

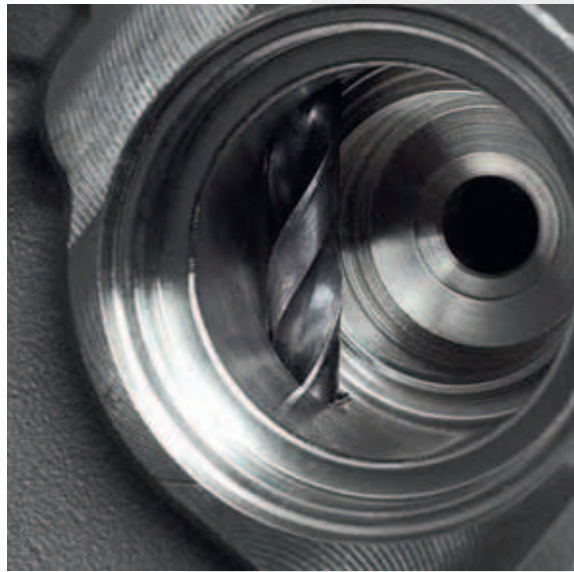


HARTNER

Precision Cutting Tools

TS 硬质合金钻头

整体硬质合金高性能钻头



+ 适合每种材料的解决方案

ISO 材料代码

P	钢和高合金钢
M	不锈钢
K	灰铸铁,可锻铸铁和球墨铸铁
N	铝合金及其它有色金属
S	特殊合金,镍基合金以及钛合金
H	硬化钢及硬化铸铁

图标说明

刀具材料

VHM

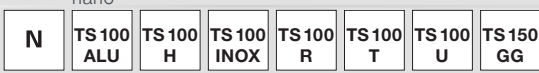
整体硬质合金

表面处理



AITIN AITIN nano 光亮处理 FIRE TiAlN TiAlSiN

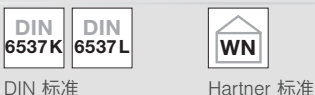
类型



加工深度



标准



DIN 标准 Hartner 标准

顶尖角



Ø-公差



切削方向



顺时针

柄部形式



DIN 6535 标准 直柄

横刃修磨



内冷



带内冷



不带内冷





TS 100 U

▼ 钢与高合金钢，通用型

P	•
M	○
K	•
N	○
S	○
H	○

TS 100 U



TS 100 INOX

▼ 不锈钢、耐酸和耐热钢
钛及钛合金，特殊合金

P	○
M	•
K	•
N	○
S	○
H	○

TS 100 INOX



TS 100 R | TS 150 GG

▼ 灰口铸铁、可锻铸铁和球墨铸铁
GGV/ADI/CDI

P	○
M	○
K	•
N	○
S	○
H	○

TS 100 R | TS 150 GG



TS 100 ALU | TS 150 GG

▼ 铝合金、铜合金、黄铜合金和青铜合金、塑料

P	○
M	○
K	•
N	•
S	○
H	○

TS 100 ALU | TS 150 GG

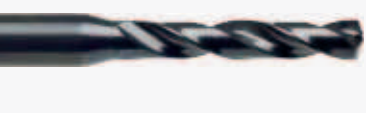


TS 100 H

▼ 合金和非合金高强度钢、硬化钢、特殊合金和钛合金

P	•
M	○
K	•
N	○
S	•
H	○

TS 100 H



整体硬质合金微型钻头

▼ 普通钢加工最高可达 1200 N/mm²，通用型

P	•
M	•
K	•
N	○
S	○
H	○

整体硬质合金微型钻头



TS 100 T

▼ 普通钢加工最高可达 1200 N/mm²，通用型

P	•
M	•
K	•
N	○
S	○
H	○

TS 100 T



应用建议

应用建议

P	M	K	N	S	H	标准	内冷	刀具材料	表面处理	切削方向	柄部形式	钻深	d1/mm	产品代号	页码
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TS 100 U







	●	○	●	○	○	DIN 6537K	不带内冷	整硬	F	右手	HA	3xD	3,000 - 20,000	89413	10
	●	○	●	○	○	DIN 6537K	不带内冷	整硬	F	右手	HE	3xD	3,000 - 20,000	89402	10
	●	○	●	○	○	DIN 6537L	不带内冷	整硬	F	右手	HA	5xD	3,000 - 20,000	89414	12
	●	○	●	○	○	DIN 6537L	不带内冷	整硬	F	右手	HE	5xD	3,000 - 20,000	89417	12
	●	○	●	○	○	DIN 6537K	带内冷	整硬	F	右手	HA	3xD	3,000 - 20,000	89410	14
	●	○	●	○	○	DIN 6537K	带内冷	整硬	F	右手	HE	3xD	3,000 - 20,000	89415	14
	●	○	●	○	○	DIN 6537L	带内冷	整硬	F	右手	HA	5xD	3,000 - 20,000	89411	16
	●	○	●	○	○	DIN 6537L	带内冷	整硬	F	右手	HE	5xD	3,000 - 20,000	89408	16
	●	○	●	○	○	哈特纳标准	带内冷	整硬	F	右手	HA	7xD	3,000 - 20,000	89412	18
	●	○	●	○	○	哈特纳标准	带内冷	整硬	F	右手	HE	7xD	3,000 - 20,000	89416	18
	●	○	●	○	○	哈特纳标准	带内冷	整硬	F	右手	HA	12xD	3,000 - 20,000	89418	20

TS 100 INOX

	○	●	○	○	○	DIN 6537K	带内冷	整硬	g	右手	HA	3xD	3,000 - 20,000	89450	24
	○	●	○	○	○	DIN 6537K	带内冷	整硬	g	右手	HE	3xD	3,000 - 20,000	89550	24

P	M	K	N	S	H	标准	内冷	刀具材料	表面处理	切削方向	柄部形式	钻深	d1/mm	产品代号	页码
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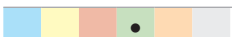




TS 100 INOX

		DIN 6537L	带内冷	整硬		右手	HA	5xD	3,000 - 20,000	89451	26
		DIN 6537L	带内冷	整硬		右手	HE	5xD	3,000 - 20,000	89551	26


TS 100 R | TS 150 GG

		DIN 6537L	带内冷	整硬		右手	HA	5xD	3,000 - 20,000	89420	32
		哈特纳标准	带内冷	整硬		右手	HA	7xD	4,000 - 20,000	89421	34
		哈特纳标准	带内冷	整硬		右手	HA	4xD	3,000 - 20,000	89292	36
		哈特纳标准	带内冷	整硬		右手	HA	7xD	3,000 - 20,000	89294	37
		哈特纳标准	带内冷	整硬		右手	HA	10xD	3,000 - 20,000	89293	38

TS 100 ALU | TS 150 GG

		DIN 6537L	带内冷	整硬		右手	HA	5xD	3,000 - 20,000	89560	44
		哈特纳标准	带内冷	整硬		右手	HA	10xD	3,000 - 19,500	89295	46

TS 100 H



		DIN 6537K	不带内冷	整硬		右手	HA	3xD	3,000 - 20,000	89422	50
		DIN 6537K	带内冷	整硬		右手	HA	3xD	3,000 - 20,000	89423	52

P	M	K	N	S	H	标准	内冷	刀具材料	表面处理	切削方向	柄部形式	钻深	d1/mm	产品代号	页码
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TS 100 H

	•	•	•	•	○	DIN 6537K	带内冷	整硬	Y	右手	HE	3xD	3,000 - 20,000	89424	52
	•	•	•	•	○	DIN 6537L	带内冷	整硬	Y	右手	HA	5xD	3,000 - 20,000	89425	54
	•	•	•	•	○	DIN 6537L	带内冷	整硬	Y	右手	HE	5xD	3,000 - 20,000	89426	54
	•	•	•	•	○	哈特纳标准	带内冷	整硬	Y	右手	HA	7xD	3,000 - 16,000	89427	56

微钻

	•	•	•	○	○	哈特纳标准	不带内冷	整硬	A	右手	圆柱形	4xD	0,500 - 3,000	86400	60
	•	•	•	○	○	哈特纳标准	不带内冷	整硬	A	右手	圆柱形	7xD	0,500 - 3,000	86401	61
	•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	圆柱形	5xD	1,400 - 3,000	86405	62
	•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	圆柱形	8xD	1,400 - 3,000	86408	63
	•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	圆柱形	15xD	1,400 - 3,000	86412	64

TS 100 T

	•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	HA	15xD	3,000 - 16,000	86509	68
	•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	HA	20xD	3,000 - 16,000	86511	69
	•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	HA	25xD	3,000 - 16,000	86512	70

P	M	K	N	S	H	标准	内冷	刀具材料	表面处理	切削方向	柄部形式	钻深	d1/mm	产品代号	页码
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TS 100 T



•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	HA	30xD	3,000 - 14,000	86513	71
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•	•	•	○	○	哈特纳标准	带内冷	整硬	A	右手	HA	40xD	3,000 - 10,000	86514	72
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TS 100 U

▼ 优势和特性

- ▼ 在长与短切屑钢(强度高达约 1200 N/mm^2)、碳素钢、青铜、铸件和高合金 AISi 合金中具有最高的切削值和出色的加工效果
- ▼ 同心度高,孔径公差小,表面粗糙度低
- ▼ 借助经优化的刀刃几何形状(带双面磨削和芯厚减薄设计),实现精确定心和短切屑



钢与高合金钢

通用型

特殊几何形状可通用于几乎所有材料

钻尖倒角,即使是恶劣工况也能实现长久的使用寿命。

芯厚减薄实现精确钻孔

在钻孔深度 $7 \times D$ 和 $12 \times D$ 时,两个额外的导向倒角确保钻孔平直度和圆度

开放式切槽轮廓确保短切屑和安全排屑

多层 nanoFIRE 涂层确保高切割值下的长使用时间





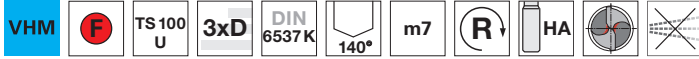
HARTNER

不带内冷TS钻头

产品代号 89413



P	M	K	N	S	H
●	○	●	○	○	○



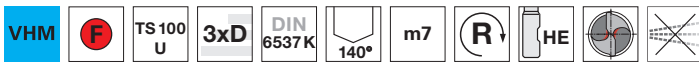
芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数

适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金

产品代号 89402

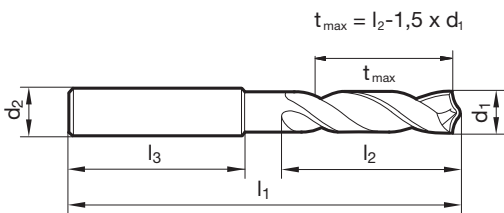


P	M	K	N	S	H
●	○	●	○	○	○



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数

适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	5,200		6,000	66,000	28,000	36,000
3,100		6,000	62,000	20,000	36,000	5,300		6,000	66,000	28,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	5,400		6,000	66,000	28,000	36,000
3,200		6,000	62,000	20,000	36,000	5,500		6,000	66,000	28,000	36,000
3,250		6,000	62,000	20,000	36,000	5,550		6,000	66,000	28,000	36,000
3,300		6,000	62,000	20,000	36,000	5,560	7/32	6,000	66,000	28,000	36,000
3,400		6,000	62,000	20,000	36,000	5,600		6,000	66,000	28,000	36,000
3,500		6,000	62,000	20,000	36,000	5,700		6,000	66,000	28,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	5,800		6,000	66,000	28,000	36,000
3,600		6,000	62,000	20,000	36,000	5,900		6,000	66,000	28,000	36,000
3,700		6,000	62,000	20,000	36,000	5,950	15/64	6,000	66,000	28,000	36,000
3,800		6,000	66,000	24,000	36,000	6,000		6,000	66,000	28,000	36,000
3,900		6,000	66,000	24,000	36,000	6,100		8,000	79,000	34,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	6,200		8,000	79,000	34,000	36,000
4,000		6,000	66,000	24,000	36,000	6,300		8,000	79,000	34,000	36,000
4,100		6,000	66,000	24,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
4,200		6,000	66,000	24,000	36,000	6,400		8,000	79,000	34,000	36,000
4,300		6,000	66,000	24,000	36,000	6,500		8,000	79,000	34,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	6,600		8,000	79,000	34,000	36,000
4,400		6,000	66,000	24,000	36,000	6,700		8,000	79,000	34,000	36,000
4,500		6,000	66,000	24,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
4,600		6,000	66,000	24,000	36,000	6,800		8,000	79,000	34,000	36,000
4,650		6,000	66,000	24,000	36,000	6,900		8,000	79,000	34,000	36,000
4,700		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	7,100		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,900		6,000	66,000	28,000	36,000	7,200		8,000	79,000	41,000	36,000
5,000		6,000	66,000	28,000	36,000	7,300		8,000	79,000	41,000	36,000
5,100		6,000	66,000	28,000	36,000	7,400		8,000	79,000	41,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000	7,500		8,000	79,000	41,000	36,000



不带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,540	19/64	8,000	79,000	41,000	36,000	11,400		12,000	102,000	55,000	45,000
7,600		8,000	79,000	41,000	36,000	11,500		12,000	102,000	55,000	45,000
7,700		8,000	79,000	41,000	36,000	11,600		12,000	102,000	55,000	45,000
7,800		8,000	79,000	41,000	36,000	11,700		12,000	102,000	55,000	45,000
7,900		8,000	79,000	41,000	36,000	11,800		12,000	102,000	55,000	45,000
7,940	5/16	8,000	79,000	41,000	36,000	11,900		12,000	102,000	55,000	45,000
8,000		8,000	79,000	41,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
8,100		10,000	89,000	47,000	40,000	12,000		12,000	102,000	55,000	45,000
8,200		10,000	89,000	47,000	40,000	12,100		14,000	107,000	60,000	45,000
8,300		10,000	89,000	47,000	40,000	12,200		14,000	107,000	60,000	45,000
8,330	21/64	10,000	89,000	47,000	40,000	12,300	31/64	14,000	107,000	60,000	45,000
8,400		10,000	89,000	47,000	40,000	12,400		14,000	107,000	60,000	45,000
8,500		10,000	89,000	47,000	40,000	12,500		14,000	107,000	60,000	45,000
8,600		10,000	89,000	47,000	40,000	12,600		14,000	107,000	60,000	45,000
8,700		10,000	89,000	47,000	40,000	12,700	1/2	14,000	107,000	60,000	45,000
8,730	11/32	10,000	89,000	47,000	40,000	12,800		14,000	107,000	60,000	45,000
8,800		10,000	89,000	47,000	40,000	13,000		14,000	107,000	60,000	45,000
8,900		10,000	89,000	47,000	40,000	13,100	33/64	14,000	107,000	60,000	45,000
9,000		10,000	89,000	47,000	40,000	13,200		14,000	107,000	60,000	45,000
9,100		10,000	89,000	47,000	40,000	13,300		14,000	107,000	60,000	45,000
9,130	23/64	10,000	89,000	47,000	40,000	13,500		14,000	107,000	60,000	45,000
9,200		10,000	89,000	47,000	40,000	13,700		14,000	107,000	60,000	45,000
9,250		10,000	89,000	47,000	40,000	13,800		14,000	107,000	60,000	45,000
9,300		10,000	89,000	47,000	40,000	14,000		14,000	107,000	60,000	45,000
9,400		10,000	89,000	47,000	40,000	14,100		16,000	115,000	65,000	48,000
9,500		10,000	89,000	47,000	40,000	14,200		16,000	115,000	65,000	48,000
9,520	3/8	10,000	89,000	47,000	40,000	14,290	9/16	16,000	115,000	65,000	48,000
9,600		10,000	89,000	47,000	40,000	14,500		16,000	115,000	65,000	48,000
9,700		10,000	89,000	47,000	40,000	14,700		16,000	115,000	65,000	48,000
9,800		10,000	89,000	47,000	40,000	15,000		16,000	115,000	65,000	48,000
9,900		10,000	89,000	47,000	40,000	15,100		16,000	115,000	65,000	48,000
9,920	25/64	10,000	89,000	47,000	40,000	15,200		16,000	115,000	65,000	48,000
10,000		10,000	89,000	47,000	40,000	15,500		16,000	115,000	65,000	48,000
10,100		12,000	102,000	55,000	45,000	15,700		16,000	115,000	65,000	48,000
10,200		12,000	102,000	55,000	45,000	15,800		16,000	115,000	65,000	48,000
10,300		12,000	102,000	55,000	45,000	16,000		16,000	115,000	65,000	48,000
10,320	13/32	12,000	102,000	55,000	45,000	16,200		18,000	123,000	73,000	48,000
10,400		12,000	102,000	55,000	45,000	16,500		18,000	123,000	73,000	48,000
10,500		12,000	102,000	55,000	45,000	17,000		18,000	123,000	73,000	48,000
10,600		12,000	102,000	55,000	45,000	17,500		18,000	123,000	73,000	48,000
10,700		12,000	102,000	55,000	45,000	18,000		18,000	123,000	73,000	48,000
10,800		12,000	102,000	55,000	45,000	18,500		20,000	131,000	79,000	50,000
10,900		12,000	102,000	55,000	45,000	19,000		20,000	131,000	79,000	50,000
11,000		12,000	102,000	55,000	45,000	19,500		20,000	131,000	79,000	50,000
11,100		12,000	102,000	55,000	45,000	20,000		20,000	131,000	79,000	50,000
11,110	7/16	12,000	102,000	55,000	45,000						
11,200		12,000	102,000	55,000	45,000						
11,300		12,000	102,000	55,000	45,000						



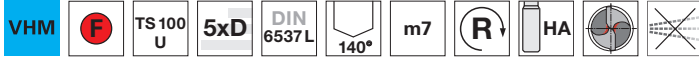
HARTNER

不带内冷TS钻头

产品代号 89414



P	M	K	N	S	H
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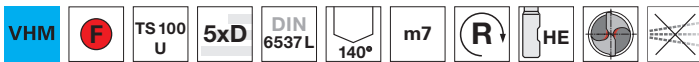
芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数

适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金

产品代号 89417

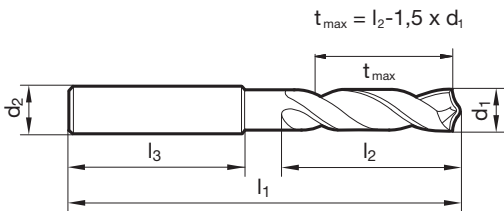


P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数

适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	5,200		6,000	82,000	44,000	36,000
3,100		6,000	66,000	28,000	36,000	5,300		6,000	82,000	44,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	5,400		6,000	82,000	44,000	36,000
3,200		6,000	66,000	28,000	36,000	5,500		6,000	82,000	44,000	36,000
3,250		6,000	66,000	28,000	36,000	5,550		6,000	82,000	44,000	36,000
3,300		6,000	66,000	28,000	36,000	5,560	7/32	6,000	82,000	44,000	36,000
3,400		6,000	66,000	28,000	36,000	5,600		6,000	82,000	44,000	36,000
3,500		6,000	66,000	28,000	36,000	5,700		6,000	82,000	44,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	5,800		6,000	82,000	44,000	36,000
3,600		6,000	66,000	28,000	36,000	5,900		6,000	82,000	44,000	36,000
3,700		6,000	66,000	28,000	36,000	5,950	15/64	6,000	82,000	44,000	36,000
3,800		6,000	74,000	36,000	36,000	6,000		6,000	82,000	44,000	36,000
3,900		6,000	74,000	36,000	36,000	6,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	6,200		8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	6,300		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	6,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	6,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	6,600		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	6,700		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	6,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	6,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,100		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	7,200		8,000	91,000	53,000	36,000
5,000		6,000	82,000	44,000	36,000	7,300		8,000	91,000	53,000	36,000
5,100		6,000	82,000	44,000	36,000	7,400		8,000	91,000	53,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000	7,500		8,000	91,000	53,000	36,000



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d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,540	19/64	8,000	91,000	53,000	36,000	11,400		12,000	118,000	71,000	45,000
7,600		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
7,700		8,000	91,000	53,000	36,000	11,600		12,000	118,000	71,000	45,000
7,800		8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000
7,900		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
7,940	5/16	8,000	91,000	53,000	36,000	11,900		12,000	118,000	71,000	45,000
8,000		8,000	91,000	53,000	36,000	11,910	15/32	12,000	118,000	71,000	45,000
8,100		10,000	103,000	61,000	40,000	12,000		12,000	118,000	71,000	45,000
8,200		10,000	103,000	61,000	40,000	12,100		14,000	124,000	77,000	45,000
8,300		10,000	103,000	61,000	40,000	12,200		14,000	124,000	77,000	45,000
8,330	21/64	10,000	103,000	61,000	40,000	12,500		14,000	124,000	77,000	45,000
8,400		10,000	103,000	61,000	40,000	12,700	1/2	14,000	124,000	77,000	45,000
8,500		10,000	103,000	61,000	40,000	13,000		14,000	124,000	77,000	45,000
8,600		10,000	103,000	61,000	40,000	13,100	33/64	14,000	124,000	77,000	45,000
8,700		10,000	103,000	61,000	40,000	13,500		14,000	124,000	77,000	45,000
8,730	11/32	10,000	103,000	61,000	40,000	13,700		14,000	124,000	77,000	45,000
8,800		10,000	103,000	61,000	40,000	13,800		14,000	124,000	77,000	45,000
8,900		10,000	103,000	61,000	40,000	14,000		14,000	124,000	77,000	45,000
9,000		10,000	103,000	61,000	40,000	14,100		16,000	133,000	83,000	48,000
9,100		10,000	103,000	61,000	40,000	14,200		16,000	133,000	83,000	48,000
9,130	23/64	10,000	103,000	61,000	40,000	14,290	9/16	16,000	133,000	83,000	48,000
9,200		10,000	103,000	61,000	40,000	14,500		16,000	133,000	83,000	48,000
9,250		10,000	103,000	61,000	40,000	14,700		16,000	133,000	83,000	48,000
9,300		10,000	103,000	61,000	40,000	15,000		16,000	133,000	83,000	48,000
9,400		10,000	103,000	61,000	40,000	15,100		16,000	133,000	83,000	48,000
9,500		10,000	103,000	61,000	40,000	15,200		16,000	133,000	83,000	48,000
9,520	3/8	10,000	103,000	61,000	40,000	15,500		16,000	133,000	83,000	48,000
9,600		10,000	103,000	61,000	40,000	15,700		16,000	133,000	83,000	48,000
9,700		10,000	103,000	61,000	40,000	16,000		16,000	133,000	83,000	48,000
9,800		10,000	103,000	61,000	40,000	16,500		18,000	143,000	93,000	48,000
9,900		10,000	103,000	61,000	40,000	17,000		18,000	143,000	93,000	48,000
9,920	25/64	10,000	103,000	61,000	40,000	17,500		18,000	143,000	93,000	48,000
10,000		10,000	103,000	61,000	40,000	18,000		18,000	143,000	93,000	48,000
10,100		12,000	118,000	71,000	45,000	18,500		20,000	153,000	101,000	50,000
10,200		12,000	118,000	71,000	45,000	19,000		20,000	153,000	101,000	50,000
10,300		12,000	118,000	71,000	45,000	19,500		20,000	153,000	101,000	50,000
10,320	13/32	12,000	118,000	71,000	45,000	20,000		20,000	153,000	101,000	50,000
10,400		12,000	118,000	71,000	45,000						
10,500		12,000	118,000	71,000	45,000						
10,600		12,000	118,000	71,000	45,000						
10,700		12,000	118,000	71,000	45,000						
10,800		12,000	118,000	71,000	45,000						
10,900		12,000	118,000	71,000	45,000						
11,000		12,000	118,000	71,000	45,000						
11,100		12,000	118,000	71,000	45,000						
11,110	7/16	12,000	118,000	71,000	45,000						
11,200		12,000	118,000	71,000	45,000						
11,300		12,000	118,000	71,000	45,000						



