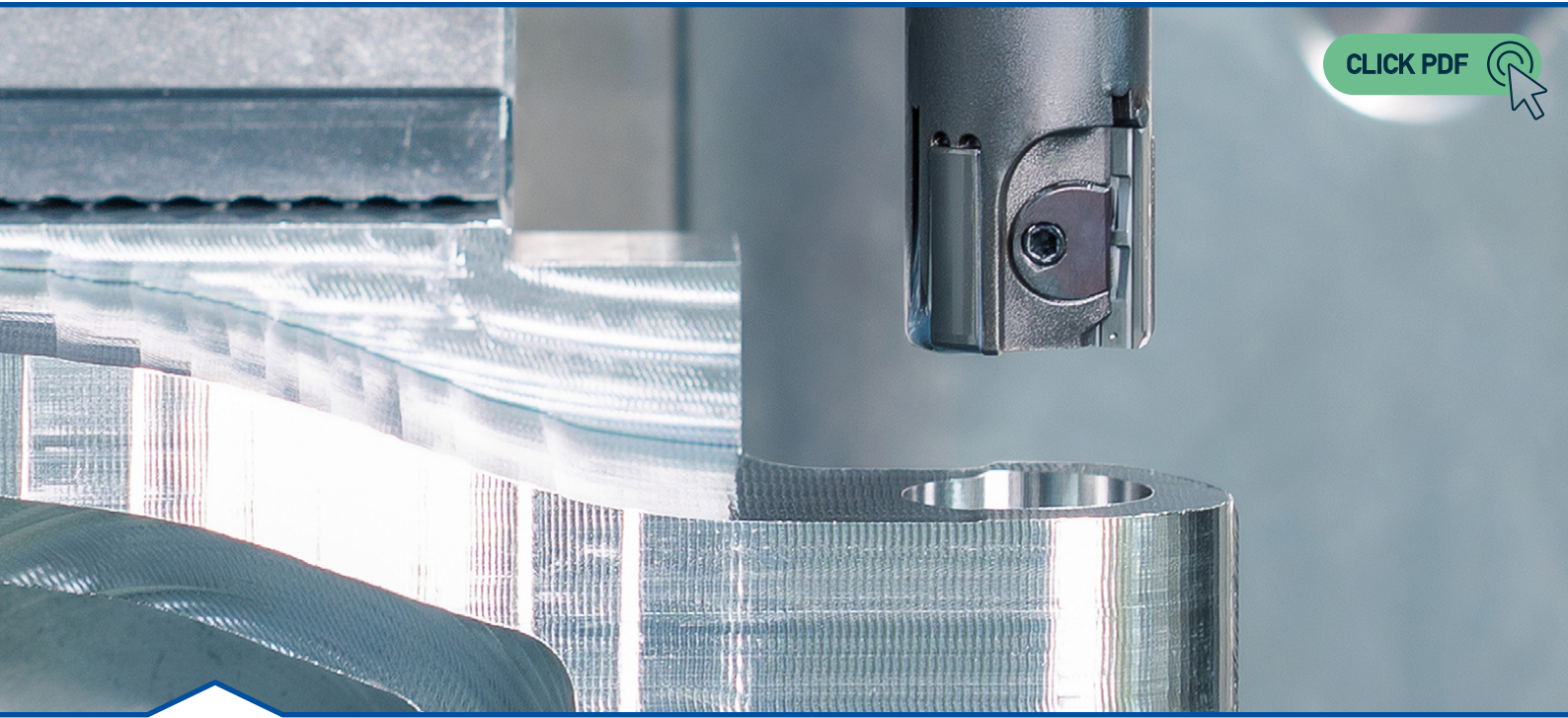




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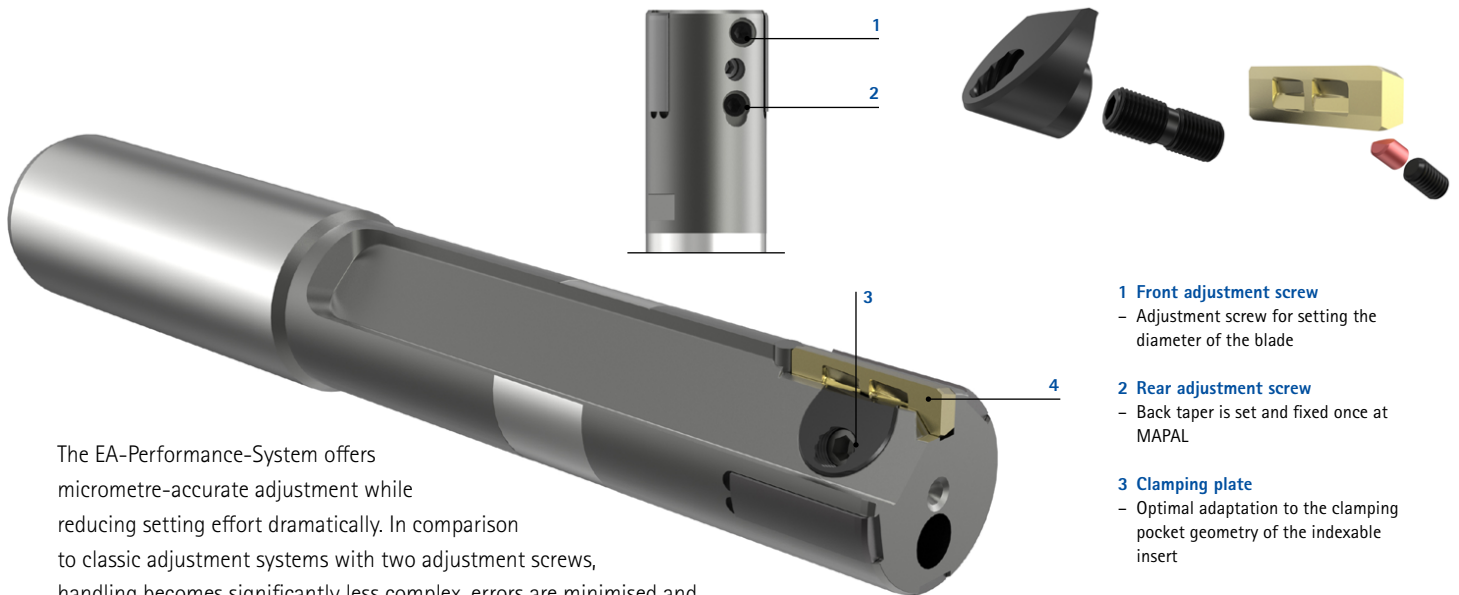


Your technology partner for cost-effective machining

EA-PERFORMANCE-SYSTEM

EA-PERFORMANCE-SYSTEM

Simple and precise setting of fine boring tools for diameter 10.00 – 19.00 mm



The EA-Performance-System offers micrometre-accurate adjustment while reducing setting effort dramatically. In comparison to classic adjustment systems with two adjustment screws, handling becomes significantly less complex, errors are minimised and reproducible results are achieved more quickly.

Technically, the system is based on a stable cutting-edge fixation with built-in back taper and is designed for a wide range of work materials. By transferring the adjustment principle to smaller diameter ranges, MAPAL specifically opens up applications where less flexible or more laborious machining solutions were previously required.

Typical applications include high-precision fit and bearing bores, for example in transmission housings, cylinders, crankshafts and camshafts.

1 Front adjustment screw

- Adjustment screw for setting the diameter of the blade

2 Rear adjustment screw

- Back taper is set and fixed once at MAPAL

3 Clamping plate

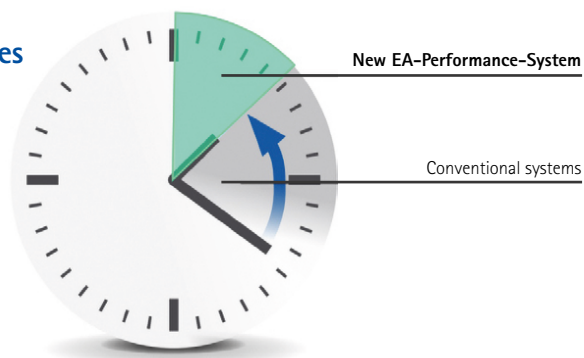
- Optimal adaptation to the clamping pocket geometry of the indexable insert

4 Indexable insert

- Indexable insert with defined contact geometry for positive-fit and reproducible positioning

Comparison of the setting times

The objective during the development of the EasyAdjust system was to reduce the setting effort drastically for tools with guide pad technology.



