PFERD TOOLS

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Milling, drilling and countersinking tools

Milling, drilling and countersinking tools
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Milling, drilling and countersinking tools

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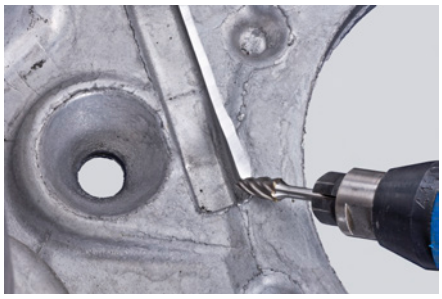
Milling, drilling and countersinking tools
Highlights from the PFERD TOOLS range

PFERD TOOLS

Tungsten carbide burrs with high-performance cut ALU

Aluminium plays a crucial role in many industrial sectors. At the same time, machining of aluminium presents a number of challenges: Conventional cross cuts can become clogged very quickly, especially on soft aluminium alloys.

Unlike conventional cross cuts, burrs with the ALU cut feature a material-optimized tooth geometry. In combination with the high-quality HC-NFE coating, they prevent the formation of built-up edges and tool clogging.



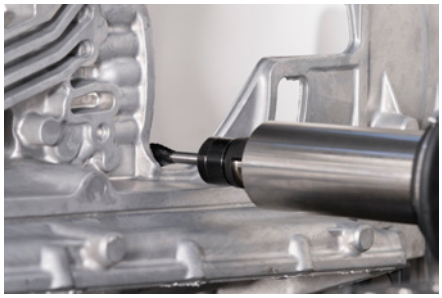
Advantages:
- High stock removal rate combined with a smooth milling action on aluminium and special aluminium alloys, non-ferrous metals and plastics.
- HC-NFE coating prevents material adhesion when working on long-chipping and lubricating non-ferrous metals.
- Can be used with cutting speeds of up to 1,100 m/min (HC-NFE: up to 1,300 m/min).

Milling tools for robot applications

PFERD TOOLS' impressive milling tools for robot applications meet the highest quality standards during production and offer high performance and wear resistance.

Our portfolio of products tailored specifically to the requirements of robot applications features innovative burr geometries which help to achieve significant process chain optimizations. The specially developed burr shapes such as KZW, KSK-WKN and SKM-ZYA combine the performance characteristics of various geometries in a single tool, enabling effortless chamfering and deburring in just one operation.

The result: Considerably reduced process costs due to fewer tool changes and significantly reduced programming effort.



Advantages:
- Less programming needed due to fewer tool changes.
- High-quality HICOAT coating for a much higher stock removal rate.

HICOAT coating

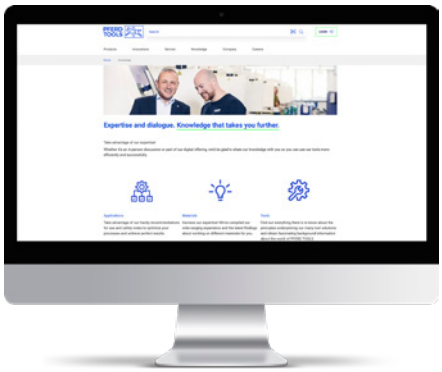
PFERD TOOLS offers tools with HICOAT coatings to tackle particularly demanding applications. Three different coatings are available. The HICOAT coating HC-FEP is specifically designed for iron and steel materials. The HICOAT coating HC-STS is optimized for use on stainless steels. The HICOAT coating HC-NFE is mainly used for long-chipping and lubricating aluminium alloys and non-ferrous metals, as it prevents material adhesion. In general, all PFERD TOOLS tungsten carbide burrs are also available with HICOAT coatings.

Scan the QR code to find out more about PFERD TOOLS' HICOAT coatings.

Advantages:
- Improved anti-adhesion characteristics.
- Effective chip discharge.
- Lower thermal loads.
- Increased tool life.
- Burrs with the HICOAT coating HC-FEP achieve a much higher stock removal rate than uncoated burrs.

More expert information online

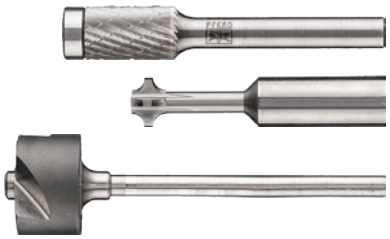
Scan the QR code to find out a wide range of tool and application knowledge relating to PFERD TOOLS' high-quality tools and their huge variety of materials.



Milling, drilling and countersinking tools
General information

Custom-made products

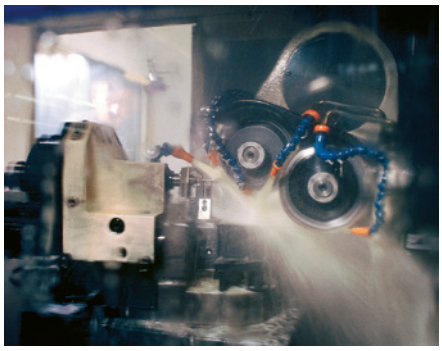
If you cannot find the solution for your particular application in our comprehensive catalogue range, we are happy to produce milling tools to meet your wishes and requirements. Our sales representatives and technical advisers will be happy to assist you in analyzing your task. Your specifications and wishes, drawings relating to cuts, shank diameters, special lengths, special shapes and coatings can thus be taken into account.



Resharpening

PFERD TOOLS offers resharpening of tungsten carbide burrs, subject to a minimum resharpening quantity of 25 units (unmixed items). Resharpening of HSS rotary cutters or tungsten carbide burrs with a shank diameter of 3 mm is not recommended for economic reasons. In each case, our production specialists will decide whether resharpening makes sense from an economic point of view and is technically feasible. The following cuts can be resharpened (only applies to a shank diameter of 6 and 8 mm):

- Cut 1
- Cut 3
- Cut 3 PLUS
- Cut 4
- Cut 5
- INOX
- ALU
- TITANIUM
- TOUGH
- TOUGH-S
- MICRO



Robotics at PFERD TOOLS

To provide the best possible overview of our high-performance robotics range, we have marked all milling tools that are particularly well suited to robot-guided use with a pictogram.

In addition to the milling tools that have been specifically optimized for robot applications, selected coated tungsten carbide burrs with a shank diameter of 6 mm or more can also be used on the robot.

We are also happy to develop custom products for your robot applications. PFERD TOOLS has a long tradition of developing tools for robot applications. Our in-house research and development, along with our experienced application engineers, have successfully optimized numerous robotics applications around the world.

Safety notes

- For safety reasons, the maximum permitted rotational speed indicated must never be exceeded.

Wear eye protection!

Wear hearing protection!

Wear a dust mask!

Wearing protective gloves is recommended. Handle the tool drive with both hands.

Observe the recommended rotational speed, especially when using burrs with long shanks!

Observe the contact angle of 5–60° (**ALU**MASTER HSD-F)!

Tighten the bolts!

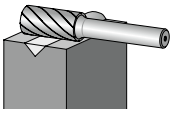
Do not use if damaged!

Do not use for cutting!

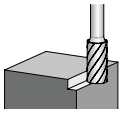
CE-marked

Milling, drilling and countersinking tools
Burr shapes

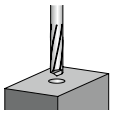
PFERD TOOLS



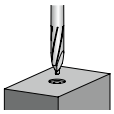
ZYA
Cylindrical shape



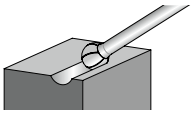
ZYAS/HSS A-ST
Cylindrical shape with end cut



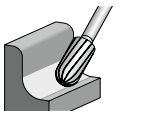
ZYA BS
Cylindrical shape with drill cut



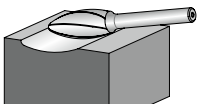
ZYA ZBS
Cylindrical shape with centre drill



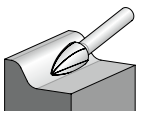
KUD/HSS F
Ball shape



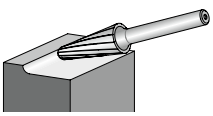
WRC/HSS C
Cylindrical shape with radius end



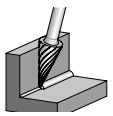
B
Flame shape



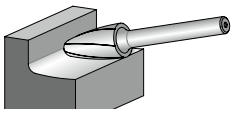
SPG/ HSS K
Pointed tree shape



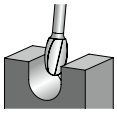
KEL/HSS L
Conical shape with radius end



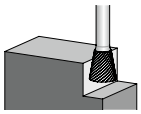
SKM/HSS G
Conical pointed shape



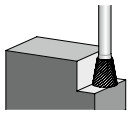
RBF/HSS H
Tree shape with radius end



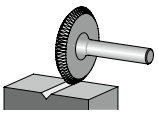
TRE/HSS O
Oval shape



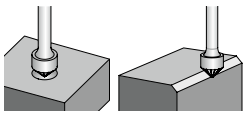
WKN
Inverted cones



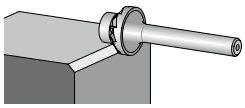
WKNS/HSS W-ST
Inverted cones with end cut



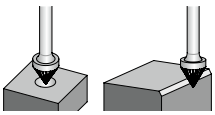
N
Disc shape



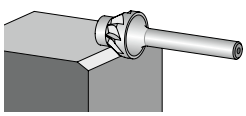
KSK
Conical counterbore shape 90°



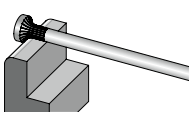
KSK EDGE
EDGE 45°



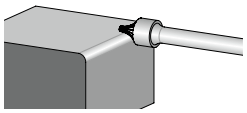
KSJ
Conical counterbore shape 60°



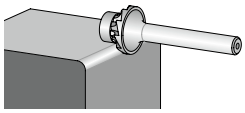
KSJ EDGE
EDGE 30°



R
Radius burrs



V
Concave radius burrs



V EDGE
EDGE R3.0

The quick way to find the perfect tool

Application	Material group			Used for	High-performance application	Universal application
Deburring, chamfering, milling out for the preparation of build-up welding, machining weld seams, machining contours, cleaning cast material	Steel, cast steel	Steels up to 1,200 N/mm² (< 38 HRC)	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, tempering steels	Coarse stock removal	STEEL	3 PLUS
					ALLROUND	
				Fine stock removal	MICRO	5
		Hardened, heat-treated steels over 1,200 N/mm² (> 38 HRC)	Tool steels, tempering steels, alloyed steels, cast steel	Coarse stock removal	STEEL	3 PLUS
					ALLROUND	
				Fine stock removal	MICRO	5
	Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	Coarse stock removal	INOX	4
					ALLROUND	
				Fine stock removal	MICRO	5
	Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys	Coarse stock removal	ALU	1
				Fine stock removal		-
			Brass, copper, zinc	Coarse stock removal	NON-FERROUS	1
					ALU	
					ALLROUND	
				Fine stock removal	ALU	3
		Hard non-ferrous metals	Bronze, titanium/ titanium alloys, hard aluminium alloys (high Si content)	Coarse stock removal	TITANIUM	4
					ALU	
					NON-FERROUS	
					INOX	
					ALLROUND	
				Fine stock removal	MICRO	5
		High-temperature-resistant materials	Nickel-based and co-balt-based alloys (engine and turbine construction)	Coarse stock removal	On request	4
				Fine stock removal	MICRO	5
	Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black annealed cast iron EN-GJMB (GTS)	Coarse stock removal	CAST	3 PLUS
					ALLROUND	
				Fine stock removal	MICRO	3
Milling out, machining contours	Plastics, other materials	Thermoplastics, fibre-reinforced plastics (GRP/CRP) with a fibre content ≤ 40%		Coarse stock removal	PLAST	-
Trimming, contour milling, cutting out holes		Thermoplastics, fibre-reinforced plastics (GRP/CRP) with a fibre content > 40%			FVK/FVKS	
					ALU	
					NON-FERROUS	

Special applications

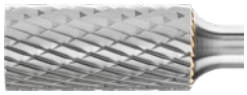
Application	High-performance application	Universal application
Work on edges	TC burrs for work on edges	-
	EDGE FINISH system for work on edges	-
Problems with broken teeth	TC burrs – TOUGH, TOUGH-S cuts	HSS rotary cutters
Cutting out round holes	TC hole cutter	HSS step drills, HSS hole saws
Machining butt welds and fillet welds, work on edges/ chamfering using an angle grinder	**ALU**MASTER High Speed Disc	-
Machining butt welds and fillet welds, work on edges	High Speed Torus Cutter	-
Deburring and chamfering in a single step in robot applications	TC burrs KZW MICRO RS with HICOAT coating HC-FEP, TC burrs KZW cut 3 RS with HICOAT coating HC-FEP	-

TC burrs
PFERD TOOLS cuts

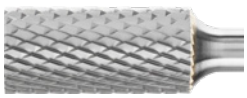
PFERD TOOLS cuts for universal applications

Cut 1 (C according to DIN 8033)
- Machining of non-ferrous metals, steel and cast iron.
- High stock removal and good surfaces.

Cut 3 (MY according to DIN 8033)
- Machining of steel, cast iron, stainless steel (INOX), nickel-based alloys and titanium alloys.
- High stock removal and good surfaces.
- Good surface.
- Burrs with the HICOAT coating HC-FEP achieve a much higher stock removal rate than uncoated burrs.



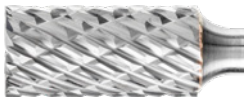
Cut 3 PLUS (MX according to DIN 8033)
- Similar to the 3 cut, but with cross cut.
- Machining of steel, cast iron, stainless steel (INOX), nickel-based alloys and titanium alloys.
- High stock removal and good surfaces.
- Burrs with the HICOAT coating HC-FEP achieve a much higher stock removal rate than uncoated burrs.



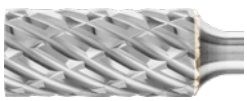
Cut 4 (MX according to DIN 8033)
- Machining of stainless steel (INOX), steel and high-temperature-resistant materials such as nickel-based and cobalt-based alloys.
- High stock removal with short chips.
- Good surface.
- Burrs with the HICOAT coating HC-FEP achieve a much higher stock removal rate than uncoated burrs.

Cut 5 (F according to DIN 8033)
- Fine machining of steel, cast iron, stainless steel (INOX) and high-temperature-resistant materials such as nickel-based and cobalt-based alloys.
- Good surface.
- Burrs with HICOAT coating HC-FEP for high hardness and wear resistance.

PFERD TOOLS cuts for high-performance applications



ALLROUND cut
- High stock removal rate on key materials such as steel, cast steel, stainless steel (INOX), non-ferrous metals and cast iron.
- Similar to the 3 PLUS cut but with a significantly higher stock removal rate.
- Burrs with the HICOAT coating HC-FEP achieve a much higher stock removal rate than uncoated burrs.

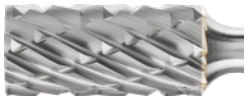


STEEL cut
- Extremely high stock removal rate on steel and cast steel.
- Smooth milling.
- Reduced vibration and less noise.
- Burrs with the HICOAT coating HC-FEP achieve a much higher stock removal rate than uncoated burrs.

TC burrs
PFERD TOOLS cuts

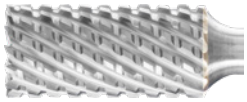
INOX cut
- Extremely high stock removal rate on all austenitic, rust and acid-resistant steels, stainless steel (INOX) and soft titanium alloys (tensile strength < 500 N/mm²).
- Significantly reduced vibration and less noise.
- Burrs with HICOAT coating HC-STS demonstrate high hardness and wear resistance in comparison with uncoated burrs.

ALU cut
- High stock removal rate on aluminium and aluminium alloys, non-ferrous metals and plastics.
- Smooth milling.
- High-quality HICOAT coating HC-NFE for long-chipping and smearing aluminium alloys and non-ferrous metals.
- Can be used with cutting speeds of up to 1,100 m/min (HC-NFE: up to 1,300 m/min).



NON-FERROUS cut
- High stock removal rate on non-ferrous metals, brass, copper, plastics and fibre-reinforced plastics.
- Suitable for universal use.

CAST cut
- Extremely high stock removal rate on cast iron.
- Smooth milling.
- Reduced vibration and less noise.



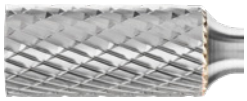
TITANIUM cut
- Outstanding stock removal rate and tool life on hard titanium alloys.
- Tangibly more aggressive, large chips and very good chip removal.
- Reduced vibration and less noise.
- For soft titanium alloys (tensile strength < 500 N/mm²), PFERD TOOLS recommends the INOX cut.

EDGE cut
- Creates exact edge shapes – with either 30° or 45° chamfering or a defined radius of 3.0 mm.
- Safe and comfortable to guide.

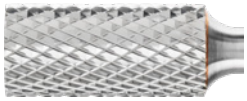
PLAST cut
- Trimming and contour milling of workpieces made from less hard glass and carbon-fibre-reinforced duroplastics (GRP and CRP with ≤ 40 % fibre content) and fibre-reinforced thermoplastics.
- Minimized delamination and fraying through straight cut.
- Highly suitable for use on machines and on robots.
- Reduced vibration and less noise.

FVK cut
- Trimming and contour milling of workpieces made from hard glass and carbon-fibre-reinforced duroplastics (also GRP and CRP > 40 %).

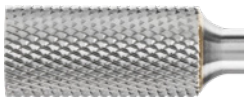
FVKS cut
- Similar to the FVK cut.
- Smooth milling.
- Generates smooth cut edges.
- For use on machines and robots with high feed rates.



TOUGH cut
- High stock removal rate on cast iron, steel < 54 HRC.
- Extremely resistant to impacts.
- Also suitable for use with high surface contact angles > 1/3 and under impact loads.



TOUGH-S cut
- High stock removal rate on cast iron, steel < 54 HRC.
- Similar to the TOUGH cut, but with smoother milling and shorter chips.
- Extremely resistant to impacts.
- Also suitable for use with high surface contact angles > 1/3 and under impact loads.

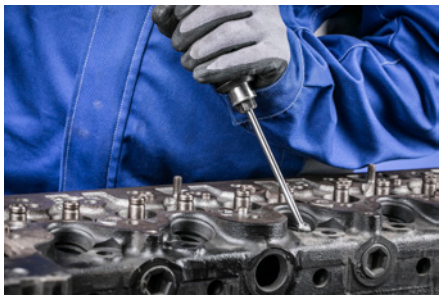


MICRO cut
- Good stock removal on almost all materials < 68 HRC.
- High surface quality.
- Reduced vibration and less noise.
- Burrs with HICOAT coating HC-FEP for high hardness and wear resistance.

Note
- On tungsten carbide burrs designed for high-performance applications, blue discolouration cannot be avoided on account of the very high stock removal rate. However, this does not constitute a safety risk.

TC burrs
General information

Tungsten carbide burrs with a long shank

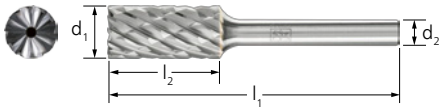


Tungsten carbide burrs with long shanks are particularly well suited to working in hard-to-reach areas. PFERD TOOLS holds long-shank versions in stock for the respective product groups. Long-shank versions are available with the 3 PLUS, STEEL, Z5 and TOUGH cuts. Additional variants can be custom-made on request. Tungsten carbide burrs with a long steel shank SL should only be used with rigid clamping systems and drives. There is a risk that they may break off!

In some applications, drive spindle extensions are an economic alternative to customized burrs with long shanks.

For more information please see catalogue section 9.

Explanation of the code system



d_1 = Burr dia.
l_2 = Cut length
d_2 = Shank dia.
l_1 = Total length

Recommendations for use

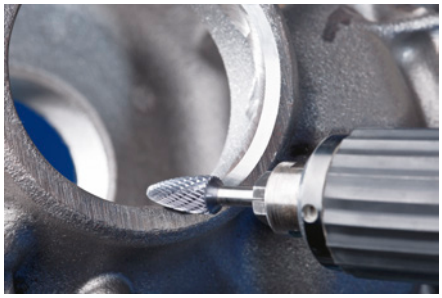
An optimum rotational speed and power output for the tool drive are required for cost-effective use of tungsten carbide burrs. Using tungsten carbide burrs on drives with an elastically mounted spindle significantly improves comfort when working. What's more, the grinder's elastically mounted spindle guarantees a longer tool life, especially when using tungsten carbide burrs. Scan the QR code to obtain more handy recommendations for use relating to milling work.

TC burrs
Cutting speeds – burrs for universal applications

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:
① Select the material group to be machined.
② Determine the type of application.
③ Select the cut.
④ Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:
⑤ Select the required burr diameter.
⑥ The cutting speed range and the burr diameter determine the recommended rotational speed range.