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产品代号 89410



P	M	K	N	S	H
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VHM F TS100 U 3xD DIN 6537K 140° m7 R HA

芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金

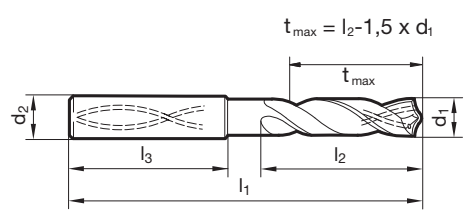
产品代号 89415



P	M	K	N	S	H
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VHM F TS100 U 3xD DIN 6537K 140° m7 R HE

芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
	33/64		107,000	60,000	45,000	5,000		6,000	66,000	28,000	36,000
			115,000	65,000	48,000	5,100		6,000	66,000	28,000	36,000
			123,000	73,000	48,000	5,160	13/64	6,000	66,000	28,000	36,000
3,000		6,000	62,000	20,000	36,000	5,200		6,000	66,000	28,000	36,000
3,100		6,000	62,000	20,000	36,000	5,300		6,000	66,000	28,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	5,400		6,000	66,000	28,000	36,000
3,200		6,000	62,000	20,000	36,000	5,500		6,000	66,000	28,000	36,000
3,250		6,000	62,000	20,000	36,000	5,550		6,000	66,000	28,000	36,000
3,300		6,000	62,000	20,000	36,000	5,560	7/32	6,000	66,000	28,000	36,000
3,400		6,000	62,000	20,000	36,000	5,600		6,000	66,000	28,000	36,000
3,500		6,000	62,000	20,000	36,000	5,700		6,000	66,000	28,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	5,800		6,000	66,000	28,000	36,000
3,600		6,000	62,000	20,000	36,000	5,900		6,000	66,000	28,000	36,000
3,700		6,000	62,000	20,000	36,000	5,950	15/64	6,000	66,000	28,000	36,000
3,800		6,000	66,000	24,000	36,000	6,000		6,000	66,000	28,000	36,000
3,900		6,000	66,000	24,000	36,000	6,100		8,000	79,000	34,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	6,200		8,000	79,000	34,000	36,000
4,000		6,000	66,000	24,000	36,000	6,300		8,000	79,000	34,000	36,000
4,100		6,000	66,000	24,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
4,200		6,000	66,000	24,000	36,000	6,400		8,000	79,000	34,000	36,000
4,300		6,000	66,000	24,000	36,000	6,500		8,000	79,000	34,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	6,600		8,000	79,000	34,000	36,000
4,400		6,000	66,000	24,000	36,000	6,700		8,000	79,000	34,000	36,000
4,500		6,000	66,000	24,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
4,600		6,000	66,000	24,000	36,000	6,800		8,000	79,000	34,000	36,000
4,650		6,000	66,000	24,000	36,000	6,900		8,000	79,000	34,000	36,000
4,700		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	7,100		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,900		6,000	66,000	28,000	36,000	7,200		8,000	79,000	41,000	36,000



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d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,300		8,000	79,000	41,000	36,000	11,110	7/16	12,000	102,000	55,000	45,000
7,400		8,000	79,000	41,000	36,000	11,200		12,000	102,000	55,000	45,000
7,500		8,000	79,000	41,000	36,000	11,300		12,000	102,000	55,000	45,000
7,540	19/64	8,000	79,000	41,000	36,000	11,400		12,000	102,000	55,000	45,000
7,600		8,000	79,000	41,000	36,000	11,500		12,000	102,000	55,000	45,000
7,700		8,000	79,000	41,000	36,000	11,600		12,000	102,000	55,000	45,000
7,800		8,000	79,000	41,000	36,000	11,700		12,000	102,000	55,000	45,000
7,900		8,000	79,000	41,000	36,000	11,800		12,000	102,000	55,000	45,000
7,940	5/16	8,000	79,000	41,000	36,000	11,900		12,000	102,000	55,000	45,000
8,000		8,000	79,000	41,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
8,100		10,000	89,000	47,000	40,000	12,000		12,000	102,000	55,000	45,000
8,200		10,000	89,000	47,000	40,000	12,100		14,000	107,000	60,000	45,000
8,300		10,000	89,000	47,000	40,000	12,200		14,000	107,000	60,000	45,000
8,330	21/64	10,000	89,000	47,000	40,000	12,300	31/64	14,000	107,000	60,000	45,000
8,400		10,000	89,000	47,000	40,000	12,500		14,000	107,000	60,000	45,000
8,500		10,000	89,000	47,000	40,000	12,700	1/2	14,000	107,000	60,000	45,000
8,600		10,000	89,000	47,000	40,000	13,000		14,000	107,000	60,000	45,000
8,700		10,000	89,000	47,000	40,000	13,200		14,000	107,000	60,000	45,000
8,730	11/32	10,000	89,000	47,000	40,000	13,300		14,000	107,000	60,000	45,000
8,800		10,000	89,000	47,000	40,000	13,500		14,000	107,000	60,000	45,000
8,900		10,000	89,000	47,000	40,000	13,700		14,000	107,000	60,000	45,000
9,000		10,000	89,000	47,000	40,000	14,000		14,000	107,000	60,000	45,000
9,100		10,000	89,000	47,000	40,000	14,200		16,000	115,000	65,000	48,000
9,130	23/64	10,000	89,000	47,000	40,000	14,290	9/16	16,000	115,000	65,000	48,000
9,200		10,000	89,000	47,000	40,000	14,400		16,000	115,000	65,000	48,000
9,250		10,000	89,000	47,000	40,000	14,500		16,000	115,000	65,000	48,000
9,300		10,000	89,000	47,000	40,000	14,600		16,000	115,000	65,000	48,000
9,400		10,000	89,000	47,000	40,000	14,700		16,000	115,000	65,000	48,000
9,500		10,000	89,000	47,000	40,000	15,000		16,000	115,000	65,000	48,000
9,520	3/8	10,000	89,000	47,000	40,000	15,200		16,000	115,000	65,000	48,000
9,600		10,000	89,000	47,000	40,000	15,500		16,000	115,000	65,000	48,000
9,700		10,000	89,000	47,000	40,000	15,700		16,000	115,000	65,000	48,000
9,800		10,000	89,000	47,000	40,000	16,000		16,000	115,000	65,000	48,000
9,900		10,000	89,000	47,000	40,000	16,100		18,000	123,000	73,000	48,000
9,920	25/64	10,000	89,000	47,000	40,000	16,500		18,000	123,000	73,000	48,000
10,000		10,000	89,000	47,000	40,000	16,900		18,000	123,000	73,000	48,000
10,100		12,000	102,000	55,000	45,000	17,000		18,000	123,000	73,000	48,000
10,200		12,000	102,000	55,000	45,000	17,300		18,000	123,000	73,000	48,000
10,300		12,000	102,000	55,000	45,000	17,500		18,000	123,000	73,000	48,000
10,320	13/32	12,000	102,000	55,000	45,000	18,000		18,000	123,000	73,000	48,000
10,400		12,000	102,000	55,000	45,000	18,500		20,000	131,000	79,000	50,000
10,500		12,000	102,000	55,000	45,000	18,900		20,000	131,000	79,000	50,000
10,600		12,000	102,000	55,000	45,000	19,000		20,000	131,000	79,000	50,000
10,700		12,000	102,000	55,000	45,000	19,500		20,000	131,000	79,000	50,000
10,800		12,000	102,000	55,000	45,000	20,000		20,000	131,000	79,000	50,000
10,900		12,000	102,000	55,000	45,000						
11,000		12,000	102,000	55,000	45,000						
11,100		12,000	102,000	55,000	45,000						

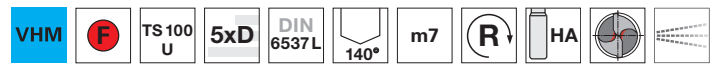


带内冷TS钻头

产品代号 89411



P	M	K	N	S	H
●	○	●	○	○	○



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金

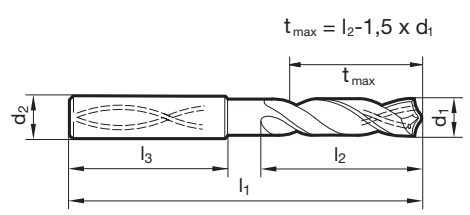
产品代号 89408



P	M	K	N	S	H
●	○	●	○	○	○



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
			133,000	83,000	48,000	5,160	13/64	6,000	82,000	44,000	36,000
3,000		6,000	66,000	28,000	36,000	5,200		6,000	82,000	44,000	36,000
3,100		6,000	66,000	28,000	36,000	5,300		6,000	82,000	44,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	5,400		6,000	82,000	44,000	36,000
3,200		6,000	66,000	28,000	36,000	5,500		6,000	82,000	44,000	36,000
3,250		6,000	66,000	28,000	36,000	5,550		6,000	82,000	44,000	36,000
3,300		6,000	66,000	28,000	36,000	5,560	7/32	6,000	82,000	44,000	36,000
3,400		6,000	66,000	28,000	36,000	5,600		6,000	82,000	44,000	36,000
3,500		6,000	66,000	28,000	36,000	5,700		6,000	82,000	44,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	5,800		6,000	82,000	44,000	36,000
3,600		6,000	66,000	28,000	36,000	5,900		6,000	82,000	44,000	36,000
3,700		6,000	66,000	28,000	36,000	5,950	15/64	6,000	82,000	44,000	36,000
3,800		6,000	74,000	36,000	36,000	6,000		6,000	82,000	44,000	36,000
3,900		6,000	74,000	36,000	36,000	6,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	6,200		8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	6,300		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	6,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	6,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	6,600		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	6,700		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	6,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	6,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,100		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	7,200		8,000	91,000	53,000	36,000
5,000		6,000	82,000	44,000	36,000	7,300		8,000	91,000	53,000	36,000
5,100		6,000	82,000	44,000	36,000	7,400		8,000	91,000	53,000	36,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,500		8,000	91,000	53,000	36,000	11,900		12,000	118,000	71,000	45,000
7,540	19/64	8,000	91,000	53,000	36,000	11,910	15/32	12,000	118,000	71,000	45,000
7,600		8,000	91,000	53,000	36,000	12,000		12,000	118,000	71,000	45,000
7,700		8,000	91,000	53,000	36,000	12,100		14,000	124,000	77,000	45,000
7,800		8,000	91,000	53,000	36,000	12,200		14,000	124,000	77,000	45,000
7,900		8,000	91,000	53,000	36,000	12,300	31/64	14,000	124,000	77,000	45,000
7,940	5/16	8,000	91,000	53,000	36,000	12,400		14,000	124,000	77,000	45,000
8,000		8,000	91,000	53,000	36,000	12,500		14,000	124,000	77,000	45,000
8,100		10,000	103,000	61,000	40,000	12,600		14,000	124,000	77,000	45,000
8,200		10,000	103,000	61,000	40,000	12,700	1/2	14,000	124,000	77,000	45,000
8,300		10,000	103,000	61,000	40,000	12,800		14,000	124,000	77,000	45,000
8,330	21/64	10,000	103,000	61,000	40,000	13,000		14,000	124,000	77,000	45,000
8,400		10,000	103,000	61,000	40,000	13,100	33/64	14,000	124,000	77,000	45,000
8,500		10,000	103,000	61,000	40,000	13,300		14,000	124,000	77,000	45,000
8,600		10,000	103,000	61,000	40,000	13,500		14,000	124,000	77,000	45,000
8,700		10,000	103,000	61,000	40,000	13,700		14,000	124,000	77,000	45,000
8,730	11/32	10,000	103,000	61,000	40,000	13,800		14,000	124,000	77,000	45,000
8,800		10,000	103,000	61,000	40,000	14,000		14,000	124,000	77,000	45,000
8,900		10,000	103,000	61,000	40,000	14,100		16,000	133,000	83,000	48,000
9,000		10,000	103,000	61,000	40,000	14,200		16,000	133,000	83,000	48,000
9,100		10,000	103,000	61,000	40,000	14,290	9/16	16,000	133,000	83,000	48,000
9,130	23/64	10,000	103,000	61,000	40,000	14,500		16,000	133,000	83,000	48,000
9,200		10,000	103,000	61,000	40,000	14,700		16,000	133,000	83,000	48,000
9,250		10,000	103,000	61,000	40,000	14,800		16,000	133,000	83,000	48,000
9,300		10,000	103,000	61,000	40,000	15,000		16,000	133,000	83,000	48,000
9,400		10,000	103,000	61,000	40,000	15,100		16,000	133,000	83,000	48,000
9,500		10,000	103,000	61,000	40,000	15,200		16,000	133,000	83,000	48,000
9,520	3/8	10,000	103,000	61,000	40,000	15,300		16,000	133,000	83,000	48,000
9,600		10,000	103,000	61,000	40,000	15,500		16,000	133,000	83,000	48,000
9,700		10,000	103,000	61,000	40,000	15,700		16,000	133,000	83,000	48,000
9,800		10,000	103,000	61,000	40,000	15,800		16,000	133,000	83,000	48,000
9,900		10,000	103,000	61,000	40,000	16,000		16,000	133,000	83,000	48,000
9,920	25/64	10,000	103,000	61,000	40,000	16,500		18,000	143,000	93,000	48,000
10,000		10,000	103,000	61,000	40,000	16,900		18,000	143,000	93,000	48,000
10,100		12,000	118,000	71,000	45,000	17,000		18,000	143,000	93,000	48,000
10,200		12,000	118,000	71,000	45,000	17,500		18,000	143,000	93,000	48,000
10,300		12,000	118,000	71,000	45,000	18,000		18,000	143,000	93,000	48,000
10,320	13/32	12,000	118,000	71,000	45,000	18,500		20,000	153,000	101,000	50,000
10,400		12,000	118,000	71,000	45,000	18,900		20,000	153,000	101,000	50,000
10,500		12,000	118,000	71,000	45,000	19,000		20,000	153,000	101,000	50,000
10,600		12,000	118,000	71,000	45,000	19,050	3/4	20,000	153,000	101,000	50,000
10,700		12,000	118,000	71,000	45,000	19,500		20,000	153,000	101,000	50,000
10,800		12,000	118,000	71,000	45,000	20,000		20,000	153,000	101,000	50,000
10,900		12,000	118,000	71,000	45,000						
11,000		12,000	118,000	71,000	45,000						
11,100	7/16	12,000	118,000	71,000	45,000						
11,110		12,000	118,000	71,000	45,000						
11,200		12,000	118,000	71,000	45,000						
11,300		12,000	118,000	71,000	45,000						
11,400		12,000	118,000	71,000	45,000						
11,500		12,000	118,000	71,000	45,000						
11,600		12,000	118,000	71,000	45,000						
11,700		12,000	118,000	71,000	45,000						
11,800		12,000	118,000	71,000	45,000						



带内冷TS钻头

产品代号 89412



P	M	K	N	S	H
●	○	●	○	○	○



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金

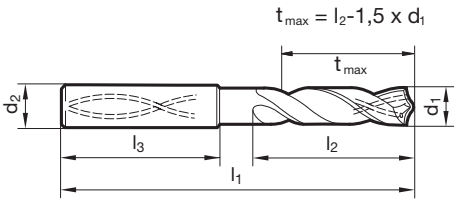
产品代号 89416



P	M	K	N	S	H
●	○	●	○	○	○



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000	5,200		6,000	90,000	50,000	36,000
3,100		6,000	70,000	30,000	36,000	5,300		6,000	90,000	50,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000	5,400		6,000	97,000	57,000	36,000
3,200		6,000	70,000	30,000	36,000	5,500		6,000	97,000	57,000	36,000
3,250		6,000	70,000	30,000	36,000	5,700		6,000	97,000	57,000	36,000
3,300		6,000	70,000	30,000	36,000	5,800		6,000	97,000	57,000	36,000
3,400		6,000	75,000	35,500	36,000	5,900		6,000	97,000	57,000	36,000
3,500		6,000	75,000	35,500	36,000	5,950	15/64	6,000	97,000	57,000	36,000
3,570	9/64	6,000	75,000	35,500	36,000	6,000		6,000	97,000	57,000	36,000
3,600		6,000	75,000	35,500	36,000	6,200		8,000	106,000	66,000	36,000
3,700		6,000	75,000	35,500	36,000	6,300		8,000	106,000	66,000	36,000
3,800		6,000	75,000	37,500	36,000	6,350	1/4	8,000	106,000	66,000	36,000
3,900		6,000	75,000	37,500	36,000	6,500		8,000	106,000	66,000	36,000
3,970	5/32	6,000	75,000	37,500	36,000	6,600		8,000	106,000	66,000	36,000
4,000		6,000	75,000	37,500	36,000	6,700		8,000	106,000	66,000	36,000
4,100		6,000	75,000	37,500	36,000	6,800		8,000	106,000	66,000	36,000
4,200		6,000	75,000	37,500	36,000	6,900		8,000	116,000	76,000	36,000
4,300		6,000	85,000	45,000	36,000	7,000		8,000	116,000	76,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000	7,100		8,000	116,000	76,000	36,000
4,400		6,000	85,000	45,000	36,000	7,200		8,000	116,000	76,000	36,000
4,500		6,000	85,000	45,000	36,000	7,500		8,000	116,000	76,000	36,000
4,600		6,000	85,000	45,000	36,000	7,600		8,000	116,000	76,000	36,000
4,650		6,000	85,000	45,000	36,000	7,700		8,000	116,000	76,000	36,000
4,700		6,000	85,000	45,000	36,000	7,800		8,000	116,000	76,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000	8,000		8,000	116,000	76,000	36,000
4,800		6,000	90,000	50,000	36,000	8,100		10,000	131,000	87,000	40,000
4,900		6,000	90,000	50,000	36,000	8,200		10,000	131,000	87,000	40,000
5,000		6,000	90,000	50,000	36,000	8,400		10,000	131,000	87,000	40,000
5,100		6,000	90,000	50,000	36,000	8,500		10,000	131,000	87,000	40,000
5,160	13/64	6,000	90,000	50,000	36,000	8,600		10,000	131,000	87,000	40,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
8,700		10,000	131,000	87,000	40,000	14,000		14,000	182,000	133,000	45,000
8,800		10,000	131,000	87,000	40,000	14,100		16,000	204,000	152,000	48,000
9,000		10,000	131,000	87,000	40,000	14,200		16,000	204,000	152,000	48,000
9,100		10,000	139,000	95,000	40,000	14,500		16,000	204,000	152,000	48,000
9,200		10,000	139,000	95,000	40,000	15,000		16,000	204,000	152,000	48,000
9,250		10,000	139,000	95,000	40,000	15,100		16,000	204,000	152,000	48,000
9,300		10,000	139,000	95,000	40,000	15,500		16,000	204,000	152,000	48,000
9,400		10,000	139,000	95,000	40,000	16,000		16,000	204,000	152,000	48,000
9,500		10,000	139,000	95,000	40,000	16,500		18,000	223,000	171,000	48,000
9,520	3/8	10,000	139,000	95,000	40,000	16,900		18,000	223,000	171,000	48,000
9,700		10,000	139,000	95,000	40,000	17,000		18,000	223,000	171,000	48,000
9,800		10,000	139,000	95,000	40,000	17,500		18,000	223,000	171,000	48,000
9,900		10,000	139,000	95,000	40,000	18,000		18,000	223,000	171,000	48,000
10,000		10,000	139,000	95,000	40,000	18,500		20,000	244,000	190,000	50,000
10,200		12,000	155,000	106,000	45,000	18,900		20,000	244,000	190,000	50,000
10,300		12,000	155,000	106,000	45,000	19,000		20,000	244,000	190,000	50,000
10,500		12,000	155,000	106,000	45,000	19,050	3/4	20,000	244,000	190,000	50,000
10,800		12,000	155,000	106,000	45,000	19,500		20,000	244,000	190,000	50,000
11,000		12,000	155,000	106,000	45,000	20,000		20,000	244,000	190,000	50,000
11,200		12,000	163,000	114,000	45,000						
11,500		12,000	163,000	114,000	45,000						
11,800		12,000	163,000	114,000	45,000						
12,000		12,000	163,000	114,000	45,000						
12,100		14,000	182,000	133,000	45,000						
12,200		14,000	182,000	133,000	45,000						
12,500		14,000	182,000	133,000	45,000						
12,700	1/2	14,000	182,000	133,000	45,000						
13,000		14,000	182,000	133,000	45,000						
13,100	33/64	14,000	182,000	133,000	45,000						
13,500		14,000	182,000	133,000	45,000						



带内冷TS钻头

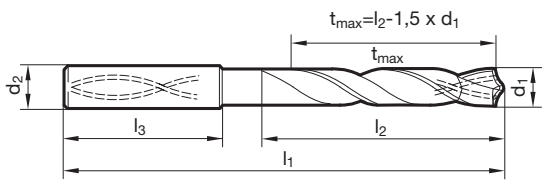
产品代号 89418



P	M	K	N	S	H
●	○	●	○	○	○



芯厚 ≥ Ø 3,000 • 双后刀面 • 刀尖涂层 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 钢 (合金/非合金), 强度小于 1200N/mm² • 铸件材料 • 青铜、黄铜 • 高硅铝合金

