

hard material matters



**MaxiMill HPC / HSV  
Milling with PCD and CBN**

EN



# CERATIZIT – secrets of success

## Secrets of success

- CERATIZIT is your partner for exceptional hard material solutions. Hard materials and tools from CERATIZIT - our solutions to complex problems are an integral part of our customers' success. Our products guarantee: economy - long life - speed! And it is precisely this combination which gives our business partners a direct competitive advantage.
- Premier performance is only possible through a total appreciation of the requirements of our business partners. A performance achieved through flexible thinking and continuous dialogue with our customers. A pioneering spirit and a deep understanding of powder metallurgy characterize the history of CERATIZIT. One of the attributes of our company philosophy is the search for perfection: target oriented - sustainably - passionately!
- Intensive research and development activities, taking into account the precise requirements and working processes of the customer, are today's investment for the solutions of tomorrow - and beyond.

## Corporate values

- 1 The views and focus of our business partners matter
- 2 Innovative and flexible thinking matters
- 3 Communication matters
- 4 Employee development matters
- 5 Professionalism matters
- 6 Our environment matters



## Tailored cutting tool solutions

- Cutting materials, coatings, inserts, tooling systems and machining solutions - all this is included in the cutting tool division at CERATIZIT.
- Worldwide well-known companies process advanced materials applying cutting tool products from CERATIZIT: from the automotive industry to the aerospace industry, mechanical engineering and tool construction to the oil industry.
- The basis of these long-term business relations is the faith of the customers in the extensive know-how of the carbide specialists.

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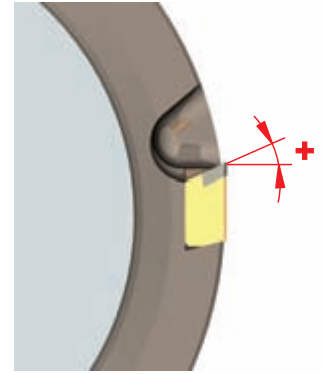
Cutting data  
Machining examples

# MaxiMill HPC

## System advantages

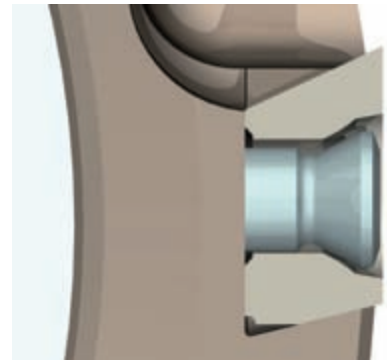
### Very positive rake angles Low cutting forces

- Reduced deformation of the components.
- Improved flatness.
- Reduced formation of burrs.
- Improved tool life.



### High speed – high performance

- Optimized design of tool and insert seat.
- Maximum productivity.
- Moderate heating of the work piece.
- Low cutting forces.
- High speed security verified by centrifugal force tests.



### Optimized insert geometries

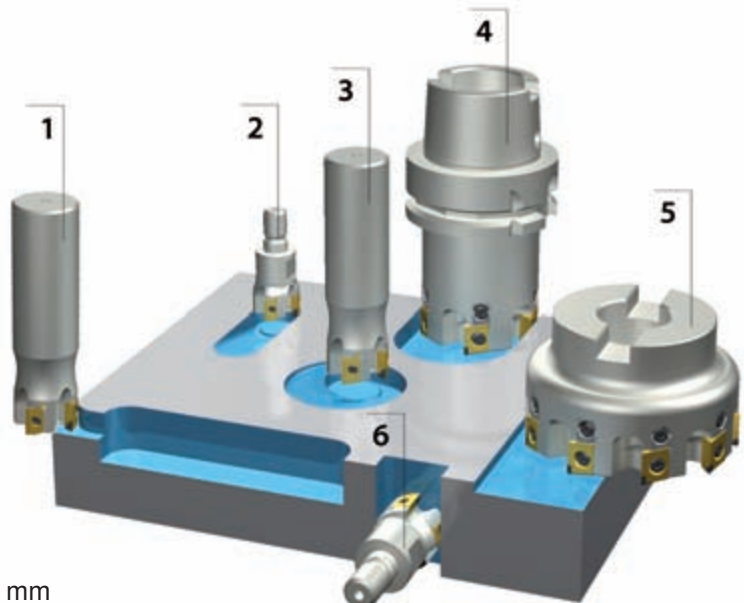
- Tailored cutting edge preparation.
- Long consistent tool life.



### Tooling system

- Low cutting forces
- Easy axial precision adjustment

- 1 Peripheral milling
- 2 Angled ramping & pocket milling
- 3 Axial and helical plunging
- 4 Trochoidal slot milling
- 5 Shoulder & face milling
- 6 Slot milling



04

12



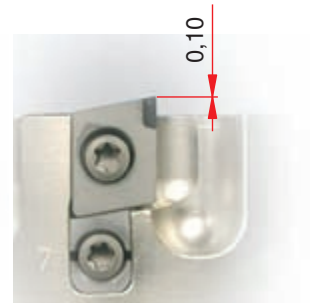
Milling cutters  $\varnothing$  20–315 mm

# MaxiMill HPC12

## System advantages

### Axial precision settings

- Very easy handling.
- Short setting time.
- Maximum precision.
- One spare part only.
- Adjustment range for precision setting = 0.10 mm.
- Possibility of a 'fixed spacer piece' (when no adjustment is necessary).



### Tool body made of steel

- Maximum stability.
- High dimensional accuracy with regard to insert change.
- Tool coating 'hard & tough'.
- Up to  $\varnothing < 160$  mm not heavier than AL tool body.
- Bi-metal version (steel ring, aluminium core), when necessary or starting at  $\varnothing 160$  mm.



