

哈工®



# 可转位齿轮加工刀具

INDEXABLE GEAR CUTTING TOOLS



哈尔滨工具厂第一分厂  
HARBIN TOOL WORKS FIRST BRANCH

**企业简介** INTRODUCTION TO ENTERPRISE

哈尔滨工具厂第一分厂始建于1990年，是一家以生产齿轮加工刀具为主的现代化企业，主要产品“哈工牌”可转位硬质合金齿轮滚刀、可转位齿轮粗精加工盘铣刀、克林贝尔格硬切刀和可转位铣削刀具，其中可转位硬质合金齿轮滚刀全国首家生产，克林贝尔格硬切刀和可转位齿轮滚刀于2011年获国家专利。

可转位齿轮滚刀是针对现代高效滚齿机缺乏相应刀具而设计的一种既能提高加工效率，又能反复使用的长寿滚刀，主要应用于中大齿轮加工行业。可转位硬质合金齿轮粗、精加工盘铣刀广泛应用于风电和回转支撑等领域。可转位铣削刀具主要应用于航空航天、铁路、风电、机床、模具等领域，深受用户好评。

欢迎国内外新老用户前来洽谈贸易、交流技术、共创辉煌。

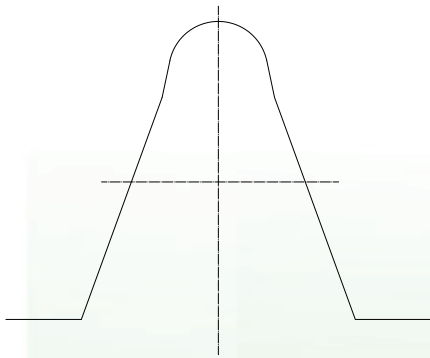
The Harbin Tools works first branch was founded in 1990, is a modern enterprise mainly the production of gear cutting tools, the main product "Ha Gong brand" indexable carbide gear hobs, coarse and fine bit gear can be transferred processing disc cutter, Klingelberg's hard cutter and indexable milling tools, which can be transferred Carbide the gear hob first national production, Klingelberg's hard cutter and indexable gear hobs in 2011 by the national patent.

The indexable gear hobs lack of appropriate tools designed for modern high-efficiency gear hobbing one can not only improve the processing efficiency, longevity hob and can be used repeatedly, Mainly used in large gear processing industry can be transferred to bit carbide gear crude, finishing disk cutter is widely used indexable milling tools in the field of wind power and slewing, mainly used in the aerospace, rail, wind power, machine tools, molds, and other fields, praised by users.

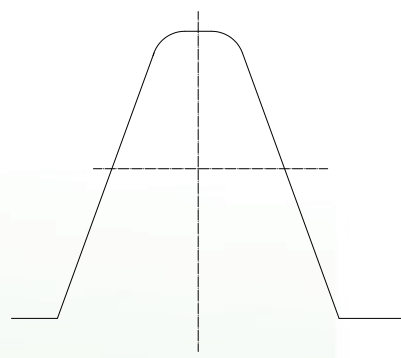
Welcome new and old customers at home and abroad to negotiate trade, exchange of technology, create brilliant.



可转位齿轮滚刀 INDEXABLE GEAR HOB



粗加工  
Roughing



精加工  
Finishing

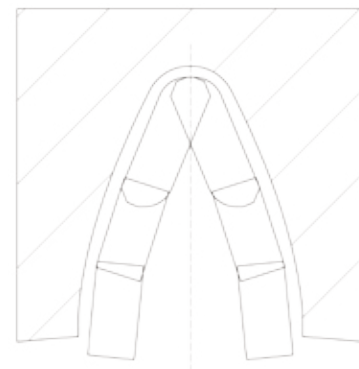
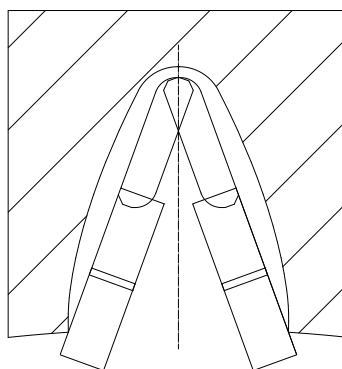
M6-M40  
留磨滚刀可定制双头  
标准滚刀精度可达 A 级