ADVANTAGES AND CUSTOMER BENEFITS

- Easy handling enables fast set-up times
- Reduced training costs, enhancing efficiency
- Increased process reliability and productivity due to minimised error rate



INDEXABLE INSERT SIZE SELECTION

Size	Diameter [mm]
90	10.00 - 13.50
91	> 13.50 - 19.50
92	> 19.50 - 20.00

Indexable inserts with SZ lead

EA-Performance-System

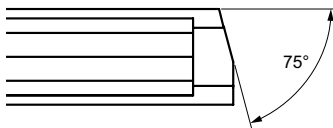
Design:

Maximum cutting depth: 1.00 mm

Rake angle: 6°, 12°

Features and advantages:

- Especially designed for aluminium cast alloys
- Very good surface quality at small feed rates
- Exact adherence to gauges
- Main cutting edge angle of 75°
- Reduced radial forces
- Especially suitable for thin-walled workpieces
- High process reliability and dimensional accuracy



Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*				
					N			S	
					N1	N2	N3	S1	S2
31638388	SZ90R6-SD-HU615	positive	90	right		■			
31638417	SZ91R6-SD-HU615	positive	91	right		■			
31638445	SZ92R6-SD-HU615	positive	92	right		■			
31638532	SZ90R6-SD-PU620	positive	90	right	■	■	■		
31638536	SZ91R6-SD-PU620	positive	91	right	■	■	■		
31638540	SZ92R6-SD-PU620	positive	92	right	■	■	■		
31638367	SZ90R2-SD-HU615	highly positive	90	right		■		■	■
31638396	SZ91R2-SD-HU615	highly positive	91	right		■		■	■
31638424	SZ92R2-SD-HU615	highly positive	92	right		■		■	■

* MAPAL machining groups

For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

■ highly suitable ▣ suitable in some situations

Indexable inserts with AS lead

EA-Performance-System

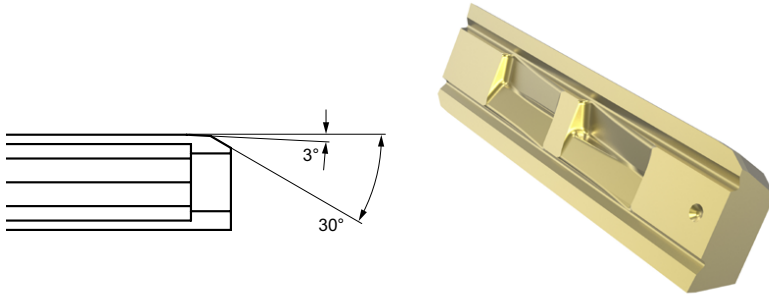
Design:

Maximum cutting depth: 0.25 mm

Rake angle: 0°, 6°, 12°

Features and advantages:

- Universally applicable for all materials
- Excellent surface quality
- Suitable for high cutting speeds
- Process-reliable and efficient machining
- Lead length: 1.3 mm



Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*												
					P					M			N			S	
					P1	P2	P3	P4	P5	M1	M2	M3	N1	N2	N3	S1	S2
31692905	AS90R6-SD-HP115	positive	90	right	■												
31692906	AS91R6-SD-HP115	positive	91	right	■												
31692909	AS92R6-SD-HP115	positive	92	right	■												
31638372	AS90R6-SD-HP026	positive	90	right		■	■										
31638401	AS91R6-SD-HP026	positive	91	right		■	■										
31638429	AS92R6-SD-HP026	positive	92	right		■	■										
31638369	AS90R6-SD-CP410	positive	90	right	■	■	■										
31638398	AS91R6-SD-CP410	positive	91	right	■	■	■										
31638426	AS92R6-SD-CP410	positive	92	right	■	■	■										
31638374	AS90R6-SD-HP016	positive	90	right				■	■	■	■	■					
31638403	AS91R6-SD-HP016	positive	91	right				■	■	■	■	■					
31638431	AS92R6-SD-HP016	positive	92	right				■	■	■	■	■					
31613824	AS90R6-SD-HU615	positive	90	right										■			
31613822	AS91R6-SD-HU615	positive	91	right										■			
31606980	AS92R6-SD-HU615	positive	92	right										■			
31638519	AS90R6-SD-PU620	positive	90	right									■	■	■		
31638533	AS91R6-SD-PU620	positive	91	right									■	■	■		
31638537	AS92R6-SD-PU620	positive	92	right									■	■	■		
31613826	AS90R2-SD-HU615	highly positive	90	right										■		■	■
31613823	AS91R2-SD-HU615	highly positive	91	right										■		■	■
31612835	AS92R2-SD-HU615	highly positive	92	right										■		■	■

* MAPAL machining groups

For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

■ highly suitable ■ suitable in some situations

Indexable inserts with AZ lead

EA-Performance-System

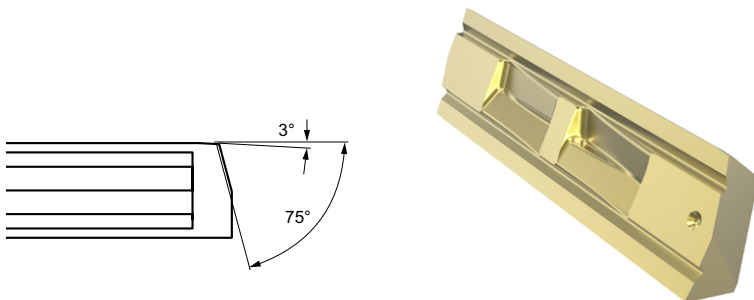
Design:

Maximum cutting depth: 0.50 mm

Rake angle: 0°, 6°, 12°

Features and advantages:

- Especially suitable for aluminium machining
- Designed for high cutting speeds
- High machining performance
- Clean and precise thread cutting
- Optimised chip formation and removal



Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*									
					K					N			S	
					K1	K2	K3	K4	K5	N1	N2	N3	S1	S2
31638389	AZ90R0-SD-FU485	negative	90	right	■									
31638418	AZ91R0-SD-FU485	negative	91	right	■									
31638446	AZ92R0-SD-FU485	negative	92	right	■									
31638363	AZ90R0-SD-HC418	neutral	90	right	■									
31638392	AZ91R0-SD-HC418	neutral	91	right	■									
31692975	AZ92R0-SD-HC418	neutral	92	right	■									
31692978	AZ90R6-SD-HP026	positive	90	right		■	■	■	■					
31692980	AZ91R6-SD-HP026	positive	91	right		■	■	■	■					
31692981	AZ92R6-SD-HP026	positive	92	right		■	■	■	■					
31638377	AZ90R6-SD-HU615	positive	90	right							■			
31638406	AZ91R6-SD-HU615	positive	91	right							■			
31638434	AZ92R6-SD-HU615	positive	92	right							■			
31638530	AZ90R6-SD-PU620	positive	90	right						■	■	■		
31638534	AZ91R6-SD-PU620	positive	91	right						■	■	■		
31638538	AZ92R6-SD-PU620	positive	92	right						■	■	■		
31638365	AZ90R2-SD-HU615	highly positive	90	right							■		■	■
31638394	AZ91R2-SD-HU615	highly positive	91	right							■		■	■
31638422	AZ92R2-SD-HU615	highly positive	92	right							■		■	■

* MAPAL machining groups

For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

■ highly suitable ▣ suitable in some situations

Indexable inserts with EK lead

EA-Performance-System

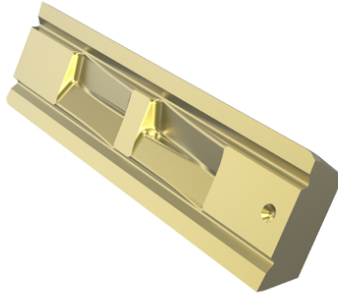
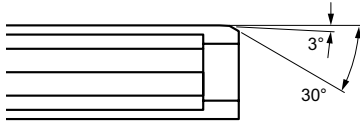
Design:

Maximum cutting depth: 0.15 mm

Rake angle: 0°, 6°, 12°

Features and advantages:

- Especially short lead length of 0.6 mm
- Suitable for all materials
- Ideal for limited thread depth or short leads
- Universal application
- Precise thread cutting even in cramped conditions



Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*												
					P					M			N			S	
					P1	P2	P3	P4	P5	M1	M2	M3	N1	N2	N3	S1	S2
31693175	EK150R6-SD-HP115	positive	150	right	■												
31693176	EK151R6-SD-HP115	positive	151	right	■												
31693177	EK152R6-SD-HP115	positive	152	right	■												
31638454	EK150R6-SD-HP026	positive	150	right		■	■										
31638461	EK151R6-SD-HP026	positive	151	right		■	■										
31638468	EK152R6-SD-HP026	positive	152	right		■	■										
31638452	EK150R6-SD-CP410	positive	150	right	■	■	■										
31638458	EK151R6-SD-CP410	positive	151	right	■	■	■										
31638465	EK152R6-SD-CP410	positive	152	right	■	■	■										
31627044	EK150R6-SD-HP016	positive	150	right				■	■	■	■	■					
31638460	EK151R6-SD-HP016	positive	151	right				■	■	■	■	■					
31638467	EK152R6-SD-HP016	positive	152	right				■	■	■	■	■					
31638451	EK150R6-SD-HU615	positive	150	right										■			
31638457	EK151R6-SD-HU615	positive	151	right										■			
31638464	EK152R6-SD-HU615	positive	152	right										■			
31638541	EK150R6-SD-PU620	positive	150	right									■	■	■		
31638542	EK151R6-SD-PU620	positive	151	right									■	■	■		
31638543	EK152R6-SD-PU620	positive	152	right									■	■	■		
31638449	EK150R2-SD-HU615	highly positive	150	right										■		■	■
31638455	EK151R2-SD-HU615	highly positive	151	right										■		■	■
31638462	EK152R2-SD-HU615	highly positive	152	right										■		■	■

* MAPAL machining groups

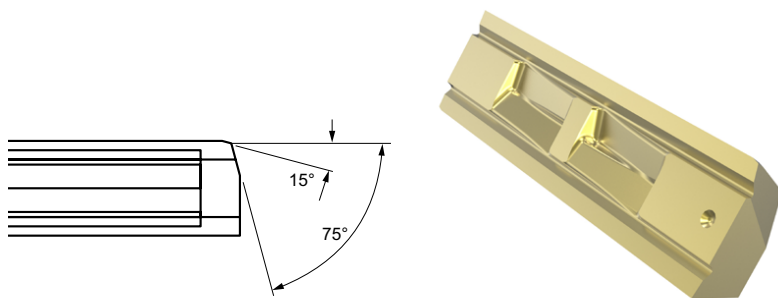
For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

■ highly suitable ■ suitable in some situations

Indexable inserts with DZ lead

EA-Performance-System

**Design:**

Maximum cutting depth: 0.15 mm

Rake angle: 0°, 6°, 12°

Features and advantages:

- Specifically for short chipping materials (e.g. grey cast iron [GG])
- Ideal for large cutting depths
- Finishing insert with 15° lead angle
- Increased process reliability in demanding applications
- Also suitable for thin-walled workpieces
- High dimensional and surface quality

Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*				
					P				
					P1	P2	P3	P4	P5
31638390	DZ90R0-SD-FU485	negative	90	right					
31638420	DZ91R0-SD-FU485	negative	91	right					
31638447	DZ92R0-SD-FU485	negative	92	right					
31638391	DZ90R0-SD-FU801	negative	90	right					
31638419	DZ91R0-SD-FU801	negative	91	right					
31638448	DZ92R0-SD-FU801	negative	92	right					
31638364	DZ90R0-SD-HC418	neutral	90	right					
31638393	DZ91R0-SD-HC418	neutral	91	right					
31638421	DZ92R0-SD-HC418	neutral	92	right					
31692982	DZ90R6-SD-HP115	positive	90	right	■				
31692984	DZ91R6-SD-HP115	positive	91	right	■				
31692985	DZ92R6-SD-HP115	positive	92	right	■				
31638385	DZ90R6-SD-HP026	positive	90	right		■	■		
31638414	DZ91R6-SD-HP026	positive	91	right		■	■		
31638442	DZ92R6-SD-HP026	positive	92	right		■	■		
31638380	DZ90R6-SD-CP410	positive	90	right	■	■	■		
31638409	DZ91R6-SD-CP410	positive	91	right	■	■	■		
31638437	DZ92R6-SD-CP410	positive	92	right	■	■	■		
31638383	DZ90R6-SD-HP016	positive	90	right				■	■
31638412	DZ91R6-SD-HP016	positive	91	right				■	■
31638440	DZ92R6-SD-HP016	positive	92	right				■	■
31638385	DZ90R6-SD-HP026	positive	90	right					
31638414	DZ91R6-SD-HP026	positive	91	right					
31638442	DZ92R6-SD-HP026	positive	92	right					
31638379	DZ90R6-SD-HU615	positive	90	right					
31638408	DZ91R6-SD-HU615	positive	91	right					
31638436	DZ92R6-SD-HU615	positive	92	right					
31638531	DZ90R6-SD-PU620	positive	90	right					
31638535	DZ91R6-SD-PU620	positive	91	right					
31638539	DZ92R6-SD-PU620	positive	92	right					
31638366	DZ90R2-SD-HU615	highly positive	90	right					
31638395	DZ91R2-SD-HU615	highly positive	91	right					
31638423	DZ92R2-SD-HU615	highly positive	92	right					

* MAPAL machining groups

For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

	Material suitability MMG*															
	M			K					N			S		H		
	M1	M2	M3	K1	K2	K3	K4	K5	N1	N2	N3	S1	S2	H1	H2	
				■												
				■												
				■												
														■	■	
														■	■	
														■	■	
				■												
				■												
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		■	■	■											■	
		■	■	■											■	
		■	■	■											■	
						■	■	■	■							
						■	■	■	■							
						■	■	■	■							
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Indexable inserts with chip breaker P06 with AS lead

EA-Performance-System

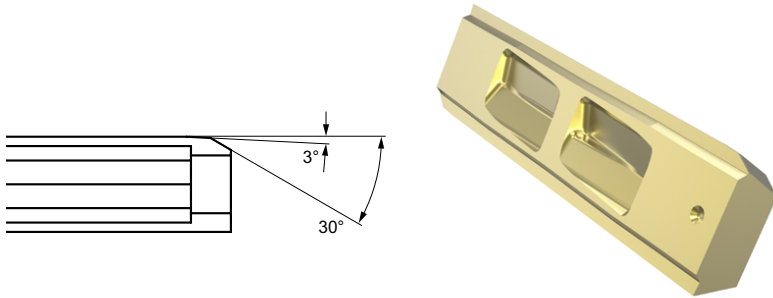
Design:

Maximum cutting depth: 0.25 mm

Rake angle: 0°, 6°, 12°

Features and advantages:

- Universally applicable for all materials
- Excellent surface quality
- Suitable for high cutting speeds
- Process-reliable and efficient machining
- Lead length: 1.3 mm



Lead	Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*								
						P					M			
						P1	P2	P3	P4	P5	M1	M2	M3	
AS	31638373	AS90R-P06-SD-HP026	positive	90	right	■	■	■						
AS	31638402	AS91R-P06-SD-HP026	positive	91	right	■	■	■						
AS	31638430	AS92R-P06-SD-HP026	positive	92	right	■	■	■						
AS	31638370	AS90R-P06-SD-CP410	positive	90	right	■	■	■						
AS	31638399	AS91R-P06-SD-CP410	positive	91	right	■	■	■						
AS	31638427	AS92R-P06-SD-CP410	positive	92	right	■	■	■						
AS	31638375	AS90R-P06-SD-HP016	positive	90	right				■	■	■	■	■	
AS	31638404	AS91R-P06-SD-HP016	positive	91	right				■	■	■	■	■	
AS	31638432	AS92R-P06-SD-HP016	positive	92	right				■	■	■	■	■	

NOTE: Applications for cutting materials

AS	AS...-P06-SD-HP026	Cutting edges using an AS lead in combination with HP026 can be used for surface qualities > Rz 6.3.
	AS...-P06-SD-CP410	The combination of AS lead and CP410 achieves the highest requirements in terms of surface finish. As a general rule, it has a roughness value of < Rz 6.3.
	AS...-P06-SD-HP016	For applications involving stainless workpiece materials, the cutting edge with an AS lead and the HP016 combination of cutting materials is available.

