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VR1810T

GRINDING WHEELS FOR CUTTING TOOLS



Diamond & CBN Wheels for machining cutting tools



WELCOME TO GENENTECH CO. LTD.

To accomplish goals together with our customers, this is our entitlement. Our company is fairly young, founded in 2009, but through cooperation with our customers challenges are mastered fast and competent. Sustained success means to be fit for the future. We offer superior quality, high precision and short delivery times for our customers.

Our core competence includes the development and production of Diamond and CBN wheels as well as the application technology for the grinding processes applied in the tooling industry. The innovated bond system offer the optimize of the process times in line with long dressing cycles enables high productivity in the production processes. Our products full fill these criterias and secure the success of our customers. Genentech is looking forward in working with you.

- $\cdot\,$ Shorter machining time through better traverse feeds.
- Longer wheel dressing interval and balanced grinding ability are able to sustain cutting tool's geometric stability.
- · Optimizing tool manufacturing process through much experience in grinding cutting tool.
- · Providing perfect wheel quality by way of developed bond systems and grit qualities.

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Basic information of Diamond & CBN Wheels

GENENTECH

Diamond grinding wheel : For grinding non-ferrous material

Genentech use good raw materials for produce best quality wheel. Diamond wheel consists of diamond which is the most hardest material on earth.

Usually the diamond grinding wheel is used for non-ferrous material such as carbide, ceramics and cermet, etc.



Diamond abrasive

Concentration

Diamond or CBN amount in unit volume



Volume

Concentration Carats/cm³

CBN grinding wheel : For grinding ferrous material (mainly steel)

Fine raw material with our effort. we produce optimized wheels. CBN grinding wheel consists of CBN (Cubic Boron Nitride) which is the second hardest material on earth. Usually CBN grinding wheel is used for steel (ferrous material) grinding.



CBN abrasive

Abrasive Grit Size

Abrasive grit that takes a role of cutting edge while grinding process is the most important factor to grind effectively for the precision tool and the suitable grit size brings an excellent grinding result.

Bond Hardness (Grade)



GENE Grit	NTECH Size	FE Desigi	PA nation	ANSI	ANSI US Grit Size		
Mesh	Size(µm)	DIA	CBN		Number	Size	
#60	251	D251	B251	60/80	60		
#80	181	D181	B181	80/100	100	80	
#100	151	D151	B151	100/120	120	100	
#120	126	D126	B126	120/140	150	120	
#140	107	D107	B107	140/170	180	140	
#170	91	D91	B91	170/200	220	170	
#200	76	D76	B76	200/230	240	200	
#230	64	D64	B64	230/270	280	230	
#270	54	D54	B54	270/325	320	270	
#325	46	D46	B46	325/400	400	325	
#400	40						
#500	35						
#600	30						
#800	20						
#1000	15						
#1500	10						

Product line

Hybrid

Genentech hybrid bond is combined with metal and resin bond. This mixture has excellent grinding abilities : Heat & wear resistance In particular, it has excellent machining ability at carbide and HSS tool. (Genentech GMT series)

Resin

Phenolic resin bond is one of the most representative bond type of Super-abrasive grinding wheel. In General, it shows an excellent result to achieve fine roughness and minimal chipping. It's mainly used for Carbide, HSS, ceramic cutting tool grinding applications. (Genentech GB series)

Polyimide

Polyimide resin bond has distinguished feature at heat and wear resistance. It's superior mechanical property in high temperature makes excellent result at creep feed grinding. (Genentech GP series)







Grinding Ability



Product Line-up for machining cutting tools



Hybrid

- · GENENTECH Hybrid bond is the most suitable product for grinding of solid shank cutting tool process such as end-mills, drills and reamers which is especially needed much lead time like Flute, Gash.
- · GENENTECH Hybrid bond is applicable for all of carbide and HSS tools.
- Hybrid bond Diamond Wheel : For carbide tool grinding.
- Hybrid bond CBN Wheel : For HSS tool grinding.

Advantages

- Excellent grinding ability, machining time is shortened significantly
- · Improves wear resistance, high lifetime of the wheels
- · Enhanced dressing interval
- · Good surface roughness

Resin & Hybrid bond Recommendation of application



Resin / Polyimide

- · Resin is a standard products especially for cutting tools manufacturing process such as endmills, drills and reamers.
- · Resin is basically combined with phenolic resin or polyimide bond.

