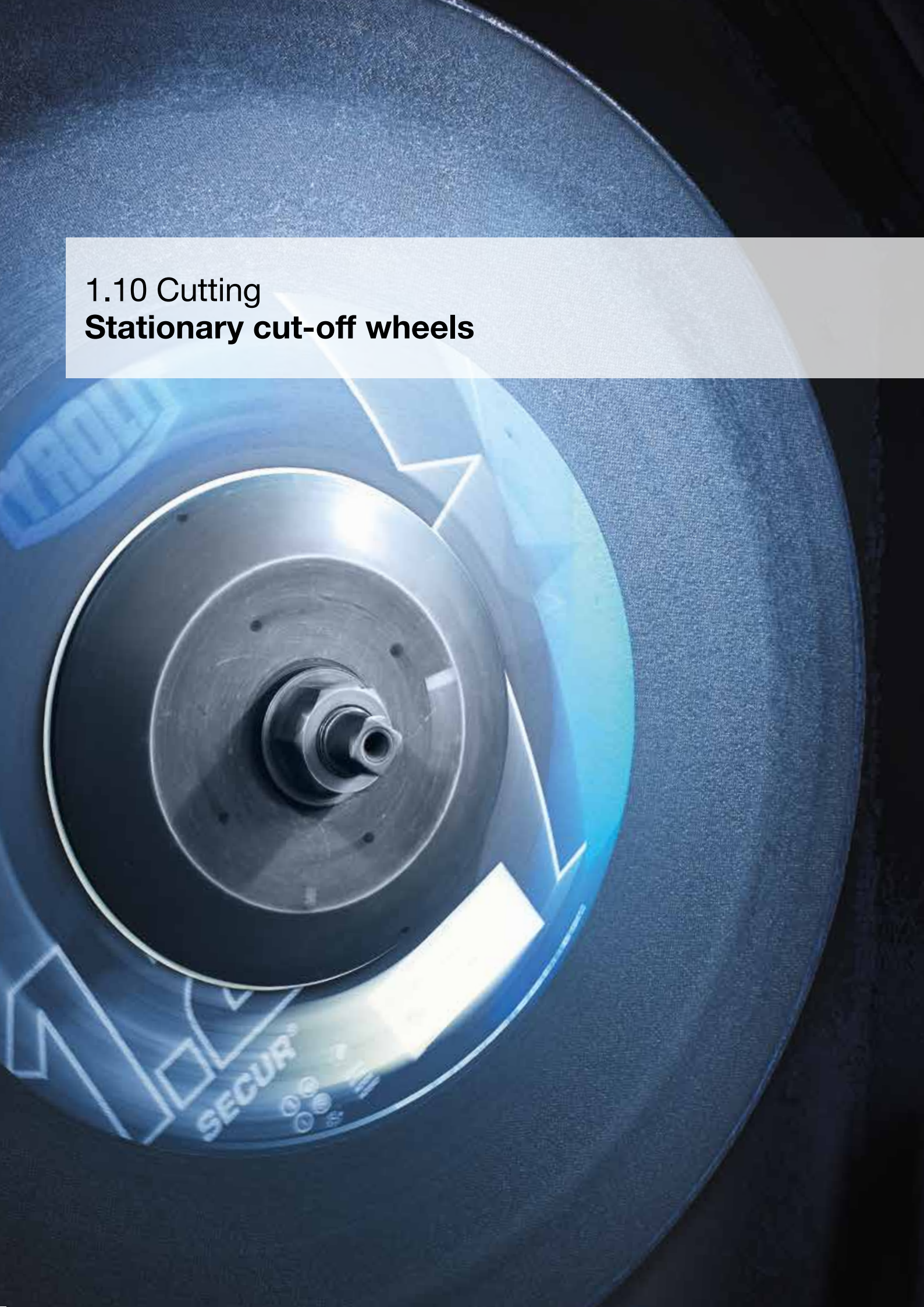


Shape 9030 | Shape 90B | 54SCHP

To achieve the highest planing quality, micro-sized planer heads are levelled with jointing stones. Products from TYROLIT achieve optimum dressing effects.

It is possible to level HSS and tungsten carbide planer knives with this product.

	Shape	Type no.	BxCxL	Specification	PU
	54SCH	351654	20x15x60	C 320 -55 V18	10
	9030	775476	12x32	C 280 J5 V18	10
	54SCHP	917288	60x15x160	454A 500 D2 B22	1
	90B	34020398	60x15x160	55AC 500 D4 B22	1



1.10 Cutting
Stationary cut-off wheels

Cut-off wheels
for stationary cutting machines

Stationary cutting machines are most commonly used in workshops. They ensure precision cutting of all materials, regardless of their.

TYROLIT offers two types of cut-off wheels for this application. Firstly, reinforced cut-off wheels, which can be used to cut profiles, pipes and solid material. Secondly, non-reinforced cut-off wheels for laboratory cutting, for cutting and saw sharpening, and for cutting high speed steel.

Whether for use on steel, stainless steel, stone or rails, thanks to the clear colour coding and application tips, you will always be able to find the right product for your application and and your workpiece. TYROLIT guarantees optimum cutting results and maximum levels of safety in all situations.

Shape

1 Saw sharpening

1A1R Cut-off wheels with continuous rim)

41N non-reinforced cut-off wheel)

Application recommendation

Performance level	Specification	Steel	Stainless steel	NF metals	Stone	Cast iron	Page
★★★ PREMIUM	A80, 89A	●					109
	A60, A80, 89A	●					110, 111
	B		●				112
	D		●				112
	D						114

Ordering Example

Dimensions of the cut-off wheel: 250x1.5x32 mm
Material to be cut: Tool steel workpiece Wst.nr. 1.2312 (40CrMnMoS8–6)

Hardness: 440 HV / 44.5 HRC
Result: Type 167205

Hardness		Recommended specification		
Vickers hardness	**Rockwell**	**Hard**	**Medium**	**Soft**
1 000 HV	72.3 HRC			
700 HV	60.5 HRC			
500 HV	49.1 HRC			
350 HV	35.5 HRC			
250 HV	22.0 HRC			
150 HV				
120 HV				
80 HV				
50 HV				
30 HV				

Dimension	**Type No.**	**Type No.**	**Type No.**
432x3.0x32		167351	
400x3.0x32		167339	
350x2.5x32		167334	167333
300x2.0x32		167226	
250x1.5x32	167207	167205	165940
230x1.5x32		167215	
Specification	A80-BH	A80-BM	A80-BS

★★★ PREMIUM

LAB

for steel and stainless steel

The PREMIUM*** laboratory cut-off wheel is a high-performance cut-off wheel for ferrous metals, such as steel and stainless steel. It is used for cutting laboratory samples that have to be cut quickly and without structural alterations, workpiece deformations or cracks. Assembly is usually carried out on wet cutting systems with a manual or automatic feed, at a maximum operating speed of 50 m/s.
The workpiece must be fixed during machining and the wheel must not be exposed to lateral load. Laboratory cut-off wheels are available in various specifications:
- soft for 60.5–72.3 HRC
- medium for 22.0–60.5 HRC
- hard up to 22.0 HRC

Avoid high pressure and use sufficient cooling lubricant.

Shape		Type no.	Dimension	Specification	Classification	PU
41N		167215	230x1,5x32	A80-BM50	Medium	10
		167207	250x1,5x32	A80-BH50	Hard	10
		167205	250x1,5x32	A80-BM50	Medium	10
		165940	250x1,5x32	A80-BS50	Soft	10
		596848	250x1,8x32	89A60L5B17/50	Very easy cutting	10
		167226	300x2,0x32	A80-BM50	Medium	10
		597041	300x2,0x32	89A60L5B17/50	Very easy cutting	10
		167334	350x2,5x32	A80-BM50	Medium	10
		167333	350x2,5x32	A80-BS50	Soft	10
		597383	350x2,5x32	89A60J5B17/50	Very easy cutting	10
		167339	400x3,0x32	A80-BM50	Medium	10
		167351	432x3,0x32	A80-BM50	Medium	10

★★★ PREMIUM

Cut-off wheels for cutting and saw sharpening

for steel und HSS

This PREMIUM*** wheel is a non-reinforced high-performance cut-off wheel for stationary machines and automatic saw sharpening machines. As these cut-off wheels are manufactured without reinforcement, they are only suitable for wet cutting on stationary machines.

The workpiece must be fixed during machining and the wheel must not be exposed to lateral load.

Shape		Type no.	Dimension	Specification	PU
	1	591080*	150x3,0x20	A60O5B68	10
	41N	529392	100x1,0x20	A80N4B2	10
		202159	100x1,0x20	A80N4B68	10
		46633	100x1,0x20	A80O4B43	10
		6673	100x2,0x20	A80N4B2	10
		1197	120x2,0x51	A60O5B43	10
		25590	125x1,0x20	A60O5B43	10
		282079	125x1,0x20	A60N5B68	10
		282110	150x1,0x20	A60N5B68	10
		1211	150x1,0x20	A60O5B43	10
		591103	150x1,0x20	A60O5B68	10
		13695	150x1,0x20	A80O5B43	10
		594360	150x1,0x20	A80O5B68	10
		39110	150x1,0x32	A80O5B43	10
		8833	150x1,5x20	A60O5B43	10
		282085	150x1,5x20	A60N5B68	10
		591104	150x1,5x20	A60O5B68	10
		662430	150x1,5x32	A80N5B68	10
		42808	150x1,6x20	A60P4B43	10
		58158	150x1,6x32	A60P4B43	10
		15685	150x2,0x20	A60O5B43	10
		594362	150x2,0x20	A60O5B68	10
		33436	150x2,0x30	A60N4B2	10
		223516*	150x2,5x20	A60N4B2	10
		607744	175x3,0x51	A60P4B68	10
		675283	180x1,0x32	A60O5B43	10
		493199	180x1,6x32	A60O5B68	10

** Also suitable for saw sharpening.*

▶

◀

	Shape	Type no.	Dimension	Specification	PU
		282113	200x1,5x20	A60N5B68	10
		1254	200x1,5x20	A60O5B43	10
		282114	200x1,5x32	A60N5B68	10
		6718	200x1,5x32	A60O4B43	10
		230691	200x1,6x32	A60M4B43	10
		205822	200x1,6x32	A60P4B43	10
		6710*	200x2,0x20	A60N4B2	10
		62874	200x2,0x32	A60N4B43	10
		863284	200x3,0x32	A60P4B68	10
		599666	230x1,5x22,2	89A60N4B68	10
		373520	250x1,5x25,4	A60O5B71	10
		834839	250x1,6x32	89A80L4B43	10
		549002	300x2,0x31,75	89A80L4B43	10
		60572	300x2,0x32	A80O5B71	10
		220394	400x2,8x25,4	89A60L4B59	10

** Also suitable for saw sharpening.*

Cutting rotating tools
for HSS

The high-performance cut-off wheel for HSS achieves a perfect cutting performance thanks to its innovative bond system and tailored grain quality. Avoid feed values that are too high during machining, to prevent a cut deviation.

Assembly is usually carried out on wet cutting systems with a manual or automatic feed, at a maximum operating speed of 50 m/s.