M6-M40  
Double hob can made for roughing hobs  
Standard hob reach A Class

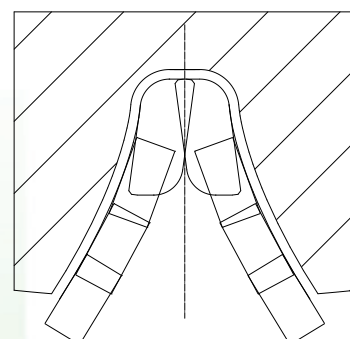
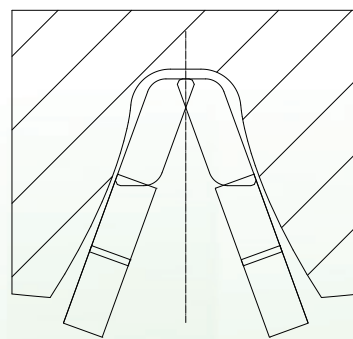
齿轮粗铣刀齿形  
Roughing

齿轮半精铣刀齿形  
Semi-finishing

可转位内齿轮铣刀 INTERNAL FINISHING TOOLS



可转位外齿轮铣刀 EXTERNAL FINISHING TOOLS



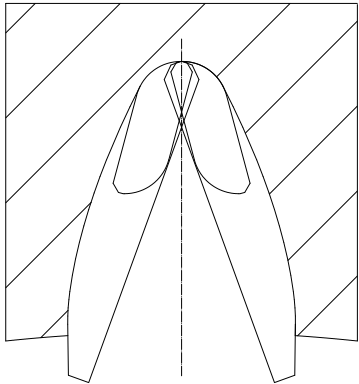
直线齿形，用于粗加工去除余量，  
可内外齿轮通用一种刀具

Straight flank roughing both  
internal and external milling

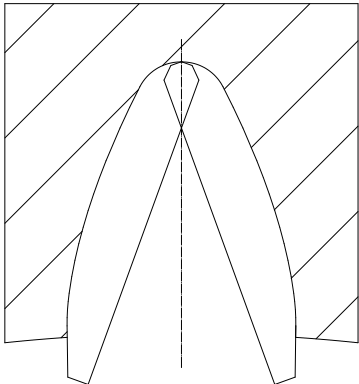
折线齿形，均匀留量的粗铣刀

Adapted profile for uniform  
stock roughing

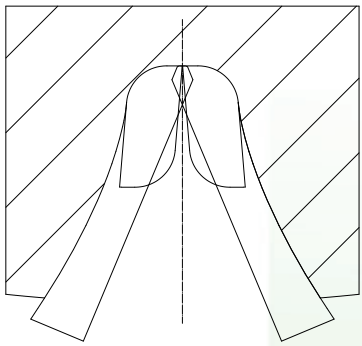
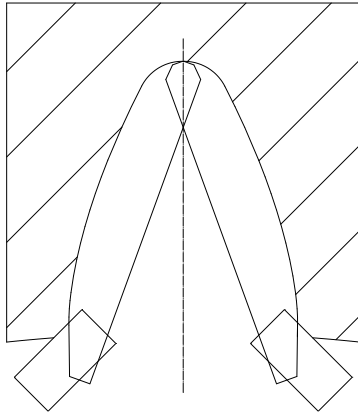
齿轮精铣刀齿形  
Pre-finishing