Well optimized by numerous test results we have conducted with our customers.

rinding wheel	D54 GMT2K, 3V1 Ø150 x 12t x 8v
achine	REX-5B (5-axis CNC grinder , 18.5kw)
oolant	Oil

Grinding wheel Machine Coolant	D54 GMT1, Ø150 Foremed wheel ANCA TX7+(5-axis CNC grinder, 18.75kw) Oil	
Work piece	Carbide Drill 2FL-Ø10(fl 68mm)	30
Grinding Parameter		28
Grinding Process	Flute	26
Feed rate	190mm/min	20
Cutting speed	26m/s	24
Infeed	3.8mm	
Material removal rate(Qw')	12mm 3/mms	22
Advantages		20
The Wheel reduced cycle tin	ne for the flute arinding by 50%	

Information of cutting tool grinding process



Recommended operating parameter



	Flute	OD relief	End teeth
Wheel Shape	1A1, 1V1, 3A1, 3V1, etc.	11A2, 11V4, 11V5, 3V1, etc.	Gash : 1V1, 3V1 (High angle), 1Y1, etc. End teeth : 11A2, 11V4, 3V1, etc. Corner radius : 11V5, 3V1
Wheel Grit Size	Carbide : D46~ D91 HSS : B64~ B107	Carbide : D20~ D46 HSS : B46~ B91	Carbide : D30~ D76 HSS : B76~ B107
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Drill



	Flute	OD clearance	Thinning	Point
Wheel Shape	1V1, 3V1, etc. Formed wheel	3V1 (Slight angle)	1V1, 3V1, etc.	6A2, 11A2 (Cup)
Wheel Grit Size	Carbide : D46~ D91 HSS : B64~ B107	Carbide : D46~ D76 HSS : B76~ B107	Carbide : D46~ D91 HSS : B64~ B107	Carbide : D30~ D64 HSS : B46~ B91
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Fluting for carbide tools

$$\mathbf{Q}_{w}' = \frac{\mathbf{a}_{e} \cdot \mathbf{V}_{f}}{60} \qquad \mathbf{V}_{f} = \frac{\mathbf{Q}_{w}' \cdot 60}{\mathbf{a}_{e}}$$

Numerous experience with tool manufacturing, Genentech recommend operating parameter as belows. You can get more efficiency and productivity with this parameters under corresponding machine environments and working condition.

• Wheel speed : 18~22 m/s

Ο,						Feed ra	ate [V _f :n	nm/min.]				
	V	50	60	80	90	100	120	140	160	180	200	220
	2.4	2.0	2.4	3.2	3.6	4.0	4.8	5.6	6.4	7.2	8.0	8.8
	2.6	2.2	2.6	3.5	3.9	4.3	5.2	6.1	6.9	7.8	8.7	9.5
	2.8	2.3	2.8	3.7	4.2	4.7	5.6	6.5	7.5	8.4	9.3	10.3
	3.0	2.5	3.0	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.0	11.0
	3.2	2.7	3.2	4.3	4.8	5.3	6.4	7.5	8.5	9.6	10.7	11.7
	3.4	2.8	3.4	4.5	5.1	5.7	6.8	7.9	9.1	10.2	11.3	12.5
	3.6	3.0	3.6	4.8	5.4	6.0	7.2	8.4	9.6	10.8	12.0	13.2
Infeed	3.8	3.2	3.8	5.1	5.7	6.3	7.6	8.9	10.1	11.4	12.7	13.9
[a _e :mm]	4.0	3.3	4.0	5.3	6.0	6.7	8.0	9.3	10.7	12.0	13.3	14.7
	4.2	3.5	4.2	5.6	6.3	7.0	8.4	9.8	11.2	12.6	14.0	15.4
	4.4	3.7	4.4	5.9	6.6	7.3	8.8	10.3	11.7	13.2	14.7	16.1
	4.6	3.8	4.6	6.1	6.9	7.7	9.2	10.7	12.3	13.8	15.3	16.9
	5.0	4.2	5.0	6.7	7.5	8.3	10.0	11.7	13.3	15.0	16.7	18.3
	5.2	4.3	5.2	6.9	7.8	8.7	10.4	12.1	13.9	37.6	17.3	19.1
	5.4	4.5	5.4	7.2	8.1	9.0	10.8	12.6	14.4	16.2	18.0	19.8
	5.6	4.7	5.6	7.5	8.4	9.3	11.2	13.1	14.9	16.8	18.7	20.5
	6.0	5.0	6.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0



Flute grinding for endmills

Gash grinding for endmills





Flute

Flute

6		Ļ
	1V1	

Change		-	v	V		Carbide		
Snape			•	V	п	Grit size	Bond	
1V1	125	10~12	6,10	45	Por request		GMT1	
1V1	150	10~12	6,10	45	rei iequest	D54	GIVITI	