Shape	Type no.	Dimension	U-X	Specification	PU
1A1R	788700	125x1.0x20	1–5	B126 C75 B	1
	164485	125x1.0x20	1–5	B151 C100 B	1
	494701	150x1.0x20	1–5	B151 C100 B	1

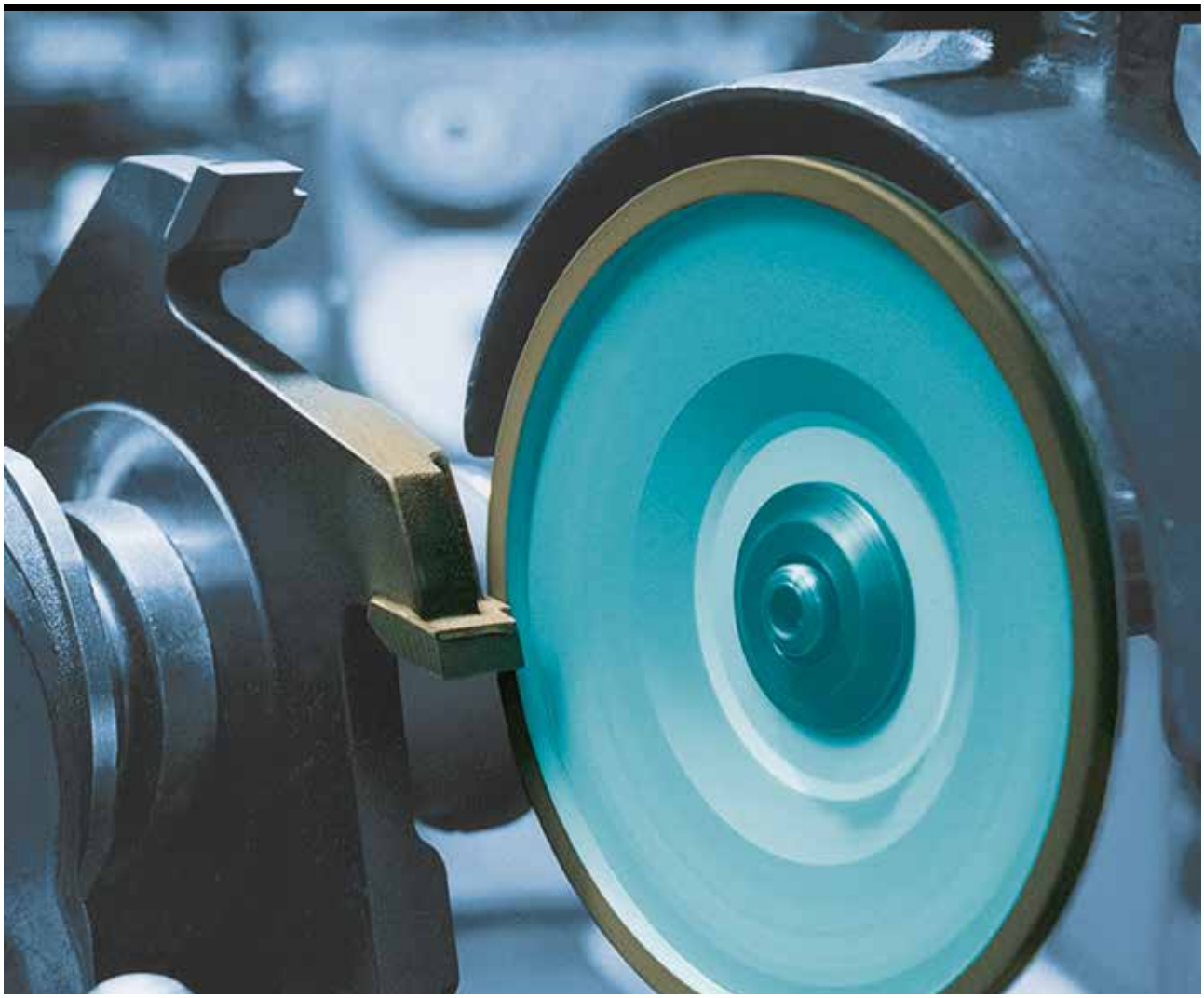
Tungsten carbide
for tungsten carbide

The high-performance cut-off wheel for tungsten carbide achieves a perfect cutting performance thanks to its innovative bond system and tailored grain quality. Avoid feed values that are too high during machining, to prevent a cut deviation.

Assembly is usually carried out on wet cutting systems with a manual or automatic feed, at a maximum operating speed of 50 m/s.

Shape	Type no.	Dimension	U-X	Specification	PU
1A1R	299109	75x1.0x20	0.8–5	D151 C75 B	1
	157800	75x0.8x20	0.8–5	D126 C75 B	1
	119395	100x0.8x20	0.8–5	D126 C100 B	1
	100660	100x1.0x20	1-5	D126 C100 B	1
	108728	100x1.5x20	1.5–5	D126 C75 B	1
	101000	125x1.0x20	1-5	D126 C100 B	1
	148132	150x1.0x20	1-5	D126 C100 B	1
	317532	150x1.0x20	1-5	D126 C75 B	1
	278979	150x1.0x20	1-5	D151 C100 B	1
	667995	200x1.0x22	1-5	D126 C100 B	1
	858531	200x1.2x20	1.2–7	D126 C100 B	1
	603284	200x1.2x30	1.2–7	D151 C100 B	1

1.11 Tools
Universal tool grinding



Universal tool grinding

TYROLIT offers a comprehensive range of grinding tools for tool grinding. This makes a high-quality range available for tool production as well as tool regrinding.

It includes conventional grinding wheels as well as diamond and CBN grinding tools for wet and dry grinding. Grain qualities adapted to the grinding process and innovative bond systems combined with efficient grinding wheel design always guarantee optimum quality of your tools.

Application recommendation

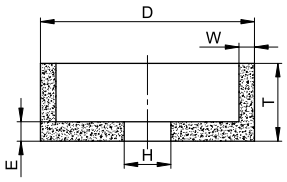
Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened | Hardened	Unhardened | Hardened								
89A, SD33A		●	●	●					●		117, 118, 119
91A, SD55A				●					●		118
454A			●	●					●		117
C						●			●		119
AMIGO, B		●	●	●					●		120, 121, 122
DIAGO, D						●			●		123, 124

● Extremely suitable

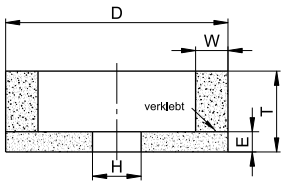
Application tips CBN

- Recommended operating speed for cemented carbide: 16–22 m/s
- Recommended operating speed for HSS: 20–25 m/s

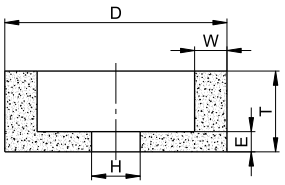
Shapes



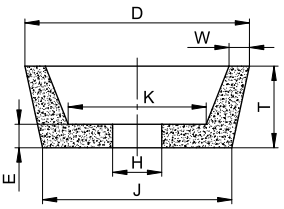
Shape 6



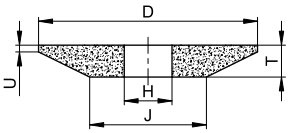
Shape 6BS



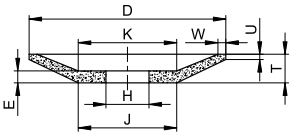
Shape 6BB



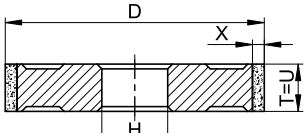
Shape 11



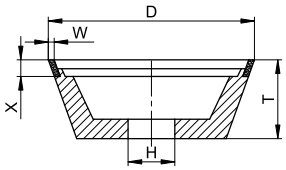
Shape 3



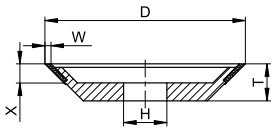
Shape 12



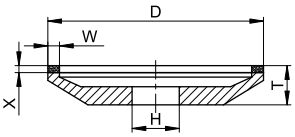
Shape 1A1



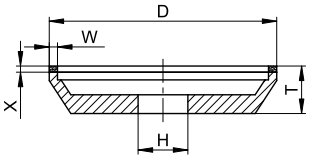
Shape 11V9



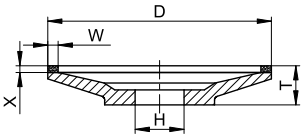
Shape 12V9



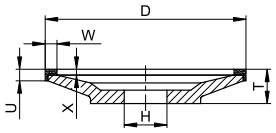
Shape 12A2



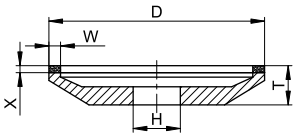
Shape 12A2D



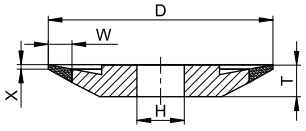
Shape 12A2F



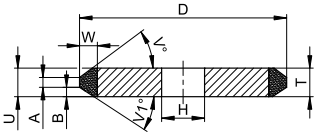
Shape 12C2F



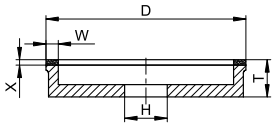
Shape 4C2



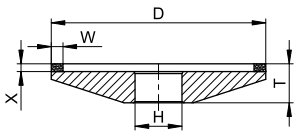
Shape 4BT9



Shape 1BM1



Shape 6A2



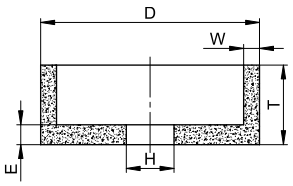
Shape 4A2

Conventional ceramic for dry grinding

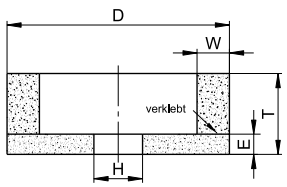
for non and low-alloyed steels, high-alloyed steels and HSS.

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A, SD25A, SD33A		●		●		●					●	
91A, SD55						●					●	
454A				●		●					●	

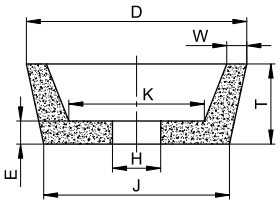
Recommended stock type



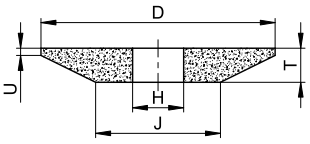
Shape 6



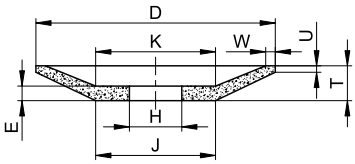
Shape 6BS



Shape 11



Shape 3



Shape 12

With this tool you can grind all cutting tools for the wood and metal industry and a range of shear blades. These products are disc and cup wheels with fused white aluminium oxide or sintered aluminium oxide mixtures that are used in dry grinding.
The tailored specification of this tool prevents discolouration on the workpieces.

	Shape	Type no.	DxTxH	W/E	Specification	Comments
	6	34048152	80x40x20	W6/E10	454A 801 N5 V3 U5	With peripheral impregnation
		455038	80x40x20	W6/E8	454A 901 M5 V3 U5	
		34048027	100x50x20	W10/E10	454A 801 K5 V3 U5	
	6	5843	80x40x20	W6/E10	89A 60 K5A V53	
		376274	90x55x20	W17/E18	SD25A80HH11PVK3	
		34924	100x50x20	W10/E10	89A 462 K5A V53	
		19040	100x50x20	W8/E10	89A 542 I5A V53	
		5886	100x50x20	W10/E10	89A 60 J5A V53	
		5887	100x50x20	W10/E10	89A 60 K5A V53	
		49273	100x50x20	W10/E10	89A 60 M5A V53	
		9627	100x50x20	W10/E10	SD33A80II7PVK3F	
		568265	100x50x20	W10/E10	SD33A80II7PVK3F	With peripheral impregnation
		5889	100x50x20	W10/E10	89A 80 J5A V53	

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	Shape	Type no.	DxTxH	W/E	Specification	Comments
	6	8641	100x50x20	W10/E10	89A 80 K5A V53	
		54820	100x50x20	W10/E10	89A 80 L5 V55	
		131991	125x50x32	W13/E13	89A 60 K5 V53	
		451151	125x63x20	W8/E13	89A 542 I5A V53	
		78847	150x50x32	W12/E15	89A 60 K5 V53	
		77824	150x60x50	W15/E15	SD33A36II7PVK3F	
		84809	150x70x28	W17/E16	SD33A36HH8PVK3F	
		91350	150x76x28	W17,5/E16	SD33A46II8PVK3F	
		186445	150x80x32	W10/E16	89A 60 J5A V217	
		365824	150x80x50	W10/E16	SD33A46II7PVK3F	
		54119	175x75x76,2	W17,5/E17	SD33A36II8PVK3F	
		126245	175x75x78	W15/E18	SD33A36II7PVK3F	
		712490	175x75x78	W15/E18	SD33A36JJ10PVB3	
		91441	175x75x78	W15/E18	SD33A46II7PVK3F	
		587026	175x80x32	W13/E20	SD33A46II11PVK3F	
		305227	200x80x30	W17,5/E20	SD33A60KK7PVO3	Mower knife
		210314	200x80x35	W20/E20	SD33A46JJ8PVK3F	Sickle
		70128	200x80x78	W20/E20	SD33A36II7PVK3F	
		798715	200x80x78	W20/E20	SD33A36JJ10PVB3	
	6	122989	100x50x20	W10/E10	91A 80 L5A V217	
		438088	150x63x32	W15/E16	SD55A46HH9PVK3	
		75803	165x60x32	W15/E15	SD55A46HH9PVK3	
	6BS	70092	200x100x51	W25/E25	SD33A36II8PVK3F	

	Shape	Type no.	D/JxTxH	W/E/K	Specification
	11	334166	80/57x32x20	W6/E8/K46	89A 1002 H5A V53
		338237	80/57x32x20	W6/E8/K46	89A 601 K5A V53
		4917	100/71x40x20	W8/E10/K56	89A 462 J5A V53
		4924	100/71x40x20	W8/E10/K56	89A 601 K5A V53
		631057	100/71x40x32	W8/E10/K56	89A 601 J5A V53
		63195	100/80x50x32	W9/E13/K67	89A 60 K5 V53
		31675	125/96x40x20	W8/E10/K81	89A 462 K5A V53
		331500	125/96x40x32	W8/E10/K81	89A 601 J5A V53
		203176	150/114x50x32	W10/E13/K96	89A 462 I5A V53
		498229	150/114x50x32	W10/E13/K96	89A 601 J5A V53

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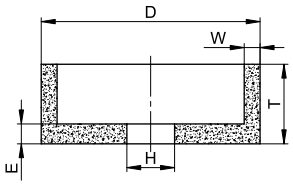
	Shape	Type no.	D/JxT/UxH	W/E/K	Specification
	3	31009	150/75x8/2x20		89A 601 J5A V53
	12	9398	150/75x16/3x20	W10/E10/K85	89A 601 J5A V53
		19659	100/50x13/3x20	W5/E7/K50	89A 601 K5A V53
		216789	125/63x13,3/3x20	W6/E7/K63	89A 461 J5A V53
		364685	125/63x13/3x20	W6/E7/K63	89A 601 I5A V53
		9833	175/85x18/3x20	W10/E10/K85	89A 601 I5A V53

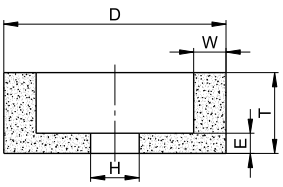
Conventional ceramic for dry grinding
for tungsten carbide

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
C						●			●	

Recommended stock type



Shape 6



Shape 6BB

This silicon carbide wheel is a cost-effective variant for machining tungsten carbide for secondary applications. It is primarily used for working on castings and nonferrous metals.