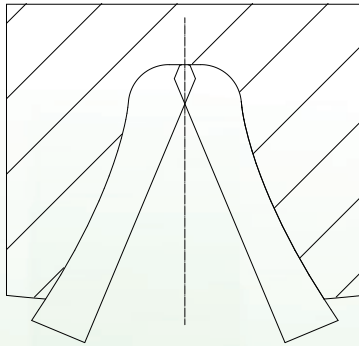
齿轮精铣刀齿形  
Finishing



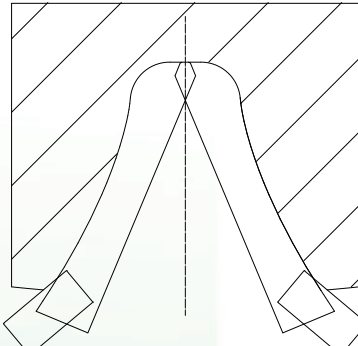
齿轮精铣刀齿形带齿顶倒角  
Finishing with chamfer



渐开线齿形，可用于半精或精加工  
Final profile for semifinishing or finishing

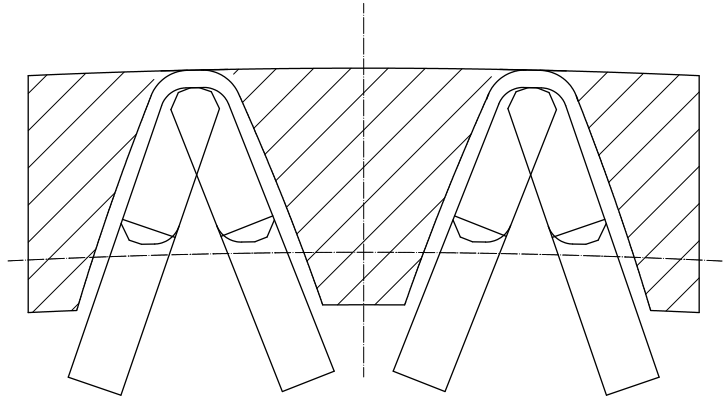


渐开线齿形，可用于精加工  
Final profile for finishing



渐开线齿形，可用于精加工  
Final profile for finishing

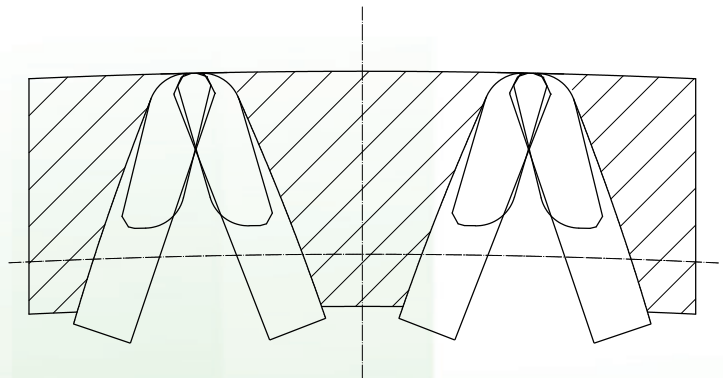
可转位双圆盘齿轮粗铣刀 DUPLEX-ROUGHING TOOLS



双圆盘粗铣刀可同时加工两个齿槽，刀片交错排列，使得粗加工的效率大大提升

Duples-roughing tools can process two tooth at the same trme the blade staggered,to enhance the maching efficiency