# Grade overview

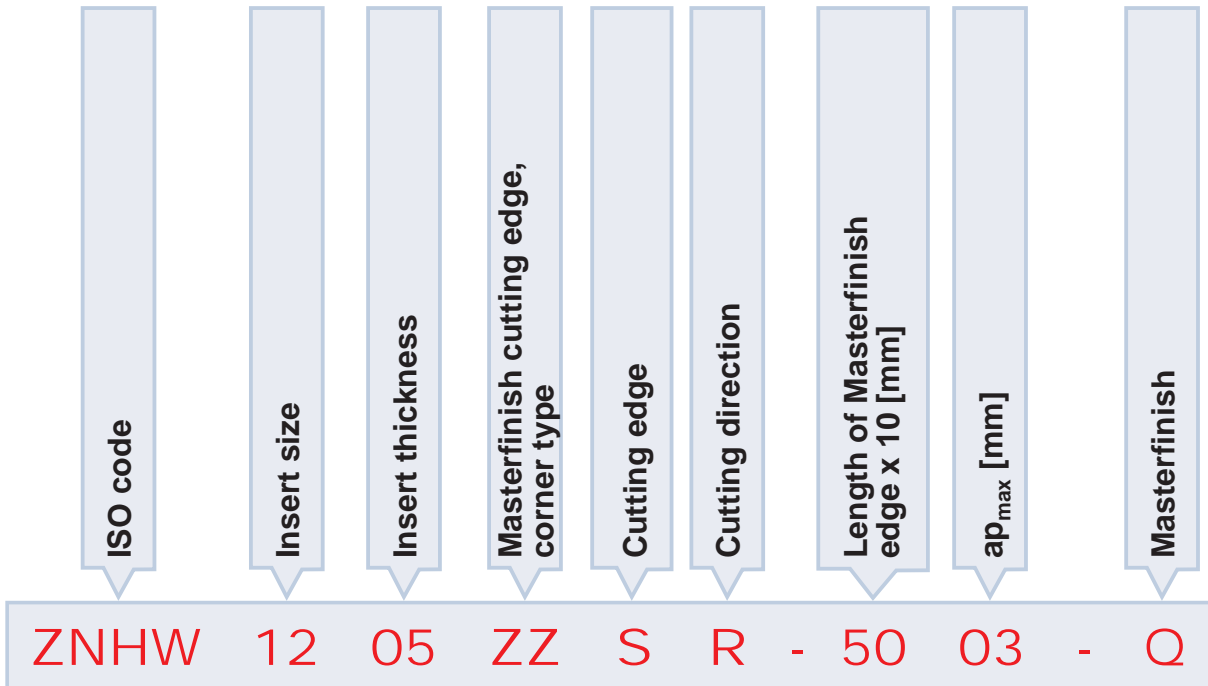
Grade designation	Standard designation	Cutting material	Application range						A	R	F	N	S	H
			0	05	10	15	20	25	Steel	Stainless	Cast iron	Non ferrous metals	Heat resistant	Hard materials
<b>CTD4205</b>	DP-K01	D	[Bar chart: 0-5%]						■	■	■	●	■	
<b>CTL3215</b>	BN-K10	L	[Bar chart: 5-15%]						■	■	●	■	■	○
			0	05	10	15	20	25	● Main application ○ Extended application					

Grade designation	Standard designation	Cutting material	Application range								A	R	F	N	S	H	
			01	05	10	15	20	25	30	35	40	45	50	Steel	Stainless	Cast iron	Non ferrous metals
<b>H216T</b>	HW-K15	W	[Bar chart: 10-20%]								■	■	●	●	■		
			01	05	10	15	20	25	30	35	40	45	50	● Main application ○ Extended application			

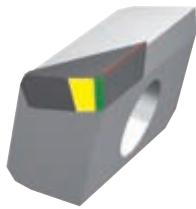


# MaxiMill HPC System designation

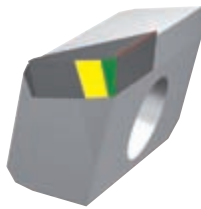
## Cutting inserts



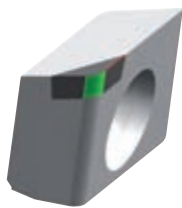
## One insert style - many different variants



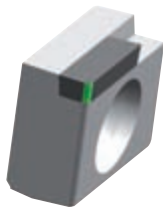
ZNHW-04T3POER-1204



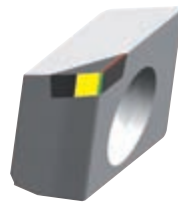
ZNHW-04T305ER-1204



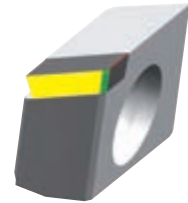
ZNHW-120508SR-0003



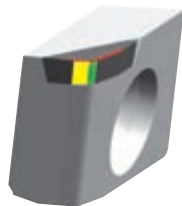
ZNHW-120504FR-0007



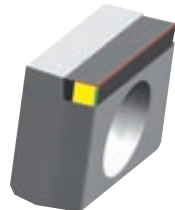
ZNHW-1205POSR-1503



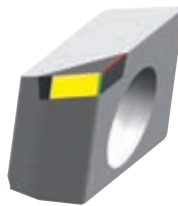
ZNHW-1205ZZSR-5003-Q



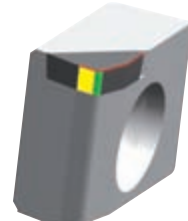
ZNHW-1205EOSR-1002



ZNHW-1205POER-1511



ZNHW-1205POSR-3003



ZNHW-1205EOER-1002

■ Edge preparation (E, F, S)

■ Cutting edge type (radius, chamfer)

■ Masterfinish cutting edge

# Inserts

## ZN.. 04..



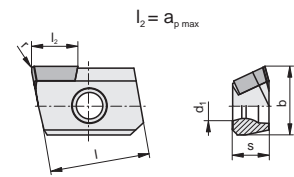
-1204

(l) [mm]	Type, description	CTL3215	CTD4205				l [mm]	b [mm]	s [mm]	l <sub>2</sub> [mm]	r [mm]	d <sub>1</sub> [mm]
	ZNHW 04T305ER-1204	●					11.00	7.5	3.97	4.0	0.50	2.80

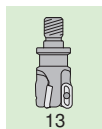
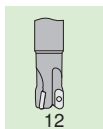


Steel												
Stainless												
Cast iron	●											
Non ferrous metals		●										
Heat resistant												
Hard materials	○											

- Main application
- Extended application
- International CERATIZIT range, for present availability see price list



Ordering example: 10 pieces ZNHW 04T3POER-1204 CTD4205





# Inserts

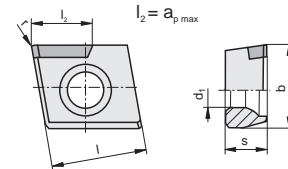
## ZN.. 12..