① Coarse stock removal			② Used for	③ Cut	④ Cutting speed
Steel, cast steel	Steels up to 1,200 N/mm² (< 38 HRC)	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, tempering steels	Coarse stock removal	1	600–900 m/min
				3 PLUS	450–600 m/min
				3 PLUS HC-FEP	450–750 m/min
			Fine stock removal	5	450–600 m/min
				5 HC-FEP	450–750 m/min
	Hardened, heat-treated steels over 1,200 N/mm² (> 38 HRC)	Tool steels, tempering steels, alloyed steels, cast steel	Coarse stock removal	3	250–350 m/min
				3 PLUS	
				4	
				3 HC-FEP	250–450 m/min
				3 PLUS HC-FEP	
				4 HC-FEP	
			Fine stock removal	5	350–450 m/min
				5 HC-FEP	350–600 m/min
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	Coarse stock removal	1	250–450 m/min
				3	250–350 m/min
				3 PLUS	
				3 HC-FEP	250–450 m/min
				4	
				4 HC-FEP	250–600 m/min
			Fine stock removal	5	350–450 m/min
				5 HC-FEP	350–600 m/min
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys	Coarse stock removal	1	600–900 m/min
		Brass, copper, zinc	Coarse stock removal	1	600–900 m/min
			Fine stock removal	3	450–600 m/min
				3 HC-FEP	450–750 m/min
	Hard non-ferrous metals	Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	Coarse stock removal	3	250–350 m/min
				4	
				3 HC-FEP	250–450 m/min
				4 HC-FEP	
			Fine stock removal	5	350–450 m/min
				5 HC-FEP	350–600 m/min
	High-temperature-resistant materials	Nickel-based and cobalt-based alloys (engine and turbine construction)	Coarse stock removal	3 PLUS	250–450 m/min
				4	
				4 HC-FEP	250–600 m/min
			Fine stock removal	5	350–600 m/min
				5 HC-FEP	350–750 m/min
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black annealed cast iron EN-GJMB (GTS)	Coarse stock removal	1	600–900 m/min
				3 PLUS	450–600 m/min
			Fine stock removal	3	450–600 m/min
				3 HC-FEP	450–750 m/min

TC burrs
Cutting speeds – burrs for material-specific applications

PFERD TOOLS

① Material group			② Used for	③ Cut	④ Cutting speed
Steel, cast steel	Steels up to 1,200 N/mm² (below 38 HRC)	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, tempering steels	Coarse stock removal	ALLROUND	450–750 m/min
				ALLROUND HC-FEP	450–900 m/min
				STEEL	450–750 m/min
				STEEL HC-FEP	450–900 m/min
	Hardened, heat-treated steels over 1,200 N/mm² (over 38 HRC)	Tool steels, tempering steels, alloyed steels, cast steel	Coarse stock removal	ALLROUND	250–450 m/min
				ALLROUND HC-FEP	250–600 m/min
				STEEL	450–750 m/min
				STEEL HC-FEP	450–900 m/min
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	Coarse stock removal	ALLROUND	450–600 m/min
				INOX	450–600 m/min
			Fine stock removal	INOX HC-STS	450–750 m/min
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys	Coarse stock removal	ALU	600–1,100 m/min
				ALU HC-NFE	600–1,300 m/min
			Fine stock removal	ALU	900–1,100 m/min
				ALU HC-NFE	900–1,300 m/min
		Brass, copper, zinc	Coarse stock removal	ALLROUND	450–750 m/min
				ALLROUND HC-FEP	450–900 m/min
				ALU	600–1,100 m/min
				ALU HC-NFE	600–1,300 m/min
				NON-FERROUS	450–600 m/min
			Fine stock removal	ALU	900–1,100 m/min
				ALU HC-NFE	900–1,300 m/min
	Hard non-ferrous metals	Titanium/titanium alloys, hard aluminium alloys (high Si content)	Coarse stock removal	ALLROUND	450–600 m/min
				ALLROUND HC-FEP	450–750 m/min
				INOX	250–450 m/min
				INOX HC-STS	250–600 m/min
		Hard titanium alloys	Coarse stock removal	TITANIUM	250–450 m/min
		Bronze	Coarse stock removal	ALLROUND	450–600 m/min
				ALLROUND HC-FEP	450–750 m/min
				ALU	600–900 m/min
				ALU HC-NFE	600–1,300 m/min
				NON-FERROUS	600–900 m/min
			Fine stock removal	ALU	900–1,100 m/min
				ALU HC-NFE	900–1,300 m/min
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black annealed cast iron EN-GJMB (GTS)	Coarse stock removal	ALLROUND	450–900 m/min
				CAST	450–750 m/min
Plastics, other materials	Thermoplastics, Fibre-reinforced plastics (GRP/CRP)		Coarse stock removal	NON-FERROUS	600–1,100 m/min
				ALU	
				ALU HC-NFE	600–1,300 m/min
				PLAST	450–900 m/min
				FVK	
			Fine stock removal	ALU	600–1,100 m/min
				ALU HC-NFE	600–1,300 m/min
				FVKS	450–900 m/min

TC burrs
Cutting speeds – burrs for special applications

PFERD TOOLS

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① Coarse stock removal			② Used for	③ Cut	④ Cutting speed
Steel, cast steel	Steels up to 1,200 N/mm² (below 38 HRC)	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, tempering steels	Coarse stock removal with impact load	TOUGH	250–600 m/min
				TOUGH-S	
			Work on edges	3, 3 PLUS, SP	450–600 m/min
				3 HC-FEP, 3 PLUS HC-FEP	450–750 m/min
				EDGE	600–900 m/min
			Fine stock removal	MICRO	600–750 m/min
				MICRO HC-FEP	600–900 m/min
	Hardened, heat-treated steels over 1,200 N/mm² (over 38 HRC)	Tool steels, tempering steels, alloyed steels, cast steel	Coarse stock removal with impact load	TOUGH	250–350 m/min
				TOUGH-S	
			Work on edges	3, 3 PLUS, SP	250–350 m/min
				3 HC-FEP, 3 PLUS HC-FEP	250–450 m/min
				5	350–450 m/min
				5 HC-FEP	350–600 m/min
				EDGE	600–750 m/min
			Fine stock removal	MICRO	450–600 m/min
				MICRO HC-FEP	450–750 m/min
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	Work on edges	3, 3 PLUS, SP	250–350 m/min
				3 HC-FEP, 3 PLUS HC-FEP	250–450 m/min
				5	350–450 m/min
				5 HC-FEP	350–600 m/min
			Fine stock removal	MICRO	450–600 m/min
				MICRO HC-FEP	450–750 m/min
Non-ferrous metals	Soft non-ferrous metals	Soft aluminium alloys	Work on edges	EDGE ALU	900–1,100 m/min
		Brass, copper, zinc	Work on edges	3, 3 PLUS, SP	600–900 m/min
				3 HC-FEP, 3 PLUS HC-FEP	600–1,100 m/min
				EDGE ALU	900–1,100 m/min
				EDGE	600–900 m/min
	Hard non-ferrous metals	Bronze, hard aluminium alloys (high Si content)	Work on edges	3, 3 PLUS	250–450 m/min
				3 HC-FEP, 3 PLUS HC-FEP	250–600 m/min
				EDGE ALU	900–1,100 m/min
				EDGE	250–450 m/min
			Fine stock removal	MICRO	450–600 m/min
				MICRO HC-FEP	450–750 m/min
		Titanium/titanium alloys	Work on edges	SP	250–450 m/min
				EDGE	
			Fine stock removal	MICRO	450–600 m/min
				MICRO HC-FEP	450–750 m/min
	High-temperature-resistant materials	Nickel-based and cobalt-based alloys (engine and turbine construction)	Work on edges	5	350–600 m/min
				5 HC-FEP	350–750 m/min
				EDGE	250–450 m/min
			Fine stock removal	MICRO	450–600 m/min
				MICRO HC-FEP	450–750 m/min
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black annealed cast iron EN-GJMB (GTS)	Coarse stock removal with impact load	TOUGH	250–600 m/min
				TOUGH-S	
			Work on edges	3, 3 PLUS, SP	450–600 m/min
				3 HC-FEP, 3 PLUS HC-FEP	450–750 m/min
			Fine stock removal	MICRO	600–750 m/min
				MICRO HC-FEP	600–900 m/min
Plastics, other materials	Fibre-reinforced plastics (GRP/CRP), thermoplastics		Work on edges	EDGE ALU	750–1,100 m/min

TC burrs
Rotational speeds

Example:
TC burr,
ALLROUND cut,
Burr dia. 12 mm.
Coarse stock removal on steels up to 1,200 N/mm².
Cutting speed: 450–750 m/min
Rotational speed range:
12.000–20.000 RPM

⑤ Burr dia. [mm]	⑥ Cutting speeds [m/min]							
	250	350	450	600	750	900	1,100	1,300
	Rotational speeds [RPM]							
1.5	53,000	74,000	95,000	127,000	159,000	191,000	233,000	275,000
2	40,000	56,000	72,000	95,000	119,000	143,000	175,000	206,000
3	27,000	37,000	48,000	64,000	80,000	95,000	117,000	138,000
4	20,000	28,000	36,000	48,000	60,000	72,000	88,000	104,000
5	16,000	22,000	29,000	40,000	48,000	57,000	70,000	83,000
6	13,000	19,000	24,000	32,000	40,000	48,000	59,000	70,000
8	10,000	14,000	18,000	24,000	30,000	36,000	44,000	52,000
10	8,000	11,000	14,000	19,000	24,000	29,000	35,000	41,000
12	7,000	9,000	12,000	16,000	20,000	24,000	30,000	34,000
13	6,000	9,000	11,000	15,000	22,500	22,000	27,000	32,000
16	5,000	7,000	9,000	12,000	15,000	18,000	22,000	26,000
20	4,000	6,000	7,000	10,000	12,000	14,000	17,000	20,000
25	3,000	4,000	6,000	8,000	10,000	11,000	13,000	16,000

Tungsten carbide burrs with long shanks

Tungsten carbide burrs with long shanks are particularly well suited to working in hard-to-reach areas. PFERD TOOLS holds long-shank versions in stock for the respective product groups. Long-shank versions are available with the 3 PLUS, STEEL, Z5 and TOUGH cuts. All long shanks can be individually shortened. Tungsten carbide burrs with the designation GL 75 mm are made from solid carbide, which means they can only be shortened using diamond tools. Additional variants can be custom-made on request. In some applications, drive spindle extensions are an economic alternative to customized burrs with long shanks. For more information please see catalogue section 9.

Safety notes:

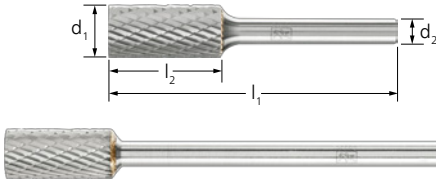
- Tungsten carbide burrs with a long steel shank SL should only be used with rigid clamping systems and drives. There is a risk that they may break off.
- When working with long shank lengths, it is crucial that the tool is in contact with the workpiece (or inserted in the bore or slot to be machined) before the drive system is turned on. As a rule, the tool must remain in contact with the workpiece for as long as the machine is running. Failure to observe this procedure may result in burr failure (bending) and hence an increased risk of accidents. If continuous contact between the tool and the workpiece is not guaranteed, the ⑧ maximum idling speeds stated in the table must not be exceeded.
- For safety reasons, the maximum application speeds ⑦ with contact with the workpiece require a reduction in the recommended rotational speed of tungsten carbide burrs with standard shanks. The reduced rotational speeds are stated in the table below.

To determine the recommended rotational speed range [RPM], please proceed as follows:
① Select the required burr diameter.
⑦ For the maximum application speed [RPM] with contact with the workpiece, please refer to the right-hand side of the table.

Example:
TC burr, SL 150 mm,
cut 3 PLUS,
burr dia. 12 mm.
Coarse stock removal on steels up to 1,200 N/mm².
Maximum application speed with contact with the workpiece: 7,000 RPM

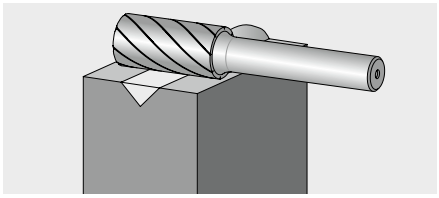
	⑧ Maximum idling speed [RPM] without contact with the workpiece		⑦ Maximum application speed [RPM] with contact with the workpiece	
	Shank length [mm]			
① Burr dia. [mm]	75	150	75	150
3	10,000	-	31,000	-
6	6,000	8,000	15,000	15,000
8	-	6,000	-	11,000
10	-	4,000	-	9,000
12	-	3,000	-	7,000

TC burrs for universal applications
For fine and coarse stock removal



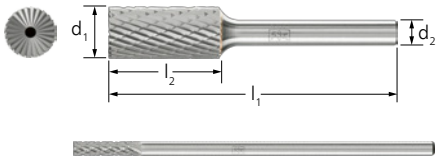
Cylindrical shape ZYA without end cut

Cylindrical burrs according to DIN 8032 with cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



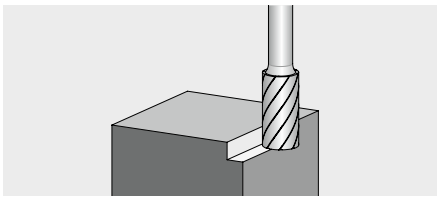
Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
4	13	6	55	3 PLUS	1	21101526	ZYA 0413/6 Z3 PLUS
6	16	6	55	3 PLUS HC-FEP	1	21101624	ZYA 0616/6 Z3 PLUS HC-FEP
				5	1	21101656	ZYA 0616/6 Z5
8	20	6	60	3 PLUS	1	21101726	ZYA 0820/6 Z3 PLUS
10	13	6	53	3 PLUS	1	21101826	ZYA 1013/6 Z3 PLUS
	25	6	65	3 PLUS	1	21102226	ZYA 1025/6 Z3 PLUS
12	25	6	65	3 PLUS HC-FEP	1	21101924	ZYA 1225/6 Z3 PLUS HC-FEP
				5	1	21101956	ZYA 1225/6 Z5
8	20	6	170	3 PLUS	1	21101727	ZYA 0820/6 Z3 PLUS SL 150



Cylindrical shape ZYAS with end cut

Cylindrical burr according to DIN 8032 with circumferential and end cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	3 PLUS	1	21200283	ZYAS 0313/3 Z3 PLUS
6	7	3	37	3 PLUS	1	21200383	ZYAS 0607/3 Z3 PLUS

TC burrs for universal applications
For fine and coarse stock removal

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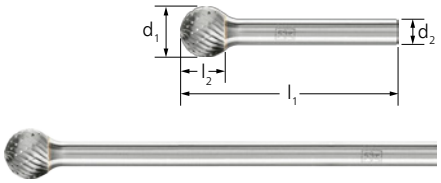
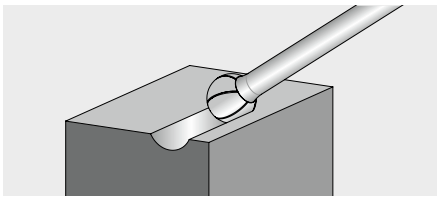


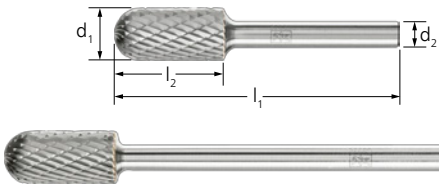
Ball shape KUD

Ball-shaped burr according to DIN 8032 with cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



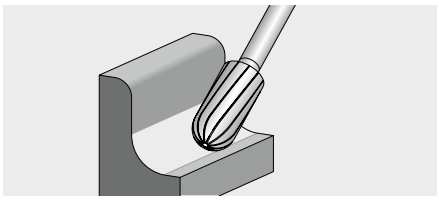
Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
4	3	6	45	5	1	21112056	KUD 0403/6 Z5
8	7	6	47	3 PLUS	1	21112626	KUD 0807/6 Z3 PLUS
10	9	6	49	3 PLUS HC-FEP	1	21112724	KUD 1009/6 Z3 PLUS HC-FEP
20	18	6	58	3 PLUS	1	21113026	KUD 2018/6 Z3 PLUS
8	7	6	157	3 PLUS	1	21112627	KUD 0807/6 Z3 PLUS SL 150



Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 with cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.

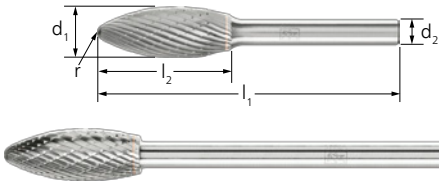


Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	3 PLUS	1	21205183	WRC 0313/3 Z3 PLUS
4	13	6	55	3 PLUS	1	21104926	WRC 0413/6 Z3 PLUS
6	16	6	55	3 PLUS HC-FEP	1	21105024	WRC 0616/6 Z3 PLUS HC-FEP
10	25	6	65	3 PLUS	1	21105526	WRC 1025/6 Z3 PLUS
12	25	6	65	3 PLUS HC-FEP	1	21105324	WRC 1225/6 Z3 PLUS HC-FEP
8	20	6	170	3 PLUS	1	21105127	WRC 0820/6 Z3 PLUS SL 150
12	25	6	175	3 PLUS	1	21105327	WRC 1225/6 Z3 PLUS SL 150

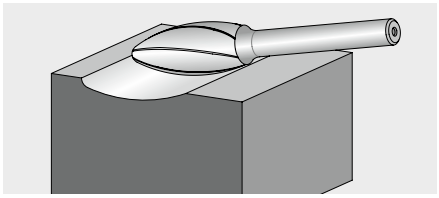
TC burrs for universal applications
For fine and coarse stock removal

PFERD TOOLS



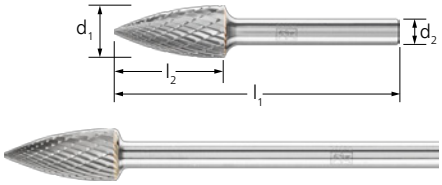
Flame-shaped B

Flame-shaped burr according to ISO 7755/8 with cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



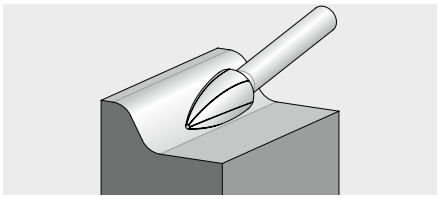
Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	7	3	37	0.8	5	1	21202553	B 0307/3 Z5
6	13	3	43	1	5	1	21203653	B 0613/3 Z5
8	20	6	60	1.5	3 PLUS	1	21103126	B 0820/6 Z3 PLUS
			170	1.5	3 PLUS	1	21103127	B 0820/6 Z3 PLUS SL 150



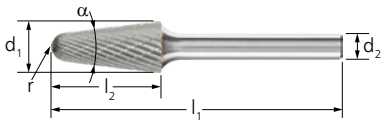
Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032 with cut conforming to DIN 8033 and flattened tip for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



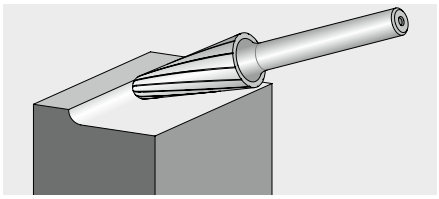
Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	7	3	37	3 PLUS	1	21222583	SPG 0307/3 Z3 PLUS
12	30	6	70	3 PLUS	1	21123426	SPG 1230/6 Z3 PLUS



Conical shape with radius end KEL

Conical burr with round radius end according to DIN 8032 and cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.

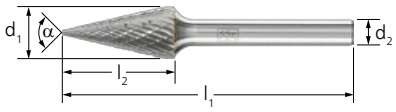


Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	r [mm]	Cut		Item no.	Designation
12	25	6	65	14	3.3	3 PLUS	1	21125126	KEL 1225/6 Z3 PLUS

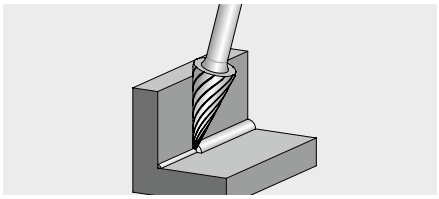
TC burrs for universal applications
For fine and coarse stock removal

PFERD TOOLS



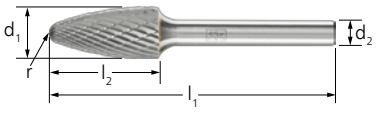
Conical pointed shape SKM

Conical pointed burr according to DIN 8032 with cut conforming to DIN 8033 and flattened tip for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



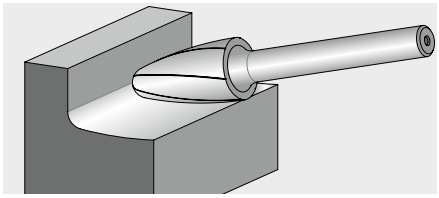
Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Cut		Item no.	Designation
3	7	3	37	21	3 PLUS	1	21214083	SKM 0307/3 Z3 PLUS



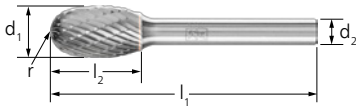
Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 with cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



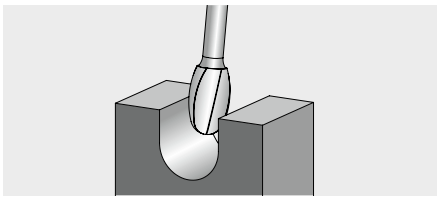
Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	13	3	43	0.75	3 PLUS	1	21218133	RBF 0313/3 Z3 PLUS
6	18	6	55	1.5	3 PLUS HC-FEP	1	21117324	RBF 0618/6 Z3 PLUS HC-FEP
8	20	6	60	1.2	3 PLUS	1	21117626	RBF 0820/6 Z3 PLUS
12	25	6	65	2.5	3 PLUS HC-FEP	1	21117824	RBF 1225/6 Z3 PLUS HC-FEP
8	20	6	170	1.2	3 PLUS	1	21117627	RBF 0820/6 Z3 PLUS SL 150
12	25	6	175	2.5	3 PLUS	1	21117827	RBF 1225/6 Z3 PLUS SL 150



Oval shape TRE

Oval burr according to DIN 8032 with cut conforming to DIN 8033 for general use on all materials. A good stock removal rate is achieved through optimum matching of tungsten carbide, geometry, cut and available coating.