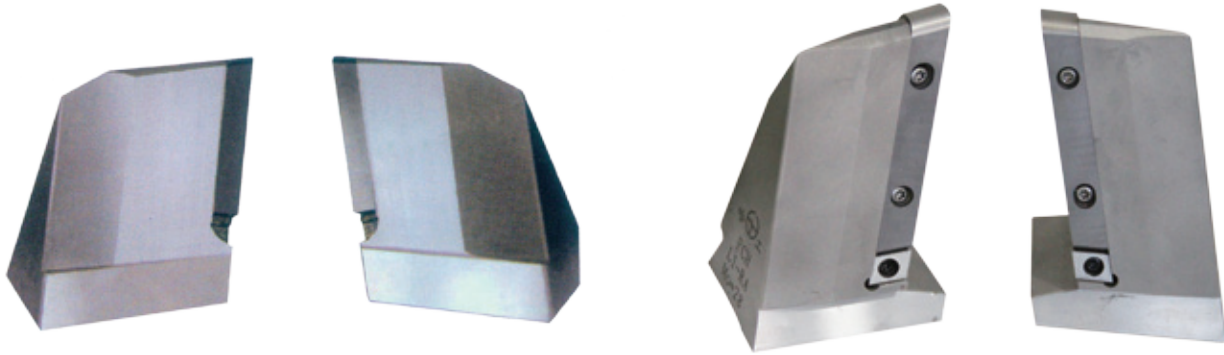
可转位双圆盘齿轮精铣刀 DUPLEX-FINISHING TOOLS



双圆盘精铣刀可同时加工两个渐开线齿槽，主齿的特殊渐开线设计搭配副齿的齿顶加工，更高效、更经济。

It can machine two involute tooth at the same time,the sprcial design of twolute,more efficient and more economic

## 克林贝尔格硬切刀 HPG-S KLINGELNBERG COTTER BLADE



型号 Type	模数 Module	型号 Type	模数 Module	型号 Type	模数 Module	
R100	M2.6	R170	M7	R260	M8	
	M3.2		M8		M10	
	M4		M10		M12	
	M5		M12		M14	
R135	M4	R210	M8		GMC160	M17
	M5		M10	M10		
	M6		M12	M12		
	M7		M14	M14		
						M17
						M24
					M28	

克林贝尔格硬切刀适用于克林贝尔格机床对螺旋伞齿轮淬火后的精加工。  
刀刃采用C B N复合片与刀体整体焊接，具有刚性好、一致性好的特点。加工出的齿轮接触区好，光洁度高。

Klingelberg HPG cutting blade is for Klingelberg cyclo palloid geometry finishing spiral bevel gear after heat treatment.  
Cutting edge with CNB and welded the whole body,with the features of consistency and rigidity. The gear area is good,finish high.

可转位齿轮刀具展示 TOOLS SHOW



齿轮粗铣刀  
Roughing tools



齿轮精铣刀  
Finishing tools



齿轮（主副齿）精铣刀  
Pre-finishing tools



标准齿轮滚刀  
Standard hobs



双头留磨滚刀  
Roughing hobs for double



标准齿轮滚刀  
Standar hobs for spiral piece

对比：齿距 - 模数 - 径节 - 周节

COMPARISON: PITCH-MODULE-DIAMETRAL PITCH-CIRCULAR PITCH

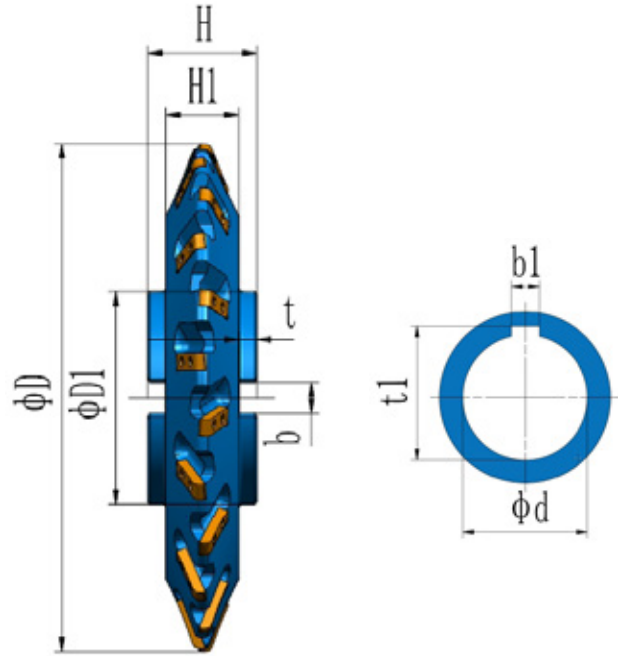
径节 / 周节  
DIAMETRAL PITCH/CIRCULAR PITCH