(l) [mm]	Type, description	CTL3215	CTD4205					l [mm]	b [mm]	s [mm]	l <sub>2</sub> [mm]	r [mm]	d <sub>1</sub> [mm]
	ZNHW 120504FR-0007		●					12.40	10.8	5.40	7.0	0.40	4.85
	ZNHW 120508ER-1503		●					12.40	10.8	5.40	3.0	0.80	4.85
	ZNHW 120508SR-0003		●					12.40	10.8	5.40	3.0	0.80	4.85
	ZNHW 1205EOER-1002	●						12.40	10.8	5.40	2.0		4.85
	ZNHW 1205EOSR-1002	●						12.40	10.8	5.40	2.0		4.85
	ZNHW 1205POER-1511		●					12.40	10.8	5.40	11.0		4.85
	ZNHW 1205POSR-1503		●					12.40	10.8	5.40	3.0		4.85
	ZNHW 1205POSR-3003		●					12.40	10.8	5.40	3.0		4.85
	ZNHW 1205ZZSR-5003-Q		●					12.40	10.8	5.40	3.0		4.85

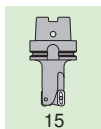
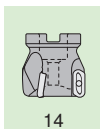


Steel							
Stainless							
Cast iron	●						
Non ferrous metals		●					
Heat resistant							
Hard materials	○						



- Main application
- Extended application
- International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces ZNHW 120504ER-1503 CTD4205



# Inserts

## VC.. 22..



-27MP

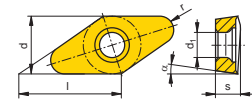


VC..W

(l) [mm]	Type, description	H216T	CTD4205				d [mm]	l [mm]	s [mm]	r [mm]	d <sub>1</sub> [mm]	α [°]
22	VCGT 220530FN-27MP	●					12.70	22.10	5.56	3.00	5.50	8
	VCGX 220530FN-27MP	●					12.70	22.10	5.56	3.00	5.50	7
	VCGW 2205PCER-R		●				12.70	22.10	5.56		5.50	7
	VCGW 2205PCSR-M		●				12.70	22.10	5.56		5.50	7

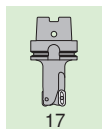
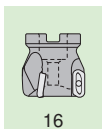


Steel						
Stainless						
Cast iron	●					
Non ferrous metals	●	●				
Heat resistant						
Hard materials						



- Main application
- Extended application
- International CERATIZIT range, for present availability see price list

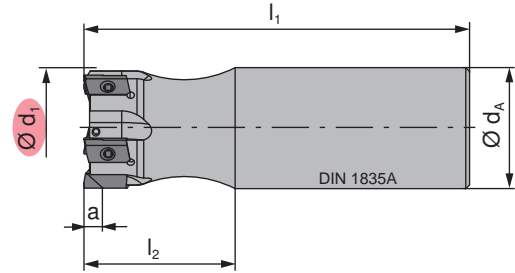
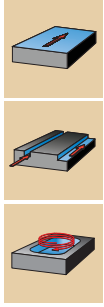
Ordering example: 10 pieces VCGT 220530FN-27MP H216T







# Face milling cutters




## CHPC-04



$d_1$ [mm]	Type, description	$l_1$ [mm]	$l_2$ [mm]	$d_A$ [mm]	$a$ [mm]	$n_{max}$ [min <sup>-1</sup> ]	 z	
20	CHPC.20.R.03-04-A-25	77	25	20	4	52000	3	ZNHW 04T3..
25	CHPC.25.R.04-04-A-32	90	32	25	4	45000	4	ZNHW 04T3..
32	CHPC.32.R.05-04-A-40	102	40	32	4	38000	5	ZNHW 04T3..
40	CHPC.40.R.06-04-A-50	122	50	40	4	34000	6	ZNHW 04T3..

Ordering example: 1 piece CHPC.20.R.03-04-A-25

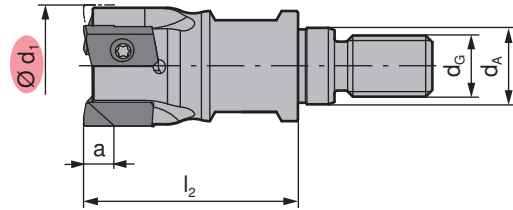
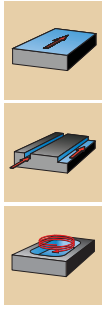
**Supply details:** cutter body and clamping screws for inserts



	$d_1$ [mm]			
ZNHW 04T3..	20 - 40	10000125/M2,5X7,3/08TP	DMSD 1,6Nm/SORT 08IP	



# Face milling cutters




## GHPC-04



$d_1$ [mm]	Type, description	$l_2$ [mm]	$d_A$ [mm]	$d_G$ [mm]	$a$ [mm]	$n_{max}$ [min <sup>-1</sup> ]	 z	
20	GHPC.20.R.03-04	35	10.5	10	4	52000	3	ZNHW 04T3..
25	GHPC.25.R.04-04	35	12.5	12	4	45000	4	ZNHW 04T3..
32	GHPC.32.R.05-04	35	17	16	4	38000	5	ZNHW 04T3..
40	GHPC.40.R.06-04	35	17	16	4	34000	6	ZNHW 04T3..