Special features:
- Long tool life and high surface quality.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.
- Also available with the high-quality HICOAT coating for a much higher stock removal rate.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
6	10	6	50	2.8	3 PLUS	1	21134826	TRE 0610/6 Z3 PLUS
8	13	6	53	3.7	3 PLUS	1	21135026	TRE 0813/6 Z3 PLUS
			163	3.7	3 PLUS	1	21135027	TRE 0813/6 Z3 PLUS SL 150

Set 1501 cut 5

Set 1501 – cut 5 – contains 15 small tungsten carbide burrs in the most common shapes and dimensions for general applications.

Contents:
The set comprises one each of the following: ZYAS 0210/3 Z5, ZYAS 0313/3 Z5, ZYAS 0607/3 Z5, ZYAS 0613/3 Z5, B 0307/3 Z5, KUD 0403/3 Z5, WRC 0210/3 Z5, WRC 0313/3 Z5, SPG 0307/3 Z5, SKM 0613/3 Z5, RBF 0307/3 Z5, RBF 0613/3 Z5, TRE 0307/3 Z5, TRE 0610/3 Z5 and WKNS 0307/3 Z5 with a shank diameter of 3 mm, cut 5.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
5	1	21901501	SET 1501 Z5 15TLG

Set 1503 cut 3 PLUS

Set 1503 – cut 3 PLUS – contains 15 small tungsten carbide burrs in the most common shapes and dimensions for general applications.

Contents:
The set comprises one each of the following: ZYAS 0313/3 Z3 PLUS, ZYAS 0613/3 Z3 PLUS, KUD 0302/3 Z3 PLUS, KUD 0403/3 Z3 PLUS, KUD 0605/3 Z3 PLUS, WRC 0313/3 Z3 PLUS, WRC 0613/3 Z3 PLUS, SPG 0313/3 Z3 PLUS, SPG 0613/3 Z3 PLUS, SKM 0311/3 Z3 PLUS, SKM 0613/3 Z3 PLUS, RBF 0307/3 Z3 PLUS, RBF 0613/3 Z3 PLUS, TRE 0307/3 Z3 PLUS and TRE 0610/3 Z3 PLUS with a shank diameter of 3 mm, cut 3 PLUS.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
3 PLUS	1	21901505	SET 1503 Z3P 15TLG

Set 1504 cut 3 PLUS

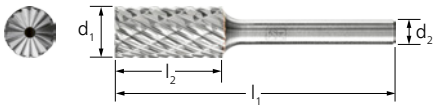
Set 1504 – cut 3 PLUS – contains three small tungsten carbide burrs in the most common shapes and dimensions for applications in the workshop.

Contents:
The set comprises one each of the following: ZYAS 0313/3 Z3 PLUS, WRC 0313/3 Z3 PLUS and RBF 0313/3 Z3 PLUS with a shank diameter of 3 mm, cut 3 PLUS.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

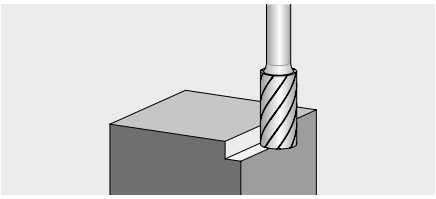
Cut		Item no.	Designation
3 PLUS	1	21901504	SET 1504 Z3P 3TLG

TC burrs for high-performance applications
ALLROUND cut for versatile use



Cylindrical shape ZYAS with end cut

Cylindrical burrs according to DIN 8032 with circumferential and end cut for versatile, economical and time-saving use on steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron. Also available with wear-resistant HICOAT coating.

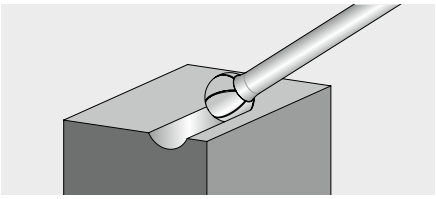


Special features:
- 30% higher stock removal rate when used on steel than conventional cross-cut burrs.
- Comfortable working thanks to reduced vibration and less noise.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	ALLROUND	1	21001000	ZYAS 0616/6 ALLROUND
12	25	6	65	ALLROUND	1	21001003	ZYAS 1225/6 ALLROUND

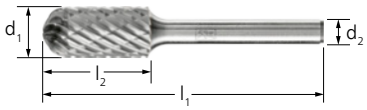
Ball shape KUD

Ball-shaped burr according to DIN 8032 for versatile, economical and time-saving use on steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron. Also available with wear-resistant HICOAT coating.



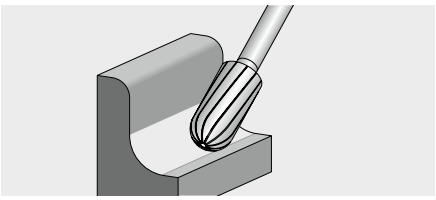
Special features:
- 30% higher stock removal rate when used on steel than conventional cross-cut burrs.
- Comfortable working thanks to reduced vibration and less noise.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
8	7	6	47	ALLROUND	1	21001006	KUD 0807/6 ALLROUND



Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for versatile, economical and time-saving use on steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron. Also available with wear-resistant HICOAT coating.

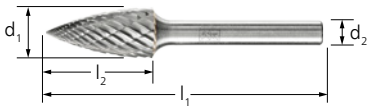


Special features:
- 30% higher stock removal rate when used on steel than conventional cross-cut burrs.
- Comfortable working thanks to reduced vibration and less noise.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	ALLROUND	1	21001010	WRC 0616/6 ALLROUND
8	20	6	60	ALLROUND	1	21001011	WRC 0820/6 ALLROUND
12	25	6	65	ALLROUND	1	21001013	WRC 1225/6 ALLROUND

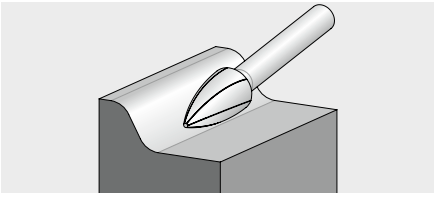
TC burrs for high-performance applications
ALLROUND cut for versatile use

PFERD TOOLS



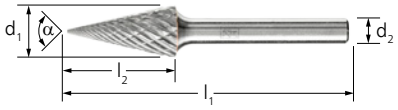
Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032 with flattened tip for versatile, economical and time-saving use on steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron. Also available with wear-resistant HICOAT coating.



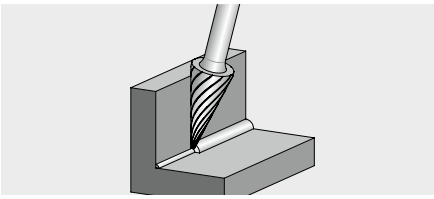
Special features:
- 30% higher stock removal rate when used on steel than conventional cross-cut burrs.
- Comfortable working thanks to reduced vibration and less noise.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
10	20	6	60	ALLROUND	1	21001021	SPG 1020/6 ALLROUND



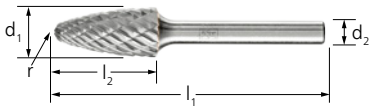
Conical pointed shape SKM

Conical pointed burr according to DIN 8032 with flattened tip for versatile, economical and time-saving use on steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron. Also available with wear-resistant HICOAT coating.



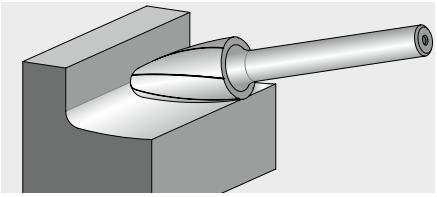
Special features:
- 30% higher stock removal rate when used on steel than conventional cross-cut burrs.
- Comfortable working thanks to reduced vibration and less noise.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Cut		Item no.	Designation
6	18	6	55	18	ALLROUND	1	21001034	SKM 0618/6 ALLROUND
12	25	6	65	26	ALLROUND	1	21001037	SKM 1225/6 ALLROUND



Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for versatile, economical and time-saving use on steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron. Also available with wear-resistant HICOAT coating.



Special features:
- 30% higher stock removal rate when used on steel than conventional cross-cut burrs.
- Comfortable working thanks to reduced vibration and less noise.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
6	18	6	55	1.5	ALLROUND	1	21001029	RBF 0618/6 ALLROUND
12	25	6	65	2.5	ALLROUND	1	21001032	RBF 1225/6 ALLROUND

TC burrs for high-performance applications
ALLROUND cut for versatile use

Set 1412 ALLROUND

Set 1412 ALLROUND contains five versatile tungsten carbide burrs for use on important materials such as steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 1225/6 ALLROUND, KUD 1210/6 ALLROUND, WRC 1225/6 ALLROUND, SPG 1225/6 ALLROUND and RBF 1225/6 ALLROUND with a shank diameter of 6 mm, cut ALLROUND.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The burrs are secured at the shanks, facilitating the selection and withdrawal of the tools.
- Five further unused slots are available for other burrs.

Cut		Item no.	Designation
ALLROUND	1	21901412	SET 1412 ALLROUND 5TLG

Set 1403 ALLROUND

Set 1403 ALLROUND contains three versatile small tungsten carbide burrs for use on important materials such as steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 0313/3 ALLROUND, WRC 0313/3 ALLROUND and RBF 0313/3 ALLROUND with a shank diameter of 3 mm, cut ALLROUND.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
ALLROUND	1	21901403	SET 1403 ALLROUND 3TLG

Set 1404 ALLROUND

Set 1404 ALLROUND contains three versatile small tungsten carbide burrs for use on important materials such as steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 0613/3 ALLROUND, WRC 0613/3 ALLROUND and RBF 0613/3 ALLROUND with a shank diameter of 3 mm, cut ALLROUND.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
ALLROUND	1	21901404	SET 1404 ALLROUND 3TLG

TC burrs for high-performance applications
ALLROUND cut for versatile use

Set 1406 ALLROUND

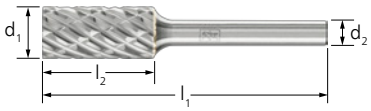
Set 1406 ALLROUND contains three versatile tungsten carbide burrs for use on important materials such as steel and cast steel, stainless steel (INOX), non-ferrous metals and cast iron in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 0616/6 ALLROUND, WRC 0616/6 ALLROUND and RBF 0618/6 ALLROUND with a shank diameter of 6 mm, cut ALLROUND.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

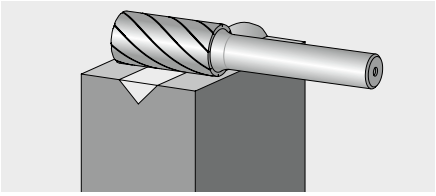
Cut		Item no.	Designation
ALLROUND	1	21901406	SET 1406 ALLROUND 3TLG

STEEL cut for steel and cast steel



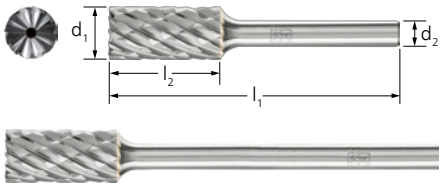
Cylindrical shape ZYA without end cut

Cylindrical burrs according to DIN 8032 for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



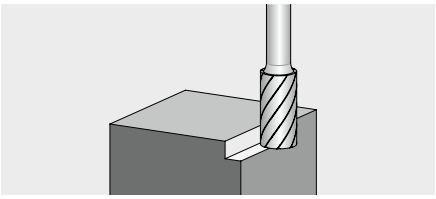
Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
8	20	6	60	STEEL	1	21101787	ZYA 0820/6 STEEL
10	20	6	60	STEEL	1	21102187	ZYA 1020/6 STEEL



Cylindrical shape ZYAS with end cut

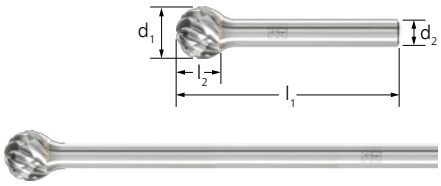
Cylindrical burr according to DIN 8032 with circumferential and end cut for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

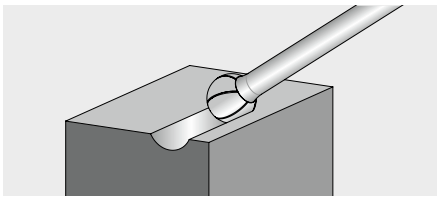
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
8	20	6	60	STEEL	1	21100387	ZYAS 0820/6 STEEL
10	20	6	60	STEEL	1	21100487	ZYAS 1020/6 STEEL

TC burrs for high-performance applications
STEEL cut for steel and cast steel



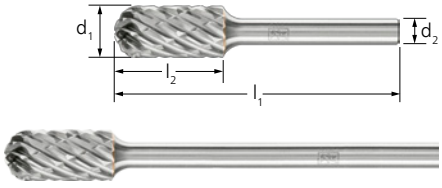
Ball shape KUD

Ball-shaped burr according to DIN 8032 for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



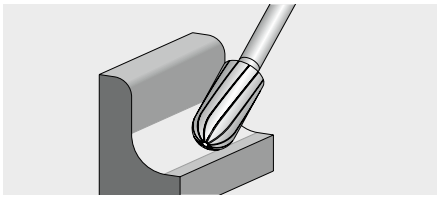
Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	5	6	45	STEEL	1	21112587	KUD 0605/6 STEEL



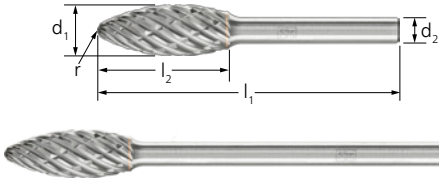
Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



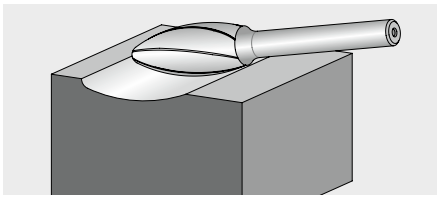
Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
10	20	6	60	STEEL	1	21105287	WRC 1020/6 STEEL
12	25	6	65	STEEL	1	21105387	WRC 1225/6 STEEL



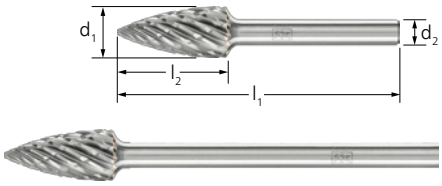
Flame-shaped B

Flame-shaped burr according to ISO 7755/8 for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



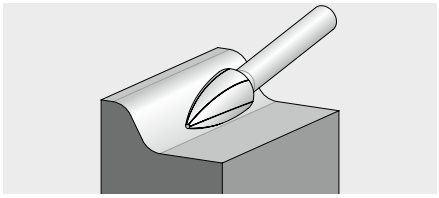
Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
8	20	6	60	1.5	STEEL	1	21103187	B 0820/6 STEEL
12	30	6	70	2.1	STEEL	1	21103387	B 1230/6 STEEL



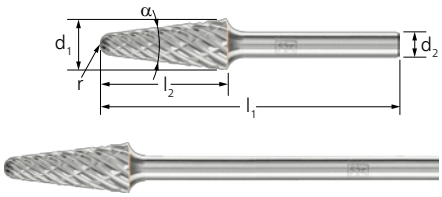
Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032 with flattened tip for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



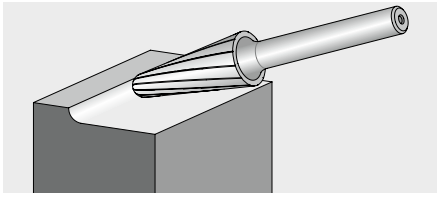
Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
10	20	6	60	STEEL	1	21122687	SPG 1020/6 STEEL
12	25	6	65	STEEL	1	21122787	SPG 1225/6 STEEL



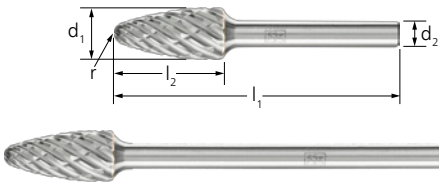
Conical shape with radius end KEL

Conical burr with round radius end according to DIN 8032 for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



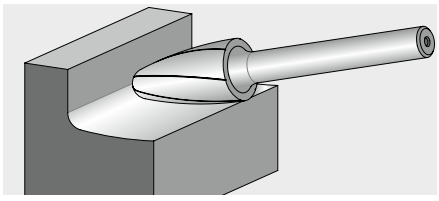
Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	r [mm]	Cut		Item no.	Designation
10	20	6	60	14	2.9	STEEL	1	21125087	KEL 1020/6 STEEL



Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for machining steel and cast steel. Tangibly more aggressive combined with good guidance, guaranteeing safe and precise work. Also available with wear-resistant HICOAT coating.



Special features:
- Up to 50% higher stock removal rate when used on steel and cast steel than conventional cross-cut burrs.
- Workpieces are protected through significantly lower thermal load.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
10	20	6	60	2.5	STEEL	1	21117787	RBF 1020/6 STEEL
12	25	6	65	2.5	STEEL	1	21117887	RBF 1225/6 STEEL

TC burrs for high-performance applications
STEEL cut for steel and cast steel

Set 1812 STEEL

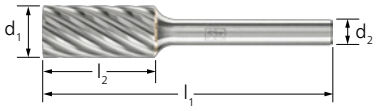
Set 1812 STEEL contains five tungsten carbide burrs for processing steel and cast steel in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYA 1225/6 STEEL, KUD 1210/6 STEEL, WRC 1225/6 STEEL, SPG 1225/6 STEEL and RBF 1225/6 STEEL with a shank diameter of 6 mm, cut STEEL.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The burrs are secured at the shanks, facilitating the selection and withdrawal of the tools.
- Five further slots are available for other burrs.

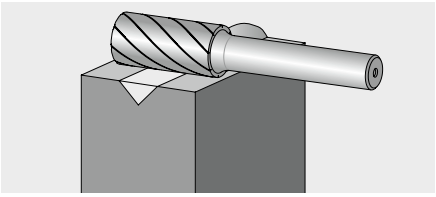
Cut		Item no.	Designation
STEEL	1	21901812	SET 1812 STEEL 5TLG

INOX cut for stainless steel (INOX)



Cylindrical shape ZYA without end cut

Cylindrical burrs according to DIN 8032 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.

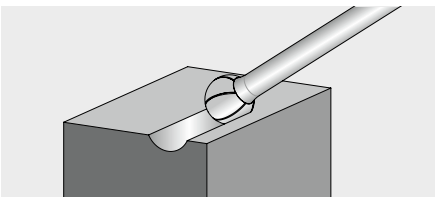


Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	INOX	1	21201282	ZYA 0313/3 INOX
6	13	3	43	INOX	1	21201482	ZYA 0613/3 INOX
	16	6	55	INOX	1	21101682	ZYA 0616/6 INOX
12	25	6	65	INOX	1	21101982	ZYA 1225/6 INOX

Ball shape KUD

Ball-shaped burr according to DIN 8032 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.



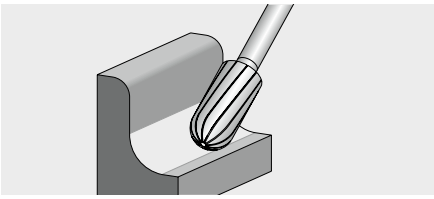
Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	2	3	33	INOX	1	21211082	KUD 0302/3 INOX
6	5	3	35	INOX	1	21213082	KUD 0605/3 INOX

TC burrs for high-performance applications
INOX cut for stainless steel (INOX)

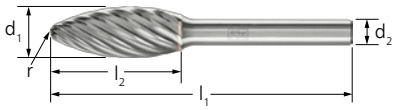
Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.



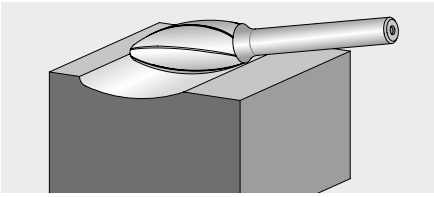
Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	INOX	1	21205182	WRC 0313/3 INOX
6	13	3	43	INOX	1	21205282	WRC 0613/3 INOX
	16	6	55	INOX	1	21105082	WRC 0616/6 INOX
12	25	6	65	INOX	1	21105382	WRC 1225/6 INOX



Flame-shaped B

Flame-shaped burr according to ISO 7755/8 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.