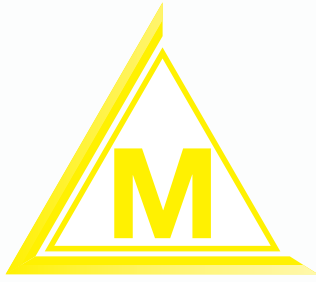


d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	90,000	50,000	36,000	7,000		8,000	146,000	108,000	36,000
3,100		6,000	90,000	50,000	36,000	7,100		8,000	146,000	108,000	36,000
3,170	1/8	6,000	90,000	50,000	36,000	7,200		8,000	146,000	108,000	36,000
3,200		6,000	90,000	50,000	36,000	7,300		8,000	146,000	108,000	36,000
3,300		6,000	90,000	50,000	36,000	7,400		8,000	146,000	108,000	36,000
3,400		6,000	90,000	50,000	36,000	7,500		8,000	146,000	108,000	36,000
3,500		6,000	90,000	50,000	36,000	7,600		8,000	146,000	108,000	36,000
3,600		6,000	90,000	50,000	36,000	7,700		8,000	146,000	108,000	36,000
3,700		6,000	90,000	50,000	36,000	7,800		8,000	146,000	108,000	36,000
3,800		6,000	102,000	64,000	36,000	7,900		8,000	146,000	108,000	36,000
3,900		6,000	102,000	64,000	36,000	8,000		8,000	146,000	108,000	36,000
4,000		6,000	102,000	64,000	36,000	8,100		10,000	162,000	120,000	40,000
4,100		6,000	102,000	64,000	36,000	8,200		10,000	162,000	120,000	40,000
4,200		6,000	102,000	64,000	36,000	8,300		10,000	162,000	120,000	40,000
4,300		6,000	102,000	64,000	36,000	8,400		10,000	162,000	120,000	40,000
4,400		6,000	102,000	64,000	36,000	8,500		10,000	162,000	120,000	40,000
4,500		6,000	102,000	64,000	36,000	8,600		10,000	162,000	120,000	40,000
4,600		6,000	102,000	64,000	36,000	8,700		10,000	162,000	120,000	40,000
4,700		6,000	102,000	64,000	36,000	8,800		10,000	162,000	120,000	40,000
4,800		6,000	116,000	78,000	36,000	8,900		10,000	162,000	120,000	40,000
4,900		6,000	116,000	78,000	36,000	9,000		10,000	162,000	120,000	40,000
5,000		6,000	116,000	78,000	36,000	9,100		10,000	162,000	120,000	40,000
5,100		6,000	116,000	78,000	36,000	9,200		10,000	162,000	120,000	40,000
5,200		6,000	116,000	78,000	36,000	9,300		10,000	162,000	120,000	40,000
5,300		6,000	116,000	78,000	36,000	9,400		10,000	162,000	120,000	40,000
5,400		6,000	116,000	78,000	36,000	9,500		10,000	162,000	120,000	40,000
5,500		6,000	116,000	78,000	36,000	9,520	3/8	10,000	162,000	120,000	40,000
5,600		6,000	116,000	78,000	36,000	9,600		10,000	162,000	120,000	40,000
5,700		6,000	116,000	78,000	36,000	9,700		10,000	162,000	120,000	40,000
5,800		6,000	116,000	78,000	36,000	9,800		10,000	162,000	120,000	40,000
5,900		6,000	116,000	78,000	36,000	9,900		10,000	162,000	120,000	40,000
6,000		6,000	116,000	78,000	36,000	10,000		10,000	162,000	120,000	40,000
6,100		8,000	146,000	108,000	36,000	10,200		12,000	204,000	156,000	45,000
6,200		8,000	146,000	108,000	36,000	10,500		12,000	204,000	156,000	45,000
6,300		8,000	146,000	108,000	36,000	11,000		12,000	204,000	156,000	45,000
6,350	1/4	8,000	146,000	108,000	36,000	11,500		12,000	204,000	156,000	45,000
6,400		8,000	146,000	108,000	36,000	12,000		12,000	204,000	156,000	45,000
6,500		8,000	146,000	108,000	36,000	12,500		14,000	230,000	182,000	45,000
6,600		8,000	146,000	108,000	36,000	12,700	1/2	14,000	230,000	182,000	45,000
6,700		8,000	146,000	108,000	36,000	13,000		14,000	230,000	182,000	45,000
6,800		8,000	146,000	108,000	36,000	13,500		14,000	230,000	182,000	45,000
6,900		8,000	146,000	108,000	36,000	14,000		14,000	230,000	182,000	45,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
14,500		16,000	260,000	208,000	48,000	20,000		20,000	310,000	258,000	50,000
15,000		16,000	260,000	208,000	48,000						
15,500		16,000	260,000	208,000	48,000						
16,000		16,000	260,000	208,000	48,000						
16,500		18,000	285,000	234,000	48,000						
17,000		18,000	285,000	234,000	48,000						
17,500		18,000	285,000	234,000	48,000						
18,000		18,000	285,000	234,000	48,000						
18,500		20,000	310,000	258,000	50,000						
19,000		20,000	310,000	258,000	50,000						
19,050	3/4	20,000	310,000	258,000	50,000						
19,500		20,000	310,000	258,000	50,000						



TS 100 INOX

▼ 优势和特性

- ▼ 在不锈钢、耐酸和耐热钢、因科镍合金、哈氏合金、镍铬合金、钛和钛合金中实现准确钻孔和长使用寿命的专家
- ▼ 使用 TS 100 INOX 可实现高进给速度——可快速排屑并防止产生切屑瘤
- ▼ 冷却通道具备最大横截面,有助于排出热量和切屑并防止产生切屑瘤——确保工艺安全的钻孔



不锈钢、耐酸和耐热钢、钛和钛合金、特殊合金

TS 100 INOX

特殊尖点打薄实现精确钻孔

专为高合金材料切削加工设计的锋利几何形状和刀刃缘预加工

最大的冷却通道横截面确保完美的冷却润滑

极为平滑的耐磨 AlTiN 纳米涂层确保在不锈钢和耐酸钢中的效果良好

开放式排屑槽设计, 即使长屑材料也可以实现完美排屑



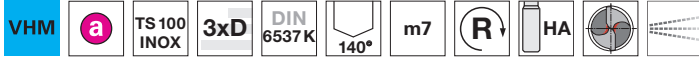


带内冷TS钻头

产品代号 89450



P	M	K	N	S	H
○	●			○	



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 不锈钢/耐酸/耐热钢 • 钛及钛合金 • 镍合金, 哈氏合金, 锰合金

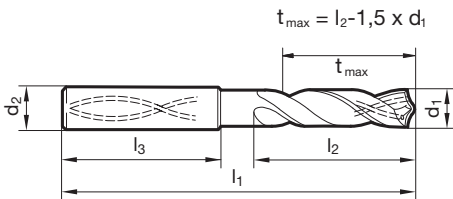
产品代号 89550



P	M	K	N	S	H
○	●			○	



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 不锈钢/耐酸/耐热钢 • 钛及钛合金 • 镍合金, 哈氏合金, 锰合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	5,200		6,000	66,000	28,000	36,000
3,100		6,000	62,000	20,000	36,000	5,300		6,000	66,000	28,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	5,400		6,000	66,000	28,000	36,000
3,200		6,000	62,000	20,000	36,000	5,500		6,000	66,000	28,000	36,000
3,250		6,000	62,000	20,000	36,000	5,550		6,000	66,000	28,000	36,000
3,300		6,000	62,000	20,000	36,000	5,560	7/32	6,000	66,000	28,000	36,000
3,400		6,000	62,000	20,000	36,000	5,600		6,000	66,000	28,000	36,000
3,500		6,000	62,000	20,000	36,000	5,700		6,000	66,000	28,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	5,800		6,000	66,000	28,000	36,000
3,600		6,000	62,000	20,000	36,000	5,900		6,000	66,000	28,000	36,000
3,700		6,000	62,000	20,000	36,000	5,950	15/64	6,000	66,000	28,000	36,000
3,800		6,000	66,000	24,000	36,000	6,000		6,000	66,000	28,000	36,000
3,900		6,000	66,000	24,000	36,000	6,100		8,000	79,000	34,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	6,200		8,000	79,000	34,000	36,000
4,000		6,000	66,000	24,000	36,000	6,300		8,000	79,000	34,000	36,000
4,100		6,000	66,000	24,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
4,200		6,000	66,000	24,000	36,000	6,400		8,000	79,000	34,000	36,000
4,300		6,000	66,000	24,000	36,000	6,500		8,000	79,000	34,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	6,600		8,000	79,000	34,000	36,000
4,400		6,000	66,000	24,000	36,000	6,700		8,000	79,000	34,000	36,000
4,500		6,000	66,000	24,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
4,600		6,000	66,000	24,000	36,000	6,800		8,000	79,000	34,000	36,000
4,650		6,000	66,000	24,000	36,000	6,900		8,000	79,000	34,000	36,000
4,700		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	7,100		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,900		6,000	66,000	28,000	36,000	7,200		8,000	79,000	41,000	36,000
5,000		6,000	66,000	28,000	36,000	7,300		8,000	79,000	41,000	36,000
5,100		6,000	66,000	28,000	36,000	7,400		8,000	79,000	41,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000	7,500		8,000	79,000	41,000	36,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,540	19/64	8,000	79,000	41,000	36,000	10,900		12,000	102,000	55,000	45,000
7,600		8,000	79,000	41,000	36,000	11,000		12,000	102,000	55,000	45,000
7,700		8,000	79,000	41,000	36,000	11,100		12,000	102,000	55,000	45,000
7,800		8,000	79,000	41,000	36,000	11,110	7/16	12,000	102,000	55,000	45,000
7,900		8,000	79,000	41,000	36,000	11,200		12,000	102,000	55,000	45,000
7,940	5/16	8,000	79,000	41,000	36,000	11,300		12,000	102,000	55,000	45,000
8,000		8,000	79,000	41,000	36,000	11,400		12,000	102,000	55,000	45,000
8,100		10,000	89,000	47,000	40,000	11,500		12,000	102,000	55,000	45,000
8,200		10,000	89,000	47,000	40,000	11,600		12,000	102,000	55,000	45,000
8,300		10,000	89,000	47,000	40,000	11,700		12,000	102,000	55,000	45,000
8,330	21/64	10,000	89,000	47,000	40,000	11,800		12,000	102,000	55,000	45,000
8,400		10,000	89,000	47,000	40,000	11,900		12,000	102,000	55,000	45,000
8,500		10,000	89,000	47,000	40,000	11,910	15/32	12,000	102,000	55,000	45,000
8,600		10,000	89,000	47,000	40,000	12,000		12,000	102,000	55,000	45,000
8,700		10,000	89,000	47,000	40,000	12,200		14,000	107,000	60,000	45,000
8,730	11/32	10,000	89,000	47,000	40,000	12,500		14,000	107,000	60,000	45,000
8,800		10,000	89,000	47,000	40,000	12,700	1/2	14,000	107,000	60,000	45,000
8,900		10,000	89,000	47,000	40,000	13,000		14,000	107,000	60,000	45,000
9,000		10,000	89,000	47,000	40,000	13,500		14,000	107,000	60,000	45,000
9,100		10,000	89,000	47,000	40,000	13,700		14,000	107,000	60,000	45,000
9,130	23/64	10,000	89,000	47,000	40,000	14,000		14,000	107,000	60,000	45,000
9,200		10,000	89,000	47,000	40,000	14,200		16,000	115,000	65,000	48,000
9,250		10,000	89,000	47,000	40,000	14,290	9/16	16,000	115,000	65,000	48,000
9,300		10,000	89,000	47,000	40,000	14,500		16,000	115,000	65,000	48,000
9,400		10,000	89,000	47,000	40,000	14,700		16,000	115,000	65,000	48,000
9,500		10,000	89,000	47,000	40,000	15,000		16,000	115,000	65,000	48,000
9,520	3/8	10,000	89,000	47,000	40,000	15,200		16,000	115,000	65,000	48,000
9,600		10,000	89,000	47,000	40,000	15,500		16,000	115,000	65,000	48,000
9,700		10,000	89,000	47,000	40,000	15,700		16,000	115,000	65,000	48,000
9,800		10,000	89,000	47,000	40,000	16,000		16,000	115,000	65,000	48,000
9,900		10,000	89,000	47,000	40,000	16,500		18,000	123,000	73,000	48,000
9,920	25/64	10,000	89,000	47,000	40,000	17,000		18,000	123,000	73,000	48,000
10,000		10,000	89,000	47,000	40,000	17,500		18,000	123,000	73,000	48,000
10,100		12,000	102,000	55,000	45,000	18,000		18,000	123,000	73,000	48,000
10,200		12,000	102,000	55,000	45,000	18,500		20,000	131,000	79,000	50,000
10,300		12,000	102,000	55,000	45,000	19,000		20,000	131,000	79,000	50,000
10,320	13/32	12,000	102,000	55,000	45,000	19,500		20,000	131,000	79,000	50,000
10,400		12,000	102,000	55,000	45,000	20,000		20,000	131,000	79,000	50,000
10,500		12,000	102,000	55,000	45,000						
10,600		12,000	102,000	55,000	45,000						
10,700		12,000	102,000	55,000	45,000						
10,800		12,000	102,000	55,000	45,000						

TS 100 INOX

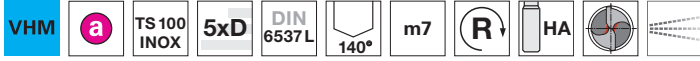


带内冷TS钻头

产品代号 89451



P	M	K	N	S	H
○	●			○	



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 不锈钢/耐酸/耐热钢 • 钛及钛合金 • 镍合金, 哈氏合金, 锰合金

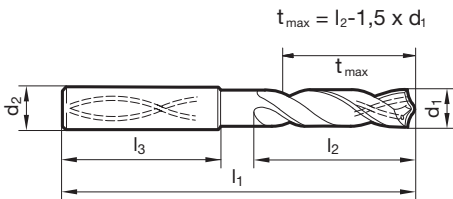
产品代号 89551



P	M	K	N	S	H
○	●			○	



芯厚 ≥ Ø 3,000 • 双后刀面 • 精密磨削过的主切削刃 • 优化了的切削几何参数
 不锈钢/耐酸/耐热钢 • 钛及钛合金 • 镍合金, 哈氏合金, 锰合金



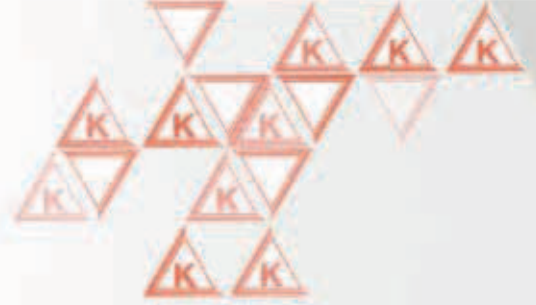
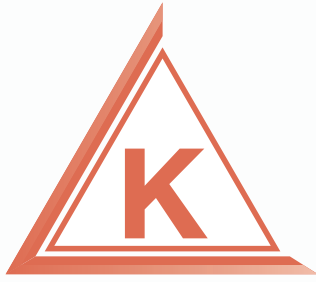
d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	5,200		6,000	82,000	44,000	36,000
3,100		6,000	66,000	28,000	36,000	5,300		6,000	82,000	44,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	5,400		6,000	82,000	44,000	36,000
3,200		6,000	66,000	28,000	36,000	5,500		6,000	82,000	44,000	36,000
3,250		6,000	66,000	28,000	36,000	5,550		6,000	82,000	44,000	36,000
3,300		6,000	66,000	28,000	36,000	5,560	7/32	6,000	82,000	44,000	36,000
3,400		6,000	66,000	28,000	36,000	5,600		6,000	82,000	44,000	36,000
3,500		6,000	66,000	28,000	36,000	5,700		6,000	82,000	44,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	5,800		6,000	82,000	44,000	36,000
3,600		6,000	66,000	28,000	36,000	5,900		6,000	82,000	44,000	36,000
3,700		6,000	66,000	28,000	36,000	5,950	15/64	6,000	82,000	44,000	36,000
3,800		6,000	74,000	36,000	36,000	6,000		6,000	82,000	44,000	36,000
3,900		6,000	74,000	36,000	36,000	6,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	6,200		8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	6,300		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	6,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	6,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	6,600		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	6,700		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	6,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	6,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,100		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	7,200		8,000	91,000	53,000	36,000
5,000		6,000	82,000	44,000	36,000	7,300		8,000	91,000	53,000	36,000
5,100		6,000	82,000	44,000	36,000	7,400		8,000	91,000	53,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000	7,500		8,000	91,000	53,000	36,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,540	19/64	8,000	91,000	53,000	36,000	10,900		12,000	118,000	71,000	45,000
7,600		8,000	91,000	53,000	36,000	11,000		12,000	118,000	71,000	45,000
7,700		8,000	91,000	53,000	36,000	11,100		12,000	118,000	71,000	45,000
7,800		8,000	91,000	53,000	36,000	11,110	7/16	12,000	118,000	71,000	45,000
7,900		8,000	91,000	53,000	36,000	11,200		12,000	118,000	71,000	45,000
7,940	5/16	8,000	91,000	53,000	36,000	11,300		12,000	118,000	71,000	45,000
8,000		8,000	91,000	53,000	36,000	11,400		12,000	118,000	71,000	45,000
8,100		10,000	103,000	61,000	40,000	11,500		12,000	118,000	71,000	45,000
8,200		10,000	103,000	61,000	40,000	11,600		12,000	118,000	71,000	45,000
8,300		10,000	103,000	61,000	40,000	11,700		12,000	118,000	71,000	45,000
8,330	21/64	10,000	103,000	61,000	40,000	11,800		12,000	118,000	71,000	45,000
8,400		10,000	103,000	61,000	40,000	11,900		12,000	118,000	71,000	45,000
8,500		10,000	103,000	61,000	40,000	11,910	15/32	12,000	118,000	71,000	45,000
8,600		10,000	103,000	61,000	40,000	12,000		12,000	118,000	71,000	45,000
8,700		10,000	103,000	61,000	40,000	12,200		14,000	124,000	77,000	45,000
8,730	11/32	10,000	103,000	61,000	40,000	12,500		14,000	124,000	77,000	45,000
8,800		10,000	103,000	61,000	40,000	12,700	1/2	14,000	124,000	77,000	45,000
8,900		10,000	103,000	61,000	40,000	13,000		14,000	124,000	77,000	45,000
9,000		10,000	103,000	61,000	40,000	13,500		14,000	124,000	77,000	45,000
9,100		10,000	103,000	61,000	40,000	13,700		14,000	124,000	77,000	45,000
9,130	23/64	10,000	103,000	61,000	40,000	14,000		14,000	124,000	77,000	45,000
9,200		10,000	103,000	61,000	40,000	14,200		16,000	133,000	83,000	48,000
9,250		10,000	103,000	61,000	40,000	14,290	9/16	16,000	133,000	83,000	48,000
9,300		10,000	103,000	61,000	40,000	14,500		16,000	133,000	83,000	48,000
9,400		10,000	103,000	61,000	40,000	14,700		16,000	133,000	83,000	48,000
9,500		10,000	103,000	61,000	40,000	15,000		16,000	133,000	83,000	48,000
9,520	3/8	10,000	103,000	61,000	40,000	15,200		16,000	133,000	83,000	48,000
9,600		10,000	103,000	61,000	40,000	15,500		16,000	133,000	83,000	48,000
9,700		10,000	103,000	61,000	40,000	15,700		16,000	133,000	83,000	48,000
9,800		10,000	103,000	61,000	40,000	16,000		16,000	133,000	83,000	48,000
9,900		10,000	103,000	61,000	40,000	16,500		18,000	143,000	93,000	48,000
9,920	25/64	10,000	103,000	61,000	40,000	17,000		18,000	143,000	93,000	48,000
10,000		10,000	103,000	61,000	40,000	17,500		18,000	143,000	93,000	48,000
10,100		12,000	118,000	71,000	45,000	18,000		18,000	143,000	93,000	48,000
10,200		12,000	118,000	71,000	45,000	18,500		20,000	153,000	101,000	50,000
10,300		12,000	118,000	71,000	45,000	19,000		20,000	153,000	101,000	50,000
10,320	13/32	12,000	118,000	71,000	45,000	19,500		20,000	153,000	101,000	50,000
10,400		12,000	118,000	71,000	45,000	20,000		20,000	153,000	101,000	50,000
10,500		12,000	118,000	71,000	45,000						
10,600		12,000	118,000	71,000	45,000						
10,700		12,000	118,000	71,000	45,000						
10,800		12,000	118,000	71,000	45,000						

TS 100 INOX



TS 100 R

▼ 优势和特性

- ▼ 特殊几何形状和获得专利的弧形钻尖确保在加工 GGV(蠕墨铸铁)、ADI(等温淬火球墨铸铁)以及所有传统铸造材料时,实现最高性能和经济效益
- ▼ 通过独特协调正面轮廓和槽轮廓,TS 100 R 可极其稳定、尺寸精确与工艺安全地加工
- ▼ 适合钻孔深度 $\leq 7 \times D$



灰口铸铁、可锻铸铁和球墨铸铁、GGV/ADI/CDI

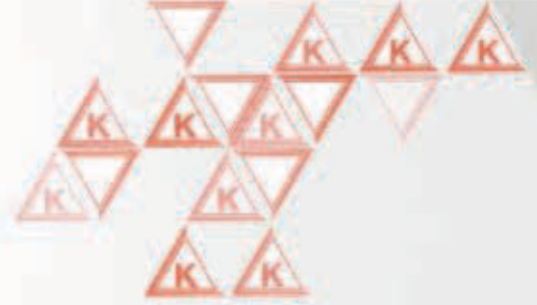
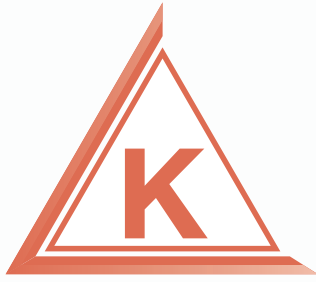
专利弧形钻尖显著降低磨损

采用特殊尖点打薄的坚固尖端磨削保证准确钻孔和尺寸精确的孔洞

nanoFIRE 涂层在研磨铸造材料中实现最高耐磨强度

TS 100 R | TS 150 GG

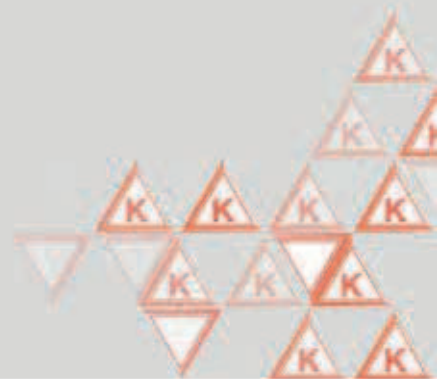




TS 150 GG

▼ 优势和特性

- ▼ 带冷却通道的高性能硬质合金钻头用于加工短切屑材料, 例如铸铁、灰口铸铁、可锻铸铁和球墨铸铁
- ▼ 用于同心度、直线度高的孔加工
- ▼ 根据要求也可提供涂层