Ordering example: 1 piece GHPC.20.R.03-04

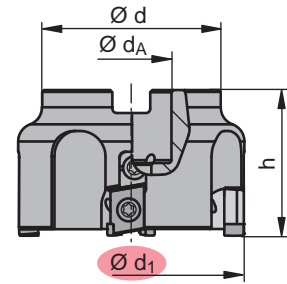
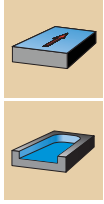
**Supply details:** cutter body and clamping screws for inserts



	$d_1$ [mm]			
ZNHW 04T3..	20 - 40	10000125/M2,5X7,3/08TP	DMSD 1,6Nm/SORT 08IP	



# Face milling cutters






## AHPC-12



d <sub>1</sub> [mm]	Type, description	h [mm]	d [mm]	d <sub>A</sub> [mm]	n <sub>max</sub> [min <sup>-1</sup> ]	[kg]	 z	
40	AHPC.40.R.04-12	40	34	16	32000	0.28	4	ZNHW 1205..
50	AHPC.50.R.04-12	40	49	22	32000	0.41	4	ZNHW 1205..
50	AHPC.50.R.05-12	40	49	22	32000	0.40	5	ZNHW 1205..
63	AHPC.63.R.04-12	40	49	22	29000	0.65	4	ZNHW 1205..
63	AHPC.63.R.07-12	40	49	22	29000	0.62	7	ZNHW 1205..
80	AHPC.80.R.05-12	50	60	27	26000	1.25	5	ZNHW 1205..
80	AHPC.80.R.09-12	50	60	27	26000	1.17	9	ZNHW 1205..
100	AHPC.100.R.06-12	50	70	32	24000	1.93	6	ZNHW 1205..
100	AHPC.100.R.12-12	50	70	32	24000	1.80	12	ZNHW 1205..
125	AHPC.125.R.08-12	63	72	40	22000	2.88	8	ZNHW 1205..
125	AHPC.125.R.14-12	63	72	40	22000	2.60	14	ZNHW 1205..
160	AHPC.160.R.10-12	63	72	40	18000	3.30	10	ZNHW 1205..
160	AHPC.160.R.16-12	63	118	40	18000	5.45	16	ZNHW 1205..
200	AHPC.200.R.12-12	63	153	60	16000	6.40	12	ZNHW 1205..
250	AHPC.250.R.14-12	63	200	60	14000	9.60	14	ZNHW 1205..
315	AHPC.315.R.18-12	80	265	60	12000	18.00	18	ZNHW 1205..

Ordering example: 1 piece AHPC.40.R.04-12

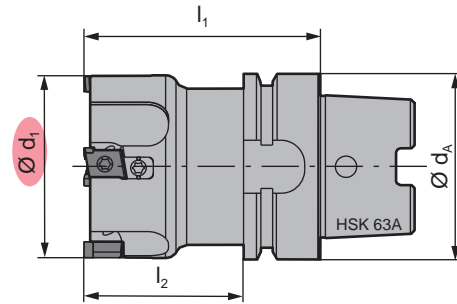
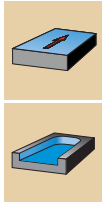
**Supply details:** cutter body, clamping screws for inserts, wedges, clamping key, edge protecting ring  
**Bi-metal version** (steel ring, aluminium core), when necessary or starting at Ø 160 mm



	d <sub>1</sub> [mm]				
ZNHW 1205..	40 - 315	7818429/M4,0X11/T15	DMSD 5,0Nm/SORT T15	10002113-0/AW-ZNHW12	10002362-0/WS-L T15



# Face milling cutters





## MHPC-12



d <sub>1</sub> [mm]	Type, description	d <sub>A</sub> [mm]	l <sub>1</sub> [mm]	l <sub>2</sub> [mm]	n <sub>max</sub> [min <sup>-1</sup> ]	[kg]		
40	MHPC.40.R.04-12-H63A-70	63	70	44	32000	0.98	4	ZNHW 1205..
50	MHPC.50.R.04-12-H63A-80	63	80	54	32000	1.34	4	ZNHW 1205..
50	MHPC.50.R.05-12-H63A-80	63	80	54	32000	1.33	5	ZNHW 1205..
63	MHPC.63.R.04-12-H63A-80	63	80	54	29000	1.59	4	ZNHW 1205..
63	MHPC.63.R.07-12-H63A-80	63	80	54	29000	1.56	7	ZNHW 1205..
80	MHPC.80.R.05-12-H63A-90	63	90		26000	2.11	5	ZNHW 1205..
80	MHPC.80.R.09-12-H63A-90	63	90		26000	2.04	9	ZNHW 1205..
100	MHPC.100.R.06-12-H63A-90	63	90		24000	2.63	6	ZNHW 1205..
100	MHPC.100.R.12-12-H63A-90	63	90		24000	2.56	12	ZNHW 1205..
125	MHPC.125.R.08-12-H63A-123	63	123		22000	4.58	8	ZNHW 1205..
160	MHPC.160.R.10-12-H63A-123	63	123		18000	4.38	10	ZNHW 1205..