It is ideally suited for grinding mining drills and re-sharpening tools in stonemasons' workshops.

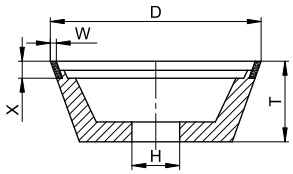
	Shape	Type no.	DxTxH	W/E	Specification	Comments
	6	139155	100x50x20	W10/E10	C 80 I5 V15	For HM and coated tools
	6BB	24299	127x63x32	W22.5/E13	C 46 J5 V15	For mining drill grinding machines
		108479	200x100x32	W25.5/E20	C 46 J5 V15	

CBN resin-bonded for dry grinding

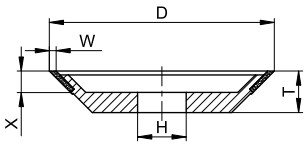
for non and low-alloyed steels, high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
AMIGO, B		●	●	●					●	

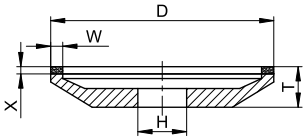
Recommended stock type



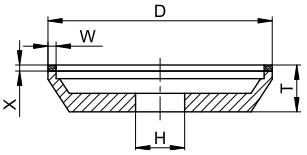
Shape 11V9



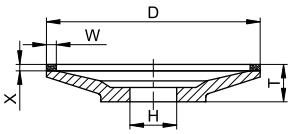
Shape 12V9



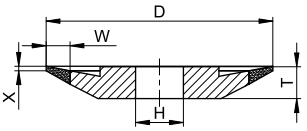
Shape 12A2



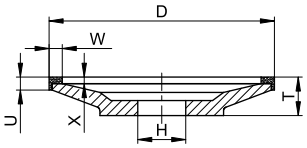
Shape 12A2D



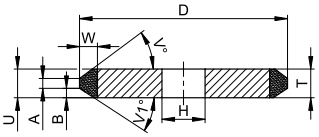
Shape 12A2F



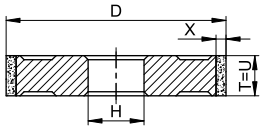
Shape 4BT9



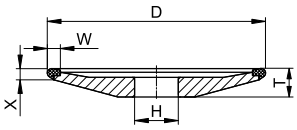
Shape 12C2F



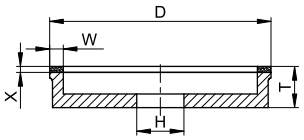
Shape 1BM1



Shape 1A1



Shape 4C2



Shape 6A2

With this tool you can grind all cutting tools for the wood and metal industry and a range of shear blades. These products are disc and cup wheels in the CBN grit size range B181 - B91.

Compared to conventional aluminium oxide wheels, CBN wheels exhibit significantly less wear and higher dimensional accuracy.

	Shape	Type no.	DxTxH	W-X	Specification	Comments
	11V9	640777	75x30x20	2-10	B 126 C75 B AMIGO	
		644532	125x40x20	2-10	B 91 C75 B AMIGO	
		641854	125x40x20	2-10	B 126 C75 B AMIGO	
		649723	100x35x32	2-10	B 126 C75 B AMIGO	
		666288	100x35x20	2-10	B 181 C75 B AMIGO	
		644514	100x35x20	2-10	B 91 C75 B AMIGO	
		617388	100x35x20	2-10	B 126 C75 B AMIGO	
		636398	100x35x20	3-10	B 126 C75 B AMIGO	
		561391	100x35x20	2-10	B 1 C75 B 53 BG	Long-life B53

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Recommended stock type

	Shape	Type no.	DxTxH	W-X	Specification	Comments
	12V9	703242	75x20x20	2-6	B 126 C75 B AMIGO	
		636658	100x20x20	2-10	B 126 C75 B AMIGO	
		840506	125x25x20	2-10	B 126 C75 B AMIGO	
	12A2	124644	150x18x20	5-3	B 126 C50 B 75 AL	
		436484	150x18x20	5-2	B 126 C50 B 75 AL	
		337051	150x18x20	4-3	B 126 C75 B 54 AL	
		649692	175x20x20	6-2	B 1 C75 B 45 AL	
	12A2D	217976	100x25x20	6-2	B 126 C50 B 54 AL	
		666137	100x25x20	6-3	B 126 C50 B 54 AL	
	12A2F	69502	125x23x20	5-4	B 126 C50 B 75 AL	
	4BT9	119325	100x10x20	10-1	B 126 C75 B 75 AL	

	Shape	Type no.	DxTxH	W/U-X	Specification
	12C2F	646778	125x23x20	5/5-4	B 91 C75 B AMIGO
		641839	125x23x20	5/5-4	B 1 C75 B AMIGO
		641842	150x23x20	5/5-4	B 1 C75 B AMIGO

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	Shape	Type no.	DxTxH	U-X	Specification	Comments
	1A1	620464	100x10x20	10-6	B 126 C50 B 54 BA	

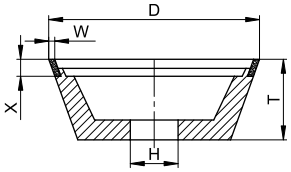
	Shape	Type no.	DxTxExH	W-X	Specification
	6A2	735896	100x30x12x20	3-6	B 126 C75 B 74 AL

Diamond resin-bonded for dry grinding

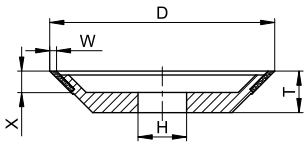
for tungsten carbide

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
DIAGO, D						●			●	

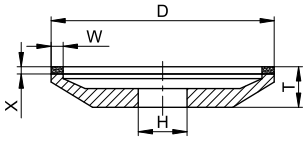
Recommended stock type



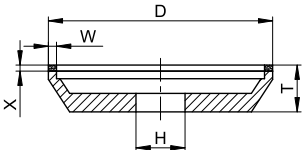
Shape 11V9



Shape 12V9



Shape 12A2



Shape 12A2D

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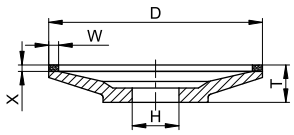
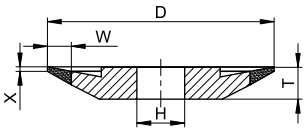
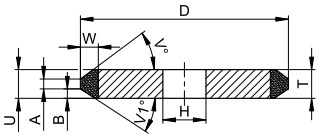


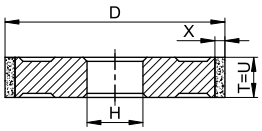
Shape 12A2F



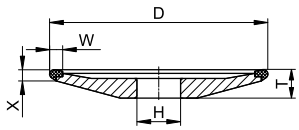
Shape 4BT9



Shape 1BM1



Shape 1A1



Shape 4A2

With this tool you can grind all tungsten carbide cutting tools for the wood and metal industry and a variety of shear blades. These products are disc and cup wheels in the diamond grain size range D181 - D64.

Compared to conventional silicon carbide wheels, diamond wheels exhibit significantly less wear and higher dimensional accuracy.

	Shape	Type no.	DxTxH	W-X	Specification	Comments
	11V9	249717	75x30x20	2-6	D 126 C75 B 52 BG	Long-life B52
		679634	75x30x20	2-10	D 126 C75 B DIAGO	
		721301	75x30x20	2-10	D 64 C50 B DIAGO	
		679946	125x40x20	3-10	D 126 C75 B DIAGO	
		335803	100x35x31.75	2-10	D 126B DIAGO	
		5028	100x35x20	3-10	D 126 C75 B 52 BG	Long-life B52
		576021	100x35x20	2-10	D 126 C75 B 74 BG	Long-life B74
		675309	100x35x20	2-10	D 126 C75 B DIAGO	
		675318	100x35x20	3-10	D 126 C75 B DIAGO	
		46198	100x35x20	3-10	D 181 C75 B DIAGO	
		676589	100x35x20	2-10	D 181 C75 B DIAGO	
		675272	100x35x20	2-10	D 64 C50 B DIAGO	
		721303	100x35x20	3-10	D 64 C50 B DIAGO	
		681915	100x35x20	2-10	D 91 C75 B DIAGO	
	12V9	696324	75x20x20	2-6	D 126 C75 B DIAGO	
		721319	75x20x20	2-6	D 64 C50 B DIAGO	
		311250	125x25x20	2-10	D 126B DIAGO	Long-life B73
		689930	100x20x20	2-10	D 126 C75 B DIAGO	
		194540	100x20x20	2-10	D 91B DIAGO	
		43588	100x20x20	2-10	D 91 C75 B 52 BG	
	12A2	19220	125x16x20	6-2	D 126 C75 B 52 AL	
		291603	150x18x20	5-3	D 91 C75 B 52 AL	

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	Shape	Type no.	DxTxH	W-X	Specification	Comments
	12A2D	28162	100x25x20	6-2	D 126 C75 B 52 AL	
		38012	100x25x20	6-2	D 64 C50 B 52 AL	
		104376	100x25x20	5-3	D 91 C75 B 52 AL	
		779789	100x25x20	10-3	D 91 C75 B 52 AL	
	12A2F	97868	125x23x20	5-4	D64B DIAGO	Long-life B73
		102902	125x23x20	5-4	D126B DIAGO	
		731387	125x23x20	5-4	D 64 C50 B DIAGO	
		731399	125x23x20	5-4	D 151 C75 B DIAGO	
		842923	125x23x20	5-4	D 151 C75 B 53 AL	Long-life B53
		416671	150x22x20	4-3	D 64 C50 B 52 AL	
		679671	150x23x20	5-4	D 126 C75 B 60 AL	
	Shape	**Type no.**	**DxTxH**	**U-X**	**Specification**	**Comments**
	4BT9	255835	100x10x20	10-1	D 91 C75 B 73 AL	
	1A1	640978	100x10x20	10-6	D 64 C50 B 52 BA	
	4A2	480500	125x10x20	5-2	D 126 C75 B 52 AL	
		86734	125x10x20	5-2	D 64 C50 B 73 AL	
		215813	150x12x20	5-2	D 126 C50 B 73 AL	
		436472	150x12x20	5-2	D 64 C50 B 73 AL	

1.12 Tools
CNC tool grinding

CNC tool grinding

Productivity demands are constantly growing for applications that involve machining an extremely wide range of different materials. At the same time, quality requirements are also increasing. Both of these requirements demand perfectly ground cutting tools that have been manufactured on the most modern CNC tool grinding machines.

For this purpose, TYROLIT provides you with a perfectly tailored range of products. This ensures that you fully exploit the advantages of the CNC machines used in the manufacturing of cutting tools. You therefore increase your productivity and, at the same time, fulfil the high quality requirements.
In the following, you can find grinding tools that meet the requirements of the tool manufacturer just as well as those of the tool regrinder.