灰口铸铁、可锻铸铁和球墨铸铁

特殊调整的刀刃几何形状实现经济加工几乎所有铸造材料

特殊芯厚减薄处理实现高精度的孔径及直线度

抛光规格确保最佳排屑

四个导向倒角确保孔洞平直度和圆度



HARTNER

带内冷TS钻头

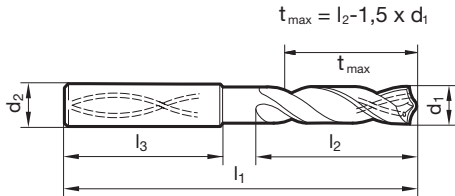
产品代号 89420



P	M	K	N	S	H
		•			



芯厚 ≥ Ø 3,000 • 专利弧形钻尖 • 直型切削刃 (通过刃修正)
 蠕墨铸铁GGV 和 ADI、CDI • 灰铸铁,可锻铸铁和球墨铸铁



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,400		10,000	103,000	61,000	40,000	13,000		14,000	124,000	77,000	45,000
9,500		10,000	103,000	61,000	40,000	13,100	33/64	14,000	124,000	77,000	45,000
9,520	3/8	10,000	103,000	61,000	40,000	13,300		14,000	124,000	77,000	45,000
9,600		10,000	103,000	61,000	40,000	13,400		14,000	124,000	77,000	45,000
9,700		10,000	103,000	61,000	40,000	13,500		14,000	124,000	77,000	45,000
9,800		10,000	103,000	61,000	40,000	13,700		14,000	124,000	77,000	45,000
9,900		10,000	103,000	61,000	40,000	13,800		14,000	124,000	77,000	45,000
9,920	25/64	10,000	103,000	61,000	40,000	13,900		14,000	124,000	77,000	45,000
10,000		10,000	103,000	61,000	40,000	14,000		14,000	124,000	77,000	45,000
10,100		12,000	118,000	71,000	45,000	14,100		16,000	133,000	83,000	48,000
10,200		12,000	118,000	71,000	45,000	14,200		16,000	133,000	83,000	48,000
10,300		12,000	118,000	71,000	45,000	14,290	9/16	16,000	133,000	83,000	48,000
10,320	13/32	12,000	118,000	71,000	45,000	14,300		16,000	133,000	83,000	48,000
10,400		12,000	118,000	71,000	45,000	14,400		16,000	133,000	83,000	48,000
10,500		12,000	118,000	71,000	45,000	14,500		16,000	133,000	83,000	48,000
10,600		12,000	118,000	71,000	45,000	14,600		16,000	133,000	83,000	48,000
10,700		12,000	118,000	71,000	45,000	14,700		16,000	133,000	83,000	48,000
10,720	27/64	12,000	118,000	71,000	45,000	14,900		16,000	133,000	83,000	48,000
10,800		12,000	118,000	71,000	45,000	15,000		16,000	133,000	83,000	48,000
10,900		12,000	118,000	71,000	45,000	15,100		16,000	133,000	83,000	48,000
11,000		12,000	118,000	71,000	45,000	15,200		16,000	133,000	83,000	48,000
11,100		12,000	118,000	71,000	45,000	15,300		16,000	133,000	83,000	48,000
11,110	7/16	12,000	118,000	71,000	45,000	15,400		16,000	133,000	83,000	48,000
11,200		12,000	118,000	71,000	45,000	15,500		16,000	133,000	83,000	48,000
11,300		12,000	118,000	71,000	45,000	15,600		16,000	133,000	83,000	48,000
11,400		12,000	118,000	71,000	45,000	15,700		16,000	133,000	83,000	48,000
11,500		12,000	118,000	71,000	45,000	15,800		16,000	133,000	83,000	48,000
11,600		12,000	118,000	71,000	45,000	15,870	5/8	16,000	133,000	83,000	48,000
11,700		12,000	118,000	71,000	45,000	15,900		16,000	133,000	83,000	48,000
11,800		12,000	118,000	71,000	45,000	16,000		16,000	133,000	83,000	48,000
11,900		12,000	118,000	71,000	45,000	16,500		18,000	143,000	93,000	48,000
11,910	15/32	12,000	118,000	71,000	45,000	16,670	21/32	18,000	143,000	93,000	48,000
12,000		12,000	118,000	71,000	45,000	17,000		18,000	143,000	93,000	48,000
12,100		14,000	124,000	77,000	45,000	17,500		18,000	143,000	93,000	48,000
12,200		14,000	124,000	77,000	45,000	18,000		18,000	143,000	93,000	48,000
12,300	31/64	14,000	124,000	77,000	45,000	18,500		20,000	153,000	101,000	50,000
12,400		14,000	124,000	77,000	45,000	19,000		20,000	153,000	101,000	50,000
12,500		14,000	124,000	77,000	45,000	19,500		20,000	153,000	101,000	50,000
12,600		14,000	124,000	77,000	45,000	20,000		20,000	153,000	101,000	50,000
12,700	1/2	14,000	124,000	77,000	45,000						
12,800		14,000	124,000	77,000	45,000						
12,900		14,000	124,000	77,000	45,000						



HARTNER

带内冷TS钻头

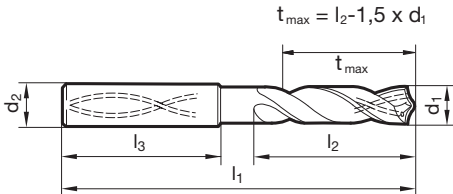
产品代号 89421



P	M	K	N	S	H
		•			



芯厚 ≥ Ø 4,000 • 专利弧形钻尖 • 直型切削刃 (通过刃修正)
 蠕墨铸铁GGV 和 ADI、CDI • 灰铸铁,可锻铸铁和球墨铸铁



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
4,000		6,000	75,000	37,500	36,000	7,200		8,000	116,000	76,000	36,000
4,100		6,000	75,000	37,500	36,000	7,300		8,000	116,000	76,000	36,000
4,200		6,000	75,000	37,500	36,000	7,400		8,000	116,000	76,000	36,000
4,300		6,000	85,000	45,000	36,000	7,500		8,000	116,000	76,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000	7,540	19/64	8,000	116,000	76,000	36,000
4,400		6,000	85,000	45,000	36,000	7,600		8,000	116,000	76,000	36,000
4,500		6,000	85,000	45,000	36,000	7,700		8,000	116,000	76,000	36,000
4,600		6,000	85,000	45,000	36,000	7,800		8,000	116,000	76,000	36,000
4,650		6,000	85,000	45,000	36,000	7,900		8,000	116,000	76,000	36,000
4,700		6,000	85,000	45,000	36,000	7,940	5/16	8,000	116,000	76,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000	8,000		8,000	116,000	76,000	36,000
4,800		6,000	90,000	50,000	36,000	8,100		10,000	131,000	87,000	40,000
4,900		6,000	90,000	50,000	36,000	8,200		10,000	131,000	87,000	40,000
5,000		6,000	90,000	50,000	36,000	8,300		10,000	131,000	87,000	40,000
5,100		6,000	90,000	50,000	36,000	8,330	21/64	10,000	131,000	87,000	40,000
5,160	13/64	6,000	90,000	50,000	36,000	8,400		10,000	131,000	87,000	40,000
5,200		6,000	90,000	50,000	36,000	8,500		10,000	131,000	87,000	40,000
5,300		6,000	90,000	50,000	36,000	8,600		10,000	131,000	87,000	40,000
5,400		6,000	97,000	57,000	36,000	8,700		10,000	131,000	87,000	40,000
5,500		6,000	97,000	57,000	36,000	8,730	11/32	10,000	131,000	87,000	40,000
5,550		6,000	97,000	57,000	36,000	8,800		10,000	131,000	87,000	40,000
5,560	7/32	6,000	97,000	57,000	36,000	8,900		10,000	131,000	87,000	40,000
5,600		6,000	97,000	57,000	36,000	9,000		10,000	131,000	87,000	40,000
5,700		6,000	97,000	57,000	36,000	9,100		10,000	139,000	95,000	40,000
5,800		6,000	97,000	57,000	36,000	9,130	23/64	10,000	139,000	95,000	40,000
5,900		6,000	97,000	57,000	36,000	9,200		10,000	139,000	95,000	40,000
5,950	15/64	6,000	97,000	57,000	36,000	9,250		10,000	139,000	95,000	40,000
6,000		6,000	97,000	57,000	36,000	9,300		10,000	139,000	95,000	40,000
6,100		8,000	106,000	66,000	36,000	9,400		10,000	139,000	95,000	40,000
6,200		8,000	106,000	66,000	36,000	9,500		10,000	139,000	95,000	40,000
6,300		8,000	106,000	66,000	36,000	9,520	3/8	10,000	139,000	95,000	40,000
6,350	1/4	8,000	106,000	66,000	36,000	9,600		10,000	139,000	95,000	40,000
6,400		8,000	106,000	66,000	36,000	9,700		10,000	139,000	95,000	40,000
6,500		8,000	106,000	66,000	36,000	9,800		10,000	139,000	95,000	40,000
6,600		8,000	106,000	66,000	36,000	9,900		10,000	139,000	95,000	40,000
6,700		8,000	106,000	66,000	36,000	9,920	25/64	10,000	139,000	95,000	40,000
6,750	17/64	8,000	106,000	66,000	36,000	10,000		10,000	139,000	95,000	40,000
6,800		8,000	106,000	66,000	36,000	10,100		12,000	155,000	106,000	45,000
6,900		8,000	116,000	76,000	36,000	10,200		12,000	155,000	106,000	45,000
7,000		8,000	116,000	76,000	36,000	10,300		12,000	155,000	106,000	45,000
7,100		8,000	116,000	76,000	36,000	10,320	13/32	12,000	155,000	106,000	45,000
7,140	9/32	8,000	116,000	76,000	36,000	10,400		12,000	155,000	106,000	45,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
10,500		12,000	155,000	106,000	45,000	14,000		14,000	182,000	133,000	45,000
10,600		12,000	155,000	106,000	45,000	14,100		16,000	204,000	152,000	48,000
10,700		12,000	155,000	106,000	45,000	14,200		16,000	204,000	152,000	48,000
10,720	27/64	12,000	155,000	106,000	45,000	14,290	9/16	16,000	204,000	152,000	48,000
10,800		12,000	155,000	106,000	45,000	14,300		16,000	204,000	152,000	48,000
10,900		12,000	155,000	106,000	45,000	14,400		16,000	204,000	152,000	48,000
11,000		12,000	155,000	106,000	45,000	14,500		16,000	204,000	152,000	48,000
11,100		12,000	163,000	114,000	45,000	14,600		16,000	204,000	152,000	48,000
11,110	7/16	12,000	163,000	114,000	45,000	14,700		16,000	204,000	152,000	48,000
11,200		12,000	163,000	114,000	45,000	14,900		16,000	204,000	152,000	48,000
11,300		12,000	163,000	114,000	45,000	15,000		16,000	204,000	152,000	48,000
11,400		12,000	163,000	114,000	45,000	15,100		16,000	204,000	152,000	48,000
11,500		12,000	163,000	114,000	45,000	15,200		16,000	204,000	152,000	48,000
11,600		12,000	163,000	114,000	45,000	15,300		16,000	204,000	152,000	48,000
11,700		12,000	163,000	114,000	45,000	15,400		16,000	204,000	152,000	48,000
11,800		12,000	163,000	114,000	45,000	15,500		16,000	204,000	152,000	48,000
11,900		12,000	163,000	114,000	45,000	15,600		16,000	204,000	152,000	48,000
11,910	15/32	12,000	163,000	114,000	45,000	15,700		16,000	204,000	152,000	48,000
12,000		12,000	163,000	114,000	45,000	15,800		16,000	204,000	152,000	48,000
12,100		14,000	182,000	133,000	45,000	15,870	5/8	16,000	204,000	152,000	48,000
12,200		14,000	182,000	133,000	45,000	15,900		16,000	204,000	152,000	48,000
12,300	31/64	14,000	182,000	133,000	45,000	16,000		16,000	204,000	152,000	48,000
12,400		14,000	182,000	133,000	45,000	16,500		18,000	223,000	171,000	48,000
12,500		14,000	182,000	133,000	45,000	16,670	21/32	18,000	223,000	171,000	48,000
12,600		14,000	182,000	133,000	45,000	17,000		18,000	223,000	171,000	48,000
12,700	1/2	14,000	182,000	133,000	45,000	17,500		18,000	223,000	171,000	48,000
12,800		14,000	182,000	133,000	45,000	18,000		18,000	223,000	171,000	48,000
12,900		14,000	182,000	133,000	45,000	18,500		20,000	244,000	190,000	50,000
13,000		14,000	182,000	133,000	45,000	19,000		20,000	244,000	190,000	50,000
13,100	33/64	14,000	182,000	133,000	45,000	19,500		20,000	244,000	190,000	50,000
13,300		14,000	182,000	133,000	45,000	20,000		20,000	244,000	190,000	50,000
13,400		14,000	182,000	133,000	45,000						
13,500		14,000	182,000	133,000	45,000						
13,700		14,000	182,000	133,000	45,000						
13,800		14,000	182,000	133,000	45,000						
13,900		14,000	182,000	133,000	45,000						



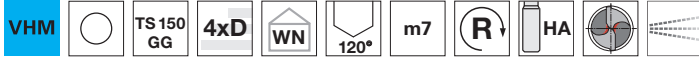
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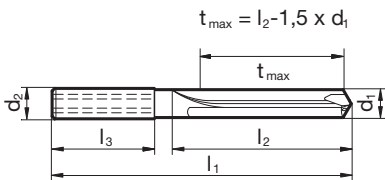
产品代号 89292



P	M	K	N	S	H
		•	○		



芯厚 ≥ Ø 3,000 • 双后刀面 • 紧直径公差 • 很好的孔表面质量 • 注意冷却压力
铝和的铝合金 • 铝材料含硅量高



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	66,000	24,000	36,000	8,300		10,000	103,000	61,000	40,000
3,100		6,000	66,000	24,000	36,000	8,400		10,000	103,000	61,000	40,000
3,200		6,000	66,000	24,000	36,000	8,500		10,000	103,000	61,000	40,000
3,300		6,000	66,000	24,000	36,000	8,700		10,000	103,000	61,000	40,000
3,400		6,000	66,000	24,000	36,000	9,000		10,000	103,000	61,000	40,000
3,500		6,000	66,000	24,000	36,000	9,400		10,000	103,000	61,000	40,000
3,600		6,000	66,000	24,000	36,000	10,000		10,000	103,000	61,000	40,000
3,700		6,000	66,000	24,000	36,000	10,200		12,000	118,000	71,000	45,000
3,800		6,000	74,000	30,000	36,000	10,500		12,000	118,000	71,000	45,000
3,900		6,000	74,000	30,000	36,000	11,000		12,000	118,000	71,000	45,000
4,000		6,000	74,000	30,000	36,000	11,500		12,000	118,000	71,000	45,000
4,200		6,000	74,000	30,000	36,000	12,000		12,000	118,000	71,000	45,000
5,000		6,000	74,000	36,000	36,000	12,300	31/64	14,000	124,000	74,000	45,000
5,100		6,000	74,000	36,000	36,000	12,500		14,000	124,000	74,000	45,000
5,300		6,000	74,000	36,000	36,000	12,700	1/2	14,000	124,000	74,000	45,000
5,400		6,000	74,000	36,000	36,000	13,000		14,000	124,000	74,000	45,000
5,900		6,000	74,000	36,000	36,000	14,000		14,000	124,000	74,000	45,000
6,000		6,000	74,000	36,000	36,000	15,000		16,000	133,000	83,000	48,000
6,200		8,000	91,000	53,000	36,000	16,000		16,000	133,000	83,000	48,000
6,300		8,000	91,000	53,000	36,000	16,500		18,000	143,000	93,000	48,000
6,400		8,000	91,000	53,000	36,000	17,000		18,000	143,000	93,000	48,000
6,600		8,000	91,000	53,000	36,000	17,500		18,000	143,000	93,000	48,000
6,700		8,000	91,000	53,000	36,000	18,000		18,000	143,000	93,000	48,000
6,800		8,000	91,000	53,000	36,000	19,000		20,000	153,000	101,000	50,000
7,000		8,000	91,000	53,000	36,000	20,000		20,000	153,000	101,000	50,000
7,400		8,000	91,000	53,000	36,000						
7,500		8,000	91,000	53,000	36,000						
8,000		8,000	91,000	53,000	36,000						
8,100		10,000	103,000	61,000	40,000						
8,200		10,000	103,000	61,000	40,000						

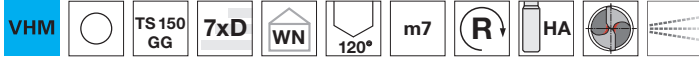


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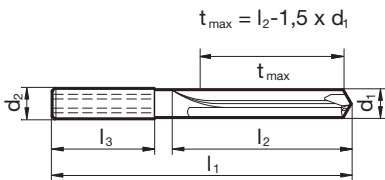
产品代号 89294



P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 紧直径公差 • 很好的孔表面质量 • 注意最佳冷却压力
铝和的铝合金 • 铝材料含硅量高



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	74,000	32,000	36,000	9,500		10,000	139,000	95,000	40,000
3,100		6,000	74,000	32,000	36,000	10,000		10,000	139,000	95,000	40,000
3,200		6,000	74,000	32,000	36,000	10,200		12,000	163,000	114,000	45,000
3,300		6,000	74,000	32,000	36,000	10,500		12,000	163,000	114,000	45,000
3,400		6,000	74,000	34,000	36,000	11,000		12,000	163,000	114,000	45,000
3,500		6,000	74,000	34,000	36,000	11,500		12,000	163,000	114,000	45,000
3,600		6,000	74,000	34,000	36,000	12,000		12,000	163,000	114,000	45,000
3,700		6,000	74,000	34,000	36,000	12,300	31/64	14,000	182,000	133,000	45,000
3,800		6,000	97,000	45,000	36,000	12,500		14,000	182,000	133,000	45,000
3,900		6,000	97,000	45,000	36,000	12,700	1/2	14,000	182,000	133,000	45,000
4,000		6,000	97,000	45,000	36,000	13,000		14,000	182,000	133,000	45,000
4,100		6,000	97,000	45,000	36,000	13,500		14,000	182,000	133,000	45,000
4,200		6,000	97,000	45,000	36,000	14,000		14,000	182,000	133,000	45,000
4,300		6,000	97,000	45,000	36,000	14,500		16,000	204,000	152,000	48,000
4,400		6,000	97,000	45,000	36,000	15,000		16,000	204,000	152,000	48,000
4,500		6,000	97,000	45,000	36,000	15,500		16,000	204,000	152,000	48,000
4,700		6,000	97,000	45,000	36,000	16,000		16,000	204,000	152,000	48,000
4,800		6,000	97,000	57,000	36,000	16,500		18,000	223,000	171,000	48,000
4,900		6,000	97,000	57,000	36,000	17,000		18,000	223,000	171,000	48,000
5,000		6,000	97,000	57,000	36,000	17,500		18,000	223,000	171,000	48,000
5,500		6,000	97,000	57,000	36,000	18,000		18,000	223,000	171,000	48,000
6,000		6,000	97,000	57,000	36,000	18,500		20,000	244,000	190,000	50,000
6,500		8,000	116,000	76,000	36,000	19,000		20,000	244,000	190,000	50,000
6,800		8,000	116,000	76,000	36,000	19,500		20,000	244,000	190,000	50,000
7,000		8,000	116,000	76,000	36,000	20,000		20,000	244,000	190,000	50,000
7,500		8,000	116,000	76,000	36,000						
7,800		8,000	116,000	76,000	36,000						
8,000		8,000	116,000	76,000	36,000						
8,500		10,000	139,000	95,000	40,000						
9,000		10,000	139,000	95,000	40,000						



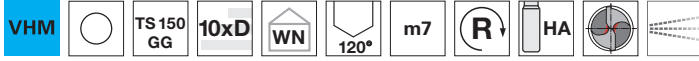
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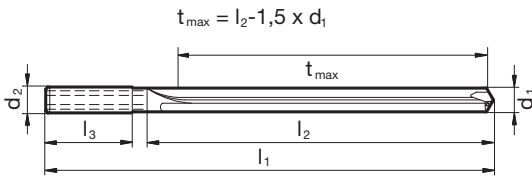
产品代号 89293



P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 紧直径公差 • 很好的孔表面质量 • 注意最佳冷却压力
 铝和的铝合金 • 铝材料含硅量高



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	91,000	42,000	36,000	9,000		10,000	175,000	130,000	40,000
3,100		6,000	91,000	42,000	36,000	9,500		10,000	175,000	130,000	40,000
3,170	1/8	6,000	91,000	42,000	36,000	9,520	3/8	10,000	175,000	130,000	40,000
3,200		6,000	91,000	42,000	36,000	10,000		10,000	175,000	130,000	40,000
3,250		6,000	91,000	42,000	36,000	10,200		12,000	209,000	159,000	45,000
3,300		6,000	91,000	42,000	36,000	10,500		12,000	209,000	159,000	45,000
3,500		6,000	91,000	48,000	36,000	10,720	27/64	12,000	209,000	159,000	45,000
3,570	9/64	6,000	91,000	48,000	36,000	11,000		12,000	209,000	159,000	45,000
3,600		6,000	91,000	48,000	36,000	11,500		12,000	209,000	159,000	45,000
3,700		6,000	91,000	48,000	36,000	12,000		12,000	209,000	159,000	45,000
3,800		6,000	121,000	77,000	36,000	12,500		14,000	233,000	183,000	45,000
3,900		6,000	121,000	77,000	36,000	12,700	1/2	14,000	233,000	183,000	45,000
3,970	5/32	6,000	121,000	77,000	36,000	13,000		14,000	233,000	183,000	45,000
4,000		6,000	121,000	77,000	36,000	13,500		14,000	233,000	183,000	45,000
4,200		6,000	121,000	77,000	36,000	14,000		14,000	233,000	183,000	45,000
4,400		6,000	121,000	77,000	36,000	14,500		16,000	260,000	207,000	48,000
4,500		6,000	121,000	77,000	36,000	15,000		16,000	260,000	207,000	48,000
5,000		6,000	121,000	82,000	36,000	15,500		16,000	260,000	207,000	48,000
5,500		6,000	121,000	82,000	36,000	16,000		16,000	260,000	207,000	48,000
6,000		6,000	121,000	82,000	36,000	17,500		18,000	284,000	231,000	48,000
6,350	1/4	8,000	146,000	106,000	36,000	18,000		18,000	284,000	231,000	48,000
6,500		8,000	146,000	106,000	36,000	20,000		20,000	308,000	255,000	50,000
6,800		8,000	146,000	106,000	36,000						
7,000		8,000	146,000	106,000	36,000						
7,140	9/32	8,000	146,000	106,000	36,000						
7,500		8,000	146,000	106,000	36,000						
7,800		8,000	146,000	106,000	36,000						
8,000		8,000	146,000	106,000	36,000						
8,500		10,000	175,000	130,000	40,000						
8,730	11/32	10,000	175,000	130,000	40,000						