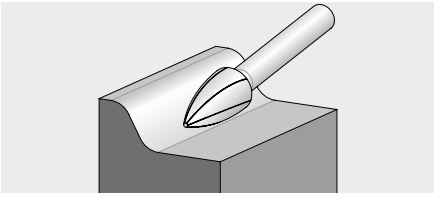


Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
12	30	6	70	2.1	INOX	1	21103382	B 1230/6 INOX

Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032 with flattened tip for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.



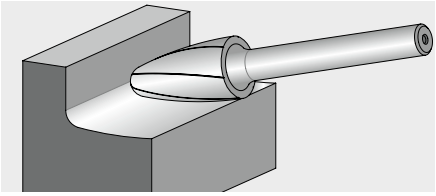
Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	18	6	55	INOX	1	21122582	SPG 0618/6 INOX
12	25	6	65	INOX	1	21122782	SPG 1225/6 INOX

TC burrs for high-performance applications
INOX cut for stainless steel (INOX)

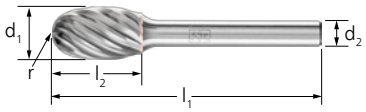
Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.



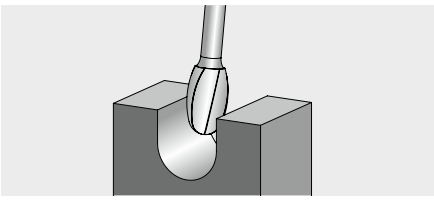
Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	13	3	43	0.75	INOX	1	21218132	RBF 0313/3 INOX
6	13	3	43	1.5	INOX	1	21230082	RBF 0613/3 INOX
	18	6	55	1.5	INOX	1	21117382	RBF 0618/6 INOX
12	25	6	65	2.5	INOX	1	21117882	RBF 1225/6 INOX



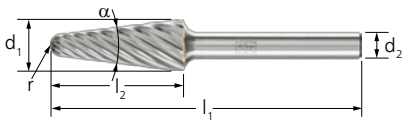
Oval shape TRE

Oval burr according to DIN 8032 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.



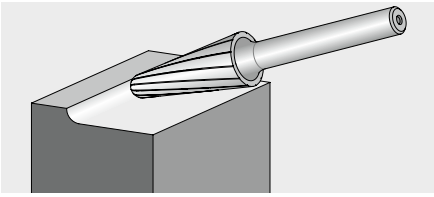
Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
12	20	6	60	5	INOX	1	21135182	TRE 1220/6 INOX



Conical shape with radius end KEL

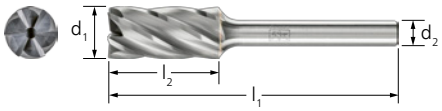
Conical burr with round radius end according to DIN 8032 for machining stainless steel (INOX). The cut impresses with an extremely high stock removal rate and long tool life as well as much lower vibration than comparable cross cuts. Also available with wear-resistant HICOAT coating.



Special features:
- Achieves high surface qualities through optimum chip formation.
- Prevents heat discolouration in the material due to reduced heat production.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

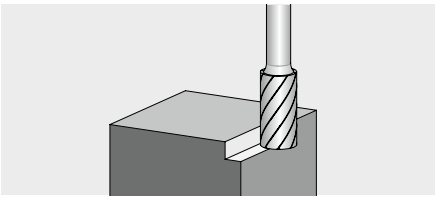
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	r [mm]	Cut		Item no.	Designation
12	30	6	70	14	2.6	INOX	1	21125282	KEL 1230/6 INOX

TC burrs for high-performance applications
ALU cut for aluminium/non-ferrous metals



Cylindrical shape ZYAS with end cut

Cylindrical burr according to DIN 8032 with circumferential and end cut for an extremely high stock removal rate, long tool life and smooth operation when machining aluminium.

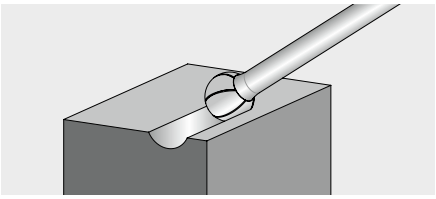


Special features:
- Large chips and reduced material adhesion.
- HC-NFE coating prevents material adhesion when working on long-chipping and lubricating non-ferrous metals.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	ALU	1	21200295	ZYAS 0313/3 ALU
12	25	6	65	ALU	1	21100586	ZYAS 1225/6 ALU

Ball shape KUD

Ball-shaped burr according to DIN 8032 for an extremely high stock removal rate, long tool life and smooth operation when machining aluminium.

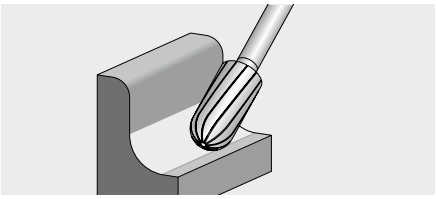


Special features:
- Large chips and reduced material adhesion.
- HC-NFE coating prevents material adhesion when working on long-chipping and lubricating non-ferrous metals.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	2	3	33	ALU	1	21211095	KUD 0302/3 ALU
6	5	6	45	ALU HC-NFE	1	21112586	KUD 0605/6 ALU HC-NFE
8	7	6	47	ALU	1	21112686	KUD 0807/6 ALU

Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for an extremely high stock removal rate, long tool life and smooth operation when machining aluminium.



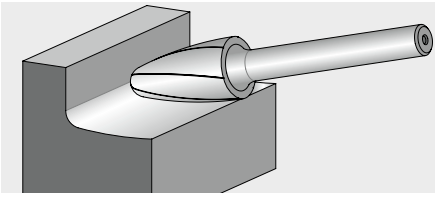
Special features:
- Large chips and reduced material adhesion.
- HC-NFE coating prevents material adhesion when working on long-chipping and lubricating non-ferrous metals.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	ALU	1	21205195	WRC 0313/3 ALU
12	25	6	65	ALU	1	21105386	WRC 1225/6 ALU

TC burrs for high-performance applications
ALU cut for aluminium/non-ferrous metals

Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for an extremely high stock removal rate, long tool life and smooth operation when machining aluminium.



Special features:
- Large chips and reduced material adhesion.
- HC-NFE coating prevents material adhesion when working on long-chipping and lubricating non-ferrous metals.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	13	3	43	0.75	ALU	1	21218135	RBF 0313/3 ALU
12	25	6	65	2.5	ALU	1	21117886	RBF 1225/6 ALU

Set 1603 ALU

Set 1603 ALU contains ten small tungsten carbide burrs for processing aluminium in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 0313/3 ALU, ZYAS 0613/3 ALU, KUD 0302/3 ALU, KUD 0605/3 ALU, WRC 0313/3 ALU, WRC 0613/3 ALU, RBF 0313/3 ALU, RBF 0613/3 ALU, SPG 0313/3 ALU and SPG 0613/3 ALU with a shank diameter of 3 mm, cut ALU.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
ALU	1	21901603	SET 1603 ALU 10TLG

Set 1606 ALU

The 1606 ALU set contains three tungsten carbide burrs for processing aluminium in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 0616/6 ALU, WRC 0616/6 ALU and RBF 0618/6 ALU with a shank diameter of 6 mm, cut ALU.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
ALU	1	21901606	1606 ALU 3TLG

New item

TC burrs for high-performance applications
ALU cut for aluminium/non-ferrous metals

Set 1612 ALU

Set 1612 ALU contains five tungsten carbide burrs for processing aluminium in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 1225/6 ALU, KUD 1210/6 ALU, WRC 1225/6 ALU, RBF 1225/6 ALU and KEL 1230/6 ALU with a shank diameter of 6 mm, cut ALU.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The burrs are secured at the shanks, facilitating the selection and withdrawal of the tools.
- Five further slots are available for other burrs.

Cut		Item no.	Designation
ALU	1	21901612	SET 1612 ALU 5TLG

Set 1613 ALU

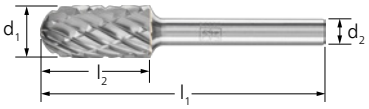
The 1613 ALU set contains three tungsten carbide burrs for processing aluminium in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 1225/6 ALU, WRC 1225/6 ALU and RBF 1225/6 ALU with a shank diameter of 6 mm, cut ALU.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

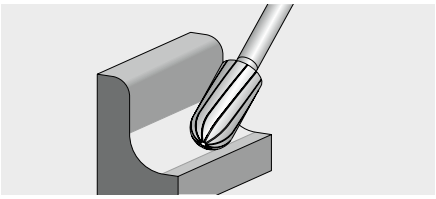
Cut		Item no.	Designation
ALU	1	21901613	1613 ALU 3TLG

NON-FERROUS cut for non-ferrous metals



Cylindrical shape with radius end WRC

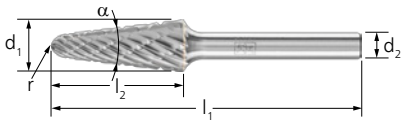
Cylindrical burr with radius end according to DIN 8032 for general-purpose use on non-ferrous metals and fibre-reinforced plastics.



Special features:
- Very good stock removal rate when used on non-ferrous metals such as brass and copper, plastics and fibre-reinforced plastics.

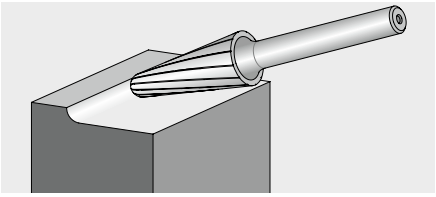
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	NON-FERROUS	1	*21105096*	WRC 0616/6 NON-FERROUS

New item
Discontinued product



Conical shape with radius end KEL

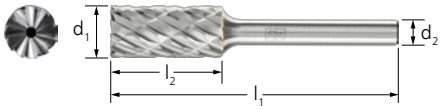
Conical burr with round radius end according to DIN 8032 for general-purpose use on non-ferrous metals and fibre-reinforced plastics.



Special features:
- Very good stock removal rate when used on non-ferrous metals such as brass and copper, plastics and fibre-reinforced plastics.

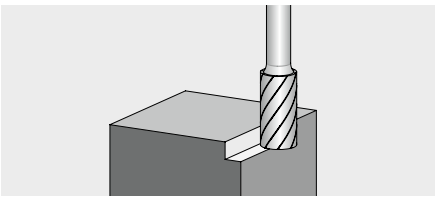
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	r [mm]	Cut		Item no.	Designation
10	20	6	60	14	2.9	NON-FERROUS	1	21125096	KEL 1020/6 NON-FERROUS

CAST cut for cast iron



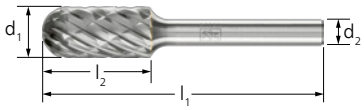
Cylindrical shape ZYAS with end cut

Cylindrical burr according to DIN 8032 with circumferential and end cut for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.



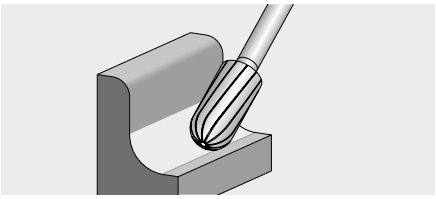
Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	CAST	1	*21100283*	ZYAS 0616/6 CAST
10	20	6	60	CAST	1	*21100483*	ZYAS 1020/6 CAST
12	25	6	65	CAST	1	21100583	ZYAS 1225/6 CAST



Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.



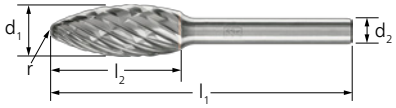
Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	CAST	1	*21105083*	WRC 0616/6 CAST
10	20	6	60	CAST	1	21105283	WRC 1020/6 CAST
12	25	6	65	CAST	1	21105383	WRC 1225/6 CAST

Discontinued product

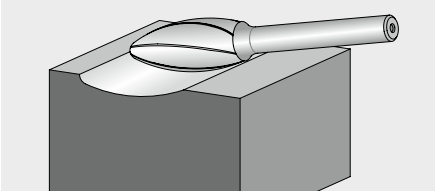
TC burrs for high-performance applications
CAST cut for cast iron

PFERD TOOLS



Flame-shaped B

Flame-shaped burr according to ISO 7755/8 for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.

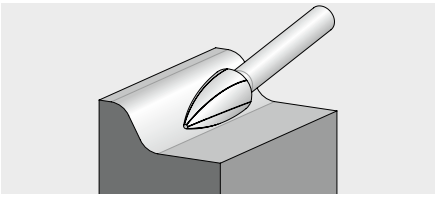


Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
12	30	6	70	2.1	CAST	1	21103383	B 1230/6 CAST

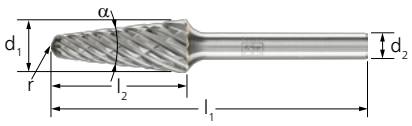
Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032 with flattened tip for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.



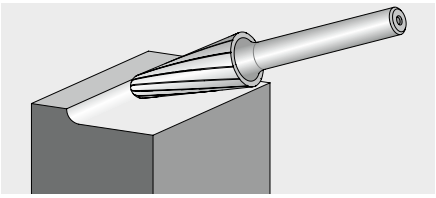
Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
10	20	6	60	CAST	1	*21122683*	SPG 1020/6 CAST



Conical shape with radius end KEL

Conical burr with round radius end according to DIN 8032 for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.

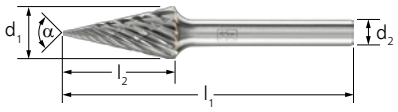


Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	r [mm]	Cut		Item no.	Designation
12	30	6	70	14	2.6	CAST	1	21125283	KEL 1230/6 CAST

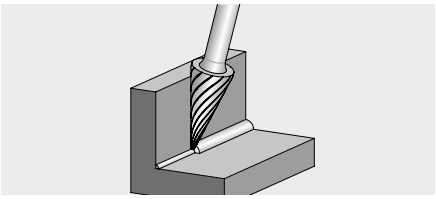
Discontinued product

TC burrs for high-performance applications
CAST cut for cast iron



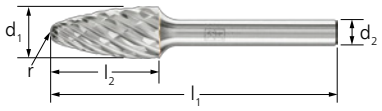
Conical pointed shape SKM

Conical pointed burr according to DIN 8032 with flattened tip for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.



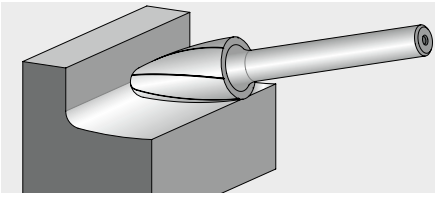
Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Cut		Item no.	Designation
12	25	6	65	26	CAST	1	21115283	SKM 1225/6 CAST



Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.

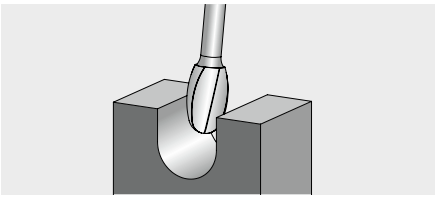


Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
6	18	6	55	1.5	CAST	1	*21117383*	RBF 0618/6 CAST
10	20	6	60	2.5	CAST	1	21117783	RBF 1020/6 CAST
12	25	6	65	2.5	CAST	1	21117883	RBF 1225/6 CAST

Oval shape TRE

Oval burr according to DIN 8032 for machining cast iron. The cut impresses with its smooth milling performance with considerably reduced vibration and less noise.

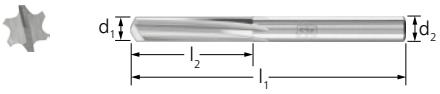


Special features:
- Up to 100% higher stock removal rate on cast iron when compared with conventional cross cuts.
- Tangibly more aggressive, large chips and very good chip removal.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
12	20	6	60	5	CAST	1	*21135183*	TRE 1220/6 CAST

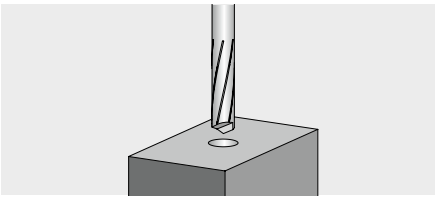
Discontinued product

TC burrs for high-performance applications
PLAST cut for GRP/CRP



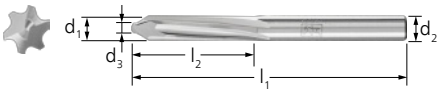
Cylindrical shape ZYA with drill cut (BS)

Cylindrical burr with drill cut (BS) for use on less hard duroplastics (GRP and CRP ≤ 40% fibre content) and fibre-reinforced thermoplastics.



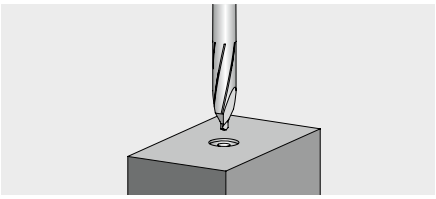
Special features:
- Minimizes delamination and fraying.
- Enables very low cutting forces and high feed rates.
- For combined drilling and milling work in manual, machine and robot applications.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	25	6	65	PLAST	1	*21455696*	ZYA 0625/6 PLAST BS



Cylindrical shape ZYA with centre drill (ZBS)

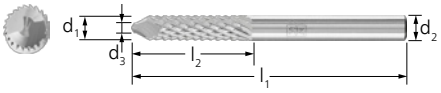
Cylindrical burr with centre drill (ZBS) for use on less hard duroplastics (GRP and CRP ≤ 40% fibre content) and fibre-reinforced thermoplastics.



Special features:
- Minimizes delamination and fraying.
- Enables very low cutting forces and high feed rates.
- For combined drilling and milling work in manual, machine and robot applications.

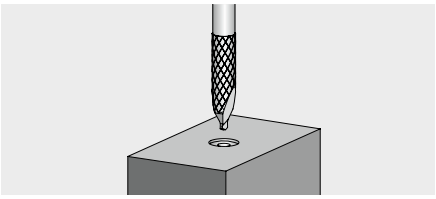
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Centre drill diameter d_3 [mm]	Cut		Item no.	Designation
6	25	6	65	2.5	PLAST	1	21456696	ZYA 0625/6 PLAST ZBS

FVK and FVKS cuts for GRP/CRP



Cylindrical shape ZYA with centre drill (ZBS)

Cylindrical burr with centre drill (ZBS) for general use on hard duroplastics (also GRP and CRP with > 40% fibre content).



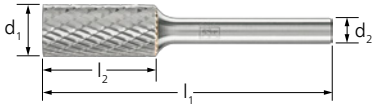
Special features:
- For combined drilling and milling work in manual, machine and robot applications.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut	RPM		Item no.	Designation
6	25	6	65	FVK	24,000 – 48,000	1	21457696	ZYA 0625/6 FVK ZBS
				FVKS	24,000 – 48,000	1	21457697	ZYA 0625/6 FVKS ZBS

Discontinued product

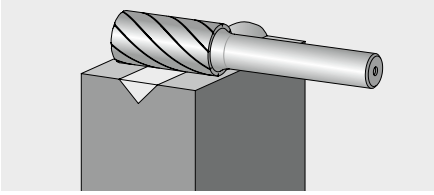
TC burrs for high-performance applications
TOUGH and TOUGH-S cuts for tough applications

PFERD TOOLS



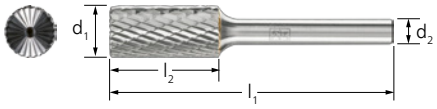
Cylindrical shape ZYA without end cut

Cylindrical burr according to DIN 8032 for tough applications in dockyards, foundries and steel construction. The extremely impact-resistant cut minimizes tooth chipping/breakage, splintering and burr failure. Ideal for use as long-shank variants.



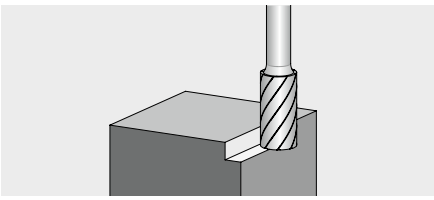
Special features:
- Can also be used in low rotational speed ranges.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
8	20	6	60	TOUGH	1	*21000013*	ZYA 0820/6 TOUGH
10	20	6	60	TOUGH	1	*21000015*	ZYA 1020/6 TOUGH
12	25	6	65	TOUGH	1	*21000016*	ZYA 1225/6 TOUGH



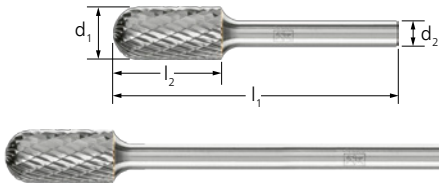
Cylindrical shape ZYAS with end cut

Cylindrical burr according to DIN 8032 with circumferential and end cut for tough applications in dockyards, foundries and steel construction. The extremely impact-resistant cut minimizes tooth chipping/breakage, splintering and burr failure. Ideal for use as long-shank variants.