Application recommendation

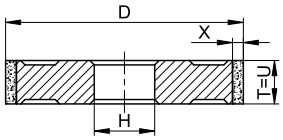
Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened | Hardened	Unhardened | Hardened								
STARTEC-BASIC, B			●	●						●	129, 130
STARTEC-BASIC, D						●				●	131, 132
STARTEC-XP-P, B			●	●						●	132, 133
START EC- XP-P, D STARTEC-HP, D						●				●	134, 134

● Extremely suitable

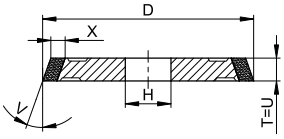
Application tips

- Cutting speed for CBN cup grinding wheels should be up to 30 % higher than for diamond wheels
- Optimum peripheral speed for CBN grinding wheels (for flute grinding) 20–25 m/s
- Cutting speed recommendation for flute grinding
  Solid carbide: 16–18 m/s
  HSS: 20–25 m/s
- Cutting speed recommendation for cup grinding wheels
  Solid carbide: 18–24 m/s
  HSS 20–30 m/s
- Use STARTEC XP-P for optimum cutting performance
- Use STARTEC HP for standard applications
- Always ensure enough coolant is available
- Dressing and sharpening instructions see page 138

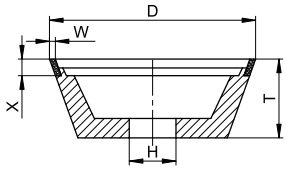
Shapes



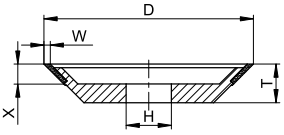
Shape 1A1



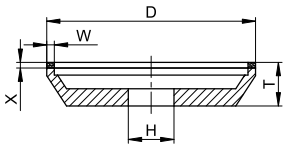
Shape 1V1



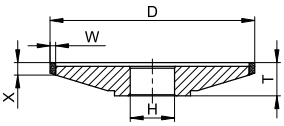
Shape 11V9



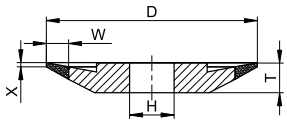
Shape 12V9



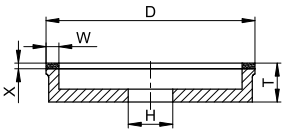
Shape 12A2D



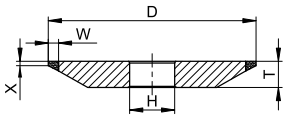
Shape 4B2



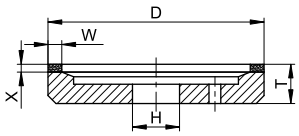
Shape 4BT9



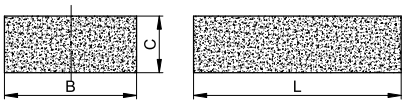
Shape 6A2



Shape 4ET9



Shape 6A2H



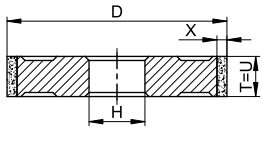
Shape 90AS

CNC tool grinding with resin-bonded CBN for wet grinding

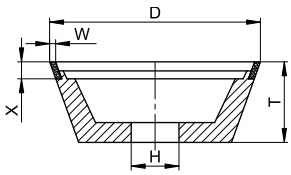
for non and low-alloyed steels, high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
STARTEC-BASIC, B			●	●						●

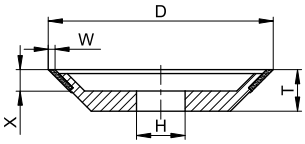
Recommended stock type



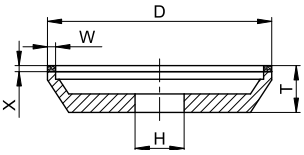
Shape 1A1



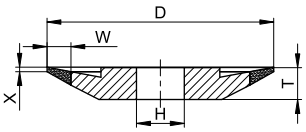
Shape 11V9



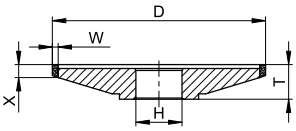
Shape 12V9



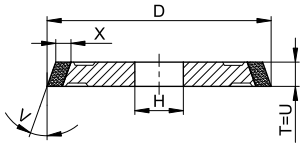
Shape 12A2D



Shape 4BT9



Shape 4B2



Shape 1V1

With this tool you can grind all cutting tools for the wood and metal industry and a variety of shear blades.

The wear-resistant bond and a high grain concentration significantly increase the lifetime of your tools compared to dry-grinding wheels.

Shape	Type no.	DxTxH	U-X	Specification	V opt. m/s
1A1	906950	100x6x20	6-6	BL1263PD STARTEC-BASIC	20-25
	906951	100x10x20	10-6	BL1263PD STARTEC-BASIC	20-25
	906954	125x10x20	10-6	BL1263PD STARTEC-BASIC	20-25

Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s
11V9	75669	75x30x20	2-10	BL1263PD STARTEC-BASIC	25-30
	494983	75x30x20	2-10	BL763PD STARTEC-BASIC	25-30
	494985	100x35x20	2-10	BL763PD STARTEC-BASIC	25-30
	532564	100x35x20	3-10	BL763PD STARTEC-BASIC	25-30

▶

CNC tool grinding with resin-bonded CBN for wet grinding

for non and low-alloyed steels, high-alloyed steels and HSS

	Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s
	12V9	75679	100x20x20	2-10	BL1263PD STARTEC-BASIC	25-30
		75685	125x25x20	2-10	BL1263PD STARTEC-BASIC	25-30
		495027	125x25x20	2-10	BL763PD STARTEC-BASIC	25-30
	12A2D	173085	125x25x20	15-3	B 91 C100 B 42 AL	

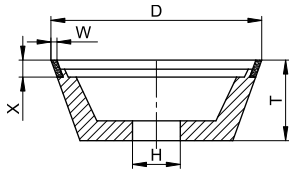
	Shape	Type no.	DxTxH	U-X V	Specification	V opt. m/s	Comments
	1V1	906946	125x12x20	12-6 V45	BL1263PD STARTEC-BASIC	20-25	
	4B2	667930	150x18x20	2-2xV20	B 126 C100 B 53 AL		Chip surface, hob

CNC tool grinding with resin-bonded diamond for wet grinding

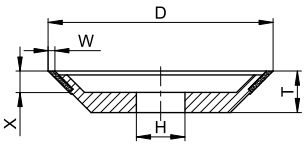
for tungsten carbide

Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
STARTEC-BASIC, D								●				●

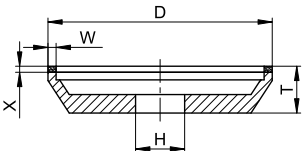
Recommended stock type



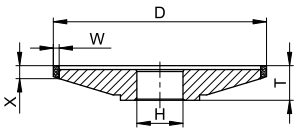
Shape 11V9



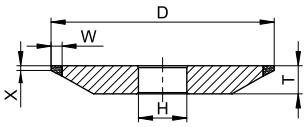
Shape 12V9



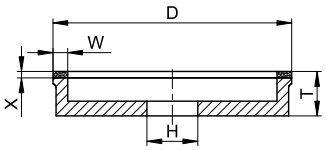
Shape 12A2D



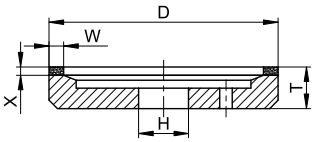
Shape 4B2



Shape 4ET9



Shape 6A2H



Shape 6A2T

With this diamond wheel you can grind all tungsten carbide cutting tools for the wood and metal industry and a variety of shear blades. Grinding wheel sets for complete machining in the diamond grain size range D126 - D54.

The wear-resistant bond and a high grain concentration significantly increase lifetime compared to dry-grinding wheels.

	Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s	Comments
	11V9	390970	75x30x20	2-10	DE643BS STARTEC-BASIC	18-25	
		357223	100x35x20	2-10	DE643BS STARTEC-BASIC	18-25	
		532514	100x35x20	3-10	DE643BS STARTEC-BASIC	18-25	
	12V9	495020	75x20x20	2-6	DE643BS STARTEC-BASIC	18-25	
		532510	100x20x20	2-10	DE643BS STARTEC-BASIC	18-25	
		532529	100x20x20	3-10	DE643BS STARTEC-BASIC	18-25	
		363993	125x25x20	2-10	DE643BS STARTEC-BASIC	18-25	
		532540	125x25x20	3-10	DE643BS STARTEC-BASIC	18-25	
	12A2D	495044	125x25x20	15-3	D 54 C75 B 48 AL		

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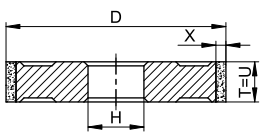
Recommended stock type

	Shape	Type no.	DxTxH	W-X	Specification	Comments
	6A2T	470272	200x35x75	8-4	D 126 C100 B 52 AL	For planer and paper knives; e.g. Göckel, Reform

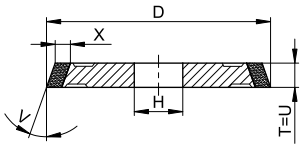
CNC tool grinding with metal bonded CBN for wet grinding
for high-alloyed steels and HSS

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
STARTEC-XP-P			●	●						●

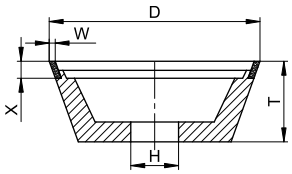
Recommended stock type



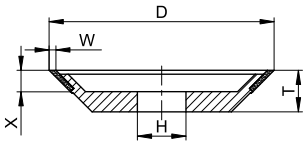
Shape 1A1



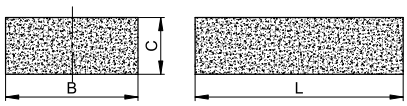
Shape 1V1



Shape 11V9



Shape 12V9



Shape 90AS

This metal-bonded CBN wheel grinds all cutting tools for the wood and metal industry. Grinding wheel sets for complete machining are available in the CBN grit size range B126 - B76. It is important that this wheel is only used for deep grinding.

The perfect combination of grit size, concentration and bond delivers exceptionally long tool lifetime and a high level of profile accuracy.

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	Shape	Type no.	DxTxH	U-X	Specification	V opt. m/s
	1A1	751424	100x6x20	6-10	B126MXPP STARTEC-XP-P	20-25
		763854	100x15x20	15-10	B126MXPP STARTEC-XP-P	20-25
		740382	100x10x20	10-10	B126MXPP STARTEC-XP-P	20-25
		772444	125x12x20	12-10	B126MXPP STARTEC-XP-P	20-25
		772443	125x10x20	10-10	B126MXPP STARTEC-XP-P	20-25
		772448	150x12x20	12-10	B126MXPP STARTEC-XP-P	20-25

	Shape	Type no.	DxTxH	U-X V	Specification	V opt. m/s
	1V1	772455	100x12x20	12-10 V45	B126MXPP STARTEC-XP-P	20-25
		772462	125x15x20	15-10 V15	B126MXPP STARTEC-XP-P	20-25

	Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s
	11V9	34211869	75x30x20	3-10	B107BXP-P STARTEC-XP-P	20-30
		34205432	100x35x20	3-10	B107BXP-P STARTEC-XP-P	20-30
	12V9	34207564	100x20x20	2-10	B107BXP-P STARTEC-XP-P	20-30
		34163105	125x25x20	3-10	B107BXP-P STARTEC-XP-P	20-30

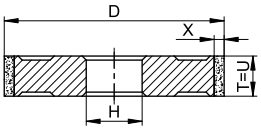
	Shape	Type no.	BxCxL	Specification	PU	Comments
	90AS	678953	24x13x200	89A 240 H5A V83	10	Sharpening stick for STARTEC XP-P and HP

CNC tool grinding with metal-bonded diamond for wet grinding

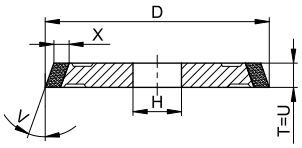
for tungsten carbide

Specification	Aluminium	Non and low-alloyed steels	High-alloyed steels	HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened | Hardened	Unhardened | Hardened							
STARTEC-XP-P, D STARTEC-HP, D						●				●

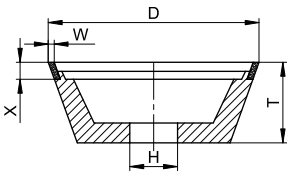
Recommended stock type



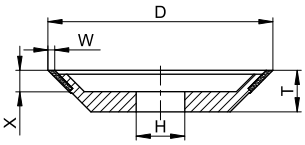
Shape 1A1



Shape 1V1



Shape 11V9



Shape 12V9

With this diamond wheel you can grind all tungsten carbide cutting tools for the wood and metal industry and a variety of shear blades. Grinding wheel sets for complete machining in the diamond grain size range D64 - D46. It is important that this wheel is only used for deep grinding.

The perfect combination of grit size, concentration and bond delivers exceptionally long tool lifetime and a high level of profile accuracy.