* MAPAL machining groups

For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

■ highly suitable ■ suitable in some situations

Indexable inserts with chip breaker P06 with DZ lead

EA-Performance-System

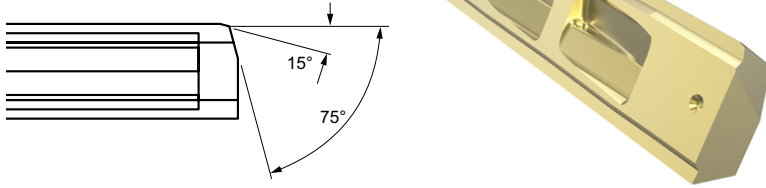
Design:

Maximum cutting depth: 0.15 mm

Rake angle: 0°, 6°, 12°

Features and advantages:

- Specifically for short chipping materials (e.g. grey cast iron [GG])
- Ideal for large cutting depths
- Finishing insert with 15° lead angle
- Increased process reliability in demanding applications
- Also suitable for thin-walled workpieces
- High dimensional and surface quality



Lead	Order no.	Specification	Rake angle	Size	Cutting direction	Material suitability MMG*								
						P					M			
						P1	P2	P3	P4	P5	M1	M2	M3	
DZ	31638386	DZ90R-P06-SD-HP026	positive	90	right	■	■	■						
DZ	31638415	DZ91R-P06-SD-HP026	positive	91	right	■	■	■						
DZ	31638443	DZ92R-P06-SD-HP026	positive	92	right	■	■	■						
DZ	31638381	DZ90R-P06-SD-CP410	positive	90	right	■	■	■						
DZ	31638410	DZ91R-P06-SD-CP410	positive	91	right	■	■	■						
DZ	31638438	DZ92R-P06-SD-CP410	positive	92	right	■	■	■						
DZ	31638384	DZ90R-P06-SD-HP016	positive	90	right				■	■	■	■	■	
DZ	31638413	DZ91R-P06-SD-HP016	positive	91	right				■	■	■	■	■	
DZ	31638441	DZ92R-P06-SD-HP016	positive	92	right				■	■	■	■	■	

NOTE: Applications for cutting materials

DZ	DZ...-P06-SD-HP026	As opposed to the AS lead, the DZ lead lowers radial force, making it suitable for workpieces with thin walls.
	DZ...-P06-SD-CP410	Thanks to the increased cutting speed, more economical results can be achieved using the cermet versions of the DZ lead.
	DZ...-P06-SD-HP016	In order to reduce radial forces, we recommend using our DZ lead with HP016 when working on stainless steels.

* MAPAL machining groups

For cutting data recommendations, see end of chapter.

Cutting edges with special lead available on request.

■ highly suitable ■ suitable in some situations

Cutting data recommendation for indexable inserts with SZ lead

Feed and cutting speed

SZ-R-6-SD-HU615

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200			
	N1-2 Aluminium – wrought alloys, hardened	350			
	N1-3 Aluminium – wrought alloys, hardened	550			
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened				
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260			
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310			
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450			
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	100	50	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340			
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310			
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400			
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size				
	N3-2 Non-metallic workpiece materials, graphite ≤ 8µm particle size				
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with SZ lead

Feed and cutting speed

SZ-R-6-SD-PU620

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200	230	115	0.120
	N1-2 Aluminium – wrought alloys, hardened	350	230	115	0.120
	N1-3 Aluminium – wrought alloys, hardened	550	230	115	0.120
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened		230	115	0.120
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260	230	115	0.120
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310	230	115	0.120
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450	230	115	0.120
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	180	90	0.120
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	180	90	0.120
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	180	90	0.120
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	180	90	0.120
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size		180	90	0.120
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size		180	90	0.120
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-R-6-SD-HP115

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420	80	40	0.150
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650	80	40	0.150
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850	70	35	0.150
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900	70	35	0.150
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000	70	35	0.150
	P2-1	Low-alloyed steel, annealed	600			
	P2-2	Low-alloyed steel, quenched and tempered	930			
	P2-3	Low-alloyed steel, quenched and tempered	1,000			
	P2-4	Low-alloyed steel, quenched and tempered	1,200			
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680			
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100			
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250			
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2	Stainless steel, martensitic, quenched and tempered	800			
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-R-6-SD-HP016

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420			
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650			
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850			
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900			
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000			
	P2-1	Low-alloyed steel, annealed	600			
	P2-2	Low-alloyed steel, quenched and tempered	930			
	P2-3	Low-alloyed steel, quenched and tempered	1,000			
	P2-4	Low-alloyed steel, quenched and tempered	1,200			
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680			
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100			
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250			
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650	60	30	0.120
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680	50	25	0.120
	P5-2	Stainless steel, martensitic, quenched and tempered	800	40	20	0.120
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200	40	20	0.120
M	M1-1	Stainless steel, austenitic, quenched	680	50	25	0.120
	M1-2	Stainless steel, austenitic (super austenitic), precipitation-hardened	1,010	40	20	0.120
	M2-1	Stainless steel, austenitic / ferritic (duplex), solution-annealed	780	40	20	0.120
	M2-2	Stainless steel, austenitic / ferritic (super-duplex), solution-annealed	780	30	15	0.120
	M3-1	Stainless steel, heat-resistant austenitic steel, cast	720	30	15	0.120

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-R-6-SD-HU615

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200			
	N1-2 Aluminium – wrought alloys, hardened	350			
	N1-3 Aluminium – wrought alloys, hardened	550			
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened				
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260			
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310			
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450			
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	100	50	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340			
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310			
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400			
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size				
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size				
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-R-6-SD-PU620

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200	230	115	0.150
	N1-2 Aluminium – wrought alloys, hardened	350	230	115	0.150
	N1-3 Aluminium – wrought alloys, hardened	550	230	115	0.150
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened		230	115	0.150
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260	230	115	0.150
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310	230	115	0.150
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450	230	115	0.150
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	180	90	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	180	90	0.150
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	180	90	0.150
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	180	90	0.150
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size		180	90	0.150
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size		180	90	0.150
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-R-6-SD-CP410

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420	180	90	0.150
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650	180	90	0.150
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850	160	80	0.120
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900	160	80	0.120
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000	160	80	0.120
	P2-1	Low-alloyed steel, annealed	600	160	80	0.150
	P2-2	Low-alloyed steel, quenched and tempered	930	160	80	0.150
	P2-3	Low-alloyed steel, quenched and tempered	1,000	140	70	0.120
	P2-4	Low-alloyed steel, quenched and tempered	1,200	140	70	0.120
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680	160	80	0.150
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100	160	80	0.150
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250	140	70	0.120
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2	Stainless steel, martensitic, quenched and tempered	800			
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-R-6-SD-HP026

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420			
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650			
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850			
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900			
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000			
	P2-1	Low-alloyed steel, annealed	600	100	50	0.150
	P2-2	Low-alloyed steel, quenched and tempered	930	100	50	0.150
	P2-3	Low-alloyed steel, quenched and tempered	1,000	80	40	0.150
	P2-4	Low-alloyed steel, quenched and tempered	1,200	80	40	0.150
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680	100	50	0.150
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100	80	40	0.150
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250	80	40	0.150
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2	Stainless steel, martensitic, quenched and tempered	800			
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for indexable inserts with AZ lead

Feed and cutting speed

AZ-R-0-SD-HC418

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
K	K1-1	Grey cast iron, GJL, pearlitic / ferritic	200	110	55	0.150
	K1-2	Grey cast iron, GJL, pearlitic	250	110	55	0.150
	K1-3	Grey cast iron, GJL, pearlitic	350	110	55	0.150
	K2-1	Spheroidal graphite cast iron, GJS, ferritic	400			
	K2-2	Spheroidal graphite cast iron, GJS, ferritic / pearlitic	500			
	K2-3	Spheroidal graphite cast iron, GJS, pearlitic	700			
	K2-4	Austempered ductile iron, ADI, austenitic / ferritic	1,400			
	K3-1	Compacted graphite cast iron, GJV, ferritic	400			
	K3-2	Compacted graphite cast iron, GJV, pearlitic	> 400			
	K4-1	Malleable cast iron, GJMW / GJMB, ferritic	400			
	K4-2	Malleable cast iron, GJMW / GJMB, pearlitic	600			
	K5-1	Austenitic cast iron, GJLA / GJSA, lamellar graphite	210			
	K5-2	Austenitic cast iron, GJLA / GJSA, spheroidal graphite	420			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AZ lead