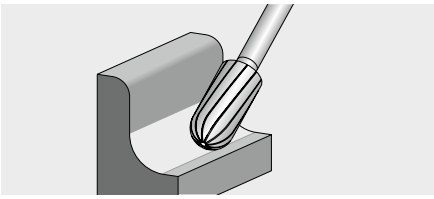
Special features:
- Can also be used in low rotational speed ranges.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
8	20	6	60	TOUGH	1	21000003	ZYAS 0820/6 TOUGH
12	25	6	65	TOUGH	1	21000007	ZYAS 1225/6 TOUGH



Cylindrical shape with radius end WRC

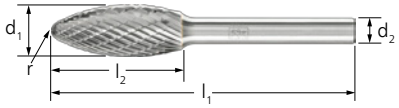
Cylindrical burr with radius end according to DIN 8032 for tough applications in dockyards, foundries and steel construction. The extremely impact-resistant cut minimizes tooth chipping/breakage, splintering and burr failure. Ideal for use as long-shank variants.



Special features:
- Can also be used in low rotational speed ranges.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

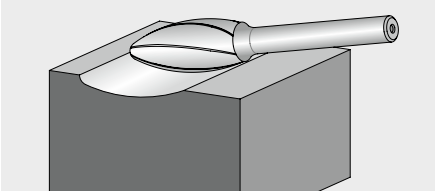
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
12	25	6	65	TOUGH	1	21000036	WRC 1225/6 TOUGH

Discontinued product



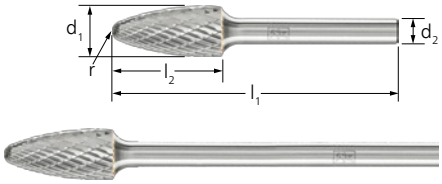
Flame-shaped B

Flame-shaped burr according to ISO 7755/8 for tough applications in dockyards, foundries and steel construction. The extremely impact-resistant cut minimizes tooth chipping/breakage, splintering and burr failure. Ideal for use as long-shank variants.



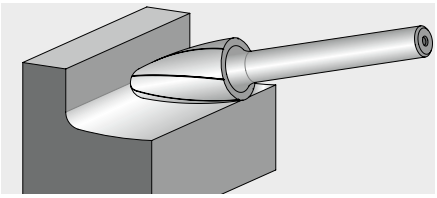
Special features:
- Can also be used in low rotational speed ranges.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
8	20	6	60	1.5	TOUGH	1	21000023	B 0820/6 TOUGH



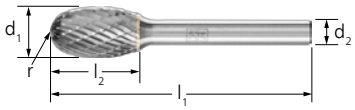
Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for tough applications in dockyards, foundries and steel construction. The extremely impact-resistant cut minimizes tooth chipping/breakage, splintering and burr failure. Ideal for use as long-shank variants.



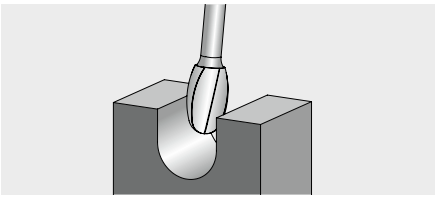
Special features:
- Can also be used in low rotational speed ranges.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
8	20	6	60	1.2	TOUGH	1	21000073	RBF 0820/6 TOUGH
12	25	6	65	2.5	TOUGH	1	21000076	RBF 1225/6 TOUGH
16	25	6	65	4.9	TOUGH	1	*21000080*	RBF 1625/6 TOUGH



Oval shape TRE

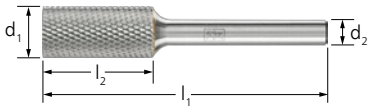
Oval burr according to DIN 8032 for tough applications in dockyards, foundries and steel construction. The extremely impact-resistant cut minimizes tooth chipping/breakage, splintering and burr failure. Ideal for use as long-shank variants.



Special features:
- Can also be used in low rotational speed ranges.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

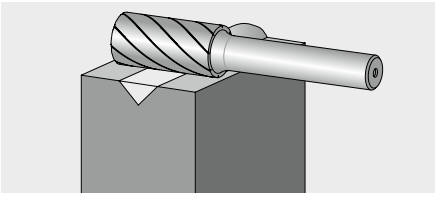
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
10	16	6	56	4	TOUGH	1	21000124	TRE 1016/6 TOUGH
12	20	6	60	5	TOUGH	1	21000126	TRE 1220/6 TOUGH

Discontinued product



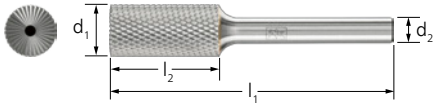
Cylindrical shape ZYA without end cut

Cylindrical burr according to DIN 8032 for fine stock removal. Burrs with the MICRO cut offer a higher stock removal rate than mounted/grinding points and impress with their high surface quality. They also operate with low vibration and little noise. Also available with wear-resistant HICOAT coating.



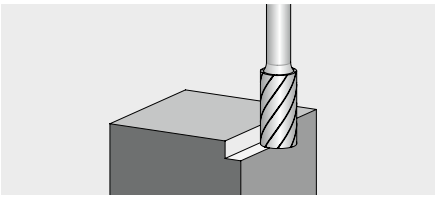
Special features:
- Unlike with mounted grinding points, there is no change in geometry due to wear and tear.
- Use on almost all materials up to 68 HRC.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	MICRO	1	21201273	ZYA 0313/3 MICRO
8	20	6	60	MICRO	1	21101776	ZYA 0820/6 MICRO



Cylindrical shape ZYAS with end cut

Cylindrical burr according to DIN 8032 with circumferential and end cut for fine stock removal. Burrs with the MICRO cut offer a higher stock removal rate than mounted/grinding points and impress with their high surface quality. They also operate with low vibration and little noise. Also available with wear-resistant HICOAT coating.

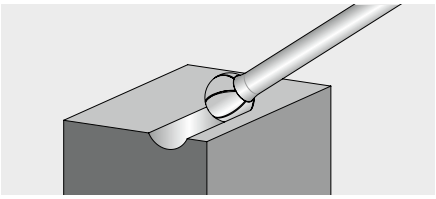


Special features:
- Unlike with mounted grinding points, there is no change in geometry due to wear and tear.
- Use on almost all materials up to 68 HRC.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	MICRO	1	21100276	ZYAS 0616/6 MICRO
10	20	6	60	MICRO	1	21100776	ZYAS 1020/6 MICRO

Ball shape KUD

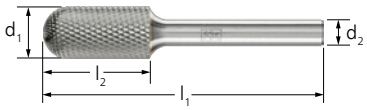
Ball-shaped burr according to DIN 8032 for fine stock removal. Burrs with the MICRO cut offer a higher stock removal rate than mounted/grinding points and impress with their high surface quality. They also operate with low vibration and little noise. Also available with wear-resistant HICOAT coating.



Special features:
- Unlike with mounted grinding points, there is no change in geometry due to wear and tear.
- Use on almost all materials up to 68 HRC.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

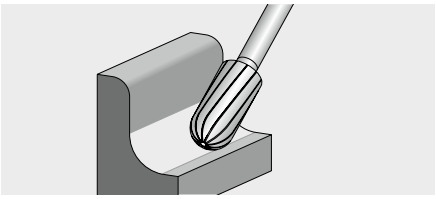
d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	5	6	45	MICRO	1	21112576	KUD 0605/6 MICRO

TC burrs for high-performance applications
MICRO cut for finishing work



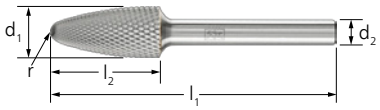
Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for fine stock removal. Burrs with the MICRO cut offer a higher stock removal rate than mounted/grinding points and impress with their high surface quality. They also operate with low vibration and little noise. Also available with wear-resistant HICOAT coating.



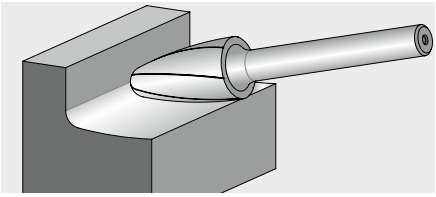
Special features:
- Unlike with mounted grinding points, there is no change in geometry due to wear and tear.
- Use on almost all materials up to 68 HRC.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	43	MICRO	1	21205173	WRC 0313/3 MICRO
6	16	6	55	MICRO	1	21105076	WRC 0616/6 MICRO
8	20	6	60	MICRO	1	21105176	WRC 0820/6 MICRO
10	20	6	60	MICRO	1	21105276	WRC 1020/6 MICRO



Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for fine stock removal. Burrs with the MICRO cut offer a higher stock removal rate than mounted/grinding points and impress with their high surface quality. They also operate with low vibration and little noise. Also available with wear-resistant HICOAT coating.



Special features:
- Unlike with mounted grinding points, there is no change in geometry due to wear and tear.
- Use on almost all materials up to 68 HRC.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	7	3	37	0.75	MICRO	1	21217593	RBF 0307/3 MICRO
	13	3	43	0.75	MICRO	1	21218173	RBF 0313/3 MICRO
6	18	6	55	1.5	MICRO	1	21157205	RBF 0618/6 MICRO
8	20	6	60	1.2	MICRO	1	21157208	RBF 0820/6 MICRO
10	20	6	60	2.5	MICRO	1	21157210	RBF 1020/6 MICRO

Set 1303 MICRO

Set 1303 MICRO contains three small tungsten carbide burrs for finishing work in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYA 0313/3 MICRO, WRC 0313/3 MICRO and RBF 0313/3 MICRO with a shank diameter of 3 mm, cut MICRO.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
MICRO	1	21901303	SET 1303 MICRO 3TLG

TC burrs for high-performance applications
MICRO cut for finishing work

Set 1306 MICRO

Set 1306 MICRO contains three tungsten carbide burrs for finishing work in the most common shapes and dimensions.

Contents:
The set comprises one each of the following: ZYAS 0616/6 MICRO, WRC 0616/6 MICRO and RBF 0618/6 MICRO with a shank diameter of 6 mm, cut MICRO.

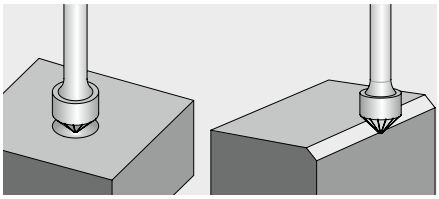
Special features:
- The sturdy plastic box protects the tools against dirt and damage.

Cut		Item no.	Designation
MICRO	1	21901306	SET 1306 MICRO 3TLG

TC burrs for flexible and defined work on edges

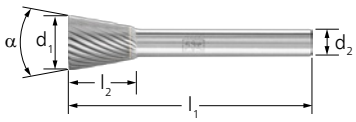
Conical counterbore shape KSK

Conical counterbore burr according to DIN 8032 with cut conforming to DIN 8033, with angle (90°). Suitable for flexible counterboring and chamfering.



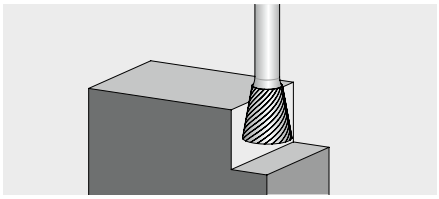
Special features:
- Can be guided as desired.
- Extremely flexible for use in hard-to-reach areas.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Cut		Item no.	Designation
16	8	6	53	90	3	1	21115436	KSK 1608/6 Z3



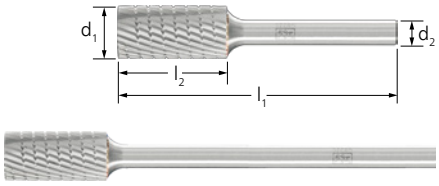
Inverted cones WKN without end cut

Inverted cone-shaped rotary cutter, tapered towards the shank according to DIN 8032 with cut conforming to DIN 8033. Suitable for work on hard-to-reach, reverse-side edges.



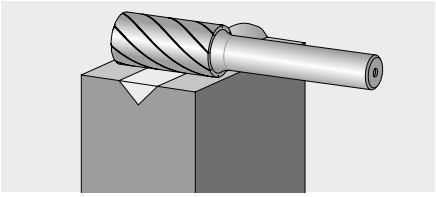
Special features:
- Can be guided as desired.
- Extremely flexible for use in hard-to-reach areas.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Cut		Item no.	Designation
6	7	3	37	10	3 PLUS	1	21208683	WKN 0607/3 Z3 PLUS



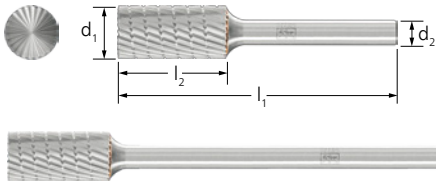
Cylindrical shape ZYA without end cut

Cylindrical burrs according to DIN 8032 for cost-effective stock removal when used on a wide variety of materials.



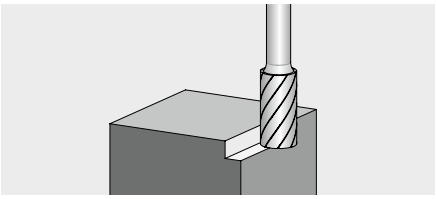
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
6	16	6	55	MX NCC	1	21301612	ZYA 0616/6 MX NCC
8	20	6	60	MX NCC	1	21301712	ZYA 0820/6 MX NCC
10	20	6	60	MX NCC	1	21301812	ZYA 1020/6 MX NCC
12	25	6	65	MX NCC	1	21301912	ZYA 1225/6 MX NCC
16	25	6	65	MX NCC	1	21302012	ZYA 1625/6 MX NCC



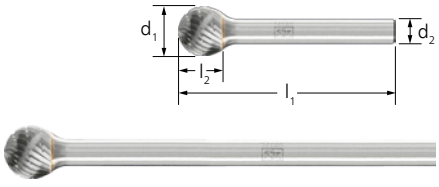
Cylindrical shape ZYAS with end cut

Cylindrical burrs according to DIN 8032 with circumferential and end cut for cost-effective stock removal when used on a wide variety of materials.



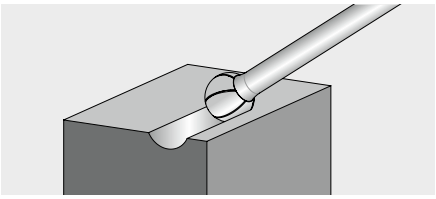
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	40	MX NCC	1	21351112	ZYAS 0313/3 MX NCC
6	13	3	43	MX NCC	1	21351212	ZYAS 0613/3 MX NCC
	16	6	55	MX NCC	1	21300612	ZYAS 0616/6 MX NCC
8	20	6	60	MX NCC	1	21300712	ZYAS 0820/6 MX NCC
10	20	6	60	MX NCC	1	21300812	ZYAS 1020/6 MX NCC
12	25	6	65	MX NCC	1	21300912	ZYAS 1225/6 MX NCC
16	25	6	65	MX NCC	1	21301012	ZYAS 1625/6 MX NCC



Ball shape KUD

Ball-shaped burr according to DIN 8032 for cost-effective stock removal when used on a wide variety of materials.

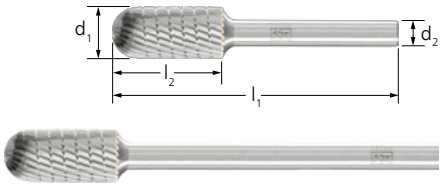


Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	2	3	40	MX NCC	1	21353112	KUD 0302/3 MX NCC
6	5	3	35	MX NCC	1	21353312	KUD 0605/3 MX NCC
		6	55	MX NCC	1	21312512	KUD 0605/6 MX NCC
10	9	6	49	MX NCC	1	21312712	KUD 1009/6 MX NCC
12	10	6	51	MX NCC	1	21312812	KUD 1210/6 MX NCC

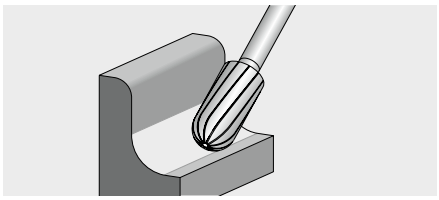
Continued on next page

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
16	14	6	54	MX NCC	1	21312912	KUD 1614/6 MX NCC
8	7	6	47	MX NCC	1	21312612	KUD 0807/6 MX NCC



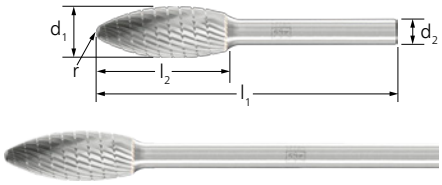
Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032 for cost-effective stock removal when used on a wide variety of materials.



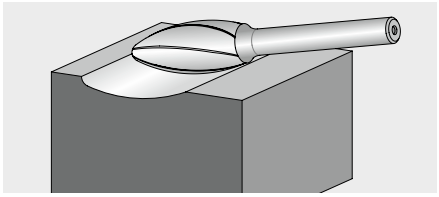
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
2	10	3	40	MX NCC	1	21352012	WRC 0210/3 MX NCC
3	13	3	40	MX NCC	1	21352112	WRC 0313/3 MX NCC
6	13	3	43	MX NCC	1	21352212	WRC 0613/3 MX NCC
	16	6	55	MX NCC	1	21305012	WRC 0616/6 MX NCC
8	20	6	60	MX NCC	1	21305112	WRC 0820/6 MX NCC
10	20	6	60	MX NCC	1	21305212	WRC 1020/6 MX NCC
12	25	6	65	MX NCC	1	21305312	WRC 1225/6 MX NCC
16	25	6	65	MX NCC	1	21305412	WRC 1625/6 MX NCC



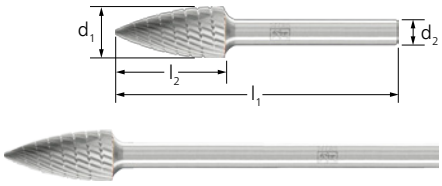
Flame-shaped B

Flame-shaped burr according to ISO 7755/8 for cost-effective stock removal when used on a wide variety of materials.



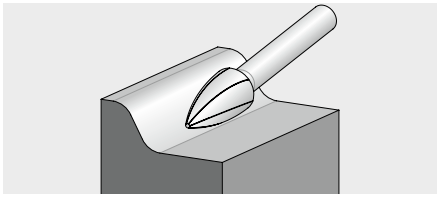
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
12	30	6	70	2.1	MX NCC	1	21303312	B 1230/6 MX NCC
16	35	6	82	2.6	MX NCC	1	21303412	B 1635/6 MX NCC



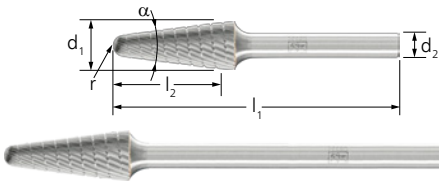
Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032 with flattened tip for cost-effective stock removal when used on a wide variety of materials.



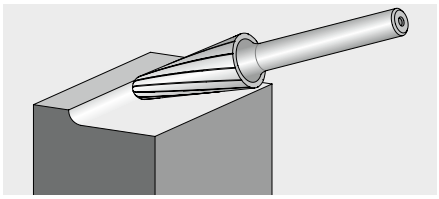
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	Cut		Item no.	Designation
3	13	3	40	MX NCC	1	21356112	SPG 0313/3 MX NCC
6	13	3	43	MX NCC	1	21356212	SPG 0613/3 MX NCC
	18	6	55	MX NCC	1	21322512	SPG 0618/6 MX NCC
10	20	6	60	MX NCC	1	21322612	SPG 1020/6 MX NCC
12	25	6	65	MX NCC	1	21322712	SPG 1225/6 MX NCC
16	25	6	65	MX NCC	1	21322812	SPG 1625/6 MX NCC
8	20	6	60	MX NCC	1	21321512	SPG 0820/6 MX NCC



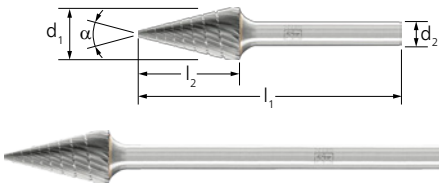
Conical shape with radius end KEL

Conical burr with round radius end according to DIN 8032 for cost-effective stock removal when used on a wide variety of materials.



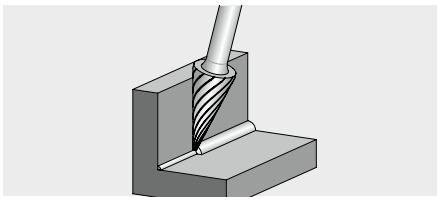
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	r [mm]	Cut		Item no.	Designation
10	20	6	60	14	2.9	MX NCC	1	21325012	KEL 1020/6 MX NCC
12	30	6	70	14	2.6	MX NCC	1	21325212	KEL 1230/6 MX NCC
16	35	6	75	14	4.3	MX NCC	1	21325312	KEL 1635/6 MX NCC
8	20	6	60	14	1.25	MX NCC	1	21324012	KEL 0820/6 MX NCC



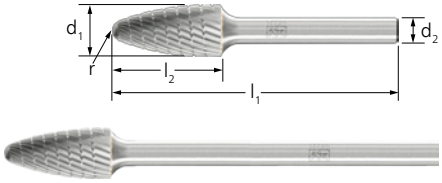
Conical pointed shape SKM

Conical pointed burr according to DIN 8032 with flattened tip for cost-effective stock removal when used on a wide variety of materials.