应用示例 外壳

刀具类型	TS 100 R
产品代号	89420
直径	17 mm
钻深	50 mm
材料	EN-GJS-400-15
冷却	IK 20 bar
润滑剂	乳化液
机器	BAZ
v_c	160 m/min
f	0.6 mm/rev
使用寿命	305 m



TS 100 ALU

▼ 优势和特性

- ▼ 可靠排屑和完美切削性能,特别是针对铝合金、铜合金、黄铜合金和青铜合金以及塑料
- ▼ 在整个材料范围内均可最佳形成切屑——包括软质、硬质有色金属合金到脆性铸铝或黄铜合金
- ▼ 低工艺温度防止在加工有色金属合金时产生切屑瘤

铝合金、铜合金、黄铜合金和青铜合金、塑料

经过微处理的锋利刀刃缘,即使在加工热处理 AISi 合金中也具有完美的切削性能

开放式尖端几何形状和凹形刀刃缘形状实现最佳切屑形成性能

尖端面、切屑面和间隙面区域的高表面质量显着降低工艺温度

抛光处理,利于排屑

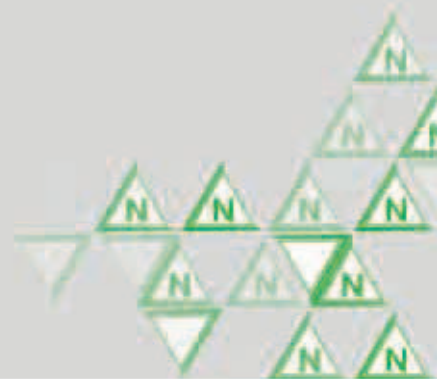
特殊硬质合金款式实现有色金属加工



TS 150 GG

▼ 优势和特性

- ▼ 带冷却通道的高性能硬质合金钻头用于加工短切屑材料, 例如硅含量高的铝合金
- ▼ 用于同心度、直线度高的孔加工
- ▼ 钻孔具备高单位时间金属切削率
- ▼ 根据要求也可提供涂层



铝合金、铜合金、黄铜合金和青铜合金

特殊调整的刀刃几何形状实现经济加工几乎所有铝合金和铝铸造合金

特殊芯厚减薄处理实现高精度的孔径及直线度

抛光处理,利于排屑

四个导向倒角确保孔洞平直度和圆度



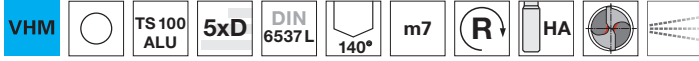
HARTNER

带内冷TS钻头

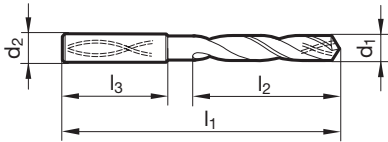
产品代号 89560



P	M	K	N	S	H
			•		



圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数 • 锋利的切削性能
 铝和的铝合金 • 铝材料含硅量高



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,340		10,000	103,000	61,000	40,000	13,300		14,000	124,000	77,000	45,000
9,400		10,000	103,000	61,000	40,000	13,400		14,000	124,000	77,000	45,000
9,500		10,000	103,000	61,000	40,000	13,500		14,000	124,000	77,000	45,000
9,520	3/8	10,000	103,000	61,000	40,000	13,700		14,000	124,000	77,000	45,000
9,600		10,000	103,000	61,000	40,000	13,800		14,000	124,000	77,000	45,000
9,700		10,000	103,000	61,000	40,000	14,000		14,000	124,000	77,000	45,000
9,800		10,000	103,000	61,000	40,000	14,100		16,000	133,000	83,000	48,000
9,900		10,000	103,000	61,000	40,000	14,200		16,000	133,000	83,000	48,000
9,920	25/64	10,000	103,000	61,000	40,000	14,290	9/16	16,000	133,000	83,000	48,000
10,000		10,000	103,000	61,000	40,000	14,300		16,000	133,000	83,000	48,000
10,100		12,000	118,000	71,000	45,000	14,400		16,000	133,000	83,000	48,000
10,200		12,000	118,000	71,000	45,000	14,500		16,000	133,000	83,000	48,000
10,300		12,000	118,000	71,000	45,000	14,700		16,000	133,000	83,000	48,000
10,320	13/32	12,000	118,000	71,000	45,000	14,800		16,000	133,000	83,000	48,000
10,400		12,000	118,000	71,000	45,000	15,000		16,000	133,000	83,000	48,000
10,500		12,000	118,000	71,000	45,000	15,100		16,000	133,000	83,000	48,000
10,600		12,000	118,000	71,000	45,000	15,200		16,000	133,000	83,000	48,000
10,700		12,000	118,000	71,000	45,000	15,300		16,000	133,000	83,000	48,000
10,800		12,000	118,000	71,000	45,000	15,500		16,000	133,000	83,000	48,000
10,900		12,000	118,000	71,000	45,000	15,700		16,000	133,000	83,000	48,000
11,000		12,000	118,000	71,000	45,000	15,800		16,000	133,000	83,000	48,000
11,100		12,000	118,000	71,000	45,000	16,000		16,000	133,000	83,000	48,000
11,110	7/16	12,000	118,000	71,000	45,000	16,500		18,000	143,000	93,000	48,000
11,200		12,000	118,000	71,000	45,000	16,700		18,000	143,000	93,000	48,000
11,300		12,000	118,000	71,000	45,000	16,900		18,000	143,000	93,000	48,000
11,400		12,000	118,000	71,000	45,000	17,000		18,000	143,000	93,000	48,000
11,500		12,000	118,000	71,000	45,000	17,500		18,000	143,000	93,000	48,000
11,600		12,000	118,000	71,000	45,000	17,700		18,000	143,000	93,000	48,000
11,700		12,000	118,000	71,000	45,000	18,000		18,000	143,000	93,000	48,000
11,800		12,000	118,000	71,000	45,000	18,500		20,000	153,000	101,000	50,000
11,900		12,000	118,000	71,000	45,000	18,900		20,000	153,000	101,000	50,000
11,910	15/32	12,000	118,000	71,000	45,000	19,000		20,000	153,000	101,000	50,000
12,000		12,000	118,000	71,000	45,000	19,050	3/4	20,000	153,000	101,000	50,000
12,100		14,000	124,000	77,000	45,000	19,300		20,000	153,000	101,000	50,000
12,200		14,000	124,000	77,000	45,000	19,500		20,000	153,000	101,000	50,000
12,500		14,000	124,000	77,000	45,000	20,000		20,000	153,000	101,000	50,000
12,600		14,000	124,000	77,000	45,000						
12,700	1/2	14,000	124,000	77,000	45,000						
12,800		14,000	124,000	77,000	45,000						
12,900		14,000	124,000	77,000	45,000						
13,000		14,000	124,000	77,000	45,000						
13,100	33/64	14,000	124,000	77,000	45,000						



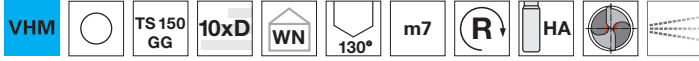
HARTNER

带内冷TS钻头

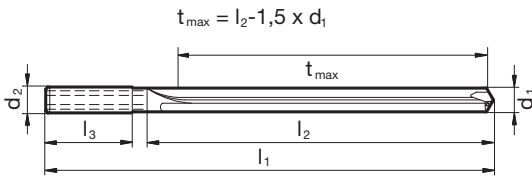
产品代号 89295



P	M	K	N	S	H
		○	●		



芯厚 ≥ Ø 3,000 • 双后刀面 • 紧直径公差 • 很好的孔表面质量 • 注意最佳冷却压力
灰铸铁,可锻铸铁和球墨铸铁



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	91,000	42,000	36,000	8,500		10,000	175,000	130,000	40,000
3,100		6,000	91,000	42,000	36,000	8,730	11/32	10,000	175,000	130,000	40,000
3,300		6,000	91,000	42,000	36,000	9,000		10,000	175,000	130,000	40,000
3,500		6,000	91,000	48,000	36,000	9,130	23/64	10,000	175,000	130,000	40,000
3,600		6,000	91,000	48,000	36,000	9,500		10,000	175,000	130,000	40,000
3,800		6,000	121,000	77,000	36,000	9,520	3/8	10,000	175,000	130,000	40,000
4,000		6,000	121,000	77,000	36,000	10,000		10,000	175,000	130,000	40,000
4,400		6,000	121,000	77,000	36,000	10,320	13/32	12,000	209,000	159,000	45,000
4,700		6,000	121,000	77,000	36,000	10,500		12,000	209,000	159,000	45,000
4,800		6,000	121,000	82,000	36,000	11,000		12,000	209,000	159,000	45,000
4,900		6,000	121,000	82,000	36,000	11,110	7/16	12,000	209,000	159,000	45,000
5,000		6,000	121,000	82,000	36,000	11,510	29/64	12,000	209,000	159,000	45,000
5,500		6,000	121,000	82,000	36,000	12,000		12,000	209,000	159,000	45,000
6,000		6,000	121,000	82,000	36,000	12,300	31/64	14,000	233,000	183,000	45,000
6,350	1/4	8,000	146,000	106,000	36,000	12,700	1/2	14,000	233,000	183,000	45,000
6,500		8,000	146,000	106,000	36,000	13,000		14,000	233,000	183,000	45,000
6,800		8,000	146,000	106,000	36,000	14,000		14,000	233,000	183,000	45,000
7,000		8,000	146,000	106,000	36,000	15,000		16,000	260,000	207,000	48,000
7,140	9/32	8,000	146,000	106,000	36,000	15,500		16,000	260,000	207,000	48,000
7,500		8,000	146,000	106,000	36,000	16,000		16,000	260,000	207,000	48,000
7,800		8,000	146,000	106,000	36,000	17,500		18,000	284,000	231,000	48,000
7,940	5/16	8,000	146,000	106,000	36,000	18,000		18,000	284,000	231,000	48,000
8,000		8,000	146,000	106,000	36,000	18,500		20,000	308,000	255,000	50,000
8,330	21/64	10,000	175,000	130,000	40,000	19,500		20,000	308,000	255,000	50,000



应用示例 外壳

刀具类型	TS 100 ALU
产品代号	89560
直径	10 mm
钻深	50 mm
材料	G-AlSi9Mg
冷却	IK 60 bar
润滑剂	乳化液
机器	BAZ
v_c	310 m/min
f	0.5 mm/rev
使用寿命	80 m



TS 100 H

▼ 优势和特性

- ▼ 借助新研发的刀刃几何形状和极硬 TiAlSiN 涂层，可精准高效地加工高强度材料和特殊合金
- ▼ 适用于汽车工业、航空航天业、能源设施制造和化学工业的理想解决方案



合金和非合金高强度钢、硬化钢、特殊合金和钛合金

负倒角可保护刀刃拐角, 确保部件的出色表面质量

通过带凹形刀刃和特殊尖端几何形状的锥体磨削, 实现可靠切割和最佳切屑形成

四个导向倒角确保最佳钻孔质量并尽可能减少刀刃角磨损

特殊槽轮廓在长切屑材料中也能实现完美排屑

自行研发的全新 TiAlSiN 层是市面上最硬的氮化涂层之一。借助采用由 TiAlN 和 SiN 所制涂层构造的纳米复合材料结构, 实现 5500 HV 的极高硬度。



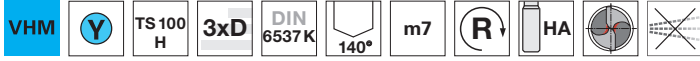
HARTNER

不带内冷TS钻头

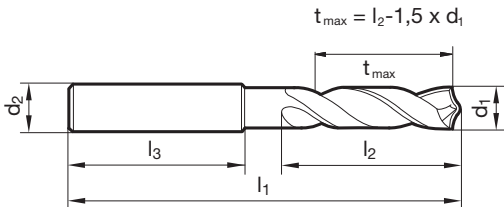
产品代号 89422



P	M	K	N	S	H
•				•	○



芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数
 强度小于1400 N/mm²的合金和高强度钢 • 镍合金, 哈氏合金, 锰合金 • 钛及钛合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000

TS 100 H



不带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,400		10,000	89,000	47,000	40,000	13,000		14,000	107,000	60,000	45,000
9,500		10,000	89,000	47,000	40,000	13,300		14,000	107,000	60,000	45,000
9,520	3/8	10,000	89,000	47,000	40,000	13,500		14,000	107,000	60,000	45,000
9,600		10,000	89,000	47,000	40,000	13,700		14,000	107,000	60,000	45,000
9,700		10,000	89,000	47,000	40,000	14,000		14,000	107,000	60,000	45,000
9,800		10,000	89,000	47,000	40,000	14,200		16,000	115,000	65,000	48,000
9,900		10,000	89,000	47,000	40,000	14,290	9/16	16,000	115,000	65,000	48,000
9,920	25/64	10,000	89,000	47,000	40,000	14,300		16,000	115,000	65,000	48,000
10,000		10,000	89,000	47,000	40,000	14,500		16,000	115,000	65,000	48,000
10,100		12,000	102,000	55,000	45,000	14,700		16,000	115,000	65,000	48,000
10,200		12,000	102,000	55,000	45,000	15,000		16,000	115,000	65,000	48,000
10,300		12,000	102,000	55,000	45,000	15,200		16,000	115,000	65,000	48,000
10,320	13/32	12,000	102,000	55,000	45,000	15,300		16,000	115,000	65,000	48,000
10,400		12,000	102,000	55,000	45,000	15,500		16,000	115,000	65,000	48,000
10,500		12,000	102,000	55,000	45,000	15,700		16,000	115,000	65,000	48,000
10,600		12,000	102,000	55,000	45,000	16,000		16,000	115,000	65,000	48,000
10,700		12,000	102,000	55,000	45,000	16,300		18,000	123,000	73,000	48,000
10,800		12,000	102,000	55,000	45,000	16,500		18,000	123,000	73,000	48,000
10,900		12,000	102,000	55,000	45,000	16,900		18,000	123,000	73,000	48,000
11,000		12,000	102,000	55,000	45,000	17,000		18,000	123,000	73,000	48,000
11,100		12,000	102,000	55,000	45,000	17,300		18,000	123,000	73,000	48,000
11,110	7/16	12,000	102,000	55,000	45,000	17,500		18,000	123,000	73,000	48,000
11,200		12,000	102,000	55,000	45,000	18,000		18,000	123,000	73,000	48,000
11,300		12,000	102,000	55,000	45,000	18,500		20,000	131,000	79,000	50,000
11,400		12,000	102,000	55,000	45,000	18,900		20,000	131,000	79,000	50,000
11,500		12,000	102,000	55,000	45,000	19,000		20,000	131,000	79,000	50,000
11,600		12,000	102,000	55,000	45,000	19,050	3/4	20,000	131,000	79,000	50,000
11,700		12,000	102,000	55,000	45,000	19,300		20,000	131,000	79,000	50,000
11,800		12,000	102,000	55,000	45,000	19,500		20,000	131,000	79,000	50,000
11,900		12,000	102,000	55,000	45,000	20,000		20,000	131,000	79,000	50,000
11,910	15/32	12,000	102,000	55,000	45,000						
12,000		12,000	102,000	55,000	45,000						
12,200		14,000	107,000	60,000	45,000						
12,500		14,000	107,000	60,000	45,000						
12,700	1/2	14,000	107,000	60,000	45,000						
12,800		14,000	107,000	60,000	45,000						



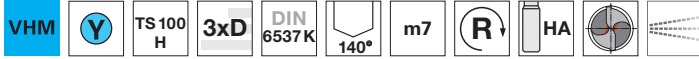
HARTNER

带内冷TS钻头

产品代号 89423



P	M	K	N	S	H
●				●	○

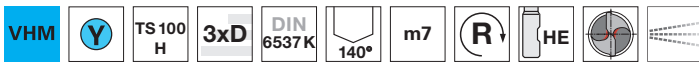


芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数
 强度小于1400 N/mm²的合金和高强度钢 • 镍合金, 哈氏合金, 锰合金 • 钛及钛合金

产品代号 89424

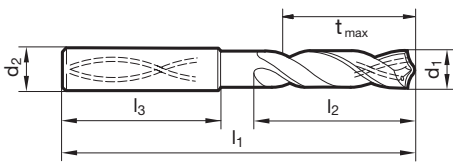


P	M	K	N	S	H
●				●	○



芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数
 强度小于1400 N/mm²的合金和高强度钢 • 镍合金, 哈氏合金, 锰合金 • 钛及钛合金

$$t_{max} = l_2 - 1,5 \times d_1$$



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	5,200		6,000	66,000	28,000	36,000
3,100		6,000	62,000	20,000	36,000	5,300		6,000	66,000	28,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	5,400		6,000	66,000	28,000	36,000
3,200		6,000	62,000	20,000	36,000	5,500		6,000	66,000	28,000	36,000
3,250		6,000	62,000	20,000	36,000	5,550		6,000	66,000	28,000	36,000
3,300		6,000	62,000	20,000	36,000	5,560	7/32	6,000	66,000	28,000	36,000
3,400		6,000	62,000	20,000	36,000	5,600		6,000	66,000	28,000	36,000
3,500		6,000	62,000	20,000	36,000	5,700		6,000	66,000	28,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	5,800		6,000	66,000	28,000	36,000
3,600		6,000	62,000	20,000	36,000	5,900		6,000	66,000	28,000	36,000
3,700		6,000	62,000	20,000	36,000	5,950	15/64	6,000	66,000	28,000	36,000
3,800		6,000	66,000	24,000	36,000	6,000		6,000	66,000	28,000	36,000
3,900		6,000	66,000	24,000	36,000	6,100		8,000	79,000	34,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	6,200		8,000	79,000	34,000	36,000
4,000		6,000	66,000	24,000	36,000	6,300		8,000	79,000	34,000	36,000
4,100		6,000	66,000	24,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
4,200		6,000	66,000	24,000	36,000	6,400		8,000	79,000	34,000	36,000
4,300		6,000	66,000	24,000	36,000	6,500		8,000	79,000	34,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	6,600		8,000	79,000	34,000	36,000
4,400		6,000	66,000	24,000	36,000	6,700		8,000	79,000	34,000	36,000
4,500		6,000	66,000	24,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
4,600		6,000	66,000	24,000	36,000	6,800		8,000	79,000	34,000	36,000
4,650		6,000	66,000	24,000	36,000	6,900		8,000	79,000	34,000	36,000
4,700		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	7,100		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,900		6,000	66,000	28,000	36,000	7,200		8,000	79,000	41,000	36,000
5,000		6,000	66,000	28,000	36,000	7,300		8,000	79,000	41,000	36,000
5,100		6,000	66,000	28,000	36,000	7,400		8,000	79,000	41,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000	7,500		8,000	79,000	41,000	36,000

TS 100 H



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,540	19/64	8,000	79,000	41,000	36,000	11,400		12,000	102,000	55,000	45,000
7,600		8,000	79,000	41,000	36,000	11,500		12,000	102,000	55,000	45,000
7,700		8,000	79,000	41,000	36,000	11,600		12,000	102,000	55,000	45,000
7,800		8,000	79,000	41,000	36,000	11,700		12,000	102,000	55,000	45,000
7,900		8,000	79,000	41,000	36,000	11,800		12,000	102,000	55,000	45,000
7,940	5/16	8,000	79,000	41,000	36,000	11,900		12,000	102,000	55,000	45,000
8,000		8,000	79,000	41,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
8,100		10,000	89,000	47,000	40,000	12,000		12,000	102,000	55,000	45,000
8,200		10,000	89,000	47,000	40,000	12,200		14,000	107,000	60,000	45,000
8,300		10,000	89,000	47,000	40,000	12,500		14,000	107,000	60,000	45,000
8,330	21/64	10,000	89,000	47,000	40,000	12,700	1/2	14,000	107,000	60,000	45,000
8,400		10,000	89,000	47,000	40,000	12,800		14,000	107,000	60,000	45,000
8,500		10,000	89,000	47,000	40,000	13,000		14,000	107,000	60,000	45,000
8,600		10,000	89,000	47,000	40,000	13,300		14,000	107,000	60,000	45,000
8,700		10,000	89,000	47,000	40,000	13,500		14,000	107,000	60,000	45,000
8,730	11/32	10,000	89,000	47,000	40,000	13,700		14,000	107,000	60,000	45,000
8,800		10,000	89,000	47,000	40,000	14,000		14,000	107,000	60,000	45,000
8,900		10,000	89,000	47,000	40,000	14,200		16,000	115,000	65,000	48,000
9,000		10,000	89,000	47,000	40,000	14,290	9/16	16,000	115,000	65,000	48,000
9,100		10,000	89,000	47,000	40,000	14,300		16,000	115,000	65,000	48,000
9,130	23/64	10,000	89,000	47,000	40,000	14,500		16,000	115,000	65,000	48,000
9,200		10,000	89,000	47,000	40,000	14,700		16,000	115,000	65,000	48,000
9,250		10,000	89,000	47,000	40,000	15,000		16,000	115,000	65,000	48,000
9,300		10,000	89,000	47,000	40,000	15,200		16,000	115,000	65,000	48,000
9,400		10,000	89,000	47,000	40,000	15,300		16,000	115,000	65,000	48,000
9,500		10,000	89,000	47,000	40,000	15,500		16,000	115,000	65,000	48,000
9,520	3/8	10,000	89,000	47,000	40,000	15,700		16,000	115,000	65,000	48,000
9,600		10,000	89,000	47,000	40,000	16,000		16,000	115,000	65,000	48,000
9,700		10,000	89,000	47,000	40,000	16,300		18,000	123,000	73,000	48,000
9,800		10,000	89,000	47,000	40,000	16,500		18,000	123,000	73,000	48,000
9,900		10,000	89,000	47,000	40,000	16,900		18,000	123,000	73,000	48,000
9,920	25/64	10,000	89,000	47,000	40,000	17,000		18,000	123,000	73,000	48,000
10,000		10,000	89,000	47,000	40,000	17,300		18,000	123,000	73,000	48,000
10,100		12,000	102,000	55,000	45,000	17,500		18,000	123,000	73,000	48,000
10,200		12,000	102,000	55,000	45,000	18,000		18,000	123,000	73,000	48,000
10,300		12,000	102,000	55,000	45,000	18,500		20,000	131,000	79,000	50,000
10,320	13/32	12,000	102,000	55,000	45,000	18,900		20,000	131,000	79,000	50,000
10,400		12,000	102,000	55,000	45,000	19,000		20,000	131,000	79,000	50,000
10,500		12,000	102,000	55,000	45,000	19,050	3/4	20,000	131,000	79,000	50,000
10,600		12,000	102,000	55,000	45,000	19,300		20,000	131,000	79,000	50,000
10,700		12,000	102,000	55,000	45,000	19,500		20,000	131,000	79,000	50,000
10,800		12,000	102,000	55,000	45,000	20,000		20,000	131,000	79,000	50,000
10,900		12,000	102,000	55,000	45,000						
11,000		12,000	102,000	55,000	45,000						
11,100		12,000	102,000	55,000	45,000						
11,110	7/16	12,000	102,000	55,000	45,000						
11,200		12,000	102,000	55,000	45,000						
11,300		12,000	102,000	55,000	45,000						