	Shape	Type no.	DxTxH	U-X	Specification	V opt. m/s
	1A1	662236	75x6x20	6-10	D54MXPP STARTEC-XP-P	16-18
		679931	75x6x20	6-6	D54MXPP STARTEC-XP-P	16-18
		679936	75x10x20	10-6	D54MXPP STARTEC-XP-P	16-18
		742939	75x10x20	10-10	D54MXPP STARTEC-XP-P	16-18
		679938	100x6x20	6-6	D54MXPP STARTEC-XP-P	16-18
		695084	100x6x20	6-10	D54MXPP STARTEC-XP-P	16-18
		675436	100x15x20	15-10	D54MXPP STARTEC-XP-P	16-18
		679942	100x15x20	15-6	D54MXPP STARTEC-XP-P	16-18
		679940	100x12x20	12-6	D54MXPP STARTEC-XP-P	16-18
		700297	100x12x20	12-10	D54MXPP STARTEC-XP-P	16-18
		679939	100x10x20	10-6	D54MXPP STARTEC-XP-P	16-18
		682530	100x10x20	10-10	D54MXPP STARTEC-XP-P	16-18
		679945	125x6x20	6-6	D54MXPP STARTEC-XP-P	16-18
		686906	125x6x20	6-10	D54MXPP STARTEC-XP-P	16-18
		679949	125x15x20	15-6	D54MXPP STARTEC-XP-P	16-18
		683963	125x15x20	15-10	D54MXPP STARTEC-XP-P	16-18
		679948	125x12x20	12-6	D54MXPP STARTEC-XP-P	16-18
		682529	125x12x20	12-10	D54MXPP STARTEC-XP-P	16-18
		685975	125x10x31.75	10-10	D54MXPP STARTEC-XP-P	16-18
		679947	125x10x20	10-6	D54MXPP STARTEC-XP-P	16-18
		682527	125x10x20	10-10	D54MXPP STARTEC-XP-P	16-18
		684827	150x8x20	8-10	D54MXPP STARTEC-XP-P	16-18

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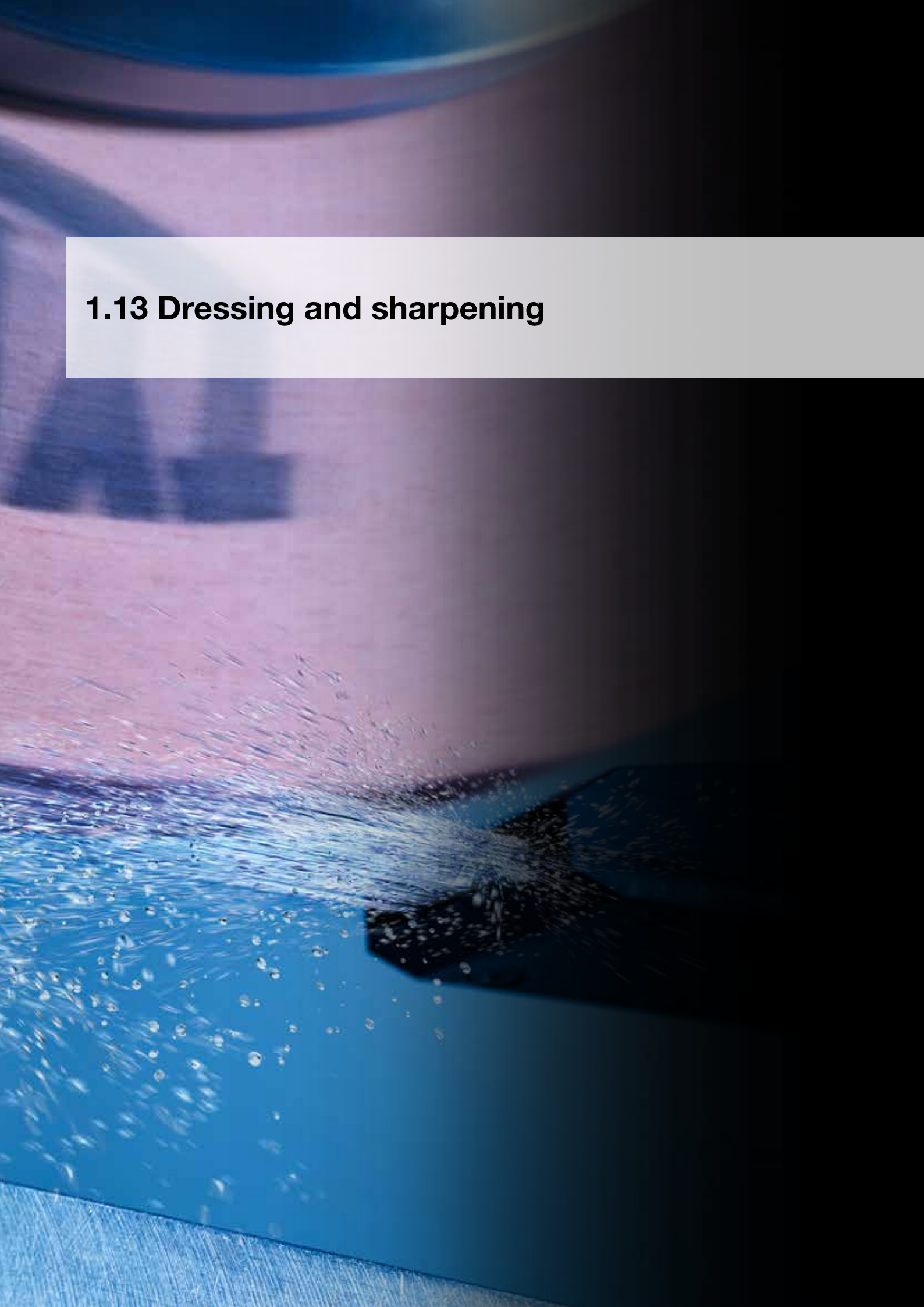
	Shape	Type no.	DxTxH	U-X	Specification	V opt. m/s
	1A1	679953	150x15x20	15-10	D54MXPP STARTEC-XP-P	16-18
		679952	150x12x20	12-10	D54MXPP STARTEC-XP-P	16-18
		679951	150x10x20	10-10	D54MXPP STARTEC-XP-P	16-18
	1A1	474444	100x6x20	6-6	DN543MH STARTEC-HP	16-18
		408972	100x10x20	10-6	DN543MH STARTEC-HP	16-18

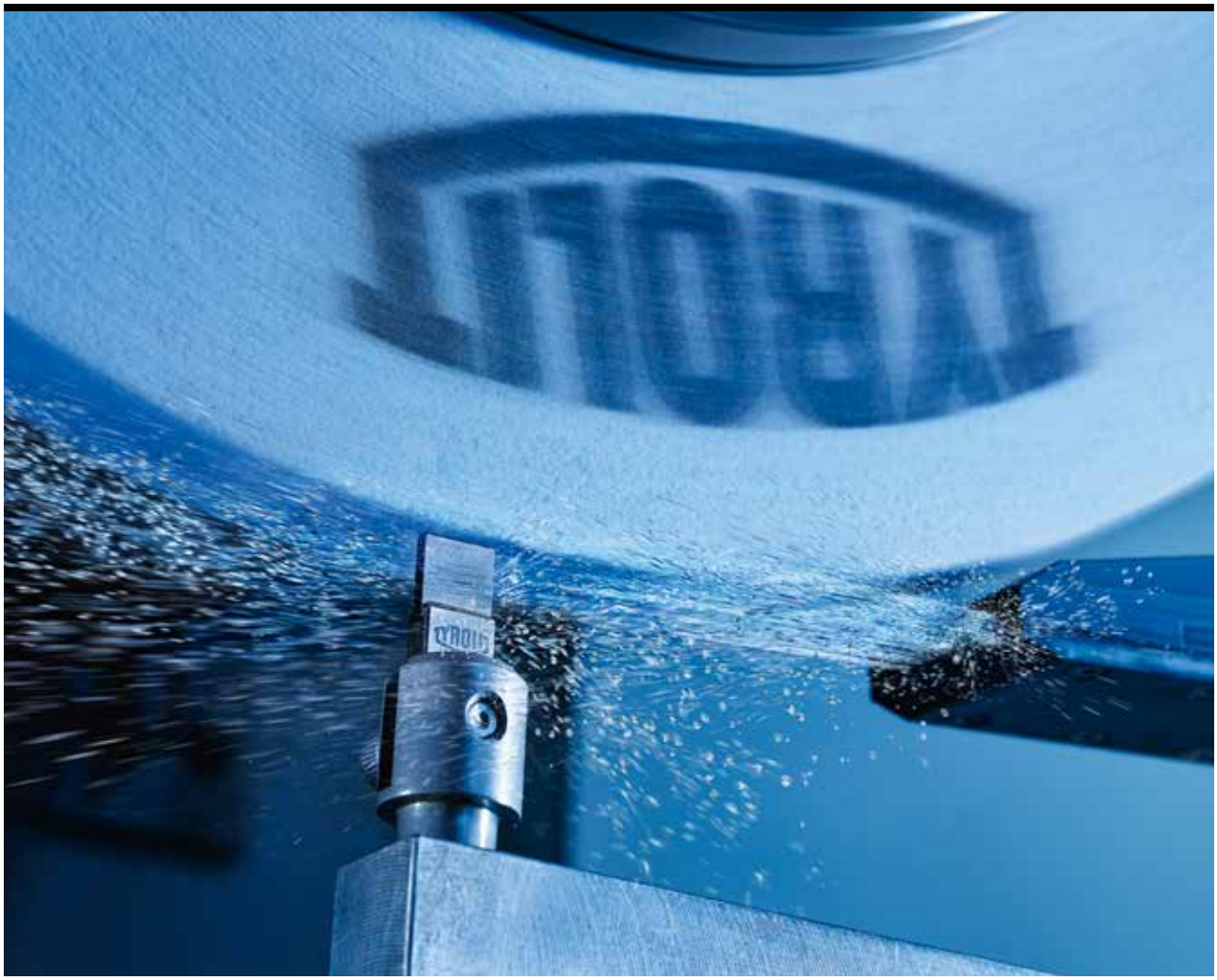
	Shape	Type no.	DxTxH	U-X V	Specification	V opt. m/s
	1V1	680098	75x8x20	8-10 V15	D54MXPP STARTEC-XP-P	16-18
		680099	75x10x20	10-10 V15	D54MXPP STARTEC-XP-P	16-18
		680100	100x6x20	6-10 V15	D54MXPP STARTEC-XP-P	16-18
		680102	100x10x20	10-10 V15	D54MXPP STARTEC-XP-P	16-18
		680104	100x12x20	12-10 V15	D54MXPP STARTEC-XP-P	16-18
		680107	100x12x20	12-10 V45	D54MXPP STARTEC-XP-P	16-18
		680110	100x15x20	15-10 V15	D54MXPP STARTEC-XP-P	16-18
		680112	125x6x20	6-10 V15	D54MXPP STARTEC-XP-P	16-18
		680114	125x10x20	10-10 V15	D54MXPP STARTEC-XP-P	16-18
		680115	125x10x20	10-10 V45	D54MXPP STARTEC-XP-P	16-18
		680116	125x12x20	12-10 V15	D54MXPP STARTEC-XP-P	16-18
		680118	125x12x20	12-10 V45	D54MXPP STARTEC-XP-P	16-18
		680120	125x15x20	15-10 V15	D54MXPP STARTEC-XP-P	16-18
		680124	150x12x20	12-10 V10	D54MXPP STARTEC-XP-P	16-18

	Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s
	11V9	34459153	75x30x20	3-10	DS64MXPP+ STARTEC-XP-P+	18-24
		34495642	75x30x20	3-10	DS46MXPP+ STARTEC-XP-P+	18-24
		34039198	75x30x20	3-10	D64BXPP STARTEC-XP-P	18-24
		34065405	75x30x20	3-10	D46BXPP STARTEC-XP-P	18-24
		34039199	100x35x20	3-10	D64BXPP STARTEC-XP-P	18-24
		34065402	100x35x20	3-10	D46BXPP STARTEC-XP-P	18-24
		34459156	100x35x20	3-10	DS64M-2XPP+ STARTEC-XP-P+	18-24
		34499341	100x35x20	3-10	DS46M-2XPP+ STARTEC-XP-P+	18-24
		34512363	100x35x31,75	3-10	DS64MXPP+ STARTEC-XP-P+	18-24
		34512362	100x35x31,75	3-10	DS46MXPP+ STARTEC-XP-P+	18-24
		34065409	125x40x20	3-10	D46BXPP STARTEC-XP-P	18-24
		34065410	125x40x20	3-10	D64BXPP STARTEC-XP-P	18-24
	12V9	34044248	100x20x20	3-10	D64BXPP STARTEC-XP-P	18-24
		34065415	125x25x20	3-10	D46BXPP STARTEC-XP-P	18-24
		34056064	125x25x20	3-10	D64BXPP STARTEC-XP-P	18-24


TYROLIT

1.13 Dressing and sharpening





Dressing and sharpening

Grinding is an unsteady process, due to wheels wearing out - this results in changes in the bond, the abrasive grain and the shape of the grinding wheel.

The changes affect grinding forces, workpiece surfaces and geometric accuracy. To ensure the grinding wheel is always able to provide optimum grinding results, a periodic conditioning cycle must be maintained. This cycle enables the grinding capability of the grinding body to be reproduced. By “conditioning” a grinding wheel correctly, the subsequent grinding process can be optimised in terms of performance, efficiency and surface finish.