Feed and cutting speed

AZ-R-6-SD-PU620

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200	230	115	0.150
	N1-2 Aluminium – wrought alloys, hardened	350	230	115	0.150
	N1-3 Aluminium – wrought alloys, hardened	550	230	115	0.150
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened		230	115	0.150
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260	230	115	0.150
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310	230	115	0.150
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450	230	115	0.150
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	180	90	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	180	90	0.150
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	180	90	0.150
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	180	90	0.150
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size		180	90	0.150
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size		180	90	0.150
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AZ lead

Feed and cutting speed

AZ-R-2-SD-HU615

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200			
	N1-2 Aluminium – wrought alloys, hardened	350			
	N1-3 Aluminium – wrought alloys, hardened	550			
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened				
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260			
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310			
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450			
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390			
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	110	55	0.150
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	110	55	0.150
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	110	55	0.150
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size				
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size				
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			
S	S1-1 Titanium, Ti alloys, pure titanium & α alloys	680	30	15	0.120
	S2-1 Titanium, Ti alloys α + β alloys, hardened	1,260	20	10	0.120
	S2-2 Titanium, Ti alloys β alloys	1,400	20	10	0.100
	S3-1 Nickel, nickel alloys, unalloyed	450			
	S3-2 Nickel, nickel alloys, low alloyed	600			
	S4-1 High-temperature alloys, super alloys, Ni or Co basis, annealed	840			
	S4-2 High-temperature alloys, super alloys, Ni or Co basis, hardened	1,180			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AZ lead

Feed and cutting speed

AZ-R-6-SD-HP026

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
K	K1-1	Grey cast iron, GJL, pearlitic / ferritic	200			
	K1-2	Grey cast iron, GJL, pearlitic	250			
	K1-3	Grey cast iron, GJL, pearlitic	350			
	K2-1	Spheroidal graphite cast iron, GJS, ferritic	400	110	55	0.150
	K2-2	Spheroidal graphite cast iron, GJS, ferritic / pearlitic	500	100	50	0.150
	K2-3	Spheroidal graphite cast iron, GJS, pearlitic	700	80	40	0.150
	K2-4	Austempered ductile iron, ADI, austenitic / ferritic	1,400	80	40	0.150
	K3-1	Compacted graphite cast iron, GJV, ferritic	400	80	40	0.150
	K3-2	Compacted graphite cast iron, GJV, pearlitic	> 400	80	40	0.150
	K4-1	Malleable cast iron, GJMW / GJMB, ferritic	400	80	40	0.150
	K4-2	Malleable cast iron, GJMW / GJMB, pearlitic	600	80	40	0.150
	K5-1	Austenitic cast iron, GJLA / GJSA, lamellar graphite	210	100	50	0.150
	K5-2	Austenitic cast iron, GJLA / GJSA, spheroidal graphite	420	80	40	0.150

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AZ lead

Feed and cutting speed

AZ-R-0-SD-FU485

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
K	K1-1	Grey cast iron, GJL, pearlitic / ferritic	200	160	80	0.150
	K1-2	Grey cast iron, GJL, pearlitic	250			
	K1-3	Grey cast iron, GJL, pearlitic	350			
	K2-1	Spheroidal graphite cast iron, GJS, ferritic	400			
	K2-2	Spheroidal graphite cast iron, GJS, ferritic / pearlitic	500			
	K2-3	Spheroidal graphite cast iron, GJS, pearlitic	700			
	K2-4	Austempered ductile iron, ADI, austenitic / ferritic	1,400			
	K3-1	Compacted graphite cast iron, GJV, ferritic	400			
	K3-2	Compacted graphite cast iron, GJV, pearlitic	> 400			
	K4-1	Malleable cast iron, GJMW / GJMB, ferritic	400			
	K4-2	Malleable cast iron, GJMW / GJMB, pearlitic	600			
	K5-1	Austenitic cast iron, GJLA / GJSA, lamellar graphite	210			
	K5-2	Austenitic cast iron, GJLA / GJSA, spheroidal graphite	420			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-6-SD-HP115

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
P	P1-1 Unalloyed steel ≤ 0.15% C, annealed	420	80	40	0.150
	P1-2 Unalloyed steel ≤ 0.45% C, annealed	650	80	40	0.150
	P1-3 Unalloyed steel ≤ 0.45% C, quenched and tempered	850	70	35	0.150
	P1-4 Unalloyed steel ≤ 0.75% C, annealed	900	70	35	0.150
	P1-5 Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000	70	35	0.150
	P2-1 Low-alloyed steel, annealed	600			
	P2-2 Low-alloyed steel, quenched and tempered	930			
	P2-3 Low-alloyed steel, quenched and tempered	1,000			
	P2-4 Low-alloyed steel, quenched and tempered	1,200			
	P3-1 High-alloyed steel and high-alloyed tool steel, annealed	680			
	P3-2 High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100			
	P3-3 High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250			
	P4-1 Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1 Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2 Stainless steel, martensitic, quenched and tempered	800			
	P5-3 Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-6-SD-HP016

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420			
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650			
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850			
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900			
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000			
	P2-1	Low-alloyed steel, annealed	600			
	P2-2	Low-alloyed steel, quenched and tempered	930			
	P2-3	Low-alloyed steel, quenched and tempered	1,000			
	P2-4	Low-alloyed steel, quenched and tempered	1,200			
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680			
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100			
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250			
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650	60	30	0.120
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680	50	25	0.120
	P5-2	Stainless steel, martensitic, quenched and tempered	800	40	20	0.120
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200	40	20	0.120
M	M1-1	Stainless steel, austenitic, quenched	680	50	25	0.120
	M1-2	Stainless steel, austenitic (super austenitic), precipitation-hardened	1,010	40	20	0.120
	M2-1	Stainless steel, austenitic / ferritic (duplex), solution-annealed	780	40	20	0.120
	M2-2	Stainless steel, austenitic / ferritic (super-duplex), solution-annealed	780	30	15	0.120
	M3-1	Stainless steel, heat-resistant austenitic steel, cast	720	30	15	0.120

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-6-SD-HU615

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200			
	N1-2 Aluminium – wrought alloys, hardened	350			
	N1-3 Aluminium – wrought alloys, hardened	550			
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened				
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260			
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310			
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450			
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	100	50	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340			
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310			
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400			
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size				
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size				
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-6-SD-PU620

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200	230	115	0.150
	N1-2 Aluminium – wrought alloys, hardened	350	230	115	0.150
	N1-3 Aluminium – wrought alloys, hardened	550	230	115	0.150
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened		230	115	0.150
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260	230	115	0.150
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310	230	115	0.150
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450	230	115	0.150
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	180	90	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	180	90	0.150
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	180	90	0.150
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	180	90	0.150
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size		180	90	0.150
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size		180	90	0.150
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-2-SD-HU615

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200			
	N1-2 Aluminium – wrought alloys, hardened	350			
	N1-3 Aluminium – wrought alloys, hardened	550			
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened				
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260			
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310			
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450			
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390			
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	100	50	0.150
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	100	50	0.150
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	100	50	0.150
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size				
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size				
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			
S	S1-1 Titanium, Ti alloys, pure titanium & α alloys	680	30	15	0.120
	S2-1 Titanium, Ti alloys α + β alloys, hardened	1,260	20	10	0.120
	S2-2 Titanium, Ti alloys β alloys	1,400	20	10	0.100
	S3-1 Nickel, nickel alloys, unalloyed	450			
	S3-2 Nickel, nickel alloys, low alloyed	600			
	S4-1 High-temperature alloys, super alloys, Ni or Co basis, annealed	840			
	S4-2 High-temperature alloys, super alloys, Ni or Co basis, hardened	1,180			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-6-SD-HP026

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420			
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650			
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850			
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900			
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000			
	P2-1	Low-alloyed steel, annealed	600	100	50	0.150
	P2-2	Low-alloyed steel, quenched and tempered	930	100	50	0.150
	P2-3	Low-alloyed steel, quenched and tempered	1,000	80	40	0.150
	P2-4	Low-alloyed steel, quenched and tempered	1,200	80	40	0.150
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680	100	50	0.150
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100	80	40	0.150
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250	80	40	0.150
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2	Stainless steel, martensitic, quenched and tempered	800			
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-R-6-SD-CP410