OD relief & end teeth grinding for endmills









Chana	D	т		v	V	u	Carbide		
зпаре				^	v	"	Grit size	Bond	
11V9	100	35	10	3	70	Der request	D46	CMT1	
11A2	100	35	4,6	6	-	Per request	D40	GIVITI	

Chana		-		v		Carbide		
Snape	ע		U	•	H	Grit size	Bond	
1A1	125	6~20	-	6,10		juest D54, D64	GMT1, GMT2	
1A1	150	6~20	-	6,10	Por request			
3A1	125	10~15	6~12	6,10	rei iequest			
3A1	150	10~18	6~15	6,10				











Flute



Metric

Chana		τ		v	V	u	Carl	pide
зпаре						n	Grit size	Bond
1V1	125	6~20	-	6,10	≤30		DE4 DE4	GMT1, GMT2
1V1	150	6~20	-	6,10	≤30	Por request		
3V1	125	10~15	6~12	6,10	≤30	Per request	054, 004	
3V1	150	10~18	6~15	6,10	≤30			





Metric

Wheels for CNC machining cutting tools Flute grinding for Carbide drills

Flute grinding for carbide endmills







D



Metric

Flute

Chana		т		v	V	U	Carbide		
Sliape					v	н	Grit size	Bond	
1V1	150	14~20	-	6,10	15				
3V1	125	8~15	3~12	6,10	15	Per request	D54~D91	GMT1	
3V1	150	10~13	6~10	6,10	15				



3A1

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Ų	
1	X
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Shape		т		v		Carbide		HSS	
Shape				^	п	Grit size	Bond	Grit size	Bond
1A1	125	6~15	6,10	-		D64~D91	GB72	B91~B107	GBS72
1A1	150	6~15	6,10	-	Per request	D64~D91	GB72	B91~B107	GBS72
3A1	125	10~15	1~12	6(U≤6) 6,10		D46~D91	GP33	B64~B107	GPS32
3A1	150	10~18	1~15	6(U≤6) 6,10		D64~D91	GP33	B64~B107	GPS32

Formed wheel for Carbide drill flute









							Carbide		HSS	
Shape	D	T	U	X	V	н	Grit size	Bond	Grit size	Bond
1V1	125	10~12	-	6(U≤6) 6,10	≤15		D91	GB72	B107	GBS72
1V1	150	10~15	-	6,10	≤15		D91	GB72	B107	GBS72
3V1	125	10	1~2	6	≤15		D46	GP33	B64	GBS32
3V1	125	10	3~8	6(U≤6) 6,10	≤15	Per request	D64	GB72	B64	GBS32
3V1	150	10	1~2	6	≤15		D46	GP33	B64	GBS32
3V1	150	10	3~8	6(U≤6) 6,10	≤15		D64	GP33	B64	GBS32







	1.1
M	etric





OD relief & end teeth grinding for endmills





11V5











11V9









6A2







11A2









Form		т		v		u	Car	bide	HSS	
FOIIII				^	V	п	Grit Size	Bond	Grit Size	Bond
3V1	100	8	6	6	15		D30	GP32	B46	GBS32
3V1	125	10	6	6	15		D30	GP32	B46	GBS32
3V1	150	10	6	6	15	Por request	D30	GP32	B46	GBS32
6A2	80	10	6	4	-	rei iequesi	D30	GP32	B46	GBS32
12V9	100	25	10	3	45		D46	GB73	B64	GBS73
12V9	125	30	10	3	45		D46	GB73	B64	GBS73

Chana		-		v		u	Carbide		HSS	
Shape				^	V	П	Grit Size	Bond	Grit Size	Bond
11V5	100	35	4	6	20		D30~D46	GP32	B46~B64	GB73
11V5	100	35	6	6	20		D30~D46	GP32	B46~B64	GB73
11V9	100	35	10	3	70	Per request	D46	GB73	B91	GB32
11V9	125	40	10	3	70		D46	GB73	B91	GB32
11A2	100	35	4,6	6	-		D46	GB73	B91	GB32



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Wheels for CNC machining cutting tools **Gash grinding for endmills**

Wheels for CNC machining cutting tools **Grinding for thinning of carbide drills**









Metric

Chana	D	Ŧ	v	v	ц	Carl	oide	н	ss
Shape	U		^			Grit Size	Bond	Grit Size	Bond
1V1	125	10~12	6,10	45					
1V1	150	10~12	6,10	45	Por request	D64	CD22	PO1	CDC22
1Y1	125	10~12	6,10	≤20	rei iequesi	D04	GF52	D91	Grooo
1Y1	150	10~12	6,10	≤20					