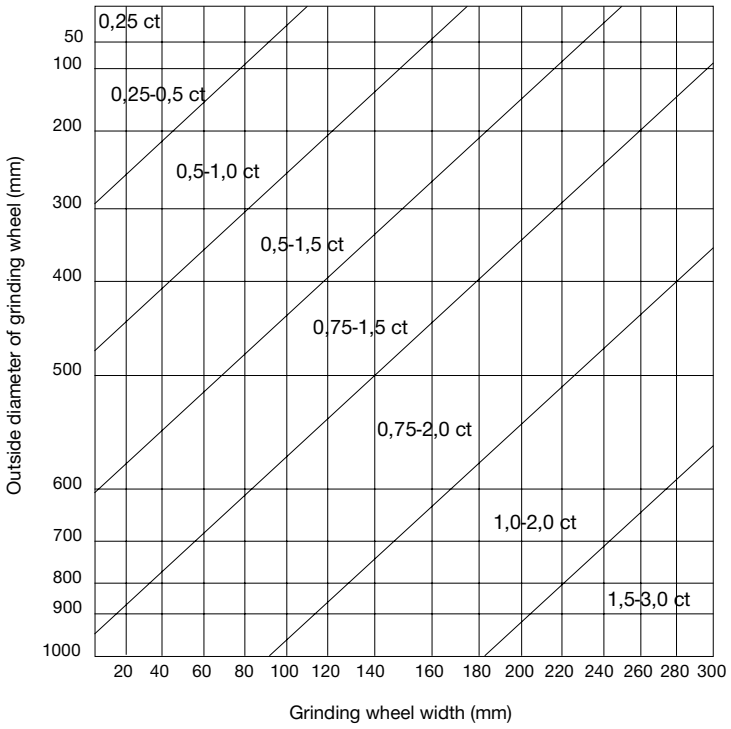
Choosing the right dresser

	Dressing tool		Grinding wheel profile	Grinding process/production type
	Photo	Detailed description		
Single-edge	Single-grain dresser		Linear (cylindrical, conical)Single-profile (convex, concave radii)	External cylindrical, surface, internal cylindrical and centreless grinding Single and small-lot production
	Profile diamond		Multi-profile (complex profiles with steep flanks and narrow radii)	External cylindrical, surface and centreless grinding Single and small-lot production
Multi-edge	Multi-set diamond dresser		Linear (cylindrical, conical)	Surface and external cylindrical grinding Single and small-lot production
	Multi-grain diamond dresser		Linear (cylindrical, conical)	Surface and external cylindrical grinding Single and small-lot production
	Diamond grain dressing plate		Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, surface and centreless grinding Single to large-scale production
	Needle dressing plates		Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, surface and centreless grinding Single to large-scale production
	Dressing plates with MCD rods		Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, internal cylindrical, surface and centreless grinding Single to large-scale production

Prevention of common mistakes when dressing

+ Return strokes with the dressing tool smoother the grinding wheel surface and reduce the cutting ability.
+ The free clamping length of the dresser is too large. Vibrations arise and the grinding wheel surface becomes irregular. This topography is reproduced on the workpiece in the subsequent grinding process.
+ The dressing infeed selected (ae > 0.03 mm) is too high. This results in fracture of the bond bridges in the grinding wheel and the grains break out prematurely. The consequences are: a rough workpiece surface and increased dressing tool wear.
+ The cooling system is switched on too late: high temperatures lead to thermal deterioration and high wear. Remedy: the cooling system must be switched on before the first contact with the dressing tool.
+ Strongly rounded single-grain diamonds permanently alter the dressing results and the cutting ability of the wheel is consequently reduced.

Diamond size (carat) in relation to grinding wheel dimensions



Interrelationship of profile radius | grit size

The table below provides an overview of which grit size can achieve a minimum profile radius. As a standard value, it can be assumed that three abrasive grains are required to maintain a minimum profile radius. To achieve a profile radius of 0.3 mm, an approximate grit size diameter of 0.1 mm is required.

Grit size		**36**	**46**	**60**	**80**	**100**	**120**	**150**	**180**	**220**
Min. profile radius	**mm**	1	0.80	0.60	0.45	0.30	0.20	0.15	0.12	0.10
	Inches	0.04	0.03	0.03	0.02	0.10	0.01	0.01	0.01	0.00

Interrelationship of surface roughness | grit size

The table below will help you select the right grit size to achieve the required surface roughness result. Variable process parameters (e.g. the dressing method) have a significant effect as to which surface roughness can be achieved with a certain grit size. For this reason, the following table also lists the surface areas/grit size.

You should take into account that large grit sizes facilitate the removal of chips (material). It is not necessary to select the finest grain for each initial selection of the grit size.

Surface		Grit size								
Micro inch CLA	**µm Ra**	**36**	**46**	**60**	**80**	**100**	**120**	**150**	**180**	**220**
42	1.10	●								
32	0.80	●	●							
26	0.70		●							
21	0.50		●	●						
16	0.40			●						
14	0.35			●	●					
11	0.25				●					
8	0.20				●	●				
7	0.17					●				
6	0.14					●	●			
5	0.12						●	●		
4	0.10							●	●	
3	0.08								●	●
2	0.05									●

Application tips

- Ensuring sufficient coolant supply while dressing increases lifetime (to prevent thermal overload of dressing diamonds)
- The active width (bd) describes the effective diamond width of the dressing tool for a certain infeed depth when dressing
- With the overlap rate (Ud), surfaces and stock removal rates can be significantly influenced
- The overlap rate (Ud) defines the number of grinding wheel rotations during which the dressing tool has deployed to its active width
- An increased overlap rate makes the grinding wheel surface smoother and, as a consequence, the actual surface roughness lower

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- Standard values for the overlap rate:
  - Roughing 2–3
  - Standard grinding 4–6
  - Fine grinding ≥7

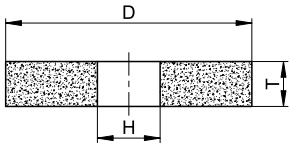
The formulas specified only apply to dressers with defined effective widths bd (single-grain dresser, dressing plate)

$$U_d = \frac{\text{Diamond effective width}}{\text{Tool feed}} = \frac{b_d \cdot n_s}{v_d}$$

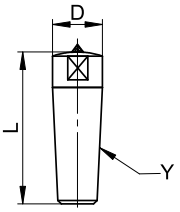
$$v_d = \frac{n_s \cdot b_d}{u_d}$$

b_d = dressing tool effective width
n_s = wheel speed
v_d = feed speed of dresser

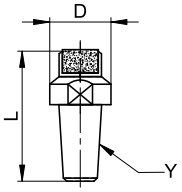
Shapes



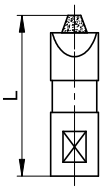
Shape 1



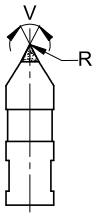
Shape 50EA

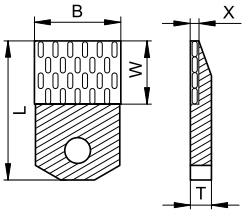


Shape 50MA

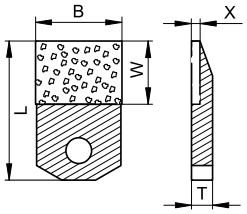


Shape 50PD

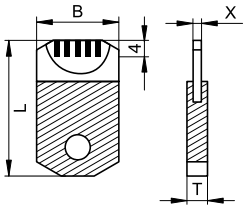




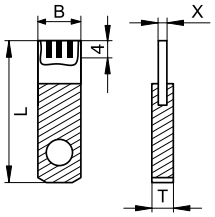
Shape 50AP 1



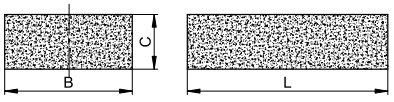
Shape 50AP 2



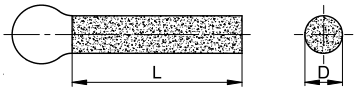
Shape 50AP 3



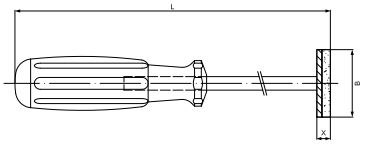
Shape 50AP 4



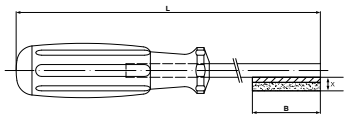
Shape 90AS



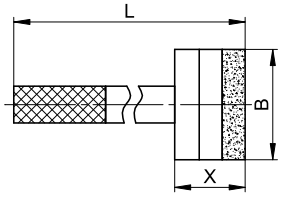
Shape 90AR



Shape STSEG A



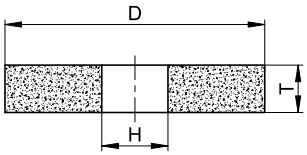
Shape STSEG C



Shape 50HAG

Brake dressing

Dressing wheels for diamond and wheels



Shape 1

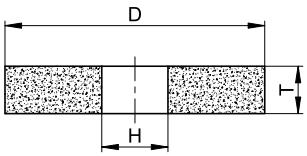
These dressing wheels are used for dressing all types of diamond and CBN grinding wheels, regardless of their bond systems. Sensitive layers can also be dressed with minimal grinding pressure.

Please be aware that electroplated wheels cannot be dressed with them. The silicon carbide wheels are available in 200–250 mm diameters.

	Shape	Type no.	DxTxH	Specification	Comments
	1	786852	200x12x76,2	C 120 K5 V15	For grit sizes ≤ D91
		34163206	200x20x20	C 120 J5 V15	For grit sizes ≤ D91
		413027	250x12x51	C 120 H5A V18	For grit sizes ≤ D91
		250491	250x12x51	C 80 H8 V15	Standard hardness, for grain sizes D151-D64
		619701	250x12x51	C 80 J5 V15	Harder than standard, for grit sizes D151-D64

Dressing device for brake dressing

Dressing wheels for diamond and CBN grinding wheels



Shape 1

These dressing wheels are used for dressing all types of diamond and CBN grinding wheels, regardless of their bond systems. The AV500 dressing device is ideally suited to dressing resin and metal-bonded wheels during dry grinding.

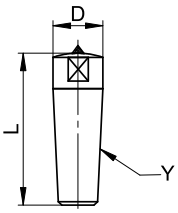
The silicon carbide wheels are available in a 75 mm diameter. Use the 1C70M5V15 specification for robust layers only.

	Shape	Type no.	Decription	PU	Comments
	96	96821	AV500		For concentrically trueing resin and metal-bonded diamond and CBN grinding wheels. Optimum results up to grinding wheel diameter of 250 mm. Dressing wheels, clamping nut and clamping insert are not included in the delivery.
		34045604	AVB	3	Replacement brake pads

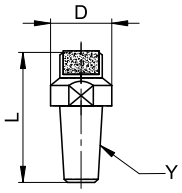
	Shape	Type no.	DxTxH	Specification	PU	Comments
	1	473304	75x20x12.7	C 120 J5 V15	10	Agathon
		7035	75x25x12.7	1C 70 M5 V15	10	Long life, for wider layers, D151-D64
		443944	75x25x12.7	1C 80 G7 V15	10	Standard hardness, for grain sizes D151-D64
		448482	75x25x12.7	C 80 J5 V18	10	Harder than standard, for grit sizes D151-D64

Stationary dressing

Single-grain dresser, multi-grain dresser, multi-grain diamond dresser



Shape 50EA



Shape 50MA/50VA

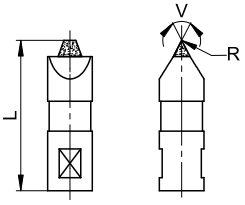
The TYROLIT single-grain, multi-grain and multi-grain diamond dressers are ideal for dressing all aluminium oxide and silicon carbide wheels. Multi-grain and multi-grain diamond dressers are often used for surface and external cylindrical grinding wheels. Large and wide wheels require a higher carat number to reduce diamond wear.

Single-grain dressers are graded according to diamond size. Multi-grain and multi-grain diamond dressers therefore have a higher carat content.