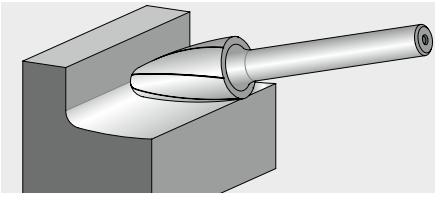
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Cut		Item no.	Designation
3	11	3	40	14	MX NCC	1	21354112	SKM 0311/3 MX NCC
6	13	3	43	25	MX NCC	1	21354212	SKM 0613/3 MX NCC
	18	6	55	18	MX NCC	1	21315012	SKM 0618/6 MX NCC
10	20	6	60	28	MX NCC	1	21315112	SKM 1020/6 MX NCC
12	25	6	65	26	MX NCC	1	21315212	SKM 1225/6 MX NCC
8	20	6	60	21	MX NCC	1	21316012	SKM 0820/6 MX NCC



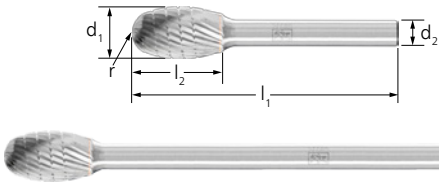
Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032 for cost-effective stock removal when used on a wide variety of materials.



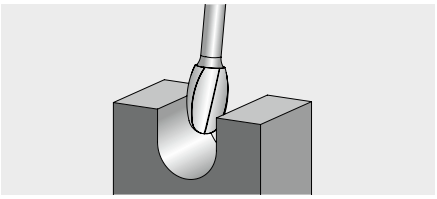
Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	7	3	40	0.75	MX NCC	1	21355012	RBF 0307/3 MX NCC
6	13	3	43	1.5	MX NCC	1	21355112	RBF 0613/3 MX NCC
	18	6	55	1.5	MX NCC	1	21317312	RBF 0618/6 MX NCC
10	20	6	60	2.5	MX NCC	1	21317712	RBF 1020/6 MX NCC
12	25	6	65	2.5	MX NCC	1	21317812	RBF 1225/6 MX NCC
16	25	6	65	4.9	MX NCC	1	21317912	RBF 1625/6 MX NCC
8	20	6	60	1.2	MX NCC	1	21317612	RBF 0820/6 MX NCC



Oval shape TRE

Oval burr according to DIN 8032 for cost-effective stock removal when used on a wide variety of materials.



Special features:
- Good stock removal rate and tool life.
- There is reduced wear on the tool drive due to impact-free work without chatter marks, thanks to the high concentricity.

d_1 [mm]	l_2 [mm]	d_2 [mm]	l_1 [mm]	r [mm]	Cut		Item no.	Designation
3	7	3	40	1.2	MX NCC	1	21357112	TRE 0307/3 MX NCC
6	10	3	40	2.8	MX NCC	1	21357212	TRE 0610/3 MX NCC
10	16	6	56	4	MX NCC	1	21335112	TRE 1016/6 MX NCC
12	20	6	60	5	MX NCC	1	21335212	TRE 1220/6 MX NCC
16	25	6	65	6.5	MX NCC	1	21335313	TRE 1625/6 MX NCC

Set 6/10-01 MX NCC

Set 6/10-01 MX NCC contains the ten most common burrs in the general MX NCC cut.

Contents:
The set comprises one each of the following: ZYA 0616/6 MX NCC, ZYA 1225/6 MX NCC, KUD 1009/6 MX NCC, KUD 1210/6 MX NCC, WRC 0616/6 MX NCC, WRC 1225/6 MX NCC, SPG 0618/6 MX NCC, SPG 1225/6 MX NCC, RBF 0618/6 MX NCC and RBF 1225/6 MX NCC with a shank diameter of 6 mm, cut MX NCC.

Special features:
- The robust round plastic box with screw-on top protects the tools against dirt and damage.

Cut		Item no.	Designation
MX NCC	1	21900500	SET 6/10-01 MX NCC 10TLG

Set 6/5-12 MX NCC

Set 6/5-12 MX NCC contains the five most common shapes with a burr diameter of 12 mm in the general cut MX NCC.

Contents:
The set comprises one each of the following: ZYA 1225/6 MX NCC, KUD 1210/6 MX NCC, WRC 1225/6 MX NCC, SPG 1225/6 MX NCC and RBF 1225/6 MX NCC with a shank diameter of 6 mm, cut MX NCC.

Special features:
- The robust round plastic box with screw-on top protects the tools against dirt and damage.

Cut		Item no.	Designation
MX NCC	1	21900501	SET 6/5-12 MX NCC 5TLG

Set 6/5-6 MX NCC

Set 6/5-6 MX NCC contains the five most common shapes with a burr diameter of 6 mm in the general cut MX NCC.

Contents:
The set comprises one each of the following: ZYA 0616/6 MX NCC, KUD 0605/6 MX NCC, WRC 0616/6 MX NCC, SPG 0618/6 MX NCC and RBF 0618/6 MX NCC with a shank diameter of 6 mm, cut MX NCC.

Special features:
- The robust round plastic box with screw-on top protects the tools against dirt and damage.

Cut		Item no.	Designation
MX NCC	1	21900502	SET 6/5-6 MX NCC 5-piece

ALUMASTER High Speed Disc
HSD-F 115/125
Type HSD-F 115/125 was developed specifically for use on angle grinders with a diameter of 115/125 mm and for flat working.

Suitable tool drives:
Compressed-air angle grinder
PWT 26/120 HV M14
Electric angle grinder UWER 18/110 SI

Applications:
- Milling out
- Work on weld seams
- Work on fillet welds
- Work on edges/chamfering
- Surface work

ALUMASTER High Speed Disc
HSD-R 115/125
Type HSD-R 115/125 has taken the HSD-F one step further and is also suitable for applications such as peripheral milling and milling out root seams.

Suitable tool drives:
Compressed-air angle grinder
PWT 26/120 HV M14
Electric angle grinder UWER 18/110 SI

Applications:
- Milling out
- Work on weld seams
- Work on fillet welds
- Work on edges/chamfering
- Surface work
- Milling out root seams
- Circumferential milling

High Speed Torus Cutter
HSC-T 20 RS8
Thanks to its specially developed design, the High Speed Torus Cutter HSC-T 20 is suitable for work on grooves, pockets and narrow radii and contours, particularly in robot applications. The Cutter can also be used face down and perfectly complements the **ALU**MASTER High Speed Disc in the HSD-R 50 version and burrs with the ALU cut.

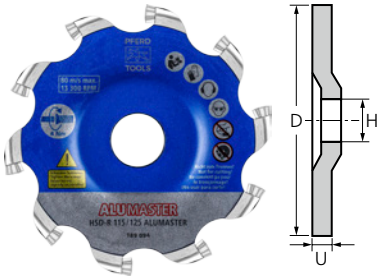
Matching tool drives:
Air-powered spindle PGAS 4/280 RS
Air-powered spindle PGAS 4/220 RS

Applications:
- Milling out
- Deburring
- Work on weld seams
- Work on fillet welds
- Work on edges/chamfering
- Surface work
- Circumferential milling
- Face milling
- Cleaning cast aluminium

Selecting suitable cutting inserts

- Uncoated cutting inserts are suitable for general use on soft non-ferrous metals (aluminium alloys, brass, copper, zinc).
- PFERD TOOLS recommends cutting inserts with the high-quality HICOAT coating for high-performance applications on soft non-ferrous metals (aluminium alloys, brass, copper, zinc), hard non-ferrous metals (hard aluminium alloys with high Si content, bronze) as well as fibre-reinforced plastics (GRP/CRP) and thermoplastics.

ALUMASTER High Speed Disc



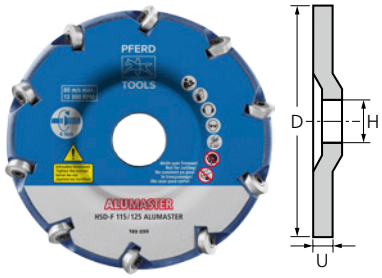
High Speed Disc ALUMASTER HSD-R 115/125

High-performance tool for peripheral milling and milling out root seams using an angle grinder. The specially developed, turnable and replaceable tungsten carbide cutting inserts enable an extremely high stock removal rate on aluminium alloys.

Contents:
The delivery includes the High Speed Disc **ALU**MASTER HSD-R 115/125 incl. premounted tungsten carbide cutting inserts, a hexalobular socket wrench and a plastic box.

Special features:
- An extraction system is not required as no hazardous or explosive dust is generated.
- Innovative, robust cut geometry for maximum safety, extreme durability and ease of work.

D [mm]	H [mm]	U [mm]	Max. RPM		Item no.	Designation
115	22.23	8	13,300	1	22000019	HSD-R 115/125 ALUMASTER



High Speed Disc ALUMASTER HSD-F 115/125

High-performance tool for surface work with an angle grinder. The specially developed, turnable and replaceable tungsten carbide cutting inserts enable an extremely high stock removal rate on aluminium alloys.

Contents:
The delivery includes the High Speed Disc **ALU**MASTER HSD-F 115/125 incl. premounted tungsten carbide cutting inserts, a hexalobular socket wrench and a plastic box.

Special features:
- An extraction system is not required as no hazardous or explosive dust is generated.
- Innovative, robust cut geometry for maximum safety, extreme durability and ease of work.

D [mm]	H [mm]	U [mm]	Max. RPM		Item no.	Designation
115	22.23	13	13,300	1	22000009	HSD-F 115/125 ALUMASTER

HICOAT

HICOAT

Cutting insert sets

Cutting insert set for **ALU**MASTER High Speed Disc.

D [mm]	Contents [Piece]	Suitable for	Version		Item no.	Designation
8	10	ALUMASTER HSD-R 115/125	Without coating	1	22000020	WSP-A-8R 115/125 ALUMASTER
12	10	ALUMASTER HSD-F	Without coating	1	22000008	WSP-A-12R 115/125 ALUMASTER

Bolt sets for cutting inserts

Bolt set for PFERD TOOLS cutting inserts.

Contents [Piece]		Item no.	Designation
5	1	22000007	WSP-S-M4S

EDGE FINISH system for work on edges

Bolt set for cutting inserts

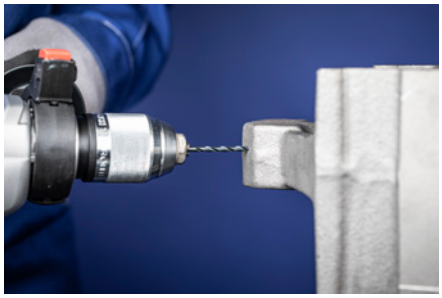
Bolt set for PFERD TOOLS cutting inserts.

Contents [Piece]		Item no.	Designation
5	1	22000007	WSP-S-M4S

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:
① Select the material group to be machined.
② Select the type.
③ Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:
④ Select the required diameter.
⑤ The cutting speed range and the diameter determine the recommended rotational speed range.



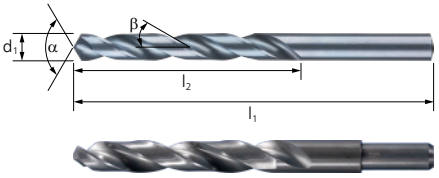
① Material group			② Design	③ Cutting speed
Steel, cast steel	Steels up to 700 N/mm² (< 220 HB)	Construction steels, carbon steels, tool steels, alloyed and non-alloyed steels, case-hardened steels, cast steel, tempering steels	STEEL	25–35 m/min
	Steels over 700 N/mm² (> 220 HB)		STEEL	20–25 m/min
			INOX	
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	INOX	10–20 m/min
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys Brass, copper, zinc	STEEL	30–60 m/min
			INOX	
	Hard non-ferrous metals	Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	STEEL	25–50 m/min
			INOX	
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black annealed cast iron EN-GJMB (GTS)	STEEL	10–25 m/min
			INOX	
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood		STEEL	15–40 m/min
			INOX	

Drilling tools
HSS spiral drill

PFERD TOOLS

Example:
Spiral drill,
SPB DIN 338 HSSG N 12.0 STEEL,
Tool dia. 12 mm.
Steels up to 700 N/mm².
Cutting speed: 25–35 m/min
Rotational speed range: 650–950 RPM

④ Tool dia. [mm]	⑤ Cutting speeds [m/min]								
	10	15	20	25	30	35	40	50	60
	Rotational speeds [RPM]								
1	3,185	4,777	6,369	7,962	9,554	11,146	12,739	15,924	19,108
1.1	2,895	4,343	5,790	7,238	8,686	10,133	11,581	14,476	17,371
1.2	2,654	3,981	5,308	6,635	7,962	9,289	10,616	13,270	15,924
1.3	2,450	3,675	4,900	6,124	7,349	8,574	9,799	12,249	14,699
1.4	2,275	3,412	4,550	5,687	6,824	7,962	9,099	11,374	13,649
1.5	2,123	3,185	4,246	5,308	6,369	7,431	8,493	10,616	12,739
1.6	1,990	2,986	3,981	4,976	5,971	6,967	7,962	9,952	11,943
1.7	1,873	2,810	3,747	4,683	5,620	6,557	7,493	9,367	11,240
1.8	1,769	2,654	3,539	4,423	5,308	6,192	7,077	8,846	10,616
1.9	1,676	2,514	3,352	4,190	5,028	5,867	6,705	8,381	10,057
2	1,592	2,389	3,185	3,981	4,777	5,573	6,369	7,962	9,554
2.1	1,517	2,275	3,033	3,791	4,550	5,308	6,066	7,583	9,099
2.2	1,448	2,171	2,895	3,619	4,343	5,067	5,790	7,238	8,686
2.3	1,385	2,077	2,769	3,462	4,154	4,846	5,539	6,923	8,308
2.4	1,327	1,990	2,654	3,317	3,981	4,644	5,308	6,635	7,962
2.5	1,274	1,911	2,548	3,185	3,822	4,459	5,096	6,369	7,643
2.6	1,225	1,837	2,450	3,062	3,675	4,287	4,900	6,124	7,349
2.7	1,180	1,769	2,359	2,949	3,539	4,128	4,718	5,898	7,077
2.8	1,137	1,706	2,275	2,843	3,412	3,981	4,550	5,687	6,824
2.9	1,098	1,647	2,196	2,745	3,295	3,844	4,393	5,491	6,589
3	1,062	1,592	2,123	2,654	3,185	3,715	4,246	5,308	6,369
3.1	1,027	1,541	2,055	2,568	3,082	3,596	4,109	5,137	6,164
3.2	995	1,493	1,990	2,488	2,986	3,483	3,981	4,976	5,971
3.3	965	1,448	1,930	2,413	2,895	3,378	3,860	4,825	5,790
3.4	937	1,405	1,873	2,342	2,810	3,278	3,747	4,683	5,620
3.5	910	1,365	1,820	2,275	2,730	3,185	3,640	4,550	5,460
3.6	885	1,327	1,769	2,212	2,654	3,096	3,539	4,423	5,308
3.7	861	1,291	1,721	2,152	2,582	3,013	3,443	4,304	5,164
3.8	838	1,257	1,676	2,095	2,514	2,933	3,352	4,190	5,028
3.9	817	1,225	1,633	2,041	2,450	2,858	3,266	4,083	4,900
4	796	1,194	1,592	1,990	2,389	2,787	3,185	3,981	4,777
4.5	708	1,062	1,415	1,769	2,123	2,477	2,831	3,539	4,246
5	637	955	1,274	1,592	1,911	2,229	2,548	3,185	3,822
5.5	579	869	1,158	1,448	1,737	2,027	2,316	2,895	3,474
6	531	796	1,062	1,327	1,592	1,858	2,123	2,654	3,185
6.5	490	735	980	1,225	1,470	1,715	1,960	2,450	2,940
7	455	682	910	1,137	1,365	1,592	1,820	2,275	2,730
7.5	425	637	849	1,062	1,274	1,486	1,699	2,123	2,548
8	398	597	796	995	1,194	1,393	1,592	1,990	2,389
8.5	375	562	749	937	1,124	1,311	1,499	1,873	2,248
9	354	531	708	885	1,062	1,238	1,415	1,769	2,123
9.5	335	503	670	838	1,006	1,173	1,341	1,676	2,011
10	318	478	637	796	955	1,115	1,274	1,592	1,911
10.5	303	455	607	758	910	1,062	1,213	1,517	1,820
11	290	434	579	724	869	1,013	1,158	1,448	1,737
11.5	277	415	554	692	831	969	1,108	1,385	1,662
12	265	398	531	663	796	929	1,062	1,327	1,592
12.5	255	382	510	637	764	892	1,019	1,274	1,529
13	245	367	490	612	735	857	980	1,225	1,470
13.5	236	354	472	590	708	826	944	1,180	1,415
14	227	341	455	569	682	796	910	1,137	1,365
14.5	220	329	439	549	659	769	879	1,098	1,318
15	212	318	425	531	637	743	849	1,062	1,274
15.5	205	308	411	514	616	719	822	1,027	1,233
16	199	299	398	498	597	697	796	995	1,194



DIN 338 HSSG N STEEL spiral drill

High-performance drilling tools in the STEEL in HSSG (M2) version for universal industrial use on steel, aluminium, brass, bronze, cast material and plastics. Fully ground, right-hand turning version with cross grinding. With dia. 13 x 35 mm stepped shank as from a drill dia. of 13.5 mm.

Special features:
- Long tool life and easy centring.
- Good chip removal and high concentricity.

d_1 [mm]	l_2 [mm]	l_1 [mm]	α [°]	Spiral angle β [°]	Version		Item no.	Designation
1	12	34	118	25 – 30	STEEL	10	25203510	SPB DIN 338 HSSG N 1,0 STEEL
1.1	14	36	118	25 – 30	STEEL	10	25203586	SPB DIN 338 HSSG N 1,1 STEEL
1.2	16	38	118	25 – 30	STEEL	10	25203587	SPB DIN 338 HSSG N 1,2 STEEL
1.3	16	38	118	25 – 30	STEEL	10	25203588	SPB DIN 338 HSSG N 1,3 STEEL
1.4	18	40	118	25 – 30	STEEL	10	25203589	SPB DIN 338 HSSG N 1,4 STEEL
1.5	18	40	118	25 – 30	STEEL	10	25203511	SPB DIN 338 HSSG N 1,5 STEEL
1.6	20	43	118	25 – 30	STEEL	10	25203512	SPB DIN 338 HSSG N 1,6 STEEL
1.7	20	43	118	25 – 30	STEEL	10	25203590	SPB DIN 338 HSSG N 1,7 STEEL
1.8	22	46	118	25 – 30	STEEL	10	25203591	SPB DIN 338 HSSG N 1,8 STEEL
1.9	22	46	118	25 – 30	STEEL	10	25203592	SPB DIN 338 HSSG N 1,9 STEEL
2	24	49	118	25 – 30	STEEL	10	25203513	SPB DIN 338 HSSG N 2,0 STEEL
2.1	24	49	118	25 – 30	STEEL	10	25203593	SPB DIN 338 HSSG N 2,1 STEEL
2.2	27	53	118	25 – 30	STEEL	10	25203594	SPB DIN 338 HSSG N 2,2 STEEL
2.3	27	53	118	25 – 30	STEEL	10	25203595	SPB DIN 338 HSSG N 2,3 STEEL
2.4	30	57	118	25 – 30	STEEL	10	25203596	SPB DIN 338 HSSG N 2,4 STEEL
2.5	30	57	118	25 – 30	STEEL	10	25203514	SPB DIN 338 HSSG N 2,5 STEEL
2.8	33	61	118	25 – 30	STEEL	10	25203599	SPB DIN 338 HSSG N 2,8 STEEL
2.9	33	61	118	25 – 30	STEEL	10	25203650	SPB DIN 338 HSSG N 2,9 STEEL
3	33	61	118	25 – 30	STEEL	10	25203515	SPB DIN 338 HSSG N 3,0 STEEL
3.1	36	65	118	25 – 30	STEEL	10	25203516	SPB DIN 338 HSSG N 3,1 STEEL
3.2	36	65	118	25 – 30	STEEL	10	25203651	SPB DIN 338 HSSG N 3,2 STEEL
3.3	36	65	118	25 – 30	STEEL	10	25203517	SPB DIN 338 HSSG N 3,3 STEEL
3.5	39	70	118	25 – 30	STEEL	10	25203519	SPB DIN 338 HSSG N 3,5 STEEL
3.7	39	70	118	25 – 30	STEEL	10	25203652	SPB DIN 338 HSSG N 3,7 STEEL
3.8	43	75	118	25 – 30	STEEL	10	25203653	SPB DIN 338 HSSG N 3,8 STEEL
4	43	75	118	25 – 30	STEEL	10	25203521	SPB DIN 338 HSSG N 4,0 STEEL
4.2	43	75	118	25 – 30	STEEL	10	25203523	SPB DIN 338 HSSG N 4,2 STEEL
4.3	47	80	118	25 – 30	STEEL	10	25203655	SPB DIN 338 HSSG N 4,3 STEEL
4.5	47	80	118	25 – 30	STEEL	10	25203525	SPB DIN 338 HSSG N 4,5 STEEL
4.6	47	80	118	25 – 30	STEEL	10	25203656	SPB DIN 338 HSSG N 4,6 STEEL
4.7	47	80	118	25 – 30	STEEL	10	25203657	SPB DIN 338 HSSG N 4,7 STEEL
4.8	53	86	118	25 – 30	STEEL	10	25203658	SPB DIN 338 HSSG N 4,8 STEEL
4.9	53	86	118	25 – 30	STEEL	10	25203659	SPB DIN 338 HSSG N 4,9 STEEL
5	52	86	118	25 – 30	STEEL	10	25203526	SPB DIN 338 HSSG N 5,0 STEEL
5.2	52	86	118	25 – 30	STEEL	10	25203528	SPB DIN 338 HSSG N 5,2 STEEL
5.4	57	93	118	25 – 30	STEEL	10	25203660	SPB DIN 338 HSSG N 5,4 STEEL
5.5	57	93	118	25 – 30	STEEL	10	25203530	SPB DIN 338 HSSG N 5,5 STEEL
5.6	57	93	118	25 – 30	STEEL	10	25203661	SPB DIN 338 HSSG N 5,6 STEEL
5.8	57	93	118	25 – 30	STEEL	10	25203663	SPB DIN 338 HSSG N 5,8 STEEL
6	57	93	118	25 – 30	STEEL	10	25203531	SPB DIN 338 HSSG N 6,0 STEEL
6.1	63	101	118	25 – 30	STEEL	10	25203665	SPB DIN 338 HSSG N 6,1 STEEL
6.2	63	101	118	25 – 30	STEEL	10	25203666	SPB DIN 338 HSSG N 6,2 STEEL
6.3	63	101	118	25 – 30	STEEL	10	25203667	SPB DIN 338 HSSG N 6,3 STEEL
6.4	63	101	118	25 – 30	STEEL	10	25203668	SPB DIN 338 HSSG N 6,4 STEEL
6.5	63	101	118	25 – 30	STEEL	10	25203532	SPB DIN 338 HSSG N 6,5 STEEL
6.6	63	101	118	25 – 30	STEEL	10	25203669	SPB DIN 338 HSSG N 6,6 STEEL
6.7	63	101	118	25 – 30	STEEL	10	25203670	SPB DIN 338 HSSG N 6,7 STEEL