Ordering example: 1 piece MHPC.40.R.04-12-H63A-70

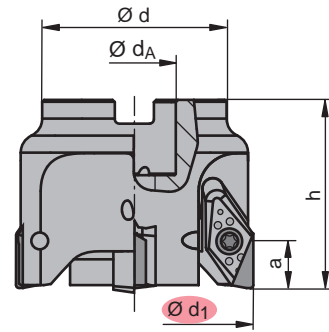
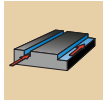
**Supply details:** cutter body, clamping screws for inserts, wedges, clamping key, edge protecting ring  
**Ø 125 - 160:** assembled version, adapter + shell mill

	d <sub>1</sub> [mm]				
ZNHW 1205..	<b>40 - 160</b>	7818429/M4,0X11/T15	DMSD 5,0Nm/SORT T15	10002113-0/AW-ZNHW12	10002362-0/WS-L T15



# Shoulder & slot milling cutters

## AHSV-22



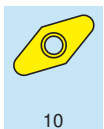
$d_1$ [mm]	Type, description	h [mm]	a [mm]	d [mm]	$d_A$ [mm]	$n_{max}$ [min <sup>-1</sup> ]		
50	AHSV.50.R.03-22	50	15	49	22	24000	3	VC.. 2205..
63	AHSV.63.R.04-22	50	15	49	22	21000	4	VC.. 2205..
80	AHSV.80.R.05-22	50	15	60	27	18000	5	VC.. 2205..
100	AHSV.100.R.06-22	63	15	70	32	15000	6	VC.. 2205..
125	AHSV.125.R.07-22	63	15	72	40	12000	7	VC.. 2205..

Ordering example: 1 piece AHSV.50.R.03-22

**Supply details:** cutter body and clamping screws for inserts

**Ø 125:** assembled version, adapter + shell mill

	$d_1$ [mm]		
VC.. 2205..	50 - 125	78221 14/M4,5X10,5/T20	DMSD 5,0Nm/SORT T20

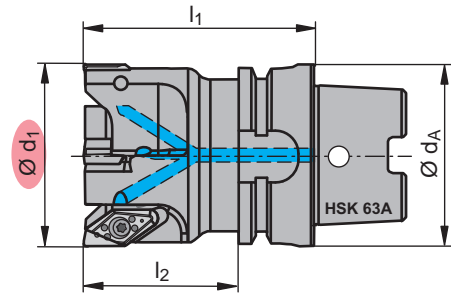
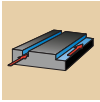




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# Shoulder & slot milling cutters

## MHSV-22






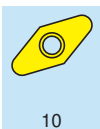
d <sub>1</sub> [mm]	Type, description	d <sub>A</sub> [mm]	l <sub>1</sub> [mm]	l <sub>2</sub> [mm]	n <sub>max</sub> [min <sup>-1</sup> ]	 z	
50	MHSV.50.R.03-22-H63A-80	63	80	54	24000	3	VC.. 2205..
63	MHSV.63.R.04-22-H63A-80	63	80	54	21000	4	VC.. 2205..
80	MHSV.80.R.05-22-H63A-90	63	90		18000	5	VC.. 2205..
100	MHSV.100.R.06-22-H63A-90	63	90		15000	6	VC.. 2205..
125	MHSV.125.R.07-22-H63A-123	63	123		12000	7	VC.. 2205..

Ordering example: 1 piece MHSV.50.R.03-22-H63A-80

**Supply details:** cutter body and clamping screws for inserts

**Ø 125:** assembled version, adapter + shell mill

	d <sub>1</sub> [mm]		
VC.. 2205..	50 - 125	7822114/M4,5X10,5/T20	DMSD 5,0Nm/SORT T20



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# Cutting data







## Grades, material


Work piece material		Type of treatment / alloy		VDI 3323 group	Hardness HB
A	Non alloyed steel	annealed	≤ 0,15% C	1	125
		annealed	0,15% - 0,45% C	2	150 - 250
		tempered	≥ 0,45% C	3	300
	Low alloyed steel	annealed		6	180
		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Corrosion resistant steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
R	Stainless steel	annealed	ferritic / martensitic	14	200
		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	-
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
	Aluminium cast alloys	non hardened	< 12% Si	23	80
		hardened	< 12% Si	24	90
		non hardened	> 12% Si	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	-
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	-
		fibre-reinforced plastics	29	-	
		hard rubber	30	-	
S	Heat resistant alloys	annealed	Fe-base	31	200
		hardened	Fe-base	32	280
		annealed	Ni or Co-base	33	250
		hardened	Ni or Co-base 30 - 58 HRC	34	-
		cast	Ni or Co-base 1500 - 2200 N/mm <sup>2</sup>	35	-
	Titanium alloys		pure titanium	36	R <sub>m</sub> 440*
			alpha + beta alloys	37	R <sub>m</sub> 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast	40	400	
	Tempered cast iron	hardened and tempered	40	55 HRC	


\* R<sub>m</sub> = ultimate tensile strength, measured in MPa

# Cutting data

## Grades, material

Uncoated carbide H216T		Coated CBN CTL3215		PCD CTD4205	
 <input type="checkbox"/>	 <input checked="" type="checkbox"/>	 <input checked="" type="checkbox"/>	 <input type="checkbox"/>	 <input type="checkbox"/>	 <input checked="" type="checkbox"/>
$v_c$ [m/min]	$v_c$ [m/min]	$v_c$ [m/min]	$v_c$ [m/min]	$v_c$ [m/min]	$v_c$ [m/min]
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
90 - 160	90 - 160	500 - 1000	-	-	-
80 - 130	80 - 130	500 - 1000	-	-	-
100 - 160	100 - 160	-	-	-	-
90 - 150	90 - 150	350 - 650**	-	-	-
100 - 160	100 - 160	-	-	-	-
70 - 150	90 - 150	-	-	-	-
-	200 - 5800	-	-	300 - 4000	300 - 4000
-	200 - 2000	-	-	300 - 1500	300 - 1500
-	200 - 2000	-	-	300 - 5000	300 - 5000
-	200 - 1800	-	-	300 - 3000	300 - 3000
-	200 - 1000	-	-	300 - 1000	300 - 1000
-	200 - 600	-	-	-	-
250 - 1000	250 - 1000	-	-	100 - 700	100 - 700
-	150 - 400	-	-	100 - 1500	100 - 1500
-	300 - 800	-	-	300 - 3000	300 - 3000
80 - 1000	80 - 1000	-	-	80 - 300	80 - 300
70 - 500	70 - 500	-	-	80 - 300	80 - 300
80 - 300	80 - 300	-	-	80 - 300	80 - 300
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	110 - 190	-	-	-
-	-	210 - 360	-	-	-
-	-	-	-	-	-