	Shape	Type no.	DxL	Y/AUFN	Specification	ct	Comments
	50EA	856232	9.3x31.5x8	MK0	DD 10 ST	1,0	For conventional tools; Single dressers for cylindrical and surface grinding machines; Wrench width for MK0 and MK1 only
		331997	14x57x12	MK1	ED 15 ST	1,5	
		313466	12.4x49x10	MK1	BD 5 ST	0,5	
		316272	12.4x49x10	MK1	BD 10	1,0	
		313127	8x90	8ZYL	BD 5 ST	0,5	
		363249	10x90	10ZYL	ED 5 ST	0,5	
		611499	10x90	10ZYL	ED 10 ST	1,0	
	50MA	446432	12x50	10x10x37	M65	2,5	Diamond grains set in layers
		446453	12x90	10x10x77	M65	2,5	
		315877	14x57x12	10xMK1	M65	2,5	
		316286	14x57x12	10xMK1	M125	2,5	
	50VA	34173161	10x60	10ZYL	V800-8X11	2,4	Irregular distribution of diamond grains
		34172978	14x42x12	11xMK0	V800-8X11	2,4	
		34172980	14x57x12	11xMK1	V800-8X11	2,4	

Stationary dressing

Profile diamonds



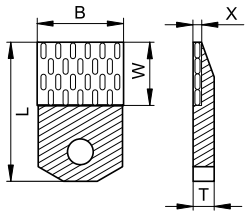
Shape 50PD

Profile diamonds are used for dressing all conventional profile grinding wheels made of aluminium oxide or silicon carbide. The huge advantage of profile diamonds is that they can be reground using a special process. They are frequently used with Diaform and CNC-controlled grinding machines.

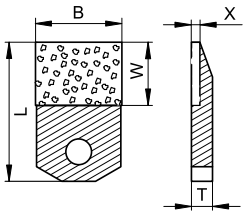
	Shape	Type no.	B/L2xY/AUFN/V/R	Specification	ct
	50PD	475960	44.5xDF/V40/R250	D 0.4 ST	0,4
		477837	44.5xDF/V60/R750	D 0.4 ST	0,4

Stationary dressing

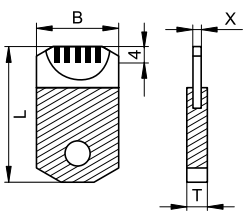
Diamond dressing plates/CSS dressing plates



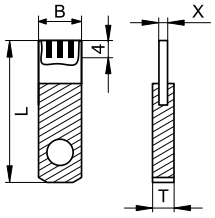
Shape 50AP 1



Shape 50AP 2



Shape 50AP 3



Shape 50AP 4

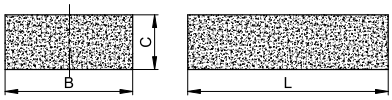
The dressing plates are a high-quality alternative to conventional single-grain diamonds. They are ideal for dressing all aluminium oxide and silicon carbide wheels. They are primarily used for dressing wide wheels and profile wheels with a shallow edge.

By using dressing plates it is possible to achieve maximum precision in the dressing process.

	Shape	Type no.	BxLxT	W-X	Specification	Comments
	50AP 2	477753	10x33x5	15-1.15	B115	sintered on sides; for cylindrical and surface grinding machines, for straight and simple profile
		477746	20x33x5	15-1.4	A140	
		476859	20x33x5	15-1.15	A115	
	50AP 1	477755	10x33x5	15-1.8	B180	Needle dressing plates
		477760	20x28x5	10-1.8	C180	
		477749	20x33x5	15-1.8	A185	
	50AP4	853704	10x33x5	10-2	W3R071004	For aluminium oxide wheels; long life; 3 dia rods
	50AP3	853680	20x33x5	10-2	W5R071004	For aluminium oxide wheels; long life; 5 dia rods

Hand-operated dressing

Dressing sticks for aluminium oxide and silicon carbide grinding wheels

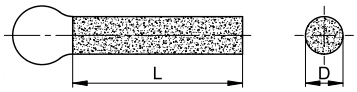


Shape 90AS

Dressing sticks are ideal for dressing all aluminium oxide and silicon carbide wheels. They can be used as an inexpensive dressing tool for vitrified-bonded bench grinding wheels.
Dressing sticks are only available in black silicon carbide.

	Shape	Type no.	BxCxL	Specification	PU
	90AS	43311	25x25x150	C COARSE	10
		9009	50x20x150	C COARSE	1
		153	50x25x200	C MEDIUM	1
		6216	50x25x200	C COARSE	1

Hand-operated dressing
Dressing tubes

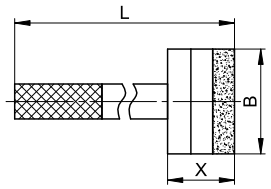


Shape 90AR

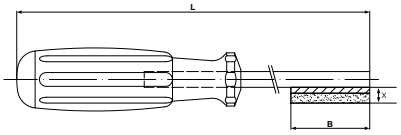
The dressing tubes are ideal for dressing all aluminium oxide and silicon carbide wheels. They can be used as an inexpensive dressing tool for vitrified-bonded bench grinding wheels.
Dressing tubes are only available in green silicon carbide.

	Shape	Type no.	DxL	Specification
	90AR	351767	17x290	C 16 - B

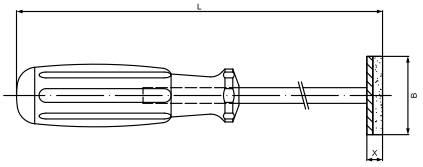
Hand-operated dressing
Diamond dresser



Shape 50HAG



Shape STSEG C



Shape STSEG A

This diamond dresser provides you with a high-quality dressing tool for bench grinding wheels in the precision machining sector. Depending on their design they can be used for peripheral or lateral face machining.

The diamond dressers therefore have either a diamond segment soldered on the face or longitudinally.

	Shape	Type no.	LxBxX	Specification	Comments
	50HAG	477724	185x20x8	D 30 ST	Steel shaft, diamond segment face
		477726	185x30x10	D 26 ST	
		477254	250x40x10	D 35 ST	
	STSEG	195112	185x40x8	HA_DIA	Plastic handle, diamond segment face
		34057995	185x40x8	HA_DIA	Plastic handle, diamond segment longitudinally

Hand-operated dressing
Grinding wheel dresser set

This dresser set is used primarily for large resin-bonded bench grinding wheels and , above all, is put to good use in the foundry industry. Steel rollers enable you to achieve efficient dressing and sharpening of the wheel.

The huge advantage of this dressing tool is that it can be quickly and easily re-equipped with replacement rollers.

▶

◀

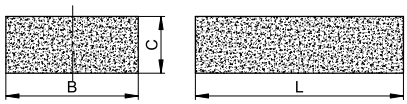
	Shape	Type no.	Specification	D	T max	Grit size	Hardness
	100AKO	15321	S3610	120-250	40	24-80	H-Q
		74497	S3611	300-600	63	16-60	H-Q
		117871	S3612	300-600	63	16-60	H-Q
	100AKO	126781	S3613	300-600	70	16-60	H-Q

Replacement parts

	Shape	Type no.	DxTxH	Specification	PU	Comments
	100ARO	74492	36x21x8	S3610	1	
		74493	55x39x12	S3611	1	
		75915	55x65x12	S3612	1	Replacement rollers
	100ARO	886902	40x2x10	S3613	1	
		132297		S3613		Replacement part set Set consisting of 250pcs.

Hand-operated dressing

Sharpening sticks for diamond and CBN grinding wheels



Shape 90AS

The TYROLIT sharpening sticks sharpen and clean all CBN and diamond grinding wheels, and are used in production and re-sharpening applications. The sticks are made of aluminium oxide and are available in grit sizes 120 - 600. They can be used for hand-operated and mechanical applications.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90AS	845593	24x13x100	SD33A120HH7PVK3	≥ 126	10
		845594	24x13x100	SD33A120JJ7PVK3	≥ 126	10
		845595	24x13x100	SD33A240JJ7PVK3	> 46 and < 126	10
		577953	24x13x200	89A 600 J5A V83	≤ 46	10
		678953	24x13x200	A 240 STARTEC	STARTEC XP-P and HP	10
		33531	25x13x100	89A 600 -25 V83	≤ 46	10
		932780	25x13x200	89A 240 H5A V83	> 46 and < 126	10
		466470	25x25x150	89A 220 I5A V217	> 20 and < 39	10
		58385	30x13x200	SD33A240JJ7PVK3	> 20 and < 39	10
		112055	50x25x200	50C 220 C4 B22	> 46 and < 126	1
		251584	50x25x200	89A 600 -25 V83	≤ 46	1
		391718	50x25x200	89A 240 -35 V83	> 46 and < 126	1
		395773	50x25x200	SD33A120HH7PVK3	≥ 126	1
		460976	50x25x200	SD33A120JJ7PVK3	≥ 126	1
		464290	50x25x200	SD33A240JJ7PVK3	> 46 and < 126	1

Notes

Safety cutting and grinding

Safety brand TYROLIT

We strive to provide operators with products with maximum safety. We achieve this through our work as the founder member of the “Organisation for the Safety of Abrasives (oSa)”, through close cooperation with the safety authorities and through practical communication with our operators across the globe.

aim of oSa®

The main aim of oSa® is defined in terms of absolute protection for the users of grinding tools, whereby members undertake to provide a consistently high level of quality, adopt a rigorous approach towards quality assurance and strive to develop new, improved standards of safety.

TYROLIT quality management system

The TYROLIT quality management system has been certified to ISO 9001:2015 for the entire production area by an external authorised body. The products are manufactured and tested in line with European safety standards:

- EN 12413 for grinding wheels made of bonded abrasives
- EN 13236 for grinding wheels made of diamond or boron nitride
- EN 13743 for special abrasives on an underlay such as vulcanised fibre grinding wheels, flap grinding wheels, flap discs and mounted points

On account of the fact that in the approval principles (EN-Standard) very high requirements are set on the grinding tools concerning defined technical grinding parameters, TYROLIT delivers all grinding tools corresponding to these principles. As a result we guarantee a constantly high safety level, even in countries without compulsory approvals.

Final inspection – checks at TYROLIT

TYROLIT carries out final inspections in accordance with EN safety standards. In addition, internal testing procedures are also used to determine efficiency and material properties.

Resin bonded products undergo a final inspection regarding an identification test, as well as a geometry, imbalance, bursting, side load and a visual test, followed by a grinding and cutting testing process.

Resin and ceramic bonded products undergo a final inspection regarding a visual test, an identification test, a geometry, imbalance, bursting and side load test as well as a test run, including a sound test.

Safety

Safety during a grinding process is ensured by the machine manufacturer, the grinding wheel producer and the user.

Grinding wheels are subject to a high load during the grinding process. This is why grinding machines, grinding bodies, handling and application must be optimally harmonised to ensure safe grinding. For the grinding machines, it is especially important to observe the machine conditions and the stipulation of the protection cover.

Whereas manufacturers implement the safety measures in line with regulations during the production of the grinding machine and grinding wheels, the user is responsible for safety when grinding by using the grinding machine for the intended purpose, as well as by correct handling and application of the grinding wheels.

The following must be considered:

- Examine the grinding tools on delivery
- Correct handling and storage of grinding tools
- Labelling, matching with machine data
- Examination of the grinding wheels prior to clamping
- Choose correct methods for grinding wheels
- Test run of grinding tools prior to start-up
- Eye protection and protective clothing (see also FEPA safety code)

Storage of the grinding wheels

Grinding wheels are to be stored in suitable racks or containers, to avoid damage and so that it is easily possible to remove wheels without disturbing the storage setup. Older stock should be used first.

During storage, the following must be noted

Store the grinding wheels in a dry, and protected environment to avoid rusting and do not expose grinding wheels to large temperature fluctuations.

Storage for different types of grinding tools

- Store cut-off wheels on a level underlay without intermediate layers and weigh them down with a steel or cast iron plate
- Store large straight grinding wheels in an upright position and make sure they cannot roll away
- Stack cylinder wheels, cylindrical grinding discs and grinding plates by using soft intermediate layers
- Stack cone-shaped grinding discs, shape 11, together by either their front or bottom side
- Store small grinding wheels in suitable containers

Checking of grinding wheels on delivery

Check packaging on delivery. If damage is visible on the packaging, the grinding wheel should be checked particularly thoroughly for any possible transport damage.

Identification of the grinding wheels

The purpose of the identification is to give people, in particular those who carry out the clamping of the grinding wheels, information for safe use and proper application.

Grinding wheels may only be used if they are identified with the following minimum information

- Manufacturer
- Dimensions of grinding wheel
- Material (at least the type of bond)
- Maximum permissible RPM of new grinding wheel and maximum operating speed in m/s

The user is obliged to match the machine speed to the maximum permissible speed given in the identification.

Checking of grinding wheels prior to clamping

Each time before clamping, the grinding wheels must be cleaned and checked visually for damage.

The sound test should be repeated. Damaged grinding wheels must not be mounted.

For the sound test, lightweight grinding wheels are put onto a mandrel or a finger, heavy grinding wheels are placed on firm ground.

The grinding wheel is tapped with a non-metal object on several points.

An undamaged grinding wheel gives a clear ring, while a damaged one gives a dull or clanking sound.

All contact surfaces on grinding wheels, intermediate layers and wheel flanges must be level (flat) and be free of foreign bodies. Foreign particles between grinding wheels and wheel flanges create pressure points and tension, which can lead to the grinding wheel breaking.