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420	180	90	0.150
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650	180	90	0.150
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850	160	80	0.120
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900	160	80	0.120
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000	160	80	0.120
	P2-1	Low-alloyed steel, annealed	600	160	80	0.150
	P2-2	Low-alloyed steel, quenched and tempered	930	160	80	0.150
	P2-3	Low-alloyed steel, quenched and tempered	1,000	140	70	0.120
	P2-4	Low-alloyed steel, quenched and tempered	1,200	140	70	0.120
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680	160	80	0.150
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100	160	80	0.150
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250	140	70	0.120
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2	Stainless steel, martensitic, quenched and tempered	800			
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-0-SD-FU485

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
K	K1-1	Grey cast iron, GJL, pearlitic / ferritic	200	150	75	0.150
	K1-2	Grey cast iron, GJL, pearlitic	250	150	75	0.150
	K1-3	Grey cast iron, GJL, pearlitic	350	150	75	0.150
	K2-1	Spheroidal graphite cast iron, GJS, ferritic	400			
	K2-2	Spheroidal graphite cast iron, GJS, ferritic / pearlitic	500			
	K2-3	Spheroidal graphite cast iron, GJS, pearlitic	700			
	K2-4	Austempered ductile iron, ADI, austenitic / ferritic	1,400			
	K3-1	Compacted graphite cast iron, GJV, ferritic	400			
	K3-2	Compacted graphite cast iron, GJV, pearlitic	> 400			
	K4-1	Malleable cast iron, GJMW / GJMB, ferritic	400			
	K4-2	Malleable cast iron, GJMW / GJMB, pearlitic	600			
	K5-1	Austenitic cast iron, GJLA / GJSA, lamellar graphite	210			
	K5-2	Austenitic cast iron, GJLA / GJSA, spheroidal graphite	420			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-0-SD-FU801

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
H	H1-1	Hardened steel, hardened and tempered	< 45 HRC	60	30	0.100
	H1-2	Hardened steel, hardened and tempered	< 50 HRC	50	25	0.080
	H1-3	Hardened steel, hardened and tempered	< 54 HRC	50	25	0.080
	H2-1	Hardened steel, hardened and tempered	< 60 HRC	50	25	0.080
	H2-2	Hardened steel, hardened and tempered	< 64 HRC	40	20	0.080
	H2-3	Hardened steel, hardened and tempered	< 68 HRC			
	H3-1	Wear-resistant cast iron / chill casting GJN, martensitic + carbide	< 55 HRC			
	H3-2	Wear-resistant cast iron / chill casting GJN, martensitic + carbide	≥ 55 HRC			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-0-SD-HC418

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
K	K1-1	Grey cast iron, GJL, pearlitic / ferritic	200	100	50	0.150
	K1-2	Grey cast iron, GJL, pearlitic	250	100	50	0.150
	K1-3	Grey cast iron, GJL, pearlitic	350	100	50	0.150
	K2-1	Spheroidal graphite cast iron, GJS, ferritic	400			
	K2-2	Spheroidal graphite cast iron, GJS, ferritic / pearlitic	500			
	K2-3	Spheroidal graphite cast iron, GJS, pearlitic	700			
	K2-4	Austempered ductile iron, ADI, austenitic / ferritic	1,400			
	K3-1	Compacted graphite cast iron, GJV, ferritic	400			
	K3-2	Compacted graphite cast iron, GJV, pearlitic	> 400			
	K4-1	Malleable cast iron, GJMW / GJMB, ferritic	400			
	K4-2	Malleable cast iron, GJMW / GJMB, pearlitic	600			
	K5-1	Austenitic cast iron, GJLA / GJSA, lamellar graphite	210			
	K5-2	Austenitic cast iron, GJLA / GJSA, spheroidal graphite	420			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-6-SD-HP115

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
P	P1-1 Unalloyed steel ≤ 0.15% C, annealed	420	80	40	0.150
	P1-2 Unalloyed steel ≤ 0.45% C, annealed	650	80	40	0.150
	P1-3 Unalloyed steel ≤ 0.45% C, quenched and tempered	850	70	35	0.150
	P1-4 Unalloyed steel ≤ 0.75% C, annealed	900	70	35	0.150
	P1-5 Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000	70	35	0.150
	P2-1 Low-alloyed steel, annealed	600			
	P2-2 Low-alloyed steel, quenched and tempered	930			
	P2-3 Low-alloyed steel, quenched and tempered	1,000			
	P2-4 Low-alloyed steel, quenched and tempered	1,200			
	P3-1 High-alloyed steel and high-alloyed tool steel, annealed	680			
	P3-2 High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100			
	P3-3 High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250			
	P4-1 Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1 Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2 Stainless steel, martensitic, quenched and tempered	800			
	P5-3 Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-6-SD-HP016

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420			
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650			
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850			
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900			
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000			
	P2-1	Low-alloyed steel, annealed	600			
	P2-2	Low-alloyed steel, quenched and tempered	930			
	P2-3	Low-alloyed steel, quenched and tempered	1,000			
	P2-4	Low-alloyed steel, quenched and tempered	1,200			
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680			
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100			
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250			
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650	60	30	0.120
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680	50	25	0.120
	P5-2	Stainless steel, martensitic, quenched and tempered	800	40	20	0.120
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200	40	20	0.120
M	M1-1	Stainless steel, austenitic, quenched	680	50	25	0.120
	M1-2	Stainless steel, austenitic (super austenitic), precipitation-hardened	1,010	40	20	0.120
	M2-1	Stainless steel, austenitic / ferritic (duplex), solution-annealed	780	40	20	0.120
	M2-2	Stainless steel, austenitic / ferritic (super-duplex), solution-annealed	780	30	15	0.120
	M3-1	Stainless steel, heat-resistant austenitic steel, cast	720	30	15	0.120
H	H1-1	Hardened steel, hardened and tempered	< 45 HRC	30	15	0.120
	H1-2	Hardened steel, hardened and tempered	< 50 HRC	30	15	0.120
	H1-3	Hardened steel, hardened and tempered	< 54 HRC	30	15	0.120
	H2-1	Hardened steel, hardened and tempered	< 60 HRC			
	H2-2	Hardened steel, hardened and tempered	< 64 HRC			
	H2-3	Hardened steel, hardened and tempered	< 68 HRC			
	H3-1	Wear-resistant cast iron / chill casting GJN, martensitic + carbide	< 55 HRC			
	H3-2	Wear-resistant cast iron / chill casting GJN, martensitic + carbide	≥ 55 HRC			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-6-SD-HU615

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200			
	N1-2 Aluminium – wrought alloys, hardened	350			
	N1-3 Aluminium – wrought alloys, hardened	550			
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened				
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260			
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310			
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450			
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	100	50	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340			
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310			
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400			
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size				
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size				
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-6-SD-PU620

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
N	N1-1 Aluminium – wrought alloys, cannot be hardened	200	230	115	0.150
	N1-2 Aluminium – wrought alloys, hardened	350	230	115	0.150
	N1-3 Aluminium – wrought alloys, hardened	550	230	115	0.150
	N1-4 Aluminium – cast alloys Si ≤ 7%, cannot be hardened		230	115	0.150
	N1-5 Aluminium – cast alloys 7% > Si ≤ 12%, cannot be hardened	260	230	115	0.150
	N1-6 Aluminium – cast alloys 7% > Si ≤ 12%, hardened	310	230	115	0.150
	N1-7 Aluminium – cast alloys Si > 12%, heat resistant	450	230	115	0.150
	N2-1 Copper and copper alloys Pb > 1% (free-machining alloy)	390	180	90	0.150
	N2-2 Copper and copper alloys CuSn (bronze, electrolytic copper)	340	180	90	0.150
	N2-3 Copper and copper alloys CuZn, CuSnZn (brass, gunmetal)	310	180	90	0.150
	N2-4 Copper and copper alloys CuAl, CuNi (special alloys)	> 400	180	90	0.150
	N3-1 Non-metallic workpiece materials, graphite > 8 µm particle size		180	90	0.150
	N3-2 Non-metallic workpiece materials, graphite ≤ 8 µm particle size		180	90	0.150
	N4-1 Non-metallic workpiece materials, thermoplastics				
	N4-2 Non-metallic workpiece materials, thermosets				
	N4-3 Non-metallic workpiece materials, foam materials				
	N4-4 Non-metallic workpiece materials, hard rubber				
	N4-5 Non-metallic workpiece materials, glass				
	N5-1 Magnesium alloys	250			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-6-SD-HP026