TS 100 H



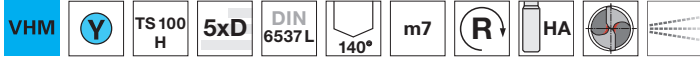
HARTNER

带内冷TS钻头

产品代号 89425



P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数
 强度小于1400 N/mm²的合金和高强度钢 • 镍合金, 哈氏合金, 锰合金 • 钛及钛合金

产品代号 89426

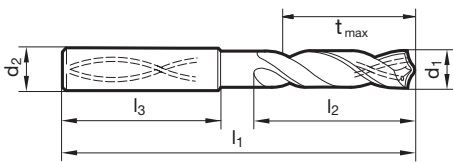


P	M	K	N	S	H
•				•	○



芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数
 强度小于1400 N/mm²的合金和高强度钢 • 镍合金, 哈氏合金, 锰合金 • 钛及钛合金

$$t_{max} = l_2 - 1,5 \times d_1$$



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	5,200		6,000	82,000	44,000	36,000
3,100		6,000	66,000	28,000	36,000	5,300		6,000	82,000	44,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	5,400		6,000	82,000	44,000	36,000
3,200		6,000	66,000	28,000	36,000	5,500		6,000	82,000	44,000	36,000
3,250		6,000	66,000	28,000	36,000	5,550		6,000	82,000	44,000	36,000
3,300		6,000	66,000	28,000	36,000	5,560	7/32	6,000	82,000	44,000	36,000
3,400		6,000	66,000	28,000	36,000	5,600		6,000	82,000	44,000	36,000
3,500		6,000	66,000	28,000	36,000	5,700		6,000	82,000	44,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	5,800		6,000	82,000	44,000	36,000
3,600		6,000	66,000	28,000	36,000	5,900		6,000	82,000	44,000	36,000
3,700		6,000	66,000	28,000	36,000	5,950	15/64	6,000	82,000	44,000	36,000
3,800		6,000	74,000	36,000	36,000	6,000		6,000	82,000	44,000	36,000
3,900		6,000	74,000	36,000	36,000	6,100		8,000	91,000	53,000	36,000
3,970		6,000	74,000	36,000	36,000	6,200		8,000	91,000	53,000	36,000
4,000	5/32	6,000	74,000	36,000	36,000	6,300		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	6,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	6,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	6,600		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	6,700		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	6,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	6,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,100		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	7,200		8,000	91,000	53,000	36,000
5,000		6,000	82,000	44,000	36,000	7,300		8,000	91,000	53,000	36,000
5,100		6,000	82,000	44,000	36,000	7,400		8,000	91,000	53,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000	7,500		8,000	91,000	53,000	36,000

TS 100 H



带内冷TS钻头

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,540	19/64	8,000	91,000	53,000	36,000	11,400		12,000	118,000	71,000	45,000
7,600		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
7,700		8,000	91,000	53,000	36,000	11,600		12,000	118,000	71,000	45,000
7,800		8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000
7,900		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
7,940	5/16	8,000	91,000	53,000	36,000	11,900		12,000	118,000	71,000	45,000
8,000		8,000	91,000	53,000	36,000	11,910	15/32	12,000	118,000	71,000	45,000
8,100		10,000	103,000	61,000	40,000	12,000		12,000	118,000	71,000	45,000
8,200		10,000	103,000	61,000	40,000	12,200		14,000	124,000	77,000	45,000
8,300		10,000	103,000	61,000	40,000	12,500		14,000	124,000	77,000	45,000
8,330	21/64	10,000	103,000	61,000	40,000	12,700	1/2	14,000	124,000	77,000	45,000
8,400		10,000	103,000	61,000	40,000	12,800		14,000	124,000	77,000	45,000
8,500		10,000	103,000	61,000	40,000	13,000		14,000	124,000	77,000	45,000
8,600		10,000	103,000	61,000	40,000	13,300		14,000	124,000	77,000	45,000
8,700		10,000	103,000	61,000	40,000	13,500		14,000	124,000	77,000	45,000
8,730	11/32	10,000	103,000	61,000	40,000	13,700		14,000	124,000	77,000	45,000
8,800		10,000	103,000	61,000	40,000	14,000		14,000	124,000	77,000	45,000
8,900		10,000	103,000	61,000	40,000	14,200		16,000	133,000	83,000	48,000
9,000		10,000	103,000	61,000	40,000	14,290	9/16	16,000	133,000	83,000	48,000
9,100		10,000	103,000	61,000	40,000	14,300		16,000	133,000	83,000	48,000
9,130	23/64	10,000	103,000	61,000	40,000	14,500		16,000	133,000	83,000	48,000
9,200		10,000	103,000	61,000	40,000	14,700		16,000	133,000	83,000	48,000
9,250		10,000	103,000	61,000	40,000	15,000		16,000	133,000	83,000	48,000
9,300		10,000	103,000	61,000	40,000	15,200		16,000	133,000	83,000	48,000
9,400		10,000	103,000	61,000	40,000	15,300		16,000	133,000	83,000	48,000
9,500		10,000	103,000	61,000	40,000	15,500		16,000	133,000	83,000	48,000
9,520	3/8	10,000	103,000	61,000	40,000	15,700		16,000	133,000	83,000	48,000
9,600		10,000	103,000	61,000	40,000	16,000		16,000	133,000	83,000	48,000
9,700		10,000	103,000	61,000	40,000	16,300		18,000	143,000	93,000	48,000
9,800		10,000	103,000	61,000	40,000	16,500		18,000	143,000	93,000	48,000
9,900		10,000	103,000	61,000	40,000	16,900		18,000	143,000	93,000	48,000
9,920	25/64	10,000	103,000	61,000	40,000	17,000		18,000	143,000	93,000	48,000
10,000		10,000	103,000	61,000	40,000	17,300		18,000	143,000	93,000	48,000
10,100		12,000	118,000	71,000	45,000	17,500		18,000	143,000	93,000	48,000
10,200		12,000	118,000	71,000	45,000	18,000		18,000	143,000	93,000	48,000
10,300		12,000	118,000	71,000	45,000	18,500		20,000	153,000	101,000	50,000
10,320	13/32	12,000	118,000	71,000	45,000	18,900		20,000	153,000	101,000	50,000
10,400		12,000	118,000	71,000	45,000	19,000		20,000	153,000	101,000	50,000
10,500		12,000	118,000	71,000	45,000	19,050	3/4	20,000	153,000	101,000	50,000
10,600		12,000	118,000	71,000	45,000	19,300		20,000	153,000	101,000	50,000
10,700		12,000	118,000	71,000	45,000	19,500		20,000	153,000	101,000	50,000
10,800		12,000	118,000	71,000	45,000	20,000		20,000	153,000	101,000	50,000
10,900		12,000	118,000	71,000	45,000						
11,000		12,000	118,000	71,000	45,000						
11,100		12,000	118,000	71,000	45,000						
11,110	7/16	12,000	118,000	71,000	45,000						
11,200		12,000	118,000	71,000	45,000						
11,300		12,000	118,000	71,000	45,000						

TS 100 H



HARTNER

带内冷TS钻头

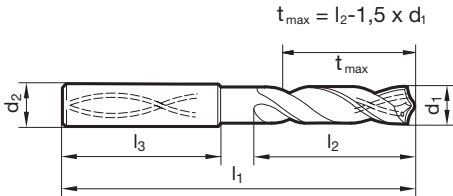
产品代号 89427



P	M	K	N	S	H
•				•	○



芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 主切削刃轻微内凹 • 优化了的切削几何参数
 强度小于1400 N/mm²的合金和高强度钢 • 镍合金, 哈氏合金, 锰合金 • 钛及钛合金



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000	9,250		10,000	139,000	95,000	40,000
3,250		6,000	70,000	30,000	36,000	9,400		10,000	139,000	95,000	40,000
3,300		6,000	70,000	30,000	36,000	9,500		10,000	139,000	95,000	40,000
3,400		6,000	75,000	35,500	36,000	10,000		10,000	139,000	95,000	40,000
3,500		6,000	75,000	35,500	36,000	10,200		12,000	155,000	106,000	45,000
3,700		6,000	75,000	35,500	36,000	10,400		12,000	155,000	106,000	45,000
4,000		6,000	75,000	37,500	36,000	10,500		12,000	155,000	106,000	45,000
4,200		6,000	75,000	37,500	36,000	10,800		12,000	155,000	106,000	45,000
4,300		6,000	85,000	45,000	36,000	11,000		12,000	155,000	106,000	45,000
4,500		6,000	85,000	45,000	36,000	11,300		12,000	163,000	114,000	45,000
4,650		6,000	85,000	45,000	36,000	11,400		12,000	163,000	114,000	45,000
5,000		6,000	90,000	50,000	36,000	11,500		12,000	163,000	114,000	45,000
5,100		6,000	90,000	50,000	36,000	12,000		12,000	163,000	114,000	45,000
5,200		6,000	90,000	50,000	36,000	12,500		14,000	182,000	133,000	45,000
5,500		6,000	97,000	57,000	36,000	13,000		14,000	182,000	133,000	45,000
5,550		6,000	97,000	57,000	36,000	13,100	33/64	14,000	182,000	133,000	45,000
6,000		6,000	97,000	57,000	36,000	13,500		14,000	182,000	133,000	45,000
6,500		8,000	106,000	66,000	36,000	14,000		14,000	182,000	133,000	45,000
6,750	17/64	8,000	106,000	66,000	36,000	14,500		16,000	204,000	152,000	48,000
6,800		8,000	106,000	66,000	36,000	15,000		16,000	204,000	152,000	48,000
6,900		8,000	116,000	76,000	36,000	15,100		16,000	204,000	152,000	48,000
7,000		8,000	116,000	76,000	36,000	15,500		16,000	204,000	152,000	48,000
7,400		8,000	116,000	76,000	36,000	16,000		16,000	204,000	152,000	48,000
7,500		8,000	116,000	76,000	36,000						
7,800		8,000	116,000	76,000	36,000						
8,000		8,000	116,000	76,000	36,000						
8,500		10,000	131,000	87,000	40,000						
8,600		10,000	131,000	87,000	40,000						
8,800		10,000	131,000	87,000	40,000						
9,000		10,000	131,000	87,000	40,000						

TS 100 H



应用示例 曲轴

刀具类型	TS 100 H
产品代号	89425
直径	14 mm
钻深	65 mm
材料	42CrMoS4
冷却	IK 40 bar
润滑剂	乳化液
机器	BAZ
v_c	105 m/min
f	0.35 mm/rev
使用寿命	55 m

整体硬质合金微型钻头

▼ 优势和特性

- ▼ 针对高达 4xD 和 7xD 的钻孔深度,提供不含内冷却的整体硬质合金微型钻头(直径范围从 0.5 至 3.0 mm)以供选择
- ▼ 针对高达 8xD 和 15xD 的钻孔,可使用含内冷却的整体硬质合金微型钻头(直径范围从 1.4 至 3.0 mm)
- ▼ 借助经优化的刀具几何形状,Hartner 整体硬质合金微型钻头在高达 15xD 的钻孔深度中无需排屑



普通钢加工最高可达 1200 N/mm²

▼ 通用型

即使在苛刻环境应用中,磨削的刀刃
缘倒角亦能实现高工艺安全性

刀具几何形状设计用于
几乎所有材料

特殊尖点打薄确保准确钻孔与尺寸精确
的孔洞

经优化的槽轮廓实现高稳定性和
出色排屑

TiAlN 涂层的单层结构特别适合微钻涂层,实
现高耐磨性和出色排屑

整体硬质合金微型钻头





无内冷微钻

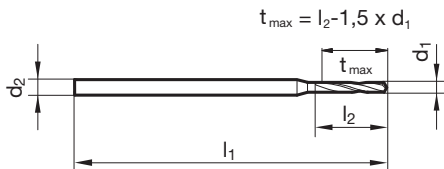
产品代号 86400

P	M	K	N	S	H
●	●	●	○	○	○



芯厚 ≥ Ø 0,500 • 双后刀面 • 精密磨削过的主切削刃 • 精密磨削过的倒棱

适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料

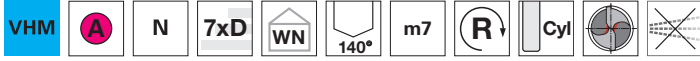


d1 mm	d2 h6 mm	l1 mm	l2 mm	d1 mm	d2 h6 mm	l1 mm	l2 mm
0,500	3,000	47,000	3,000	1,950	3,000	52,000	11,700
0,550	3,000	47,000	3,300	1,980	4,000	59,000	12,000
0,600	3,000	47,000	3,600	2,000	4,000	59,000	12,000
0,650	3,000	47,000	3,900	2,050	4,000	59,000	12,300
0,700	3,000	47,000	4,200	2,100	4,000	59,000	12,600
0,750	3,000	47,000	4,500	2,150	4,000	59,000	12,900
0,800	3,000	47,000	4,800	2,200	4,000	59,000	13,200
0,850	3,000	47,000	5,100	2,250	4,000	59,000	13,500
0,900	3,000	47,000	5,400	2,300	4,000	59,000	13,800
0,950	3,000	47,000	5,700	2,350	4,000	59,000	14,100
1,000	3,000	47,000	6,000	2,380	4,000	59,000	14,400
1,050	3,000	47,000	6,300	2,400	4,000	59,000	14,400
1,100	3,000	47,000	6,600	2,450	4,000	59,000	14,700
1,150	3,000	47,000	6,900	2,500	4,000	59,000	15,000
1,200	3,000	47,000	7,200	2,550	4,000	59,000	15,300
1,250	3,000	47,000	7,500	2,600	4,000	59,000	15,600
1,300	3,000	47,000	7,800	2,650	4,000	59,000	15,900
1,350	3,000	47,000	8,100	2,700	4,000	59,000	16,200
1,400	3,000	47,000	8,400	2,750	4,000	59,000	16,500
1,450	3,000	47,000	8,700	2,780	4,000	59,000	16,800
1,500	3,000	47,000	9,000	2,800	4,000	59,000	16,800
1,550	3,000	47,000	9,300	2,850	4,000	59,000	17,100
1,590	3,000	47,000	9,600	2,900	4,000	59,000	17,400
1,600	3,000	47,000	9,600	2,950	4,000	59,000	17,700
1,650	3,000	47,000	9,900	3,000	4,000	59,000	18,000
1,700	3,000	47,000	10,200				
1,750	3,000	47,000	10,500				
1,800	3,000	52,000	10,800				
1,850	3,000	52,000	11,100				
1,900	3,000	52,000	11,400				

无内冷微钻

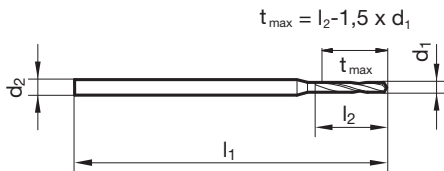
产品代号 86401

P	M	K	N	S	H
●	●	●	○	○	○



芯厚 $\geq \varnothing 0,500$ • 双后刀面 • 精密磨削过的主切削刃 • 精密磨削过的倒棱

适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1 mm	d2 h6 mm	l1 mm	l2 mm	d1 mm	d2 h6 mm	l1 mm	l2 mm
0,500	3,000	47,000	4,000	1,950	3,000	52,000	17,600
0,550	3,000	47,000	4,400	1,980	4,000	63,000	18,000
0,600	3,000	47,000	4,800	2,000	4,000	63,000	18,000
0,650	3,000	47,000	5,200	2,050	4,000	63,000	18,500
0,700	3,000	47,000	5,600	2,100	4,000	63,000	18,900
0,750	3,000	47,000	6,000	2,150	4,000	63,000	19,400
0,800	3,000	47,000	6,400	2,200	4,000	63,000	19,800
0,850	3,000	47,000	6,800	2,250	4,000	63,000	20,300
0,900	3,000	47,000	7,200	2,300	4,000	63,000	20,700
0,950	3,000	47,000	7,600	2,350	4,000	63,000	21,200
1,000	3,000	47,000	8,000	2,380	4,000	63,000	21,600
1,050	3,000	47,000	8,400	2,400	4,000	63,000	21,600
1,100	3,000	47,000	8,800	2,450	4,000	63,000	22,100
1,150	3,000	47,000	9,200	2,500	4,000	63,000	22,500
1,200	3,000	52,000	10,800	2,550	4,000	63,000	23,000
1,250	3,000	52,000	11,300	2,600	4,000	67,000	23,400
1,300	3,000	52,000	11,700	2,650	4,000	67,000	23,900
1,350	3,000	52,000	12,200	2,700	4,000	67,000	24,300
1,400	3,000	52,000	12,600	2,750	4,000	67,000	24,800
1,450	3,000	52,000	13,100	2,780	4,000	67,000	25,200
1,500	3,000	52,000	13,500	2,800	4,000	67,000	25,200
1,550	3,000	52,000	14,000	2,850	4,000	67,000	25,700
1,590	3,000	52,000	14,400	2,900	4,000	67,000	26,100
1,600	3,000	52,000	14,400	2,950	4,000	67,000	26,600
1,650	3,000	52,000	14,900	3,000	4,000	67,000	27,000
1,700	3,000	52,000	15,300				
1,750	3,000	52,000	15,800				
1,800	3,000	52,000	16,200				
1,850	3,000	52,000	16,700				
1,900	3,000	52,000	17,100				



带内冷微钻

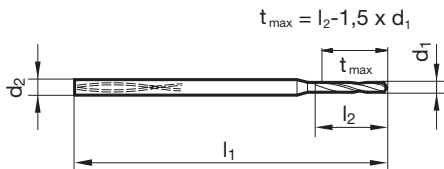
产品代号 86405

P	M	K	N	S	H
●	●	●	○	○	○



芯厚 ≥ Ø 1,400 • 双后刀面 • 精密磨削过的主切削刃 • 精密磨削过的倒棱

适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



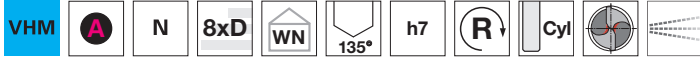
d1 mm	d2 h6 mm	l1 mm	l2 mm	d1 mm	d2 h6 mm	l1 mm	l2 mm
1,400	4,000	52,000	11,000	2,450	4,000	62,000	20,000
1,450	4,000	52,000	12,000	2,500	4,000	62,000	20,000
1,500	4,000	52,000	12,000	2,550	4,000	62,000	20,000
1,550	4,000	52,000	12,000	2,600	4,000	66,000	21,000
1,590	4,000	52,000	13,000	2,650	4,000	66,000	21,000
1,600	4,000	52,000	13,000	2,700	4,000	66,000	22,000
1,650	4,000	52,000	13,000	2,750	4,000	66,000	22,000
1,700	4,000	56,000	14,000	2,780	4,000	66,000	22,000
1,750	4,000	56,000	14,000	2,800	4,000	66,000	22,000
1,800	4,000	56,000	14,000	2,850	4,000	66,000	23,000
1,850	4,000	56,000	15,000	2,900	4,000	66,000	23,000
1,900	4,000	56,000	15,000	2,950	4,000	66,000	24,000
1,950	4,000	56,000	16,000	3,000	4,000	66,000	24,000
1,980	4,000	56,000	16,000				
2,000	4,000	56,000	16,000				
2,050	4,000	56,000	16,000				
2,100	4,000	62,000	17,000				
2,150	4,000	62,000	17,000				
2,200	4,000	62,000	18,000				
2,250	4,000	62,000	18,000				
2,300	4,000	62,000	18,000				
2,350	4,000	62,000	19,000				
2,380	4,000	62,000	19,000				
2,400	4,000	62,000	19,000				



带内冷微钻

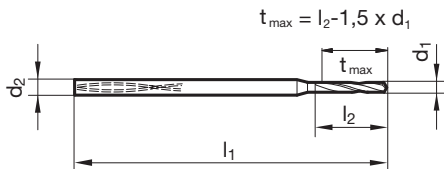
产品代号 86408

P	M	K	N	S	H
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芯厚 ≥ Ø 1,400 • 双后刀面 • 精密磨削过的主切削刃 • 精密磨削过的倒棱

适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1 mm	d2 h6 mm	l1 mm	l2 mm	d1 mm	d2 h6 mm	l1 mm	l2 mm
1,400	4,000	52,000	15,000	2,600	4,000	66,000	29,000
1,500	4,000	52,000	17,000	2,700	4,000	66,000	30,000
1,600	4,000	52,000	18,000	2,800	4,000	66,000	31,000
1,700	4,000	56,000	19,000	2,900	4,000	66,000	32,000
1,800	4,000	56,000	20,000	3,000	4,000	66,000	33,000
1,900	4,000	56,000	21,000				
2,000	4,000	56,000	22,000				
2,100	4,000	62,000	23,000				
2,200	4,000	62,000	24,000				
2,300	4,000	62,000	25,000				
2,400	4,000	62,000	26,000				
2,500	4,000	62,000	28,000				



带内冷微钻

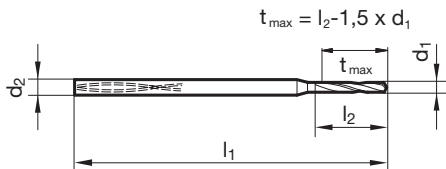
产品代号 86412



P	M	K	N	S	H
•	•	•	○	○	



芯厚 ≥ Ø 1,400 • 双后刀面 • 精密磨削过的主切削刃 • 精密磨削过的倒棱
 适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1 mm	d2 h6 mm	l1 mm	l2 mm	d1 mm	d2 h6 mm	l1 mm	l2 mm
1,400	4,000	62,000	25,000	2,600	4,000	87,000	47,000
1,500	4,000	62,000	27,000	2,700	4,000	87,000	48,000
1,600	4,000	62,000	29,000	2,800	4,000	87,000	50,000
1,700	4,000	70,000	31,000	2,900	4,000	87,000	52,000
1,800	4,000	70,000	32,000	3,000	4,000	87,000	54,000
1,900	4,000	70,000	34,000				
2,000	4,000	70,000	36,000				
2,100	4,000	78,000	38,000				
2,200	4,000	78,000	40,000				
2,300	4,000	78,000	42,000				
2,400	4,000	78,000	44,000				
2,500	4,000	78,000	45,000				