 Recommended application

 Possible application

# Cutting data

## Tool, material

	$v_c$ (m/min)	$f_z$ (mm)	$a_p$ (mm)	$v_c$ (m/min)	$f_z$ (mm)	$a_p$ (mm)	$v_c$ (m/min)	$f_z$ (mm)	$a_p$ (mm)
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### HPC-04

▼	< 1000	0,05 - 0,15	0,1 - 2,0	–	–	–	–	–	–
▼	< 5000	0,05 - 0,15	0,1 - 2,0	< 5000	0,05 - 0,20	1,0 - 4,0	–	–	–
▽	360 - 110	0,05 - 0,15	0,1 - 0,3	–	–	–	–	–	–

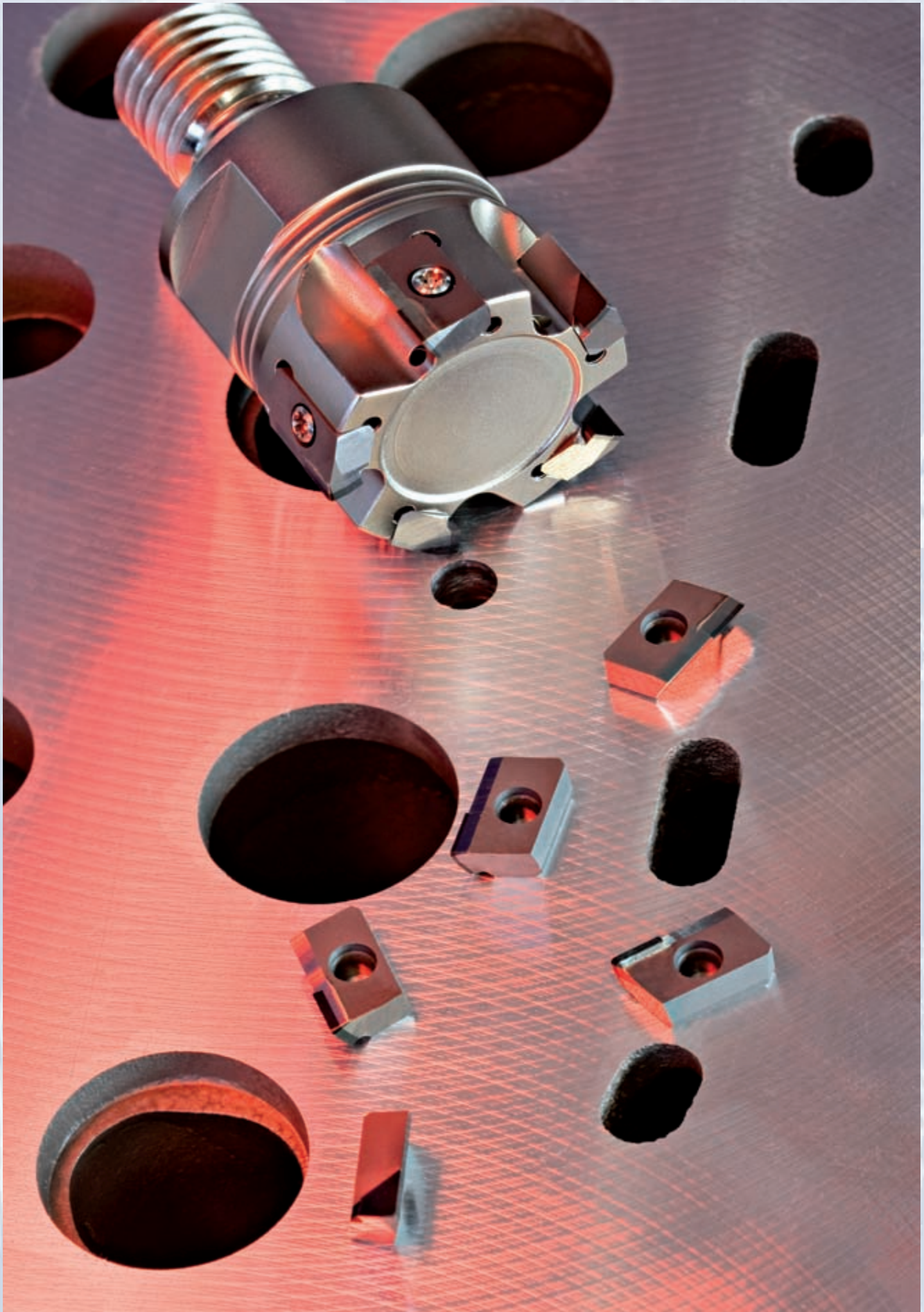
### HPC-12

▼	< 1000	0,05 - 0,15	0,1 - 2,0	–	–	–	–	–	–
▼	< 5000	0,05 - 0,15	0,1 - 3,0	< 5000	0,05 - 0,30	1,0 - 6,0	< 5000	0,05 - 0,40	4,0 - 11
▽	360 - 110	0,05 - 0,15	0,1 - 0,3	–	–	–	–	–	–

### HSV-22

▼	< 3500	0,05 - 0,10	0,1 - 1,5	< 3500	0,10 - 0,15	1,5 - 4,0	< 3500	0,15 - 0,30	≤ 15
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# MaxiMill HPC12