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
			Internal cooling	External cooling	
P	P1-1 Unalloyed steel ≤ 0.15% C, annealed	420			
	P1-2 Unalloyed steel ≤ 0.45% C, annealed	650			
	P1-3 Unalloyed steel ≤ 0.45% C, quenched and tempered	850			
	P1-4 Unalloyed steel ≤ 0.75% C, annealed	900			
	P1-5 Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000			
	P2-1 Low-alloyed steel, annealed	600	100	50	0.150
	P2-2 Low-alloyed steel, quenched and tempered	930	100	50	0.150
	P2-3 Low-alloyed steel, quenched and tempered	1,000	80	40	0.150
	P2-4 Low-alloyed steel, quenched and tempered	1,200	80	40	0.150
	P3-1 High-alloyed steel and high-alloyed tool steel, annealed	680	100	50	0.150
	P3-2 High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100	80	40	0.150
	P3-3 High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250	80	40	0.150
	P4-1 Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1 Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2 Stainless steel, martensitic, quenched and tempered	800			
	P5-3 Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-R-6-SD-CP410

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed vc [m/min]		Feed fz [mm/z]
				Internal cooling	External cooling	
P	P1-1	Unalloyed steel ≤ 0.15% C, annealed	420	180	90	0.150
	P1-2	Unalloyed steel ≤ 0.45% C, annealed	650	180	90	0.150
	P1-3	Unalloyed steel ≤ 0.45% C, quenched and tempered	850	160	80	0.120
	P1-4	Unalloyed steel ≤ 0.75% C, annealed	900	160	80	0.120
	P1-5	Unalloyed steel ≤ 0.75% C, quenched and tempered	1,000	160	80	0.120
	P2-1	Low-alloyed steel, annealed	600	160	80	0.150
	P2-2	Low-alloyed steel, quenched and tempered	930	160	80	0.150
	P2-3	Low-alloyed steel, quenched and tempered	1,000	140	70	0.120
	P2-4	Low-alloyed steel, quenched and tempered	1,200	140	70	0.120
	P3-1	High-alloyed steel and high-alloyed tool steel, annealed	680	160	80	0.150
	P3-2	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,100	160	80	0.150
	P3-3	High-alloyed steel and high-alloyed tool steel, quenched and tempered	1,250	140	70	0.120
	P4-1	Bainitic steel, ultra-high-carbon steel, bainitic-quenched and tempered	1,650			
	P5-1	Stainless steel, ferritic / martensitic, quenched and tempered	680			
	P5-2	Stainless steel, martensitic, quenched and tempered	800			
	P5-3	Stainless steel, martensitic, precipitation-hardened	1,200			

* MAPAL machining groups

The specified cutting data are guide values.

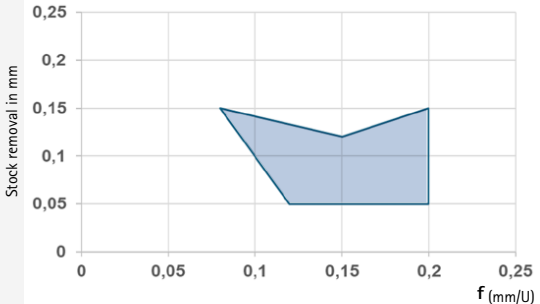
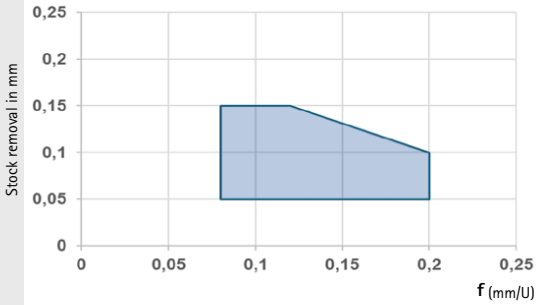
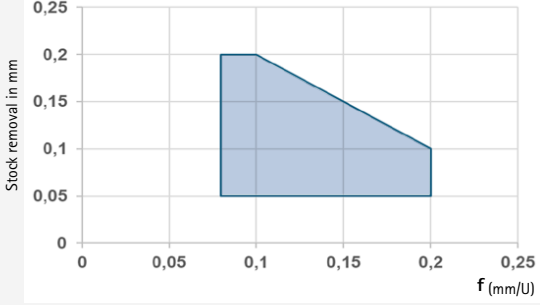
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead and chip breaker geometry P06 - HP026

Feed and cutting speed

Application:

Cutting edges using an AS lead in combination with HP026 can be used for surface qualities > Rz 6.3.

Specification Order no.	MMG*	Cutting speed vc (m/min)	Feed f (mm/rev) depending on stock removal
AS90R-P06-SD-HP026 31638373 	P 1 - 2	80 - 120	
AS91R-P06-SD-HP026 31638402 	P 1 - 2	80 - 120	
AS92R-P06-SD-HP026 31638430 	P 1 - 2	80 - 120	

* MAPAL machining groups

The specified cutting data are guide values.

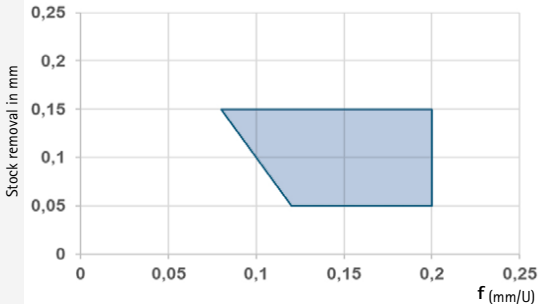
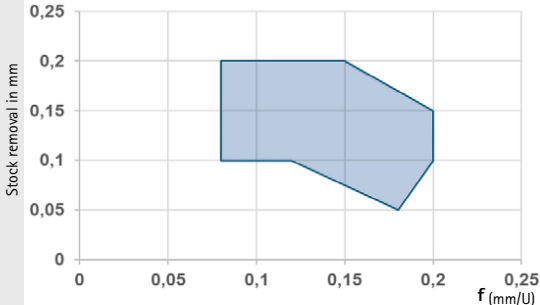
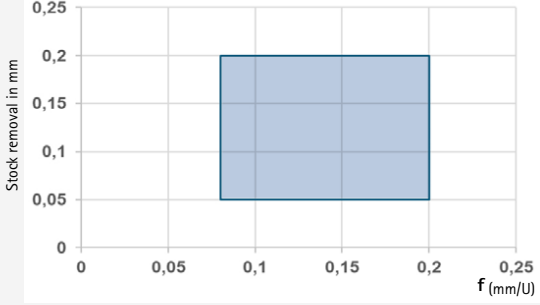
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead and chip breaker geometry P06 – CP410

Feed and cutting speed

Application:

The combination of AS lead and CP410 achieves the highest requirements in terms of surface finish. As a general rule, it has a roughness value of < Rz 6.3.

Specification Order no.	MMG*	Cutting speed vc (m/min)	Feed f (mm/rev) depending on stock removal
AS90R-P06-SD-CP410 31638370 	P 1 - 2	160 - 200	
AS91R-P06-SD-CP410 31638399 	P 1 - 2	160 - 200	
AS92R-P06-SD-CP410 31638427 	P 1 - 2	160 - 200	

* MAPAL machining groups

The specified cutting data are guide values.

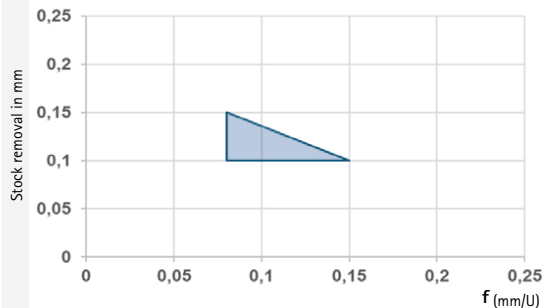
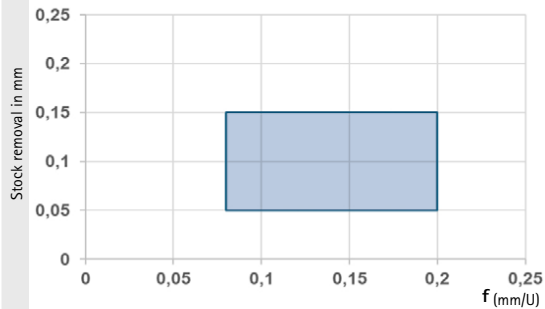
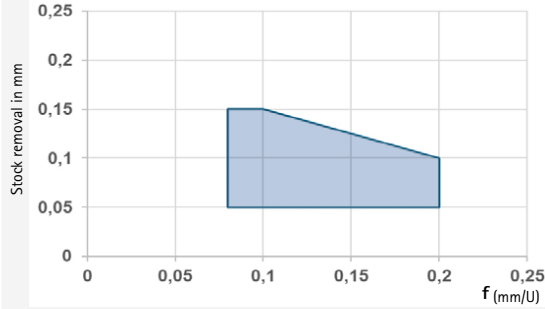
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AS lead and chip breaker geometry P06 - HP016

Feed and cutting speed

Application:

For applications involving stainless workpiece materials, the cutting edge with an AS lead and the HP016 combination of cutting materials is available.