应用示例 泵

刀具类型	微钻
产品代号	86412
直径	2,8 mm
钻深	38 mm
材料	X6CrNiTi18-10
冷却	IK 80 bar
润滑剂	乳化液
机器	BAZ
v_c	60 m/min
f	0.03 mm/rev
使用寿命	60 m

TS 100 T

▼ 优势和特性

- ▼ 用于钻孔深度最高 40xD 的螺旋深孔钻头适合非合金和合金钢,尤其是曲轴钢
- ▼ 经优化的槽横截面、最大冷却通道横截面和抛光的平滑槽实现深孔的最佳排屑
- ▼ 最高进给和切削速度可显著缩短制造时间
- ▼ 除了库存系列,还可提供最大孔深(高达 40xD)或最大总长(高达 500 mm)的中间尺寸
- ▼ 可根据要求选购针对铝加工的特殊规格 



普通钢加工最高可达 1200 N/mm²

▼ 通用型

刀具几何形状设计用于几乎所有材料

特殊芯厚减薄处理实现高精度的孔径及直线度

最大冷却通道横截面确保为刀刃高效提供润滑剂以及出色排屑

四个导向倒角实现最佳孔内支撑

最佳槽横截面确保在刀具前部出色形成切屑, 以及在后部区域良好排屑

抛光槽实现完美排屑——即使面向极深钻孔



HARTNER

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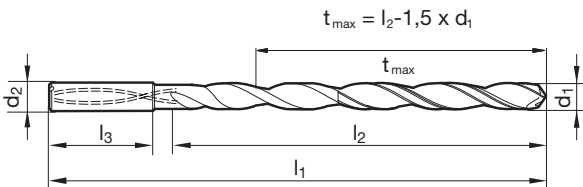
产品代号 86509



P	M	K	N	S	H
•	•	•	○	○	○



芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 刀尖涂层 • 凹形主切屑刃形状 • 优化槽型设计 • 超大冷却孔设计 • 注意冷却压力
 适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	95,000	55,000	36,000	7,540	19/64	8,000	183,000	143,000	36,000
3,100		6,000	106,000	66,000	36,000	7,800		8,000	183,000	143,000	36,000
3,170	1/8	6,000	106,000	66,000	36,000	7,940	5/16	8,000	183,000	143,000	36,000
3,200		6,000	106,000	66,000	36,000	8,000		8,000	183,000	143,000	36,000
3,300		6,000	106,000	66,000	36,000	8,330	21/64	10,000	204,000	160,000	40,000
3,500		6,000	116,000	76,000	36,000	8,500		10,000	204,000	160,000	40,000
3,570	9/64	6,000	116,000	76,000	36,000	8,730	11/32	10,000	204,000	160,000	40,000
3,700		6,000	116,000	76,000	36,000	8,800		10,000	204,000	160,000	40,000
3,800		6,000	116,000	76,000	36,000	9,000		10,000	204,000	160,000	40,000
3,970	5/32	6,000	116,000	76,000	36,000	9,130	23/64	10,000	221,000	177,000	40,000
4,000		6,000	116,000	76,000	36,000	9,500		10,000	221,000	177,000	40,000
4,200		6,000	133,000	93,000	36,000	9,520	3/8	10,000	221,000	177,000	40,000
4,300		6,000	133,000	93,000	36,000	9,800		10,000	221,000	177,000	40,000
4,370	11/64	6,000	133,000	93,000	36,000	9,920	25/64	10,000	221,000	177,000	40,000
4,500		6,000	133,000	93,000	36,000	10,000		10,000	221,000	177,000	40,000
4,600		6,000	133,000	93,000	36,000	10,320	13/32	12,000	247,000	198,000	45,000
4,760	3/16	6,000	133,000	93,000	36,000	10,500		12,000	247,000	198,000	45,000
4,800		6,000	133,000	93,000	36,000	10,720	27/64	12,000	247,000	198,000	45,000
5,000		6,000	133,000	93,000	36,000	11,000		12,000	247,000	198,000	45,000
5,100		6,000	150,000	110,000	36,000	11,110	7/16	12,000	263,000	214,000	45,000
5,160	13/64	6,000	150,000	110,000	36,000	11,510	29/64	12,000	263,000	214,000	45,000
5,410		6,000	150,000	110,000	36,000	11,800		12,000	263,000	214,000	45,000
5,500		6,000	150,000	110,000	36,000	11,910	15/32	12,000	263,000	214,000	45,000
5,560	7/32	6,000	150,000	110,000	36,000	12,000		12,000	263,000	214,000	45,000
5,600		6,000	150,000	110,000	36,000	12,300	31/64	14,000	297,000	248,000	45,000
5,800		6,000	150,000	110,000	36,000	12,500		14,000	297,000	248,000	45,000
5,950	15/64	6,000	150,000	110,000	36,000	12,700	1/2	14,000	297,000	248,000	45,000
6,000		6,000	150,000	110,000	36,000	13,000		14,000	297,000	248,000	45,000
6,300		8,000	167,000	127,000	36,000	13,100	33/64	14,000	297,000	248,000	45,000
6,350	1/4	8,000	167,000	127,000	36,000	13,490	17/32	14,000	297,000	248,000	45,000
6,500		8,000	167,000	127,000	36,000	13,890	35/64	14,000	297,000	248,000	45,000
6,750	17/64	8,000	167,000	127,000	36,000	14,000		14,000	297,000	248,000	45,000
6,800		8,000	167,000	127,000	36,000	14,290	9/16	16,000	333,000	281,000	48,000
7,000		8,000	167,000	127,000	36,000	15,000		16,000	333,000	281,000	48,000
7,140	9/32	8,000	183,000	143,000	36,000	15,870	5/8	16,000	333,000	281,000	48,000
7,500		8,000	183,000	143,000	36,000	16,000		16,000	333,000	281,000	48,000

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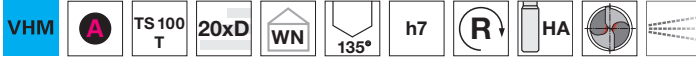


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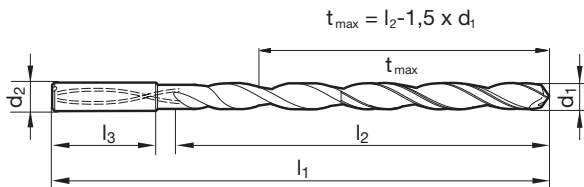
产品代号 86511



P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 刀尖涂层 • 凹形主切屑刃形状 • 优化槽型设计 • 超大冷却孔设计 • 注意冷却压力
 适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	110,000	70,000	36,000	7,940	5/16	8,000	223,000	183,000	36,000
3,100		6,000	123,000	83,000	36,000	8,000		8,000	223,000	183,000	36,000
3,170	1/8	6,000	123,000	83,000	36,000	8,330	21/64	10,000	249,000	205,000	40,000
3,200		6,000	123,000	83,000	36,000	8,500		10,000	249,000	205,000	40,000
3,300		6,000	123,000	83,000	36,000	8,730	11/32	10,000	249,000	205,000	40,000
3,500		6,000	136,000	96,000	36,000	8,800		10,000	249,000	205,000	40,000
3,570	9/64	6,000	136,000	96,000	36,000	9,000		10,000	249,000	205,000	40,000
3,700		6,000	136,000	96,000	36,000	9,130	23/64	10,000	271,000	227,000	40,000
3,800		6,000	136,000	96,000	36,000	9,520	3/8	10,000	271,000	227,000	40,000
3,970	5/32	6,000	136,000	96,000	36,000	9,920	25/64	10,000	271,000	227,000	40,000
4,000		6,000	136,000	96,000	36,000	10,000		10,000	271,000	227,000	40,000
4,200		6,000	158,000	118,000	36,000	10,200		12,000	302,000	253,000	45,000
4,300		6,000	158,000	118,000	36,000	10,320	13/32	12,000	302,000	253,000	45,000
4,370	11/64	6,000	158,000	118,000	36,000	10,500		12,000	302,000	253,000	45,000
4,500		6,000	158,000	118,000	36,000	10,720	27/64	12,000	302,000	253,000	45,000
4,600		6,000	158,000	118,000	36,000	11,000		12,000	302,000	253,000	45,000
4,760	3/16	6,000	158,000	118,000	36,000	11,110	7/16	12,000	323,000	274,000	45,000
4,800		6,000	158,000	118,000	36,000	11,510	29/64	12,000	323,000	274,000	45,000
5,000		6,000	158,000	118,000	36,000	11,800		12,000	323,000	274,000	45,000
5,100		6,000	180,000	140,000	36,000	11,910	15/32	12,000	323,000	274,000	45,000
5,160	13/64	6,000	180,000	140,000	36,000	12,000		12,000	323,000	274,000	45,000
5,410		6,000	180,000	140,000	36,000	12,300	31/64	14,000	367,000	318,000	45,000
5,500		6,000	180,000	140,000	36,000	12,500		14,000	367,000	318,000	45,000
5,560	7/32	6,000	180,000	140,000	36,000	12,700	1/2	14,000	367,000	318,000	45,000
5,800		6,000	180,000	140,000	36,000	13,000		14,000	367,000	318,000	45,000
5,950	15/64	6,000	180,000	140,000	36,000	13,100	33/64	14,000	367,000	318,000	45,000
6,000		6,000	180,000	140,000	36,000	13,490	17/32	14,000	367,000	318,000	45,000
6,350	1/4	8,000	202,000	162,000	36,000	13,890	35/64	14,000	367,000	318,000	45,000
6,500		8,000	202,000	162,000	36,000	14,000		14,000	367,000	318,000	45,000
6,750	17/64	8,000	202,000	162,000	36,000	14,290	9/16	16,000	413,000	361,000	48,000
6,800		8,000	202,000	162,000	36,000	15,000		16,000	413,000	361,000	48,000
7,000		8,000	202,000	162,000	36,000	15,870	5/8	16,000	413,000	361,000	48,000
7,140	9/32	8,000	223,000	183,000	36,000	16,000		16,000	413,000	361,000	48,000
7,500		8,000	223,000	183,000	36,000						
7,540	19/64	8,000	223,000	183,000	36,000						
7,800		8,000	223,000	183,000	36,000						

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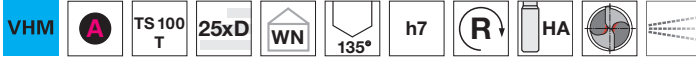


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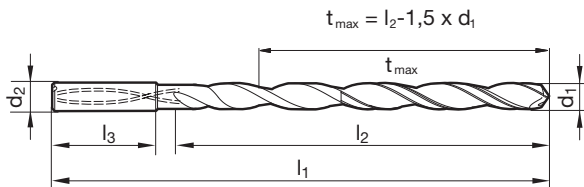
产品代号 86512



P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 刀尖涂层 • 凹形主切屑刃形状 • 优化槽型设计 • 超大冷却孔设计 • 注意冷却压力
 适合加工: 结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	125,000	85,000	36,000	7,940	5/16	8,000	263,000	223,000	36,000
3,100		6,000	141,000	101,000	36,000	8,000		8,000	263,000	223,000	36,000
3,170	1/8	6,000	141,000	101,000	36,000	8,330	21/64	10,000	294,000	250,000	40,000
3,200		6,000	141,000	101,000	36,000	8,500		10,000	294,000	250,000	40,000
3,300		6,000	141,000	101,000	36,000	8,730	11/32	10,000	294,000	250,000	40,000
3,500		6,000	156,000	116,000	36,000	8,800		10,000	294,000	250,000	40,000
3,570	9/64	6,000	156,000	116,000	36,000	9,000		10,000	294,000	250,000	40,000
3,700		6,000	156,000	116,000	36,000	9,130	23/64	10,000	321,000	277,000	40,000
3,800		6,000	156,000	116,000	36,000	9,520	3/8	10,000	321,000	277,000	40,000
3,970	5/32	6,000	156,000	116,000	36,000	9,920	25/64	10,000	321,000	277,000	40,000
4,000		6,000	156,000	116,000	36,000	10,000		10,000	321,000	277,000	40,000
4,200		6,000	183,000	143,000	36,000	10,320	13/32	12,000	359,000	310,000	45,000
4,300		6,000	183,000	143,000	36,000	10,720	27/64	12,000	359,000	310,000	45,000
4,370	11/64	6,000	183,000	143,000	36,000	11,000		12,000	359,000	310,000	45,000
4,500		6,000	183,000	143,000	36,000	11,110	7/16	12,000	386,000	337,000	45,000
4,600		6,000	183,000	143,000	36,000	11,510	29/64	12,000	386,000	337,000	45,000
4,760	3/16	6,000	183,000	143,000	36,000	11,910	15/32	12,000	386,000	337,000	45,000
4,800		6,000	183,000	143,000	36,000	12,000		12,000	386,000	337,000	45,000
5,000		6,000	183,000	143,000	36,000	12,300	31/64	14,000	437,000	388,000	45,000
5,100		6,000	210,000	170,000	36,000	12,700	1/2	14,000	437,000	388,000	45,000
5,160	13/64	6,000	210,000	170,000	36,000	13,000		14,000	437,000	388,000	45,000
5,410		6,000	210,000	170,000	36,000	13,100	33/64	14,000	437,000	388,000	45,000
5,500		6,000	210,000	170,000	36,000	13,490	17/32	14,000	437,000	388,000	45,000
5,560	7/32	6,000	210,000	170,000	36,000	13,890	35/64	14,000	437,000	388,000	45,000
5,800		6,000	210,000	170,000	36,000	14,000		14,000	437,000	388,000	45,000
5,950	15/64	6,000	210,000	170,000	36,000	14,290	9/16	16,000	493,000	441,000	48,000
6,000		6,000	210,000	170,000	36,000	15,000		16,000	493,000	441,000	48,000
6,300		8,000	237,000	197,000	36,000	15,870	5/8	16,000	493,000	441,000	48,000
6,350	1/4	8,000	237,000	197,000	36,000	16,000		16,000	493,000	441,000	48,000
6,500		8,000	237,000	197,000	36,000						
6,750	17/64	8,000	237,000	197,000	36,000						
6,800		8,000	237,000	197,000	36,000						
7,000		8,000	237,000	197,000	36,000						
7,140	9/32	8,000	263,000	223,000	36,000						
7,500		8,000	263,000	223,000	36,000						
7,540	19/64	8,000	263,000	223,000	36,000						

TS 100 T

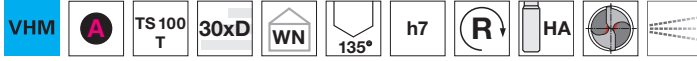


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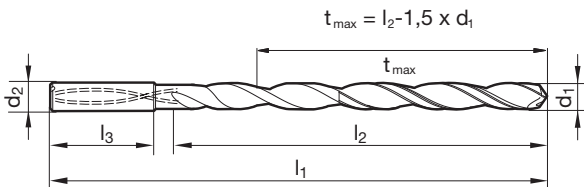
产品代号 86513



P	M	K	N	S	H
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芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 刀尖涂层 • 凹形主切屑刃形状 • 优化槽型设计 • 超大冷却孔设计 • 注意冷却压力
 适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	140,000	100,000	36,000	7,500		8,000	303,000	263,000	36,000
3,100		6,000	158,000	118,000	36,000	7,540	19/64	8,000	303,000	263,000	36,000
3,170	1/8	6,000	158,000	118,000	36,000	7,940	5/16	8,000	303,000	263,000	36,000
3,200		6,000	158,000	118,000	36,000	8,000		8,000	303,000	263,000	36,000
3,300		6,000	158,000	118,000	36,000	8,330	21/64	10,000	339,000	295,000	40,000
3,500		6,000	176,000	136,000	36,000	8,500		10,000	339,000	295,000	40,000
3,570	9/64	6,000	176,000	136,000	36,000	8,730	11/32	10,000	339,000	295,000	40,000
3,700		6,000	176,000	136,000	36,000	8,800		10,000	339,000	295,000	40,000
3,800		6,000	176,000	136,000	36,000	9,000		10,000	339,000	295,000	40,000
3,970	5/32	6,000	176,000	136,000	36,000	9,130	23/64	10,000	371,000	327,000	40,000
4,000		6,000	176,000	136,000	36,000	9,520	3/8	10,000	371,000	327,000	40,000
4,200		6,000	208,000	168,000	36,000	9,920	25/64	10,000	371,000	327,000	40,000
4,370	11/64	6,000	208,000	168,000	36,000	10,000		10,000	371,000	327,000	40,000
4,500		6,000	208,000	168,000	36,000	10,320	13/32	12,000	412,000	363,000	45,000
4,760	3/16	6,000	208,000	168,000	36,000	10,720	27/64	12,000	412,000	363,000	45,000
5,000		6,000	208,000	168,000	36,000	11,000		12,000	412,000	363,000	45,000
5,100		6,000	240,000	200,000	36,000	11,110	7/16	12,000	443,000	394,000	45,000
5,160	13/64	6,000	240,000	200,000	36,000	11,510	29/64	12,000	443,000	394,000	45,000
5,410		6,000	240,000	200,000	36,000	11,910	15/32	12,000	443,000	394,000	45,000
5,500		6,000	240,000	200,000	36,000	12,000		12,000	443,000	394,000	45,000
5,560	7/32	6,000	240,000	200,000	36,000	12,300	31/64	14,000	507,000	458,000	45,000
5,950	15/64	6,000	240,000	200,000	36,000	12,700	1/2	14,000	507,000	458,000	45,000
6,000		6,000	240,000	200,000	36,000	13,000		14,000	507,000	458,000	45,000
6,300		8,000	272,000	232,000	36,000	13,100	33/64	14,000	507,000	458,000	45,000
6,350	1/4	8,000	272,000	232,000	36,000	13,490	17/32	14,000	507,000	458,000	45,000
6,500		8,000	272,000	232,000	36,000	13,890	35/64	14,000	507,000	458,000	45,000
6,750	17/64	8,000	272,000	232,000	36,000	14,000		14,000	507,000	458,000	45,000
6,800		8,000	272,000	232,000	36,000						
7,000		8,000	272,000	232,000	36,000						
7,140	9/32	8,000	303,000	263,000	36,000						

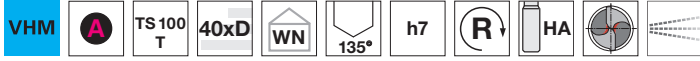


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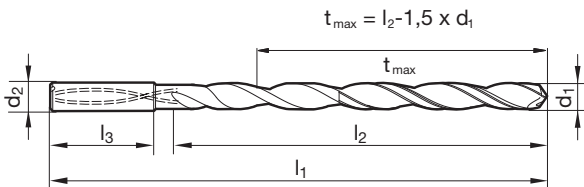
带内冷TS钻头

产品代号 86514

P	M	K	N	S	H
•	•	•	○	○	○



芯厚 ≥ Ø 3,000 • 圆弧后刀面 • 刀尖涂层 • 凹形主切屑刃形状 • 优化槽型设计 • 超大冷却孔设计 • 注意冷却压力
 适合加工：结构钢和淬硬钢 • 易切削钢和热处理钢 • 强度小于1200N/mm²的合金钢 • 不锈钢 • 铸件材料



d1	inch	d2 h6	l1	l2	l3	d1	inch	d2 h6	l1	l2	l3
mm		mm	mm	mm	mm	mm		mm	mm	mm	mm
3,000		6,000	170,000	130,000	36,000	5,500		6,000	280,000	240,000	36,000
3,100		6,000	193,000	153,000	36,000	5,560	7/32	6,000	300,000	260,000	36,000
3,170	1/8	6,000	193,000	153,000	36,000	5,950	15/64	6,000	300,000	260,000	36,000
3,200		6,000	193,000	153,000	36,000	6,000		6,000	300,000	260,000	36,000
3,300		6,000	193,000	153,000	36,000	6,300		8,000	322,000	282,000	36,000
3,500		6,000	193,000	153,000	36,000	6,350	1/4	8,000	322,000	282,000	36,000
3,570	9/64	6,000	216,000	176,000	36,000	6,500		8,000	322,000	282,000	36,000
3,800		6,000	216,000	176,000	36,000	6,750	17/64	8,000	342,000	302,000	36,000
3,970	5/32	6,000	216,000	176,000	36,000	6,800		8,000	342,000	302,000	36,000
4,000		6,000	216,000	176,000	36,000	7,000		8,000	342,000	302,000	36,000
4,200		6,000	238,000	198,000	36,000	7,140	9/32	8,000	363,000	323,000	36,000
4,370	11/64	6,000	238,000	198,000	36,000	7,500		8,000	363,000	323,000	36,000
4,500		6,000	238,000	198,000	36,000	7,540	19/64	8,000	383,000	343,000	36,000
4,760	3/16	6,000	258,000	218,000	36,000	7,940	5/16	8,000	383,000	343,000	36,000
5,000		6,000	258,000	218,000	36,000	8,000		8,000	383,000	343,000	36,000
5,100		6,000	280,000	240,000	36,000	8,500		10,000	409,000	365,000	40,000
5,160	13/64	6,000	280,000	240,000	36,000	9,000		10,000	429,000	386,000	40,000
5,410		6,000	280,000	240,000	36,000	10,000		10,000	471,000	427,000	40,000

TS 100 T

应用建议

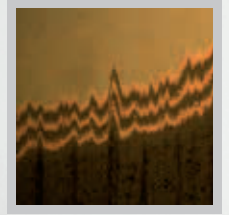


涂层



F FIRE/nanoFIRE 涂层

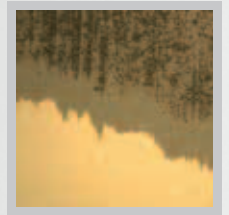
- 外观特征: 紫黑色
- 采用倾斜结构的多层 TiAlN 层。全能层的性能是 TiN 的至少两倍。兼具 TiN、TiAlN 和 TiCN 的优点。所谓的“防火”热绝缘性卓越。高韧性。FIRE 外加 MolyGlide——干式加工和 HSC 加工的理想组合和前提条件。



A AlTiN 层 (氮化铝钛)

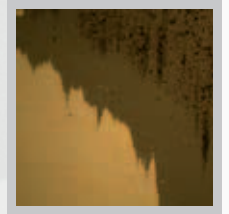
a AlTiN 纳米层 (氮化铝钛)

- 外观特征: 紫黑色
- 自行研发的可靠 TiAlN 基涂层不断向前发展。AlTiN 层的结构、化学和机械特性经过优化, 实现极高热硬度、极佳抗氧化性和出色的层附性。该层仅在搭配硬质合金时适合加工难以切削的材料, 例如因科镍合金和硬质钢以及哈氏合金切削 (> 52 HRC) 和 HSC 加工。十分适合不锈钢加工。



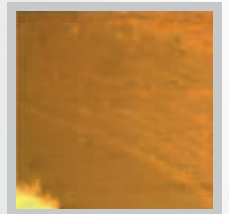
A TiAlN 层 (氮化铝钛)

- 外观特征: 紫黑色
- 该专用涂层用于研磨材料(铸件、AlSi)和/或高温负荷的切削任务、无冷却或冷却能力受限的应用, 例如深孔或小直径。尤其是, 只有在较高切削参数下该层才能实现明显性能提升。



Y TiAlSiN 层

- 外观特征: 青铜红色
- 高硬度的耐热多层涂层专为加工高硬度与硬化钢和铸铁设计。借助采用由 TiAlN 和 SiN 所制涂层构造的纳米复合材料结构, 实现 5500 HV 的极高硬度。



应用建议

TS 硬质合金钻头

一般提示

出于安全考虑, 特别注意不得以高于 $n = 6,000 \text{ rpm}$ 的转速空转钻头。否则, 离心力可能使长刀具在碰触工件表面前断裂!