X







Shape	D	Т	U	Х	V	Н	Grit Size	Bond
1V1	125	10	-	6	15	Der request	DC 4	CD22
3V1	125	10	6	6	15	Per request	D04	GPSZ

Flute grinding for carbide drills



OD clearance grinding for carbide drills



Shape	D	Т	U	Х	V	Н	Grit Size	Bond
3V1	85	10	3~6	6	≤5	Der request		CDCC
 3V1	125	10	6~10	6	≤5	Per request	D40~D04	GPSZ





Point grinding for carbide drills







Shape	D	т	W	Х	н	Grit Size	Bond
11A2	100	25	10	6	Por request	D40	CD22
11A2	100	25	15	6	rei lequest	D40	GF32



Shape	D	Т	х	Н	G
1A1	150	10~15	6		
1A1	175	10~15	6	Per request	D64,
1A1	200	10~25	6		
1A1 1A1	175 200	10~15 10~25	6 6	Per request	

Cylindrical grinding for cutting tool blanks



6

6



20

250

4B9

Chana		т		x	V	U	Carbide		
зпаре						п	Grit Size	Bond	
4B9	150	150 24	3	6	11	Der request	D20, D30, D40	GP33	
						rei iequest	D7, D10	GP23	

Cut off



1A1R





Metric

Metric

Shape	D	т	v	v	v	v	v	v	v	v	u	Carl	bide	HSS		
			^		Grit Size	Bond	Grit Size	Bond								
1A1R	150	1	6	Per request	D126	CD25	D126	CD221								
1A1R	150	1.2	6													
1A1R	200	1	6	Per request	DIZO	ככסט	DI20	GD521								
1A1R	200	1.2	6													





Metric

V	u	Carbide				
v	п	Grit Size	Bond			
11	Per request	D64, D91	GM5			







6

6

6

127

152.4

203.2

50~100

100~205

205

300

355

400~500





11V9



11A2

OD cylindrical grinding

Grit Size

D126, D251

D12, D30

Bond

GB10, GB11



н

Metric

Metric

Machine Type

Through feed

Shape	D	U	Х	н	Grit Size	Bond	Machine Type	
14A1	300	12~20	6		D126, D251		Cylindrical grinder	
14A1	350	12~20	6	Per request		GB10, GB11		
14A1	400	15~25	6		D12, D30			



12V9

Shape D T W	Ŧ	14/	_	v	ц	Carl	bide	H	SS	Machina Tuna	
		п	Grit Size	Bond	Grit Size	Bond	мастте туре				
11V9	75	30	10	2,3	70		D64	D64 GB521	B91~B126		Tool and cutter grinder
11V9	100	35	10	3	70	Per request					
11V9	125	40	10	3	70						
11A2	75	34	3	5	-		D46	CP751	GB751 B54~B126	GB321	
11A2	100	35	5	5	-						
12V9	100	25	10	3	45		DC4	CDE 21	DC4 D126		
12V9	125	35	10	3	4		<i>D</i> 04		DU4~D120		

Shape

1A1

1A1

1A1







Metric

G7

Resharpening for cutting tools by tool and cutter grinder







Metric

Chana	Shape D T W X S	-	Ŧ	Ŧ	Ŧ	Ŧ	т	Ŧ	-	-	Ŧ	-	Ŧ	Ŧ	Ŧ	-	Ŧ	Ŧ	-	-	-	-	Ŧ	Ŧ	Ŧ	Ŧ	-	_	10/				Carbide		HSS		Mashina Tura
Shape		3	п	Grit Size	Bond	Grit Size	Bond	мастіпе туре																													
1A1	100	10	-	6	-	Deserved	D64	GB65 D64	B64~B126	GB35																											
1A1	125	10	-	6	-						Tool and cutter grinder																										
1A1	150	10	-	6	-																																
6A2	100	25	5	5	-																																
6A2	125	25	6	5	-	Per request																															
6A2	150	25	8	5	-																																
12A2	100	25	5~10	3~5	45			CD534																													
12A2	125	35	5~10	3~5	45			GDSZT		GD521																											

VALUED CUSTOMER IN THE WORLD

YOUR BEST SOLUTION FOR GRINDING WHEEL

Since 2009, Genentech all the members aim to produce high quality products and on time delivery and optimized technical service for valued customer in whole the world. We are manufacturing product range of almost fields of industry like tool, electronic, automotive, aero-space and etc. By this in everywhere you can meet products with manufacturing by Genentech wheels. Genentech customized wheels provide your best solution for grinding.