Specification Order no.	MMG*	Cutting speed vc (m/min)	Feed f (mm/rev) depending on stock removal
AS90R-P06-SD-HP016 31638375 	M 1	60	
AS91R-P06-SD-HP016 31638404 	M 1	60	
AS92R-P06-SD-HP016 31638432 	M 1	60	

* MAPAL machining groups

The specified cutting data are guide values.

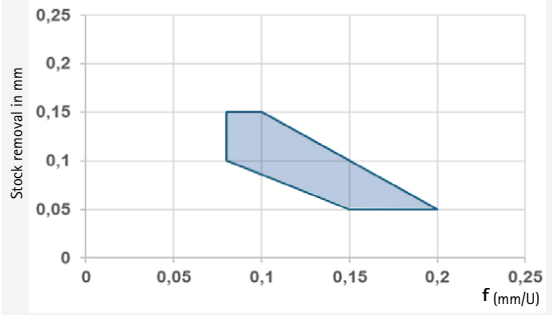
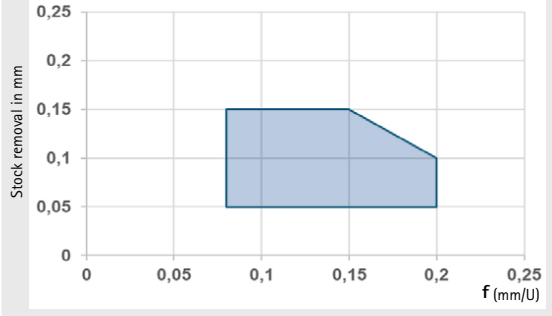
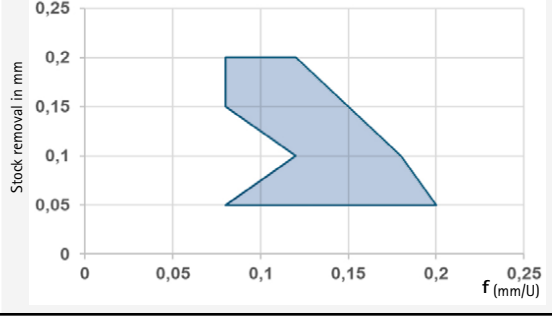
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead and chip breaker geometry P06 - HP026

Feed and cutting speed

Application:

As opposed to the AS lead, the DZ lead lowers radial force, making it suitable for workpieces with thin walls.

Specification Order no.	MMG*	Cutting speed vc (m/min)	Feed f (mm/rev) depending on stock removal
DZ90R-P06-SD-HP026 31638386 	P 1 - 2	80 - 120	
DZ91R-P06-SD-HP026 31638415 	P 1 - 2	80 - 120	
DZ92R-P06-SD-HP026 31638443 	P 1 - 2	80 - 120	

* MAPAL machining groups

The specified cutting data are guide values.

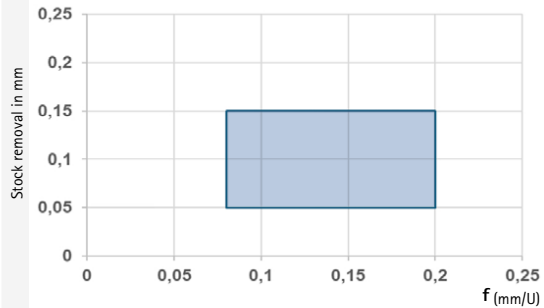
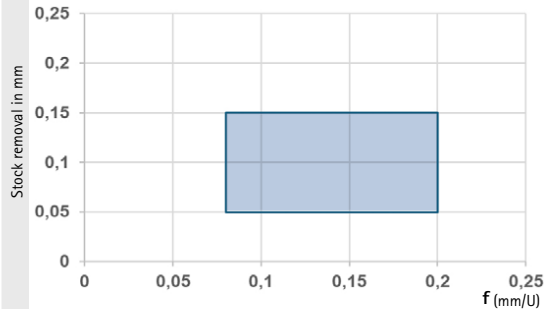
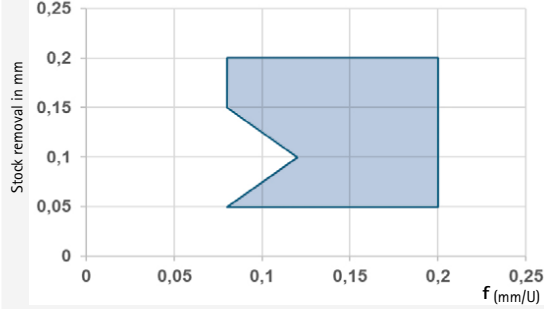
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead and chip breaker geometry P06 – CP410

Feed and cutting speed

Application:

Thanks to the increased cutting speed, more economical results can be achieved using the cermet versions of the DZ lead.

Specification Order no.	MMG*	Cutting speed vc (m/min)	Feed f (mm/rev) depending on stock removal
DZ90R-P06-SD-CP410 31638381 	P 1 – 2	160 – 200	
DZ91R-P06-SD-CP410 31638410 	P 1 – 2	160 – 200	
DZ92R-P06-SD-CP410 31638438 	P 1 – 2	160 – 200	

* MAPAL machining groups

The specified cutting data are guide values.

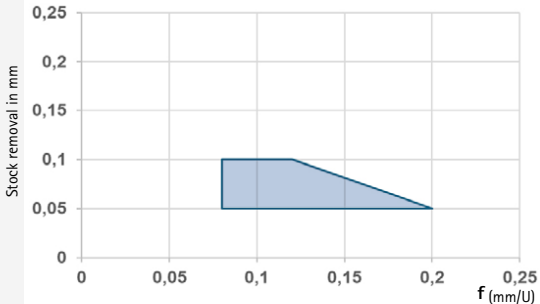
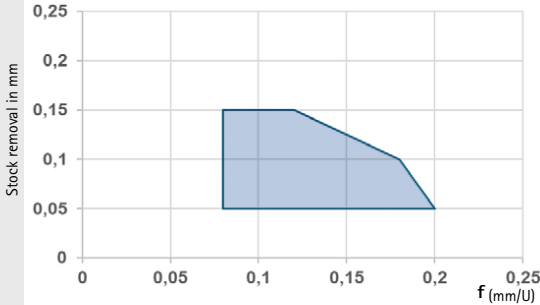
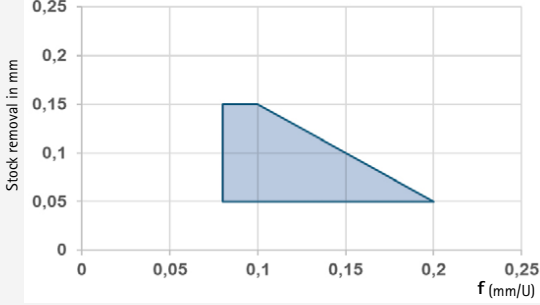
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead and chip breaker geometry P06 - HP016

Feed and cutting speed

Application:

In order to reduce radial forces, we recommend using our DZ lead with HP016 when working on stainless steels.

Specification Order no.	MMG*	Cutting speed vc (m/min)	Feed f (mm/rev) depending on stock removal
DZ90R-P06-SD-HP016 31638384 	M 1	60	
DZ91R-P06-SD-HP016 31638413 	M 1	60	
DZ92R-P06-SD-HP016 31638441 	M 1	60	

* MAPAL machining groups

The specified cutting data are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



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