Continued on next page

d_1 [mm]	l_2 [mm]	l_1 [mm]	α [°]	Spiral angle β [°]	Version		Item no.	Designation
6.8	69	109	118	25 – 30	STEEL	10	25203533	SPB DIN 338 HSSG N 6,8 STEEL
6.9	69	109	118	25 – 30	STEEL	10	25203671	SPB DIN 338 HSSG N 6,9 STEEL
7	69	109	118	25 – 30	STEEL	10	25203534	SPB DIN 338 HSSG N 7,0 STEEL
7.1	69	109	118	25 – 30	STEEL	10	25203672	SPB DIN 338 HSSG N 7,1 STEEL
7.2	69	109	118	25 – 30	STEEL	10	25203673	SPB DIN 338 HSSG N 7,2 STEEL
7.5	69	109	118	25 – 30	STEEL	10	25203535	SPB DIN 338 HSSG N 7,5 STEEL
7.6	75	117	118	25 – 30	STEEL	10	25203676	SPB DIN 338 HSSG N 7,6 STEEL
7.8	75	117	118	25 – 30	STEEL	10	25203678	SPB DIN 338 HSSG N 7,8 STEEL
7.9	75	117	118	25 – 30	STEEL	10	25203679	SPB DIN 338 HSSG N 7,9 STEEL
8	75	117	118	25 – 30	STEEL	10	25203536	SPB DIN 338 HSSG N 8,0 STEEL
8.1	75	117	118	25 – 30	STEEL	10	25203680	SPB DIN 338 HSSG N 8,1 STEEL
8.2	75	117	118	25 – 30	STEEL	10	25203681	SPB DIN 338 HSSG N 8,2 STEEL
8.3	75	117	118	25 – 30	STEEL	10	25203682	SPB DIN 338 HSSG N 8,3 STEEL
8.4	75	117	118	25 – 30	STEEL	10	25203683	SPB DIN 338 HSSG N 8,4 STEEL
8.5	75	117	118	25 – 30	STEEL	10	25203537	SPB DIN 338 HSSG N 8,5 STEEL
8.7	81	125	118	25 – 30	STEEL	10	25203685	SPB DIN 338 HSSG N 8,7 STEEL
8.8	81	125	118	25 – 30	STEEL	10	25203686	SPB DIN 338 HSSG N 8,8 STEEL
8.9	81	125	118	25 – 30	STEEL	10	25203687	SPB DIN 338 HSSG N 8,9 STEEL
9	75	125	118	25 – 30	STEEL	10	25203538	SPB DIN 338 HSSG N 9,0 STEEL
9.1	81	125	118	25 – 30	STEEL	10	25203688	SPB DIN 338 HSSG N 9,1 STEEL
9.3	81	125	118	25 – 30	STEEL	10	25203690	SPB DIN 338 HSSG N 9,3 STEEL
9.5	81	125	118	25 – 30	STEEL	10	25203539	SPB DIN 338 HSSG N 9,5 STEEL
9.6	87	133	118	25 – 30	STEEL	10	25203692	SPB DIN 338 HSSG N 9,6 STEEL
9.8	87	133	118	25 – 30	STEEL	10	25203694	SPB DIN 338 HSSG N 9,8 STEEL
9.9	87	133	118	25 – 30	STEEL	10	25203695	SPB DIN 338 HSSG N 9,9 STEEL
10	87	133	118	25 – 30	STEEL	10	25203540	SPB DIN 338 HSSG N 10,0 STEEL
10.1	87	133	118	25 – 30	STEEL	5	25203696	SPB DIN 338 HSSG N 10,1 STEEL
10.3	87	133	118	25 – 30	STEEL	5	25203697	SPB DIN 338 HSSG N 10,3 STEEL
10.4	87	133	118	25 – 30	STEEL	5	25203698	SPB DIN 338 HSSG N 10,4 STEEL
10.5	87	133	118	25 – 30	STEEL	5	25203542	SPB DIN 338 HSSG N 10,5 STEEL
10.7	94	142	118	25 – 30	STEEL	5	25203700	SPB DIN 338 HSSG N 10,7 STEEL
10.8	87	142	118	25 – 30	STEEL	5	25203706	SPB DIN 338 HSSG N 10,8 STEEL
11	94	142	118	25 – 30	STEEL	5	25203543	SPB DIN 338 HSSG N 11,0 STEEL
11.1	94	142	118	25 – 30	STEEL	5	25203708	SPB DIN 338 HSSG N 11,1 STEEL
11.2	94	142	118	25 – 30	STEEL	5	25203709	SPB DIN 338 HSSG N 11,2 STEEL
11.8	94	142	118	25 – 30	STEEL	5	25203714	SPB DIN 338 HSSG N 11,8 STEEL
11.9	101	151	118	25 – 30	STEEL	5	25203715	SPB DIN 338 HSSG N 11,9 STEEL
12	101	151	118	25 – 30	STEEL	5	25203545	SPB DIN 338 HSSG N 12,0 STEEL
12.2	101	151	118	25 – 30	STEEL	5	25203717	SPB DIN 338 HSSG N 12,2 STEEL
12.3	101	151	118	25 – 30	STEEL	5	25203718	SPB DIN 338 HSSG N 12,3 STEEL
12.5	101	151	118	25 – 30	STEEL	5	25203546	SPB DIN 338 HSSG N 12,5 STEEL
12.7	101	151	118	25 – 30	STEEL	5	25203721	SPB DIN 338 HSSG N 12,7 STEEL
13	101	151	118	25 – 30	STEEL	5	25203547	SPB DIN 338 HSSG N 13,0 STEEL
13.5	108	160	118	25 – 30	STEEL	1	25203723	SPB DIN 338 HSSG N 13,5 STEEL
14	108	160	118	25 – 30	STEEL	1	25203724	SPB DIN 338 HSSG N 14,0 STEEL
14.5	114	169	118	25 – 30	STEEL	1	25203725	SPB DIN 338 HSSG N 14,5 STEEL
15	114	169	118	25 – 30	STEEL	1	25203726	SPB DIN 338 HSSG N 15,0 STEEL
15.5	120	178	118	25 – 30	STEEL	1	25203727	SPB DIN 338 HSSG N 15,5 STEEL
16	120	178	118	25 – 30	STEEL	1	25203728	SPB DIN 338 HSSG N 16,0 STEEL

DIN 338 HSSG N STEEL spiral drills, 19-piece set

The set contains 19 HSS spiral drills in the STEEL in HSSG (M2) type for industrial uses.

Contents:
The set consists of 19 HSS spiral drills in the STEEL in HSSG (M2) version with dia. 1.0 to 10.0 mm, in increments of 0.5 mm.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.

Contents [Piece]	Version		Item no.	Designation
19	STEEL	1	25203701	SET SPB DIN 338 HSSG N 1-10 STEEL 19TLG

DIN 338 HSSG N STEEL spiral drills, 10-piece set

The set contains 10 HSS spiral drills in the STEEL in HSSG (M2) type for industrial uses.

Contents:
The set consists of 10 HSS spiral drills with dia. 1.0 to 10.0 mm, in increments of 1 mm.

Special features:
- The plastic box protects the tools against dirt and damage.

Contents [Piece]	Version		Item no.	Designation
10	STEEL	1	25298001	SET DIN 338 HSSG N 1-10 STEEL 10TLG

DIN 338 HSSG N STEEL spiral drills, 6-piece set

The set contains 6 HSS spiral drills in the STEEL in HSSG (M2) type for industrial uses.

Contents:
The set consists of 6 HSS spiral drills with dia. 2.0 to 8.0 mm (2/3/4/5/6/8 mm).

Special features:
- The plastic box protects the tools against dirt and damage.

Contents [Piece]	Version		Item no.	Designation
6	STEEL	1	25298003	SET DIN 338 HSSG N STEEL 6TLG

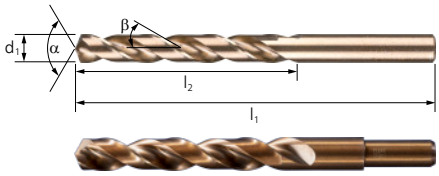
DIN 338 HSSG N STEEL spiral drills, 25-piece set

The set contains 25 HSS spiral drills in the STEEL in HSSG (M2) type for industrial uses.

Contents:
The set consists of 25 HSS spiral drills with dia. 1.0 to 13.0 mm, in increments of 0.5 mm.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.

Contents [Piece]	Version		Item no.	Designation
25	STEEL	1	25203702	SET SPB DIN 338 HSSG N 1-13 STEEL 25TLG



DIN 338 HSSE N INOX spiral drill

High-performance drilling tools in the INOX in HSSE-Co5 (M35) version for industrial uses on tough and hard materials such as alloyed and high-strength steel and stainless steel (INOX). Fully ground, right-hand turning version with cross grinding. With dia. 13 x 35 mm stepped shank as from a drill dia. of 13.5 mm.

Special features:
- Very good temperature resistance due to Co content as well as robust tip profile.
- Very long tool life and easy centring.
- Good chip removal and high concentricity.

d_1 [mm]	l_2 [mm]	l_1 [mm]	α [°]	Spiral angle β [°]	Version		Item no.	Designation
1	12	34	135	36	INOX	10	25203548	SPB DIN 338 HSSE N 1,0 INOX
1.1	14	36	135	36	INOX	10	25203729	SPB DIN 338 HSSE N 1,1 INOX
1.2	16	38	135	36	INOX	10	25203730	SPB DIN 338 HSSE N 1,2 INOX
1.3	16	38	135	36	INOX	10	25203731	SPB DIN 338 HSSE N 1,3 INOX
1.4	18	40	135	36	INOX	10	25203732	SPB DIN 338 HSSE N 1,4 INOX
1.5	18	40	135	36	INOX	10	25203549	SPB DIN 338 HSSE N 1,5 INOX
1.6	20	43	135	36	INOX	10	25203550	SPB DIN 338 HSSE N 1,6 INOX
1.7	20	43	135	36	INOX	10	25203733	SPB DIN 338 HSSE N 1,7 INOX
1.8	22	46	135	36	INOX	10	25203734	SPB DIN 338 HSSE N 1,8 INOX
1.9	22	46	135	36	INOX	10	25203735	SPB DIN 338 HSSE N 1,9 INOX
2	24	49	135	36	INOX	10	25203551	SPB DIN 338 HSSE N 2,0 INOX
2.1	24	49	135	36	INOX	10	25203736	SPB DIN 338 HSSE N 2,1 INOX
2.2	27	53	135	36	INOX	10	25203737	SPB DIN 338 HSSE N 2,2 INOX
2.3	27	53	135	36	INOX	10	25203738	SPB DIN 338 HSSE N 2,3 INOX
2.4	30	57	135	36	INOX	10	25203739	SPB DIN 338 HSSE N 2,4 INOX
2.5	30	57	135	36	INOX	10	25203552	SPB DIN 338 HSSE N 2,5 INOX
2.8	33	61	135	36	INOX	10	25203742	SPB DIN 338 HSSE N 2,8 INOX
2.9	33	61	135	36	INOX	10	25203743	SPB DIN 338 HSSE N 2,9 INOX
3	33	61	135	36	INOX	10	25203553	SPB DIN 338 HSSE N 3,0 INOX
3.1	36	65	135	36	INOX	10	25203554	SPB DIN 338 HSSE N 3,1 INOX
3.2	36	65	135	36	INOX	10	25203744	SPB DIN 338 HSSE N 3,2 INOX
3.3	36	65	135	36	INOX	10	25203555	SPB DIN 338 HSSE N 3,3 INOX
3.5	39	70	135	36	INOX	10	25203557	SPB DIN 338 HSSE N 3,5 INOX
3.7	39	70	135	36	INOX	10	25203745	SPB DIN 338 HSSE N 3,7 INOX
3.8	43	75	135	36	INOX	10	25203746	SPB DIN 338 HSSE N 3,8 INOX
4	43	75	135	36	INOX	10	25203559	SPB DIN 338 HSSE N 4,0 INOX
4.2	43	75	135	36	INOX	10	25203561	SPB DIN 338 HSSE N 4,2 INOX

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d_1 [mm]	l_2 [mm]	l_1 [mm]	α [°]	Spiral angle β [°]	Version		Item no.	Designation
4.3	47	80	135	36	INOX	10	25203748	SPB DIN 338 HSSE N 4,3 INOX
4.5	47	80	135	36	INOX	10	25203563	SPB DIN 338 HSSE N 4,5 INOX
4.6	47	80	135	36	INOX	10	25203749	SPB DIN 338 HSSE N 4,6 INOX
4.7	47	86	135	36	INOX	10	25203750	SPB DIN 338 HSSE N 4,7 INOX
4.8	53	86	135	36	INOX	10	25203751	SPB DIN 338 HSSE N 4,8 INOX
4.9	53	86	135	36	INOX	10	25203752	SPB DIN 338 HSSE N 4,9 INOX
5	52	86	135	36	INOX	10	25203564	SPB DIN 338 HSSE N 5,0 INOX
5.2	52	86	135	36	INOX	10	25203566	SPB DIN 338 HSSE N 5,2 INOX
5.4	57	93	135	36	INOX	10	25203753	SPB DIN 338 HSSE N 5,4 INOX
5.5	57	93	135	36	INOX	10	25203568	SPB DIN 338 HSSE N 5,5 INOX
5.6	57	93	135	36	INOX	10	25203754	SPB DIN338 HSSE N 5,6 INOX
5.7	57	93	135	36	INOX	10	25203755	SPB DIN 338 HSSE N 5,7 INOX
5.8	57	93	135	36	INOX	10	25203756	SPB DIN 338 HSSE N 5,8 INOX
6	57	93	135	36	INOX	10	25203569	SPB DIN 338 HSSE N 6,0 INOX
6.1	63	101	135	36	INOX	10	25203758	SPB DIN 338 HSSE N 6,1 INOX
6.2	63	101	135	36	INOX	10	25203759	SPB DIN 338 HSSE N 6,2 INOX
6.3	63	101	135	36	INOX	10	25203760	SPB DIN 338 HSSE N 6,3 INOX
6.4	63	101	135	36	INOX	10	25203761	SPB DIN 338 HSSE N 6,4 INOX
6.5	63	101	135	36	INOX	10	25203570	SPB DIN 338 HSSE N 6,5 INOX
6.6	63	101	135	36	INOX	10	25203762	SPB DIN 338 HSSE N 6,6 INOX
6.7	63	101	135	36	INOX	10	25203763	SPB DIN 338 HSSE N 6,7 INOX
6.8	69	109	135	36	INOX	10	25203571	SPB DIN 338 HSSE N 6,8 INOX
6.9	69	109	135	36	INOX	10	25203764	SPB DIN 338 HSSE N 6,9 INOX
7	69	109	135	36	INOX	10	25203572	SPB DIN 338 HSSE N 7,0 INOX
7.1	69	109	135	36	INOX	10	25203765	SPB DIN 338 HSSE N 7,1 INOX
7.2	69	109	135	36	INOX	10	25203766	SPB DIN 338 HSSE N 7,2 INOX
7.5	69	109	135	36	INOX	10	25203573	SPB DIN 338 HSSE N 7,5 INOX
7.6	75	117	135	36	INOX	10	25203769	SPB DIN 338 HSSE N 7,6 INOX
7.8	75	117	135	36	INOX	10	25203771	SPB DIN 338 HSSE N 7,8 INOX
7.9	75	117	135	36	INOX	10	25203772	SPB DIN 338 HSSE N 7,9 INOX
8	75	117	135	36	INOX	10	25203574	SPB DIN 338 HSSE N 8,0 INOX
8.1	75	117	135	36	INOX	10	25203773	SPB DIN 338 HSSE N 8,1 INOX
8.2	75	117	135	36	INOX	10	25203774	SPB DIN 338 HSSE N 8,2 INOX
8.3	75	117	135	36	INOX	10	25203775	SPB DIN 338 HSSE N 8,3 INOX
8.4	75	117	135	36	INOX	10	25203776	SPB DIN 338 HSSE N 8,4 INOX
8.5	75	117	135	36	INOX	10	25203575	SPB DIN 338 HSSE N 8,5 INOX
8.7	81	125	135	36	INOX	10	25203778	SPB DIN 338 HSSE N 8,7 INOX
8.8	81	125	135	36	INOX	10	25203779	SPB DIN 338 HSSE N 8,8 INOX
8.9	81	125	135	36	INOX	10	25203780	SPB DIN 338 HSSE N 8,9 INOX
9	75	125	135	36	INOX	10	25203576	SPB DIN 338 HSSE N 9,0 INOX
9.1	81	125	135	36	INOX	10	25203781	SPB DIN 338 HSSE N 9,1 INOX
9.3	81	125	135	36	INOX	10	25203783	SPB DIN 338 HSSE N 9,3 INOX
9.5	81	125	135	36	INOX	10	25203577	SPB DIN 338 HSSE N 9,5 INOX
9.6	87	133	135	36	INOX	10	25203785	SPB DIN 338 HSSE N 9,6 INOX
9.8	87	133	135	36	INOX	10	25203787	SPB DIN 338 HSSE N 9,8 INOX
9.9	87	133	135	36	INOX	10	25203788	SPB DIN 338 HSSE N 9,9 INOX
10	87	133	135	36	INOX	10	25203578	SPB DIN 338 HSSE N 10,0 INOX
10.1	87	133	135	36	INOX	5	25203789	SPB DIN 338 HSSE N 10,1 INOX
10.3	87	133	135	36	INOX	5	25203790	SPB DIN 338 HSSE N 10,3 INOX
10.4	87	133	135	36	INOX	5	25203791	SPB DIN 338 HSSE N 10,4 INOX
10.5	87	133	135	36	INOX	5	25203580	SPB DIN 338 HSSE N 10,5 INOX
10.7	94	142	135	36	INOX	5	25203793	SPB DIN 338 HSSE N 10,7 INOX
10.8	94	142	135	36	INOX	5	25203794	SPB DIN 338 HSSE N 10,8 INOX
11	94	142	135	36	INOX	5	25203581	SPB DIN 338 HSSE N 11,0 INOX

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d_1 [mm]	l_2 [mm]	l_1 [mm]	α [°]	Spiral angle β [°]	Version		Item no.	Designation
11.1	94	142	135	36	INOX	5	25203796	SPB DIN 338 HSSE N 11,1 INOX
11.2	94	142	135	36	INOX	5	25203797	SPB DIN 338 HSSE N 11,2 INOX
11.8	94	142	135	36	INOX	5	25203802	SPB DIN 338 HSSE N 11,8 INOX
11.9	101	151	135	36	INOX	5	25203803	SPB DIN 338 HSSE N 11,9 INOX
12	101	151	135	36	INOX	5	25203583	SPB DIN 338 HSSE N 12,0 INOX
12.2	101	151	135	36	INOX	5	25203805	SPB DIN 338 HSSE N 12,2 INOX
12.3	101	151	135	36	INOX	5	25203806	SPB DIN 338 HSSE N 12,3 INOX
12.5	101	151	135	36	INOX	5	25203584	SPB DIN 338 HSSE N 12,5 INOX
12.7	101	151	135	36	INOX	5	25203809	SPB DIN 338 HSSE N 12,7 INOX
13	101	151	135	36	INOX	5	25203585	SPB DIN 338 HSSE N 13,0 INOX
13.5	108	160	135	36	INOX	1	25203812	SPB DIN 338 HSSE N 13,5 INOX
14	108	160	135	36	INOX	1	25203813	SPB DIN 338 HSSE N 14,0 INOX
14.5	114	169	135	36	INOX	1	25203814	SPB DIN 338 HSSE N 14,5 INOX
15	114	169	135	36	INOX	1	25203815	SPB DIN 338 HSSE N 15,0 INOX
15.5	120	178	135	36	INOX	1	25203816	SPB DIN 338 HSSE N 15,5 INOX
16	120	178	135	36	INOX	1	25203817	SPB DIN 338 HSSE N 16,0 INOX

DIN 338 HSSE N INOX spiral drills, 19-piece set

The set contains 19 HSS spiral drills in the INOX in HSSE-Co5 (M35) type for industrial uses.