## Machining examples



**Criteria:**  
 > Tool life  
 > Surface quality

**Result:**  
**Tool life:**  
 > CERATIZIT = 1,500 pcs.  
 > Competitor = 90 pcs.

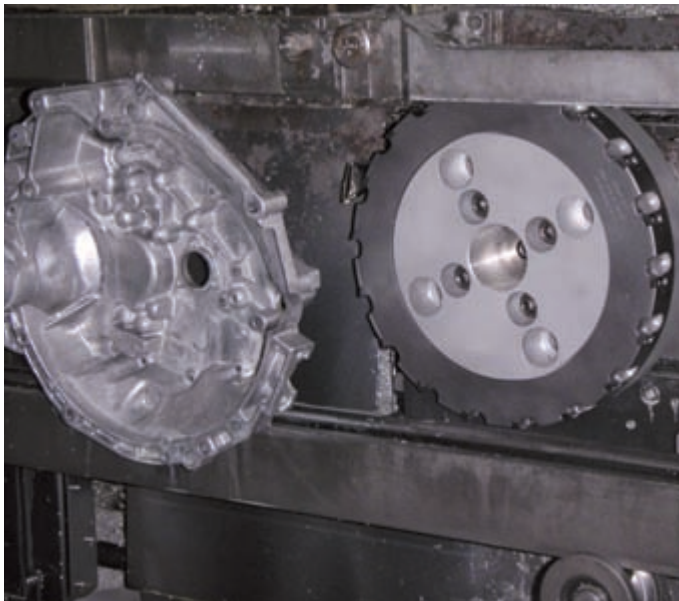
**Surface quality:**  
 >  $R_z = 1.37$   
 >  $P_t = 4.1$

**Technical data:**

Work piece: pump case (common rail)  
 Material: GGG50  
 Hardness: 200-240 HB  
 Machine: Triflex  
 Tool: MHPC.50.R.04-12-H63A-80  
 Insert: ZNHW 120508SR-0803  
 Grade: CTL3215

**Cutting data:**

> CERATIZIT	> Competitor
$v_c = 345$ m/min	$v_c = 345$ m/min
$f_z = 0.11$ mm	$f_z = 0.11$ mm
$a_p = 0.4$ mm	$a_p = 0.4$ mm



**Criteria:**  
 > Surface quality  $R > 1$ ;  
 $R_z = 30$ ;  $W_{te} = 30$ ,  
 Flatness = 0.03 between 2 holes  
 0.09 on the surface

**Result:**  
**Tool life:**  
 > CERATIZIT = 160,000 pcs.  
 > Competitor = 45,000 pcs.  
 > Tool life 3.5 times longer

**Surface finish:**  
 > Surface quality:  $R_a = 1.62$   $\mu\text{m}$ ;  
 >  $R_z = 7.35$   $\mu\text{m}$ ;  $W_{te} = 11.93$   $\mu\text{m}$ ;

**Process security**  
**Saving (€) per year: > 16,000**

**Technical data:**

Work piece: gear box casing  
 Material: G-AISI 7  
 Machine: P.C.I TRANSFERT  
 Tool: AHPC.315.R.18-12  
 Insert: ZNHW 1205POSR-1503  
 Grade: CTD4205

**Cutting data:**

> CERATIZIT	> Competitor
$v_c = 3,462$ m/min	$v_c = 3,462$ m/min
$f_z = 0.142$ mm	$f_z = 0.142$ mm
$a_p = 2$ mm	$a_p = 2$ mm

# MaxiMill HPC04

## Machining examples



### Criteria:

- > Reduce formation of burrs on the work piece edges. Reduce cycle time by 50%. Surface quality improvement.

### Result:

#### Tool life:

- > CERATIZIT = 8,500 pcs.
- > Competitor = 5,000 pcs.

#### Surface quality:

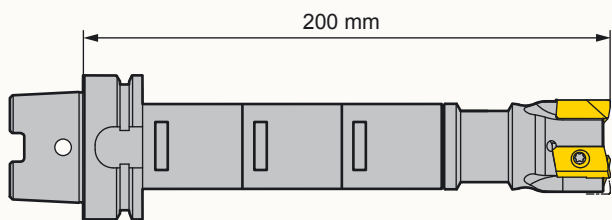
- >  $R_a = 0.40 \mu\text{m}$

### Technical data:

Work piece: turbocharger housing  
 Material: ALU 12% Si.  
 Machine: machining centre  
 Tool: CHPC.32.R.05-04-A-40  
 Insert: ZNHW 04T3POER-1204  
 Grade: CTD4205

### Cutting data:

> CERATIZIT	> Competitor
$n = 12,000 \text{ RPM}$	$n = 8,500 \text{ RPM}$
$v_c = 1,205 \text{ m/min}$	$v_c = 854 \text{ m/min}$
$f_z = 0.15 \text{ mm}$	$f_z = 0.15 \text{ mm}$
$a_p = 2-4 \text{ mm}$	$a_p = 2-4 \text{ mm}$
$z = 5$	$z = 3$



### Criteria:

- > Increase tool life
- > Reduce machining time

### Result:

#### Tool life:

- > CERATIZIT = 800 pcs.
- > Competitor = 200 - 400 pcs.

#### Surface finish:

- >  $R_a = 0.40 \mu\text{m}$

### Technical data:

Work piece: console  
 Material: ALU 12% Si.  
 Machine: Brother, machining centre  
 Tool: GHPC.32.R.05-04 (HSK)  
 Insert: ZNHW 04T3POER-1204  
 Grade: CTD4205

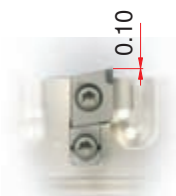
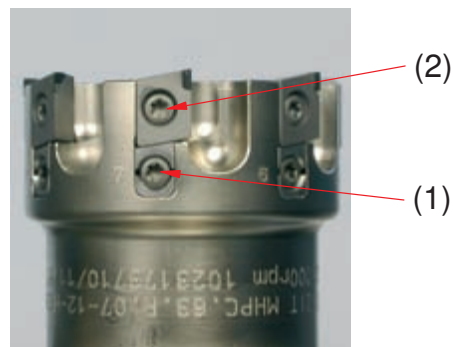
### Cutting data:

> CERATIZIT	> Competitor
$n = 12,000 \text{ RPM}$	$n = 4,000 \text{ RPM}$
$v_c = 1,205 \text{ m/min}$	$v_c = 400 \text{ m/min}$
$f_z = 0.1 \text{ mm}$	$f_z = 0.08 \text{ mm}$
$a_p = 0.7 - 1.5 \text{ mm}$	$a_p = 0.7 - 1.5 \text{ mm}$

# MaxiMill HPC12

## Precision setting procedure

1. Mount the setting wedges in the cutter (as supplied) and tighten the setting screw (1), to lightly hold the wedge without deforming it.
2. Mount PCD inserts and tighten clamping screws (2) with 1.0 Nm.
3. Mark 'highest cutting edge' using a presetting device.
4. Change position of PCD insert by 0.02 mm turning the setting screw (1) clockwise. For this purpose use the TORX key included in the delivery!
5. Set the other cutting edges to this level, maximum deviation of 0.005 mm.  
  