Clamping methods for grinding wheels

Depending on the type of machine and grinding method, as well as the grinding wheel shape, a distinction can be made between the following clamping methods

- Mounting by the central bore using wheel flanges
- Mounting by using embedded fixing elements
- Mounting by using support plates
- Mounting by using clamping head

Mounting by the central bore using wheel flanges

A distinction should be made between the following wheel flange types for central bores

- Recessed wheel flange
- Straight wheel flanges for portable grinding machines
- Special flanges
- Stepped flanges
- Locating flanges and tapered wheel flanges

The purpose of the wheel flanges is to transfer drive forces. They must therefore be in such a condition that there is no deformation of the wheel flange during clamping. The contact surfaces must be level (flat) and must not show any burring, and the run-out of the grinding wheel must be safeguarded.

Only wheel flanges that have the same external diameter and the same shape on the contact side may be used. They must be recessed so that only a ring-shaped area of the wheel flange is on the surface.

Clamping by using embedded fixing elements

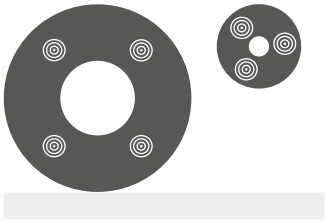
The grinding wheels are fixed by using embedded fixing elements on the grinding machine. Examples of this are the clamping of cylindrical and taper cup wheels, or the fixing of mounted points with embedded steel shafts in collets on portable grinding machines.

Clamping of grinding wheels on support plates

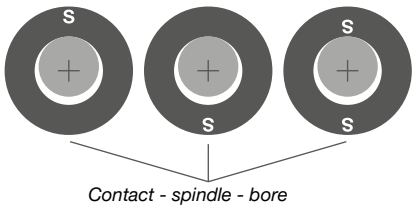
Grinding wheels will be either screwed or stuck together with the support disc.

Clamping of grinding segments in clamping heads

Grinding segments are clamped to one grinding unit (segment head) in clamping heads. On the contact surfaces between the grinding segments and the clamping pieces, adhesive strips can be placed on the grinding segments to avoid tension in the grinding segments.

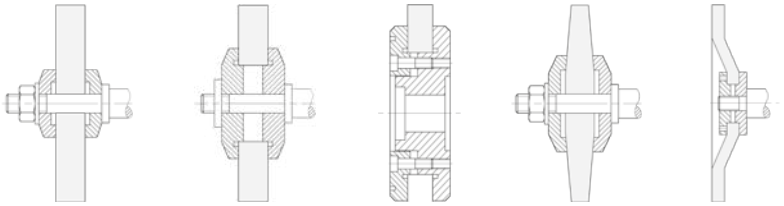


Examples of tapping points during the sound test

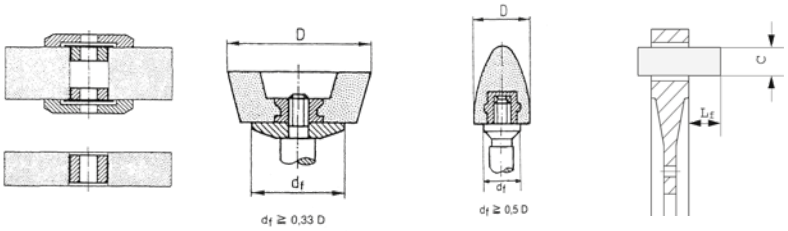


Contact - spindle - bore

Examples of identifying wheel orientation



Recessed wheel flange | Stepped flange | Locating flange | Tapered wheel flange | Straight wheel flange



Example of the correct way to use reducing rings | Clamping of taper cup wheels with a thread insert | Clamping of a grinding cone, shape 16, with a thread insert | Clamping of grinding segments in clamping heads Lf = 1.5 C

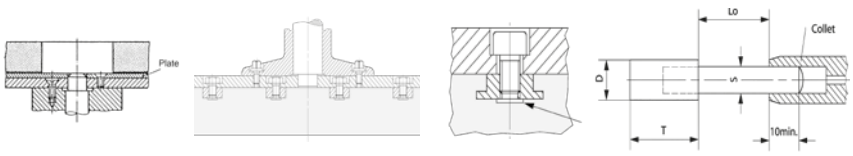


Figure 1 | Figure 2 | Figure 3 | Figure 4

Fig. 1: Grinding wheel, stuck together
Fig. 2: Grinding wheel screwed together with the support disc
Fig. 3: Correct bolt connection, bolt end must not touch the base of the grinding wheel
Fig. 4: Clamping of mounted points

Test run prior to start-up

Every grinding wheel without a diameter restriction must undergo a test run at maximum operating speed before being used for the first time and after every re-clamping.

The duration of a test run is one minute.

The test run may only be carried out once the danger zone has been secured and once the protective cover, if necessary, is attached. The grinding wheel can only be used for the intended work once the test run has been passed without complaint.

Eye protection and protective clothing

All grinding tasks where people are at risk of flying particles off of grinding wheels or workpieces must only be carried out using eye protection (safety glasses) and, if necessary, other protective clothing (e.g. leather apron and leather gloves).

Summary

The most important points for safe use of grinding wheels are summarised again below:

- Adjustment of the machine data to the identification data
- Checking of grinding wheels prior to mounting
- Knowlegdeable mounting
- Checking the functionality of the protective cover
- Test run of grinding wheels prior to grinding work
- Personal safety

Safety information


Use gloves


Use dust mask


Wet grinding


Not permitted for side grinding


Use eye protection


Declaration of conformity, EN safety standard


Dry grinding


No freehand work


Use ear protection


Pay attention to the safety recommendations


Do not use damaged wheels


Free from Fe, S, Cl

Do’s & don’ts

- ✓ Handle and store grinding tools carefully; use the oldest tools first.
- ✓ Prior to mounting or use, grinding wheels must be cleaned and undergo a visual check for cracks or possible damage.
- ✓ Ceramic bonded grinding tools must undergo a sound check before mounting.
- ✓ Make sure that the speed of the machine (RPM) does not exceed the maximum operating speed specified on the packaging or on the grinding tool.
- ✓ Ensure that the bore of the grinding tool – with or without thread – fits the shaft of the machine perfectly; and that the wheel flanges are clean, flat, the same size and suitable for the grinding tool to be clamped.
- ✓ As intended or supplied, use the intermediate layers between the grinding wheel and wheel flanges.
- ✓ Only use machines with protective covers and ensure their proper condition and fixture before the machine is switched on.
- ✓ After each mounting, carry out a test run for at least one minute at the operating speed and ensure the protective cover is mounted correctly. In doing so, ensure that any fragments would not be able to hit you or someone else in the event of a possible breakage.
- ✓ Eye protection is always recommended for all grinding processes. For off-hand grinding, protective goggles or a safety mask are recommended.
- ✓ When working with cut-off or rough-grinding wheels, ensure that the air supply and protective measures sufficiently correspond with the material to be processed. Suitable extraction systems should be fitted for all dry grinding processes.
- ✓ Only use machines that are also suitable for grinding tools with hub.
- ✓ Before stopping the machine, cut off the supply of cooling lubricant and remove the excess cooling lubricant from the grinding wheel.

- × Do not use abrasives that are exposed to particularly humid/wet conditions or high temperatures prior to mounting.
- × Never use abrasives that have been dropped, damaged or that look like they would not be fit the purpose.
- × Never exceed the specified maximum permissible operating speed.
- × Do not use wheel flanges with surfaces that are not free of foreign bodies (e. g. grinding swarf), flat or burrfree.
- × Do not tighten the clamping device or wheel flange too much.
- × Do not use recessed wheel flanges or flanges with recesses for grinding discs or cones.
- × Never use force when clamping and do not make any changes to the grinding tool.
- × Only use one-way adapters (hubs) once.
- × Only switch on the machine when the protection cover is correctly and securely fixed (machine guards or covers should be set in such a way that they divert sparks and grinding particles away from the body).
- × Only start the machine if there is no contact between the workpiece and the grinding tool.
- × Never work with grinding tools without sufficient air supply (never without breathing apparatus and ear protection, particularly in enclosed spaces) and without personal safety equipment (see pictogram).
- × Use a suitable grinding tool – an unsuitable product can create excessive grinding particles and dust.
- × Avoid mechanical damage to the grinding wheel as a result of force effects, jolting or heating.
- × Never use grinding machines in an improper condition or which contain faulty components.
- × Do not use cut-off wheels for grinding work (do not exert a lateral load on any cut-off wheels of shape 41 or 42).
- × Never mount more than one grinding tool on one shaft.
- × Never use grinding tools after the indicated expiry date. This is expressed as a month and year (e.g. 04/2016) and is usually located on the metal ring around the bore on cut-off or rough-grinding wheels. On other tool types (e.g. cup wheels), the expiry date may also be located on the label.

Speed recommendations

Rotational speeds and peripheral speeds depending on the external diameter Ø=D of the grinding wheels.

	Rotations n per minute min-1 depends on external diameter D of grinding wheel and the maximum operating speed V_s										
	Maximum operating speed V_s in m/s										
D in mm	**16**	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**
3											
4	75 300	95 400									
5	61 100	76 300	95 400								
6	50 900	63 600	79 500								
8	38 100	47 700	59 600	76 300	83 500	95 400					
10	30 500	38 100	47 700	61 100	66 800	76 300	95 400				
13	23 500	29 300	36 700	47 000	51 400	58 700	73 400	92 500			
16	19 000	23 800	29 800	38 100	41 700	47 700	59 600	75 200	95 400		
20	15 200	19 000	23 800	30 500	33 400	38 100	47 700	60 100	76 300	95 400	
25	12 200	15 200	19 000	24 400	26 700	30 500	38 100	48 100	61 100	76 300	95 400
32	9 540	11 900	14 900	19 000	20 800	23 800	29 800	37 600	47 700	59 600	74 600
35	8 730	10 900	13 600	17 400	19 000	21 800	27 200	34 300	43 600	54 400	68 200
40	7 630	9 540	11 900	15 200	16 700	19 000	23 800	30 000	38 100	47 700	59 600
50	6 110	7 630	9 540	12 200	13 300	15 200	19 000	24 000	30 500	38 100	47 700
63	4 850	6 060	7 570	9 700	10 600	12 100	15 100	10 000	24 200	30 300	37 800
80	3 810	4 770	5 960	7 630	8 350	9 540	11 900	15 000	19 000	23 800	29 800
100	3 050	3 810	4 770	6 110	6 680	7 630	9 540	12 000	15 200	19 000	23 800
115	2 650	3 320	4 150	5 310	5 810	6 640	8 300	10 400	13 200	16 600	20 700
125	2 440	3 050	3 810	4 880	5 340	6 110	7 630	9 620	12 200	15 200	19 000
150	2 030	2 540	3 180	4 070	4 450	5 090	6 360	8 020	10 100	12 700	15 900
175	1 740	2 180	2 720	3 490	3 810	4 360	5 450	6 870	8 730	10 900	13 600
180	1 690	2 120	2 650	3 390	3 710	4 240	5 300	6 680	8 480	10 600	13 200
200	1 520	1 900	2 380	3 050	3 340	3 810	4 770	6 010	7 630	9 540	11 900
225	1 350	1 690	2 120	2 710	2 970	3 390	4 240	5 340	6 790	8 480	10 600
230	1 320	1 660	2 070	2 650	2 900	3 320	4 150	5 230	6 640	8 300	10 300
250	1 220	1 520	1 900	2 440	2 670	3 050	3 810	4 810	6 110	7 630	9 540
300	1 010	1 270	1 590	2 030	2 220	2 540	3 180	4 010	5 090	6 360	7 950
350	870	1 090	1 360	1 740	1 900	2 180	2 720	3 430	4 360	5 450	6 820
400	760	950	1 190	1 520	1 670	1 900	2 380	3 000	3 810	4 770	5 960
450	670	840	1 060	1 350	1 480	1 690	2 120	2 670	3 390	4 240	5 300
500	610	760	950	1 220	1 330	1 520	1 900	2 400	3 050	3 810	4 770
600	500	630	790	1 010	1 110	1 270	1 590	2 000	2 540	3 180	3 970
700	430	540	680	870	950	1 090	1 360	1 710	2 180	2 720	3 410
750	400	500	630	810	890	1 010	1 270	1 600	2 030	2 540	3 180
800	380	470	590	760	830	950	1 190	1 500	1 900	2 380	2 980
900	330	420	530	670	740	840	1 060	1 330	1 690	2 120	2 650
1 000	300	380	470	610	660	760	950	1 200	1 520	1 900	2 380
1 060	280	360	450	570	630	720	900	1 130	1 440	1 800	2 250
1 250	250	310	390	500	550	630	790	1 000	1 270	1 590	1 980
1 500	200	250	310	400	440	500	630	800	1 010	1 270	1 590

Catalogue

General information

The tools shown in this catalogue, the information regarding delivery, appearance, performance and dimensions shall comply with the according status at the time of printing. We develop our products continuously. We reserve the right to change without prior notice.

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