7xD、10xD 和 12xD 钻头的使用提示

针对 $\geq 7xD$ 的钻孔深度, 通常设有导向孔。

1. 导向孔可以通过短硬钻头生成, 其直径要比 TS 钻头的直径大 $0.01 \sim 0.02 \text{ mm}$ 。导向孔深度 $1xD$ 。
2. TS 钻头也可加工导向孔。为此, 切削速度和进给降低 $30 \sim 40\%$ 。

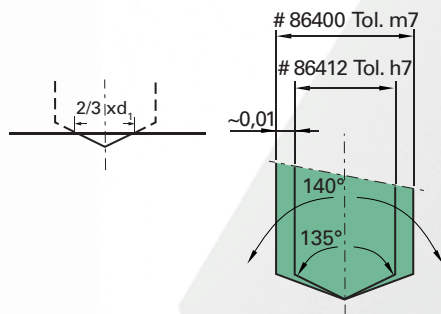
整体硬质合金微型钻头

导引孔加工

使用整体硬质合金微型钻头 $15xD$ 时, 我们建议先加工深度 $1xD$ 至 $2xD$ 的导向孔。整体硬质合金 $4xD$ 微型钻头是该导向孔的最佳之选。其尖角和直径公差与其最为适配。

定心

为发挥钻孔深度 $8xD$ 以上整体硬质合金微型钻头的最佳性能, 我们建议进行定心。为此, 可使用 $4xD$ 的整体硬质合金微型钻头, 货号 86400。
定心直径大约应为 $2/3xD$ 。



过滤器质量

由于极小的冷却通道直径, 我们建议在使用整体硬质合金微型钻头时持续监控冷却润滑剂的过滤器质量。



TS 钻头的应用建议

整体硬质合金钻头的一般提示

高性能机床, 高精度刀柄, 刀尖跳动偏差最大0.02mm, 高冷却压力, 建议采用液压力柄和热缩刀柄。

整体硬质合金钻头的冷却提示

我们建议使用乳化液或油进行冷却润滑。在特殊情况下可以通过空气冷却, 但并不推荐空冷。可以考虑微量润滑, 微量润滑推荐使用锥柄和HARTNER 微量润滑元件。进一步详情请与我公司技术部门联系。

货号: HA	HA
货号: HE	HE
标准/DIN	
刀具材质	
表面处理	
类型	
内冷	
页码	

进给代号为粗体的刀具是首选项。

钻头直径 Ø mm	进给代号								
	1	2	3	4	5	6	7	8	9
	f(mm/圈)								
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800

冷却剂:
 ● 乳化液
 ● 切削油
 ○ 空气

材料组	材料例举,最新牌号(括弧内为旧牌号) 粗体数字=材料代号依据DIN EN	拉伸强度_ MPa (N/mm ²)	硬度	冷却方式
普通结构钢	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2)	≤500		●
	1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤1000		●
易切削钢	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36)	≤850		●
	1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤1000		●
非合金热处理钢	1.0402 C22, 1.1178 C30E (Ck30)	≤700		●
	1.0503 C45, 1.1191 C45E (Ck45)	≤850		●
	1.0601 C60, 1.1221 C60E (Ck60)	≤1000		●
合金热处理钢	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4	≤1000		●
	1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1400		●
非合金表面硬化钢	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		●
合金表面硬化钢	1.7276 10CrMo11, 1.5125 11MnSi6	≤1000		●
	1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1400		●
氮化钢	1.8504 34CrAl6	≤1000		●
	1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1400		●
工具钢	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9	≤850		●
	1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤1400		●
高速钢	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
弹簧钢	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
硬化钢	-		≤48 HRC	●
			≤66 HRC	●
不锈钢,硫化	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9	≤900		●
奥氏体	1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
马氏体	1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤1500		●
铸铁	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20)		≤240 HB	●○
	0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤350 HB	●○
球墨铸铁和	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMW-350-4 (GTW35)		≤240 HB	●○
可锻铸铁	0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤350 HB	●○
冷激铸铁	-		≤350 HB	●○
蠕墨铸铁 GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35)		≤220 HB	●○
	EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤300 HB	●○
蠕墨铸铁 ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000)	≤1000		●○
	EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1400		●○
特殊合金	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
钛及钛合金	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2	≤850		●
	3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
铝及铝合金	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		●
锻铝合金	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		●
铸铝 ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	≤600		●
≤ 24 % Si	3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		●
镁合金	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		○
低合金铜	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤600		●
黄铜,短屑	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2	≤600		●
长屑	2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600		●
青铜,短屑	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn	≤600		●
	2.0790 CuNi18Zn19Pb	≤850		●
青铜,长屑	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	≤850		●
	2.0980 CuAl11Ni, 2.1247 CuBe2	≤1000		●
热固塑料	环氧树脂, Resopal, Pertinax, Moltopren	≤150		○
热塑塑料	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
Kevlar 合成纤维	Kevlar	≤1000		○
玻璃/碳纤维	GFK/CFK	≤1000		○



HARTNER

≤3xD

89413
89402
6537K
VHM
FIRE
TS 100 U
不带内冷
10

89410
89415
6537K
VHM
FIRE
TS 100 U
带内冷
14

89450
89550
6537K
VHM
AlTiN nano
TS 100 INOX
带内冷
24

89422
6537K
VHM
TiAlSiN
TS 100 H
不带内冷
50

89423
89424
6537K
VHM
TiAlSiN
TS 100 H
带内冷
52

≤4xD

89292
WN
VHM
光亮处理
TS 150 GG
带内冷
36

≤5xD

89414
89417
6537L
VHM
FIRE
TS 100 U
不带内冷
12

89411
89408
6537L
VHM
FIRE
TS 100 U
带内冷
16



V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号
130	7	145	7			130	7	145	7	130	7	145	7
110	6	120	6			110	6	120	6	110	6	120	6
145	8	170	8			145	8	170	8	145	8	170	8
110	7	145	8			110	7	145	8	110	7	145	8
120	7	130	8			120	7	130	8	120	7	130	8
110	7	125	7			110	7	125	7	110	7	125	7
105	7	120	7			105	7	120	7	105	7	120	7
105	7	120	7			105	7	120	7	105	7	120	7
100	6	105	7			100	6	105	7	100	6	105	7
130	8	145	8			130	8	145	8	130	8	145	8
120	7	120	7			120	7	120	7	120	7	120	7
85	5	85	5			85	5	85	5	85	5	85	5
100	6	110	7			100	6	110	7	100	6	110	7
90	5	105	5			90	5	105	5	90	5	105	5
65	6	80	6			65	6	80	6	65	6	80	6
55	5	65	5			55	5	65	5	55	5	65	5
		60	4			55	4	60	4			60	5
45	3	60	3			45	3	60	3	45	3	60	3
40	1	55	3			40	1	55	3	40	1	55	2
20	1	35	2			20	1	35	2	20	1	35	2
40	2	60	5	80	5	40	2			40	2	60	5
15	1	55	2	60	2-3	15	1			15	1	55	5
35	2	45	5	80	5	35	2			35	2	45	5
210	8	210	9							120	7	210	9
155	8	160	9							100	7	155	8
155	7	140	9							90	7	155	7
125	7	130	8							80	7	125	7
35	3	40	3							40	2	35	3
25	4	35	4	30	4	25	4	35	4			25	4
15	1	45	4	45	4	15	1	45	4			15	1
15	1	40	3	40	3	15	1	40	3			15	1
260	9	310	9							410	9	260	9
260	9	310	9							410	9	260	9
220	8	260	9							380	9	220	9
180	8	220	9							330	9	180	8
260	8	280	8									260	8
105	7	125	7									105	7
270	8	325	8							280	9	270	8
180	7	220	7									180	7
105	6	125	7							110	6	105	6
85	6	105	6							80	5	85	6
80	5	90	6									80	5
60	5	80	6									60	5



TS 钻头的应用建议

货号: HA	HA
货号: HE	HE
标准/DIN	
刀具材质	
表面处理	
类型	
内冷	
页码	

整体硬质合金钻头的一般提示

高性能机床, 高精度刀柄, 刀尖跳动偏差最大0.02mm, 高冷却压力, 建议采用液压力刀柄和热缩刀柄。

整体硬质合金钻头的冷却提示

我们建议使用乳化液或油进行冷却润滑。在特殊情况下可以通过空气冷却, 但并不推荐空冷。可以考虑微量润滑, 微量润滑推荐使用锥柄和HARTNER 微量润滑元件。进一步详情请与我公司技术部门联系。

进给代号为粗体的刀具是首选项。

钻头直径 Ø mm	进给代号								
	1	2	3	4	5	6	7	8	9
	f(mm/圈)								
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800

冷却剂:
 ● 乳化液
 ● 切削油
 ○ 空气

材料组	材料例举,最新牌号(括弧内为旧牌号) 粗体数字=材料代号依据DIN EN	拉伸强度_ MPa (N/mm ²)	硬度	冷却方式
普通结构钢	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2)	≤500		●
	1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤1000		●
易切削钢	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36)	≤850		●
	1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤1000		●
非合金热处理钢	1.0402 C22, 1.1178 C30E (Ck30)	≤700		●
	1.0503 C45, 1.1191 C45E (Ck45)	≤850		●
	1.0601 C60, 1.1221 C60E (Ck60)	≤1000		●
合金热处理钢	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4	≤1000		●
	1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1400		●
非合金表面硬化钢	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		●
合金表面硬化钢	1.7276 10CrMo11, 1.5125 11MnSi6	≤1000		●
	1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1400		●
氮化钢	1.8504 34CrAl6	≤1000		●
	1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1400		●
工具钢	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9	≤850		●
	1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤1400		●
高速钢	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
弹簧钢	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
硬化钢	-		≤48 HRC	●
			≤66 HRC	●
不锈钢,硫化	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9	≤900		●
奥氏体	1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
马氏体	1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤1500		●
铸铁	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20)		≤240 HB	●○
	0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤350 HB	●○
球墨铸铁和	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMW-350-4 (GTW35)		≤240 HB	●○
可锻铸铁	0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤350 HB	●○
冷激铸铁	-		≤350 HB	●○
蠕墨铸铁 GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35)		≤220 HB	●○
	EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤300 HB	●○
蠕墨铸铁 ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000)	≤1000		●○
	EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1400		●○
特殊合金	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
钛及钛合金	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2	≤850		●
	3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
铝及铝合金	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		●
锻铝合金	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		●
铸铝 ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	≤600		●
≤ 24 % Si	3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		●
镁合金	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		●
低合金铜	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤600		●
黄铜,短屑	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2	≤600		●
长屑	2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600		●
青铜,短屑	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn	≤600		●
	2.0790 CuNi18Zn19Pb	≤850		●
青铜,长屑	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	≤850		●
	2.0980 CuAl11Ni, 2.1247 CuBe2	≤1000		●
热固塑料	环氧树脂, Resopal, Pertinax, Moltopren	≤150		○
热塑塑料	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
Kevlar 合成纤维	Kevlar	≤1000		○
玻璃/碳纤维	GFK/CFK	≤1000		○



HARTNER

≤5xD

89451
89551
6537L
VHM
AlTiN nano
TS 100 INOX
带内冷
26

89425
89426
6537L
VHM
TiAlSiN
TS 100 H
带内冷
54

89420
6537L
VHM
FIRE
TS 100 R
带内冷
32

89560
6537L
VHM
光亮处理
TS 100 ALU
带内冷
44

≤7xD

89412
89416
WN
VHM
FIRE
TS 100 U
带内冷
18

89427
WN
VHM
TiAlSiN
TS 100 H
带内冷
56

89294
WN
VHM
光亮处理
TS 150 GG
带内冷
37

89421
WN
VHM
FIRE
TS 100 R
带内冷
34



V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号	V _c m/min	进给率代号
145	7	145	7	145	7	145	6	145	6	145	6	145	6
120	6	120	6	120	6	120	5	120	5	120	5	120	5
170	8	170	8	170	8	170	7	170	7	170	7	170	7
145	8	145	8	145	7	145	7	145	7	145	7	145	7
130	8	130	8	130	7	130	7	130	7	130	7	130	7
125	7	125	7	125	6	125	6	125	6	125	6	125	6
120	7	120	7	120	6	120	6	120	6	120	6	120	6
120	7	120	7	120	6	120	6	120	6	120	6	120	6
105	7	105	7	105	6	105	6	105	6	105	6	105	6
145	8	145	8	145	7	145	7	145	7	145	7	145	7
120	7	120	7	120	6	120	6	120	6	120	6	120	6
85	5	85	5	85	4	85	4	85	4	85	4	85	4
110	7	110	7	110	6	110	6	110	6	110	6	110	6
105	5	105	5	105	4	105	4	105	4	105	4	105	4
80	6	80	6	80	5	80	5	80	5	80	5	80	5
65	5	65	5	65	4	65	4	65	4	65	4	65	4
60	4	60	4	60	4	60	3	60	3	60	3	60	3
60	3	60	3	60	2	60	2	60	2	60	2	60	2
55	3	55	3	55	2	55	2	55	2	55	2	55	2
35	2	35	2	35	1	35	1	35	1	35	1	35	1
80	5	80	5	80	4	80	4	80	4	80	4	80	4
60	2-3	60	2-3	60	2	60	2	60	2	60	2	60	2
80	5	80	5	80	4	80	4	80	4	80	4	80	4
210	9	210	9	210	8	210	8	210	8	210	8	210	8
160	9	160	9	160	8	160	8	160	8	160	8	160	8
160	9	160	9	160	8	160	8	160	8	160	8	160	8
130	8	130	8	130	7	130	7	130	7	130	7	130	7
130	8	130	8	130	7	130	7	130	7	130	7	130	7
100	8	100	8	100	7	100	7	100	7	100	7	100	7
80	8	80	8	80	7	80	7	80	7	80	7	80	7
60	8	60	8	60	7	60	7	60	7	60	7	60	7
35	4	35	4	35	3	35	3	35	3	35	3	35	3
45	4	45	4	45	3	45	3	45	3	45	3	45	3
40	3	40	3	40	2	40	2	40	2	40	2	40	2
350	9	350	9	350	8	350	8	350	8	350	8	350	8
320	8	320	8	320	7	320	7	320	7	320	7	320	7
280	7	280	7	280	6	280	6	280	6	280	6	280	6
320	7	320	7	320	6	320	6	320	6	320	6	320	6
190	7	190	7	190	6	190	6	190	6	190	6	190	6
160	6	160	6	160	5	160	5	160	5	160	5	160	5
160	6	160	6	160	5	160	5	160	5	160	5	160	5
160	6	160	6	160	5	160	5	160	5	160	5	160	5
150	6	150	6	150	5	150	5	150	5	150	5	150	5
150	6	150	6	150	5	150	5	150	5	150	5	150	5
100	3	100	3	100	2	100	2	100	2	100	2	100	2
100	3	100	3	100	2	100	2	100	2	100	2	100	2
100	2	100	2	100	2	100	2	100	2	100	2	100	2
410	8	410	8	410	8	410	8	410	8	410	8	410	8
380	8	380	8	380	8	380	8	380	8	380	8	380	8
330	8	330	8	330	8	330	8	330	8	330	8	330	8
280	7	280	7	280	7	280	7	280	7	280	7	280	7
110	6	110	6	110	6	110	6	110	6	110	6	110	6
80	5	80	5	80	5	80	5	80	5	80	5	80	5



TS 钻头的应用建议

进给代号为粗体的刀具是首选项。

钻头直径 Ø mm	进给代号								
	1	2	3	4	5	6	7	8	9
	f(mm/圈)								
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800

冷却剂:
 ● 乳化液
 ● 切削油
 ○ 空气

货号: HA	HA
货号: HE	HE
标准/DIN	
刀具材质	
表面处理	
类型	
内冷	
页码	

钻头直径 Ø mm	针对货号 86400/86405/86401/86408/86412 的进给顺序码												
	56	57	58	59	60	61	62	63	64	65	66	67	68
	f(mm/圈)												
0,50	0,006	0,012	0,018	0,022	0,030	0,035	0,040	0,045	0,050	0,050	0,055	0,060	0,060
0,80	0,008	0,016	0,024	0,032	0,040	0,050	0,060	0,070	0,080	0,080	0,080	0,090	0,090
1,00	0,012	0,022	0,032	0,042	0,060	0,070	0,080	0,090	0,100	0,100	0,110	0,110	0,120
1,50	0,021	0,036	0,051	0,066	0,090	0,100	0,120	0,130	0,150	0,150	0,160	0,170	0,180
2,00	0,032	0,052	0,072	0,092	0,120	0,140	0,160	0,180	0,200	0,210	0,220	0,230	0,240
2,50	0,045	0,070	0,095	0,120	0,150	0,170	0,200	0,220	0,250	0,260	0,270	0,280	0,300
3,00	0,060	0,090	0,120	0,150	0,180	0,210	0,240	0,270	0,300	0,310	0,330	0,340	0,360

材料组	材料例举,最新牌号(括弧内为旧牌号) 粗体数字=材料代号依据DIN EN	拉伸强度_ MPa (N/mm ²)	硬度	冷却方式
普通结构钢	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2)	≤500		●
	1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤1000		●
易切削钢	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36)	≤850		●
	1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤1000		●
非合金热处理钢	1.0402 C22, 1.1178 C30E (Ck30)	≤700		●
	1.0503 C45, 1.1191 C45E (Ck45)	≤850		●
	1.0601 C60, 1.1221 C60E (Ck60)	≤1000		●
合金热处理钢	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4	≤1000		●
	1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1400		●
非合金表面硬化钢	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		●
合金表面硬化钢	1.7276 10CrMo11, 1.5125 11MnSi6	≤1000		●
	1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1400		●
氮化钢	1.8504 34CrAl6	≤1000		●
	1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1400		●
工具钢	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9	≤850		●
	1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤1400		●
高速钢	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
弹簧钢	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
硬化钢	-		≤48 HRC	●
			≤66 HRC	●
不锈钢,硫化	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9	≤900		●
奥氏体	1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
马氏体	1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤1500		●
铸铁	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20)		≤240 HB	●○
	0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤350 HB	●○
球墨铸铁和	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMW-350-4 (GTW35)		≤240 HB	●○
可锻铸铁	0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤350 HB	●○
冷激铸铁	-		≤350 HB	●○
蠕墨铸铁 GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35)		≤220 HB	●○
	EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤300 HB	●○
蠕墨铸铁 ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000)	≤1000		●○
	EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1400		●○
特殊合金	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
钛及钛合金	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2	≤850		●
	3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
铝及铝合金	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		●
锻铝合金	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		●
铸铝 ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	≤600		●
≤ 24 % Si	3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		●
镁合金	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		●
低合金铜	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤600		●
黄铜,短屑	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2	≤600		●
长屑	2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600		●
青铜,短屑	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn	≤600		●
	2.0790 CuNi18Zn19Pb	≤850		●
青铜,长屑	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	≤850		●
	2.0980 CuAl11Ni, 2.1247 CuBe2	≤1000		●
热固塑料	环氧树脂, Resopal, Pertinax, Moltopren	≤150		○
热塑塑料	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
Kevlar 合成纤维	Kevlar	≤1000		○
玻璃/碳纤维	GFK/CFK	≤1000		○



TS 钻头的应用建议

货号: HA	HA
货号: HE	HE
标准/DIN	
刀具材质	
表面处理	
类型	
内冷	
页码	

步骤

- 在工件表面铣一个平面, 确保正确的钻孔角度。
- 钻深 1xD 引导孔 (公差 F9)
- 以大约 300 转/分钟的速度和 500 毫米/分钟的进给进入引导孔
- 打开冷却液同时转速提到至设定值。
- 一次性加工至预定深度, 不要啄钻
- 加工出口为斜面的通孔, 钻穿前 1mm 处将进给 V 降低至 40%
- 到达孔深, 机床主轴停转, 冷却液停供, 快速退回

进给代号为粗体的刀具是首选项。

钻头直径 Ø mm	进给代号								
	1	2	3	4	5	6	7	8	9
	f(mm/圈)								
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630

冷却剂:
 ● 乳化液
 ● 切削油
 ○ 空气

材料组	材料例举, 最新牌号 (括弧内为旧牌号) 粗体数字=材料代号依据 DIN EN	拉伸强度_ MPa (N/mm ²)	硬度	冷却方式
普通结构钢	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤500 ≤1000		●
易切削钢	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤850 ≤1000		●
非合金热处理钢	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤700 ≤850 ≤1000		●
合金热处理钢	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1000 ≤1400		●
非合金表面硬化钢	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		●
合金表面硬化钢	1.7276 10CrMo11, 1.5125 11MnSi6 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1000 ≤1400		●
氮化钢	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1000 ≤1400		●
工具钢	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤850 ≤1400		●
高速钢	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
弹簧钢	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
硬化钢	-		≤48 HRC ≤66 HRC	●
不锈钢, 硫化 奥氏体 马氏体	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) 1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤900 ≤1100 ≤1500		●
铸铁	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20) 0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤240 HB ≤350 HB	●
球墨铸铁和 可锻铸铁	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMW-350-4 (GTW35) 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	●
冷激铸铁	-		≤350 HB	●
蠕墨铸铁 GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35) EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤220 HB ≤300 HB	●
蠕墨铸铁 ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000) EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1000 ≤1400		●
特殊合金	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
钛及钛合金	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		●
铝及铝合金	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		●
锻铝合金	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		●
铸铝 ≤ 10 % Si ≤ 24 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		●
镁合金	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		●
低合金铜	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤600		●
黄铜, 短屑 长屑	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600 ≤600		●
青铜, 短屑	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤600 ≤850		●
青铜, 长屑	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤850 ≤1000		●
热固塑料	环氧树脂, Resopal, Pertinax, Moltopren	≤150		○
热塑塑料	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
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玻璃/碳纤维	GFK/CFK	≤1000		○

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▼ TS 硬质合金钻头



▼ TF 100 系列变螺旋铣刀



▼ 整体硬质合金铣刀



▼ 倒角钻



▼ 铲钻



▼ 快速钻



▼ TM 刀具管理柜

HARTNER GMBH

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