齿距 Pitch	模数 Module	DP	CP	齿距 Pitch	模数 Module	DP	CP	齿距 Pitch	模数 Module	DP	CP	模数 Module
0.31416	0.10	-	-	2.84987	-	28	-	22.22500	-	-	7/8	m = 25.4 / DP m = 8.08507111 x CP
0.34558	0.11	-	-	2.98451	0.95	-	-	22.79899	-	3 1/2	-	
0.37699	0.12	-	-	3.06909	-	26	-	23.81250	-	-	15/16	径节 DP = 3.14159265 / CP DP = 25.4 / m
0.39898	-	200	-	3.14159	1	-	-	25.13274	8	-	-	
0.43982	0.14	-	-	3.17500	-	-	1/8	25.40000	-	-	1	周节 CP = 3.14159265 / DP CP = m / 8.08507111
0.44331	-	180	-	3.32485	-	24	-	26.59892	-	3	-	
0.45598	-	175	-	3.62711	-	22	-	26.98750	-	-	11/16	周节
0.49873	-	160	-	3.92699	1.25	-	-	28.27433	9	-	-	
0.50265	0.16	-	-	3.98982	-	20	-	28.57500	-	-	1 1/8	周节
0.53198	-	150	-	4.43314	-	18	-	29.01689	-	2 3/4	-	
0.56549	0.18	-	-	4.71239	1.5	-	-	30.16250	-	-	13/16	周节
0.62831	0.20	-	-	4.76250	-	-	3/16	31.41593	10	-	-	
0.62832	-	127	-	4.98728	-	16	-	31.75000	-	-	1 1/4	周节
0.66497	-	120	-	5.49779	1.75	-	-	31.91858	-	2 1/2	-	
0.69115	0.22	-	-	5.69975	-	14	-	33.33750	-	-	15/16	周节
0.75997	1	105	-	6.28319	2	-	-	34.55752	11	-	-	
0.78540	0.25	-	-	6.35000	-	-	1/4	34.92500	-	-	1 3/8	周节
0.79796	-	100	-	6.64970	-	12	-	35.46509	-	2 1/4	-	
0.83121	-	96	-	7.06858	2.25	-	-	36.51250	-	-	17/16	周节
0.87965	0.28	-	-	7.85398	2.5	-	-	37.69911	12	-	-	
0.90678	-	88	-	7.93750	-	-	5/16	38.10000	-	-	1 1/2	周节
0.94248	0.30	-	-	7.97965	-	10	-	39.89823	-	2	-	
0.99746	-	80	-	8.63938	2.75	-	-	41.27500	-	-	1 5/8	周节
1.09557	0.35	-	-	8.86627	-	9	-	43.98230	14	-	-	
1.10828	-	72	-	9.42478	3	-	-	44.45000	-	-	1 3/4	周节
1.24682	-	64	-	9.52500	-	-	3/8	45.59797	-	1 3/4	-	
1.25664	0.40	-	-	9.97456	-	8	-	47.62500	-	-	1 7/8	周节
1.32994	-	60	-	10.21018	3.25	-	-	50.26548	16	-	-	
1.41372	0.45	-	-	10.99557	3.5	-	-	50.80000	-	-	2	周节
1.57080	0.50	-	-	11.11250	-	-	7/16	53.19764	-	1 1/2	-	
1.58750	-	-	1/16	11.39949	-	7	-	56.54867	18	-	-	周节
1.59593	-	50	-	11.78097	3.75	-	-	62.83185	20	-	-	
1.66243	-	48	-	12.56637	4	-	-	63.83716	-	1 1/4	-	周节
1.72788	0.55	-	-	12.70000	-	-	1/2	69.11504	22	-	-	
1.73471	-	46	-	13.29941	-	6	-	75.39822	24	-	-	周节
1.81356	-	44	-	14.13717	4.5	-	-	78.53982	25	-	-	
1.88496	0.60	-	-	14.28750	-	-	9/16	79.79645	-	1	-	周节
1.89992	-	42	-	14.50845	-	-	5 1/2	81.68141	26	-	-	
1.99491	-	40	-	15.70796	5	-	-	87.96459	28	-	-	周节
2.04204	0.65	-	-	15.87500	-	-	5/8	91.19595	-	7/8	-	
2.09991	-	38	-	15.95930	-	5	-	94.24778	30	-	-	周节
2.19911	0.70	-	-	17.27876	5.5	-	-	100.53096	32	-	-	
2.21657	-	36	-	17.46250	-	-	11/16	106.39527	-	3/4	-	周节
2.34695	-	34	-	17.73255	-	4 1/2	-	109.95574	35	-	-	
2.35619	0.75	-	-	18.84956	6	-	-	113.09734	36	-	-	周节
2.49364	-	32	-	19.05000	-	-	3/4	126.66371	40	-	-	
2.51327	0.80	-	-	19.94911	-	4	-	127.67432	-	5/8	-	周节
2.65988	-	30	-	20.42035	6.5	-	-	141.37167	45	-	-	
2.67035	0.85	-	-	20.63750	-	-	13/16	157.07963	50	-	-	周节
2.82743	0.90	-	-	21.99115	7	-	-	159.59290	-	1/2	-	