Maximum adjustment = 0.10 mm.
6. Tighten all insert clamping screws (2) with 5.0 Nm.
7. Check axial run-out of all inserts  
→ target = 0.005 mm.



- ⚠** When changing the insert, first remove the setting screw (1), turning it counter clockwise. After the mounting procedure is completed, the setting procedure starts again at point 1.

## Balancing certificate, safety precautions

- ⚠** For safety reasons it is recommended that you use new clamping screws (2) whenever changing the inserts → 7818429/M4.0X11/T15.

All tools of MaxiMill HPC12 and HSV22 with HSK monobloc adapter are balanced to CERATIZIT quality class G 2.5. The tool is provided with a quality certificate which documents this procedure.

Please observe the safety precautions which are supplied with every HSC cutting tool.





# MaxiMill HPC and HSV22

## When should MaxiMill HPC12 be applied?

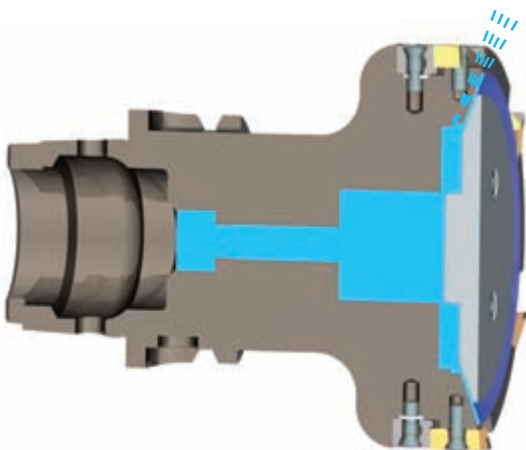
- Components made of light metals or non ferrous metals, plastics, composite fibre materials, graphite ... (PCD).
- Cast iron and hard materials (CBN).
- High volume production.
- High requirements regarding the surface quality of the work pieces.
- Long tool life is necessary due to complex tool changing procedure and expensive machine downtime.
- Tool service available at customer's site (presetting, maintenance etc.).

## Points to consider with PCD tools

- Machine stability.
- Stable tool clamping and tool adapter.
- Avoid vibration.
- Preferably apply balanced tools and observe balancing quality class.

## Through-tool coolant – applies to PCD only

- Application of coolant not generally necessary, chip evacuation however is easier with coolant → better surface quality.
- PCD has a critical temperature of 600°C above which it reverts to graphite. If such a cutting temperature is possible, use coolant.  
→ According to material, work with coolant.
- Note chemical reactions with carbide forming elements.



- Direct supply of coolant through the spindle and tool.
- Efficient coolant stream directed towards the cutting edges.
- Suitable for minimum quantity lubrication.

[Redacted content]

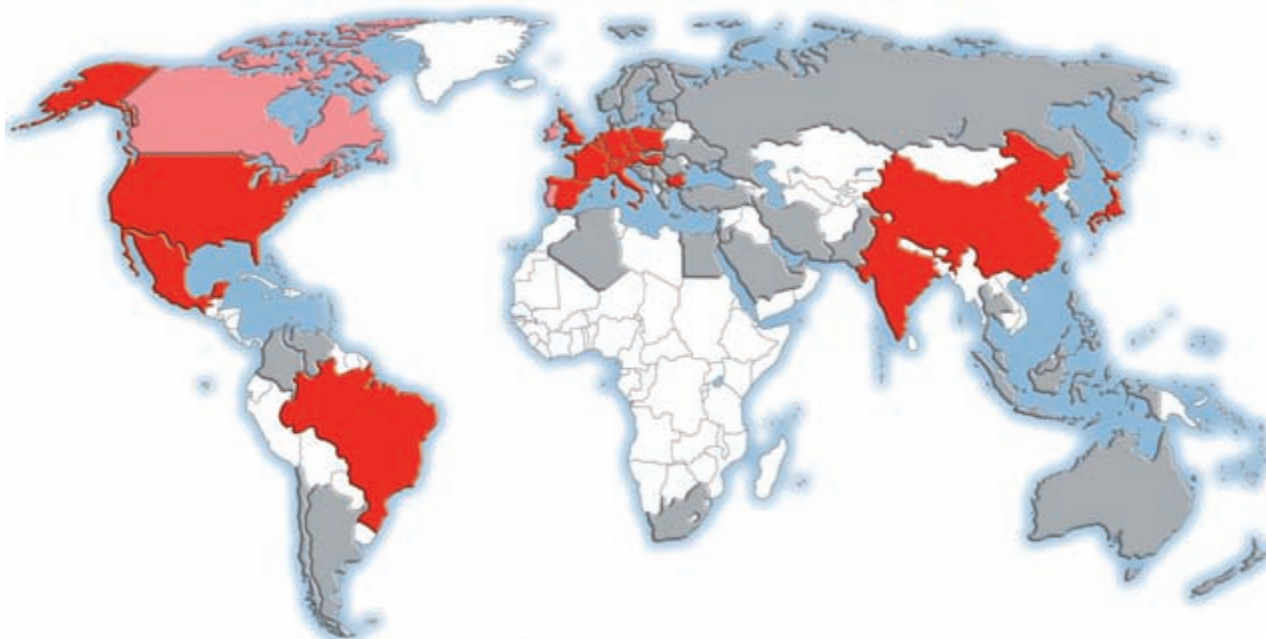
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