Contents:
The set consists of 19 HSS spiral drills with dia. 1.0 to 10.0 mm, in increments of 0.5 mm.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.

Contents [Piece]	Version		Item no.	Designation
19	INOX	1	25203703	SET SPB DIN 338 HSSE N 1-10 INOX 19TLG

DIN 338 HSSE N INOX spiral drills, 25-piece set

The set contains 25 HSS spiral drills in the INOX in HSSE-Co5 (M35) type for industrial uses.

Contents:
The set consists of 25 HSS spiral drills with dia. 1.0 to 13.0 mm, in increments of 0.5 mm.

Special features:
- The sturdy plastic box protects the tools against dirt and damage.
- The securing of the HSS spiral drills facilitates the selection and withdrawal of the tools.

Contents [Piece]	Version		Item no.	Designation
25	INOX	1	25203704	SET SPB DIN 338 HSSE N 1-13 INOX 25TLG

DIN 338 HSSE N INOX spiral drills, 10-piece set

The set contains 10 HSS spiral drills in the INOX in HSSE-Co5 (M35) type for industrial uses.

Contents:
The set consists of 10 HSS spiral drills with dia. 1.0 to 10.0 mm, in increments of 1.0 mm.

Special features:
- The plastic box protects the tools against dirt and damage.

Contents [Piece]	Version		Item no.	Designation
10	INOX	1	25298002	SET DIN 338 HSSE N 1-10 INOX 10TLG

DIN 338 HSSE N INOX spiral drills, 6-piece set

The set contains 6 HSS spiral drills in the INOX in HSSE-Co5 (M35) type for industrial uses.

Contents:
The set consists of 6 HSS spiral drills with dia. 2.0 to 8.0 mm (2/3/4/5/6/8 mm).

Special features:
- The plastic box protects the tools against dirt and damage.

Contents [Piece]	Version		Item no.	Designation
6	INOX	1	25298004	SET DIN 338 HSSE N INOX 6TLG

HSS step drills

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:
① Select the material group to be machined.
② Select the type.
③ Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:
④ Select the required diameter.
⑤ The cutting speed range and the diameter determine the recommended rotational speed range.

① Material group			② Design	③ Cutting speed
Steel, cast steel	Steels up to 700 N/mm²	Construction steels, carbon steels, tool steels, alloyed and non-alloyed steels, case-hardened steels, cast steel, tempering steels	HSS	20–30 m/min
			HICOAT HC-FEP	
	Steels over 700 N/mm²		HICOAT HC-FEP	10–20 m/min
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	HICOAT HC-FEP	10–20 m/min
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys, brass, copper, zinc	HSS	20–30 m/min
			HICOAT HC-FEP	
	Hard non-ferrous metals	Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	HICOAT HC-FEP	
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood		HSS	10–20 m/min
			HICOAT HC-FEP	

Example:
HSS step drill
STB HSS 04-30/10,
step dia. 4–30 mm.
Steels up to 700 N/mm².
Cutting speed: 20–30 m/min
Rotational speed range: 2.400–200 RPM

⑤ Step dia. [mm]	④ Cutting speeds [m/min]		
	10	20	30
	Rotational speeds [RPM]		
3.5	940	1,620	2,700
4	800	1,600	2,400
5	640	1,280	1,920
6	530	1,060	1,600
7	460	920	1,400
8	400	800	1,200
9	350	700	1,060
10	320	640	960
10.5	310	540	920
11	290	580	880
12	270	540	820
12.5	260	470	770
14	230	460	700
14.5	230	410	670
15	210	420	640
16	200	400	600
16.5	200	440	590
18	180	360	540
18.5	180	360	520
20	160	320	480
20.5	160	300	470
21	150	300	460
22	140	280	420
23.5	140	270	410
24	130	260	400
25.5	130	260	380
26	130	240	370
27	120	240	360
28	110	220	340
30	100	200	300
30.5	110	210	320
32.0	100	210	300
32.5	100	190	300
33	90	180	280
34	90	180	280
36	90	180	280
37	90	180	280
37.5	90	180	260
38.5	90	170	250
39	80	160	240
40.0	80	170	240
40.5	80	170	240

HSS step drills

Very smooth-running and sturdy high-performance tools for burr-free drilling and deburring of materials measuring up to 4 mm thick in just one work step. To ensure reliable torque transmission, all step drills have a three-surface shaft.

Special features:
- The high-quality drill tip ensures effortless centring and drilling, and the tool taper makes it easier to pull back.
- Chips which do not break are neatly removed as with a spiral drill.
- Use with cutting oil/compressed air where possible.

Drilling steps	d_2 [mm]	l_1 [mm]	Version		Item no.	Designation
4.0/5.0/6.0/7.0/8.0/9.0/10.0/11.0/12.0	6	65	HSS	1	25201036	STB HSS 04-12/6
4.0/6.0/8.0/10.0/12.0/14.0/16.0/18.0/20.0	8	75	HSS	1	25201037	STB HSS 04-20/8
4.0/6.0/8.0/10.0/12.0/14.0/16.0/18.0/20.0/22.0/24.0/26.0/28.0/30.0	10	100	HSS	1	25201038	STB HSS 04-30/10

HSS step drill, 3-piece set

The set contains three HSS step drills in the versions 4–12 mm (9 steps), 4–20 mm (9 steps), 4–30 mm (14 steps) for industrial uses.

Special features:
- To ensure reliable torque transmission, all step drills have a three-surface shaft.
- The sturdy plastic box protects the tools against dirt and damage.
- The securing of the HSS step drills facilitates the selection and withdrawal of the tools.

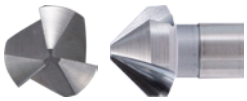
Contents [Piece]	Version		Item no.	Designation
3	HSS	1	25201046	SET STB HSS 3TLG

Countersink tools
General information

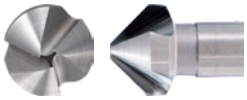
The range of PFERD TOOLS countersinking tools comprises conical countersinks and flat countersinks of a high-quality industrial standard. PFERD TOOLS also offers conical countersinks in the HSS Co5 type or with the high-quality HICOAT coating HC-FEP for working on particularly complex materials.

Types

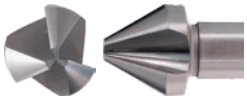
Conical countersink



HSS countersink 90°
- Particularly well suited to producing countersinks for 90° screws.



HSS countersink 90° UGT
- Particularly well suited to producing exact countersinks.
- Smooth running.
- Low countersinking force and a good surface quality.
- Specially developed geometry with wide flutes for optimal chip removal and heat dissipation.
- Particularly well suited to robotic and stationary applications.



HSS countersink 60°
- Particularly well suited to countersinking and deburring.

Flat countersink

Quality grade fine (F)
- Flat countersinks with the quality grade “fine” are suitable for producing flat countersinks at through holes or blind holes in the tolerance range “fine” with high mounting accuracy.

Quality grade medium (M)
- Flat countersinks with the quality grade “medium” are suitable for producing flat countersinks at through holes or blind holes in the tolerance range “medium” with extended mounting accuracy.

For tapping hole (GKL)
- Flat countersinks for the tapping hole are suitable for producing flat countersinks at core holes for female threads.

Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:
① Select the material group to be machined.
② Select the type.
③ Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:
④ Select the required diameter.
⑤ The cutting speed range and the diameter determine the recommended rotational speed range.

① Material group			② Design	③ Cutting speed
Steel, cast steel	Non-alloyed construction steels up to 700 N/mm²	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, tempering steels	HSS	15–20 m/min
			HSSE Co5	
			HICOAT HC-FEP	
	Alloyed construction steels over 700 N/mm²	Tool steels, tempering steels, alloyed steels, cast steel	HSSE Co5	10–15 m/min
			HICOAT HC-FEP	
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	HSS	10–15 m/min
			HSSE Co5	
			HICOAT HC-FEP	
Non-ferrous metals	Soft non-ferrous metals	Aluminium alloys, brass, copper, zinc	HSS	15–20 m/min
			HSSE Co5	
			HICOAT HC-FEP	
	Hard non-ferrous metals	Bronze, titanium/titanium alloys, hard aluminium alloys (high Si content)	HSSE Co5	10–20 m/min
			HICOAT HC-FEP	
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black annealed cast iron EN-GJMB (GTS)	HSS	10 m/min
			HSSE Co5	
			HICOAT HC-FEP	
Plastics, other materials	Fibre-reinforced thermoplastics and duroplastics, hard rubber, wood		HSS	10–15 m/min
			HSSE Co5	
			HICOAT HC-FEP	

Countersink tools
HSS countersink

Example:
Conical countersink
KES HSS DIN 335 C90°,
countersink dia. 28.0 mm.
Steels up to 700 N/mm².
Cutting speed: 15–20 m/min
Rotational speed range: 170–220 RPM

④ Countersink dia. [mm]	⑤ Cutting speeds [m/min]		
	10	15	20
	Rotational speeds [RPM]		
4.30	800	1,200	1,600
5.00	640	960	1,280
5.30	640	960	1,280
6.00	530	800	1,060
6.30	530	800	1,060
7.00	460	680	920
8.00	400	600	800
8.30	400	600	800
10.00	320	470	640
10.40	320	470	640
11.50	280	420	560
12.40	260	390	520
12.50	260	390	520
15.00	210	320	420
16.00	190	290	380
16.50	190	290	380
19.00	170	260	340
20.00	150	230	300
20.50	150	230	300
23.00	140	210	280
25.00	130	200	260
28.00	110	170	220
31.00	100	150	200
37.00	90	140	180
40.00	80	120	160

Conical countersink HSSE DIN 335 C 90°, type Co5

High-performance tool with a countersink angle of 90° for countersinking 90° screws with temperature-resistant Co content for particularly tough and hard materials.

Special features:
- High stock removal rate and optimum chip removal.
- Burr-free results even at low cutting speeds.
- High workpiece surface quality and long tool life.

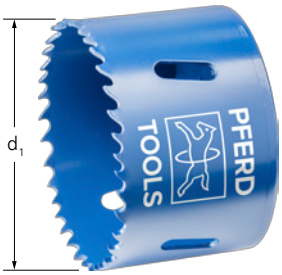
d_1 [mm]	d_2 [mm]	l_1 [mm]	α [°]	Version		Item no.	Designation
6.3	5	45	90	HSSE	1	25202126	KES HSSE DIN 335 C90° 6,3
10.4	6	50	90	HSSE	1	25202130	KES HSSE DIN 335 C90° 10,4
16.5	10	60	90	HSSE	1	25202134	KES HSSE DIN 335 C90° 16,5

Conical countersink sets HSSE DIN 335 C 90°, type Co5

The sets include high-performance countersink tools with a countersink angle of 90° for countersinking 90° screws for particularly tough and hard materials such as alloyed and high-strength steel and stainless steel (INOX).

Special features:
- Long tool life and temperature-resistant version due to Co content.
- The sturdy plastic box protects the tools against dirt and damage.

Contents [Piece]	Contents tool diameter [mm]	Version		Item no.	Designation
3	6.3 / 10.4 / 16.5	HSSE	1	25202155	SET KES HSSE DIN 335 C90° 3TLG



HSS hole saws

Hole saws made of tough, shatter-proof, sturdy HSS bimetal for cost-effectively cutting out holes. The saw teeth are made of high-quality M42 (Co8) material.

Special features:

- High concentricity, and chattering during sawing is prevented by the alternating tooth pitch.
- Good chip removal.
- The hole saw is conveniently centred and guided via the replaceable HSS pilot drill.

d_1 [mm]	Max. cutting depth [mm]	Opt. RPM steel	Opt. RPM stainless steel (INOX)	Opt. RPM non-ferrous metals	Opt. RPM plastics		Item no.	Designation
Thread version 1/2-20 UNF, suitable arbors LSS 1, LSS 4 or quick-mounting system PSL								
16	34	550	275	880	880	1	25100116	LS 16
17	36	520	260	820	820	1	25100117	LS 17
19	36	460	230	740	740	1	25100119	LS 19
20	36	425	210	700	700	1	25100220	LS 20
21	36	410	205	670	670	1	25100221	LS 21
22	36	390	195	640	640	1	25100322	LS 22
25	36	350	175	560	560	1	25100425	LS 25
27	36	325	160	520	520	1	25100527	LS 27
29	36	300	150	480	480	1	25100629	LS 29
30	36	285	145	470	470	1	25100730	LS 30
Thread version 5/8-18 UNF, suitable arbor LSS 2 or quick-mounting system PSL								
32	36	275	140	440	440	1	25100832	LS 32
33	36	260	135	420	420	1	25100933	LS 33
35	36	250	125	400	400	1	25101035	LS 35
37	36	235	115	370	370	1	25101137	LS 37
38	36	230	115	370	370	1	25101138	LS 38
40	36	215	110	350	350	1	25101240	LS 40
41	36	210	105	340	340	1	25101241	LS 41
43	31	200	100	330	330	1	25101343	LS 43
44	31	195	95	320	320	1	25101344	LS 44
48	31	180	90	290	290	1	25101448	LS 48
51	31	170	85	270	270	1	25101551	LS 51
52	31	165	80	270	270	1	25101552	LS 52
54	31	160	80	260	260	1	25101654	LS 54
57	31	150	75	250	250	1	25101757	LS 57
60	31	140	70	230	230	1	25101860	LS 60
64	31	135	65	220	220	1	25101963	LS 64
67	31	130	65	210	210	1	25102067	LS 67
70	31	125	60	200	200	1	25102170	LS 70
73	31	120	60	190	190	1	25102273	LS 73
76	31	115	55	180	180	1	25102376	LS 76
79	31	110	55	180	180	1	25102479	LS 79
83	31	105	50	170	170	1	25102583	LS 83
89	31	95	45	160	160	1	25102689	LS 89
92	31	95	45	150	150	1	25102792	LS 92
95	31	90	45	150	150	1	25102895	LS 95
102	31	85	40	140	140	1	25102912	LS 102

Continued on next page

d_1 [mm]	Max. cutting depth [mm]	Opt. RPM steel	Opt. RPM stainless steel (INOX)	Opt. RPM non-ferrous metals	Opt. RPM plastics		Item no.	Designation
105	31	80	40	130	130	1	25103015	LS 105
111	31	75	35	130	130	1	25103111	LS 111
114	31	75	35	120	120	1	25103114	LS 114

HSS hole saw sets

Set for tradespeople

The set contains five HSS hole saws in the most common diameters, including accessories, for use in professional trades. Operating instructions are included.

Contents:
The set consists of five HSS hole saws LS 22, LS 25, LS 29, LS 32 and LS 38, a hole saw arbor LSS 4, an LSA adapter for hole saw arbor LSS 4, an Allen key 4 mm and an ejection spring.

Special features:
- It is possible to use hole saws LS 32 and LS 38 with the LSA adapter and washer.
- Supplied in well-arranged plastic box which protects against dirt and damage.

L [mm]	B [mm]	H [mm]		Item no.	Designation
200	170	50	1	25900700	SET LS-SO 7 H 8TLG

Set for fitters

The set contains six HSS hole saws in the most common diameters, including accessories, for plumbers and sanitary engineers. Operating instructions are included.

Contents:
The set consists of six HSS hole saws: LS 19, LS 22, LS 29, LS 38, LS 44 and LS 57, two hole saw arbors: LSS 2 and LSS 4, an LSA adapter for hole saw arbor LSS 4, an Alley key 4 mm and an ejection spring.

Special features:
- It is possible to use hole saw LS 38 with the LSA adapter and washer.
- Supplied in well-arranged plastic box which protects against dirt and damage.

L [mm]	B [mm]	H [mm]		Item no.	Designation
310	260	80	1	25900920	SET LS-SO 9 I 10 TLG

Set for electricians (international standard sizes)

The set contains six HSS hole saws in the most common international diameters, including accessories, for electricians. Operating instructions are included.

Contents:
The set consists of six HSS hole saws: LS 22, LS 29, LS 35, LS 44, LS 51 and LS 64, two hole saw arbors: LSS 2 and LSS 4, an LSA adapter for hole saw arbor LSS 4, an Allen key 4 mm and an ejection spring.

Special features:
- It is possible to use hole saw LS 35 with the LSA adapter and washer.
- Supplied in well-arranged plastic box which protects against dirt and damage.

L [mm]	B [mm]	H [mm]		Item no.	Designation
310	260	80	1	25900910	SET LS-SO 9E-1 10TLG

Set for mechanics

The set contains nine HSS hole saws in the most common diameters, including accessories, for mechanics in the construction, container and pipeline industries. Operating instructions are included.

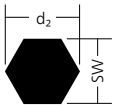
Contents:
The set consists of nine HSS hole saws: LS 19, LS 22, LS 29, LS 35, LS 38, LS 44, LS 51, LS 57 and LS 64, two hole saw arbors: LSS 2 and LSS 4, a pilot drill LSB 6/90, an LSA adapter for hole saw arbor LSS 4, an Allen key 4 mm and an ejection spring.

Special features:
- It is possible to use hole saws LS 35 and LS 38 with the LSA adapter and washer.
- Supplied in well-arranged plastic box which protects against dirt and damage.

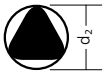
L [mm]	B [mm]	H [mm]		Item no.	Designation
310	260	80	1	25901300	SET LS-SO 13 M 14TLG

Shank dimensions [mm]

Hexagonal



Round



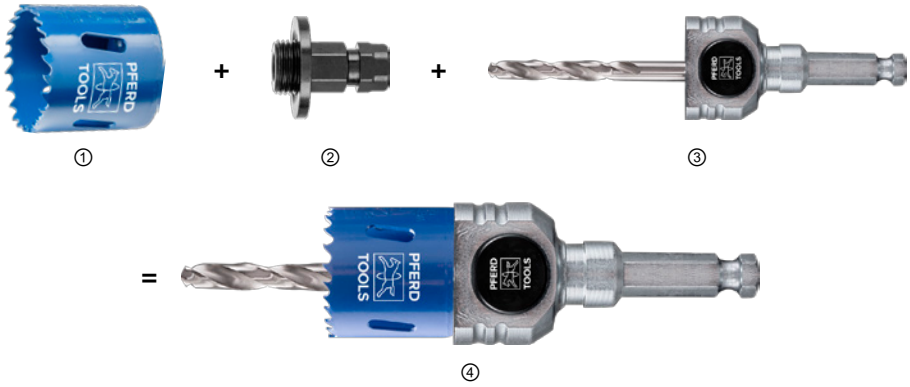
Example combination

① HSS hole saw

② Adapter

③ Quick-mounting system

④ HSS hole saw with adapter and quick-mounting system



Hole saw arbors LSS

Hole saw arbors are designed for mounting the hole saw and the pilot drill. The hole saw arbors are supplied with an HSS pilot drill and an ejection spring.

Special features:
- The spring can easily be removed manually without the help of tools.

Image	Suitable for hole saws	Suitable pilot drill	d_2 [mm]	Size [mm]	Shank type	Thread		Item no.	Designation
①	LS 14-30	-	10.5	9.53	hexagonal	1/2–20 UNF	1	25200111	LSS 1
②	LS 32-210	-	10.5	9.53	hexagonal	5/8–18 UNF	1	25200211	LSS 2
③	LS 14-30	LSB 6/90	6.35	-	round	1/2–20 UNF	1	25200407	LSS 4

Quick-mounting system for hole saws

The quick-mounting system is part of a clamping system for the quick and easy use of HSS hole saws. In conjunction with adapters, it is possible to use the HSS hole saws easily and conveniently on all conventional power drills.

Special features:
- After the application is completed, the hole saw and quick-mounting system can be separated without the use of additional tools by simply pressing a button.
- Interchangeable HSS pilot drill.

Suitable for hole saws	Shank type	d_2 [mm]	Size [mm]		Item no.	Designation
LS 14–210	hexagonal	12.2	11	1	25200900	PSL 11

① 

② 

Adapter for hole saws

Adapters tailored to the hole saw diameters.

Image	Suitable for hole saws		Item no.	Designation
①	LS 14-30	1	25200910	AD-PSL 14-30
②	LS 32-210	1	25200920	AD-PSL 32-210

① 

② 

HSS pilot drill LSB

HSS pilot drills for HSS hole saw arbors and quick-mounting systems for hole saws.

Image	Suitable for hole saws	Suitable shanks	Suitable for quick-mounting system	d_2 [mm]	l_1 [mm]	Shank type		Item no.	Designation
②	LS 14–210	LSS 4	PSL 11	6.35	90	round	1	25202007	LSB 6/90