可转位齿轮铣刀订购参数 ORDERING INFORMATION

刀具参数 TOOLS DATA

- 刀具外径 /Outside diameter/D \_\_\_\_\_
- 孔径 /Bore diameter/d \_\_\_\_\_
- 轮毂直径 /Hub diameter/D1 \_\_\_\_\_
- 铣刀厚度 /Cutter Width/H \_\_\_\_\_
- 轮毂厚度 /Hub width/H1 \_\_\_\_\_
- 端键宽度 /Radial keyway width/b \_\_\_\_\_
- 端键深度 /Radial keyway depth/t \_\_\_\_\_
- 轴键宽度 /Axial Keyway width/b1 \_\_\_\_\_
- 轴键深度 /Axial Keyway depth/t1 \_\_\_\_\_



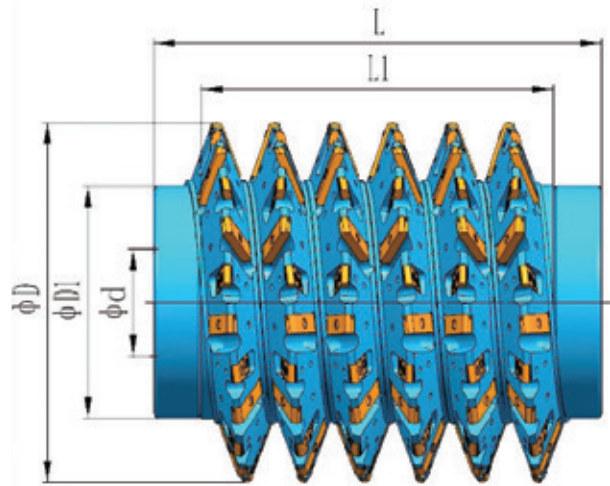
齿轮参数 GEAR INFORMATION

- 齿轮类型 /Gear Type    内齿轮 /Internal     外齿轮 /External     齿条 /Rack
- 模数 /Module/Mn \_\_\_\_\_
- 齿数 /No.of teeth/z \_\_\_\_\_
- 压力角 /Pressure angle/a \_\_\_\_\_
- 螺旋升角 /Helix angle/β \_\_\_\_\_
- 齿顶变位系数 /Addendum modification coefficient/Xn \_\_\_\_\_
- 齿顶圆直径 /Tip diameter/Da \_\_\_\_\_
- 齿根圆直径 /Root diameter/Df \_\_\_\_\_
- 齿根圆角 /Root radius/Rf \_\_\_\_\_
- 精加工后公法线长度 /After finishing base tangent length/Wk \_\_\_\_\_
- 跨齿数 /Given number of teeth/k \_\_\_\_\_
- 精加工后跨棒距 /After finishing over pin distance/Md \_\_\_\_\_
- 量棒直径 /Pin diameter/d \_\_\_\_\_
- 精加工后法向分度圆弧齿厚 /Normal Circular thickness for finishing/ $\widehat{S}_n$  \_\_\_\_\_
- 齿轮精度等级 /Gear quality class \_\_\_\_\_
- 加工工艺 /Process    粗铣 /Roughing     半精铣 /Semi-finishing     精铣 /Finishing
- 精加工余量 /Stock for finishing \_\_\_\_\_

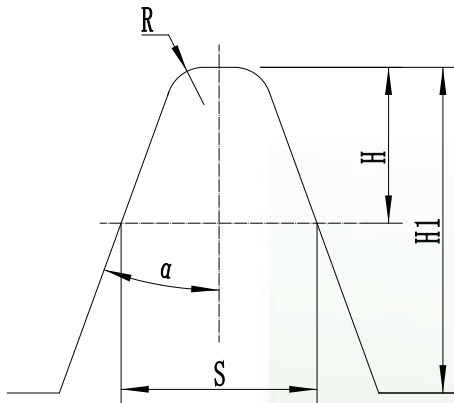
可转位齿轮滚刀订购参数 ORDERING INFORMATION

刀具参数 TOOLS DATA

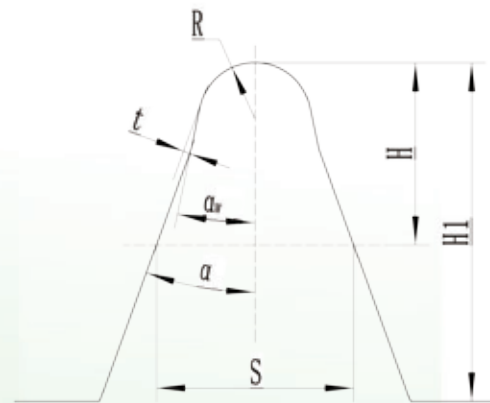
- 刀具外径 /Outside diameter/D \_\_\_\_\_
- 孔径 /Bore diameter/d \_\_\_\_\_
- 轮毂直径 /Hub diameter/D1 \_\_\_\_\_
- 滚刀总长度 /Tool length/L \_\_\_\_\_
- 切削长度 /Cutting length/L1 \_\_\_\_\_
- 轴键宽度 /Axial keyway width/b1 \_\_\_\_\_
- 轴键深度 /Axial keyway depth/t1 \_\_\_\_\_
- 滚刀精度等级 /Quality class \_\_\_\_\_



齿轮参数 GEAR INFORMATION



- 齿高 /Tooth depth/H1 \_\_\_\_\_
- 齿顶高 /Addendum/H \_\_\_\_\_
- 法向齿厚 /Normal tooth thickness/S \_\_\_\_\_
- 齿顶半径 /Tip radius/R \_\_\_\_\_
- 压力角 /Pressure angle/α \_\_\_\_\_



- 齿高 /Tooth depth/H1 \_\_\_\_\_
- 齿顶高 /Addendum/H \_\_\_\_\_
- 法向齿厚 /Normal tooth thickness/S \_\_\_\_\_
- 齿顶半径 /Tip radius/R \_\_\_\_\_
- 压力角 /Pressure angle/α \_\_\_\_\_
- 挖根量 /Protuberance amount/t \_\_\_\_\_
- 挖根处角度 /Protuberance angle/α<sub>w</sub> \_\_\_\_\_

哈工<sup>®</sup>

## 哈尔滨工具厂第一分厂

HARBIN TOOL WORKS FIRST BRANCH

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