BASS
TECHNIK FÜR GEWINDE

DURAMAX 挤压丝锥
DURAMAX ROLL TAPS

可无屑加工内螺纹
FOR CHIPLESS PRODUCTION OF INTERNAL THREADS

最大至直径 M64x6 | up to M64x6

无屑、高性能、工艺可靠

挤压丝锥突出表现为无屑而干净的加工工艺。它们利用材料本身流动的特性加工形成内螺纹。

我们的DURAMAX挤压丝锥系列，从直径M1到M48以及其他标准螺纹，最大至直径M64x6，有各种全面而高性能的样本标准品可供选择。

每种DURAMAX-系列标准丝锥，都能同时完美地用于加工最深至3xd的通孔或盲孔。其无屑挤压成型工艺，甚至是用于很深的螺纹，都能保证极高的加工可靠性

其他标准品:
- 无涂层 / 其他涂层
- 带油槽 / 不带油槽
- 用于钣金件加工

Chipless. High-performing. Process reliable.

Roll tapping stands out as a clean and therefore chipless manufacturing process. As forming tools, they use the processed material' s flowing properties to form the internal thread.

With the roll taps of our DURAMAX-family, we offer you a comprehensive and high-performing catalogue assortment ranging from M1 to M48 as well as an additional standard program with dimensions up to M64x6.

Each of our DURAMAX-types is perfectly suitable for the machining of both through and blind holes up to 3xd. The chipless thread forming process ensures a high process reliability even for large thread depths.

Other catalogue tools:
- blank / other coatings
- with / without oil grooves
- for sheet metal processing

螺纹切削
- 材料分子纤维被切断

螺纹挤压
- 材料分子纤维仍连续
- 螺纹强度更高

THREAD CUTTING
- interrupted fiber course

THREAD FORMING
- continuous fiber course
- higher strength

优点 与螺纹切削相比较

- 避免了排屑的问题
- 即使加工深螺纹也有很高的工艺可靠性
- 螺纹强度高防止失效
- 螺纹表面质量更高
- 螺纹精度高，形状更好
- 不会产生螺纹错切
- 加工寿命高
- 可用于更高的加工参数
- BASS挤压丝锥 – 可同时用于挤压通孔、盲孔或不同材料

条件

- 材料抗拉强度不超过1,200 N/mm²
- 材料延展性不低于8%
- 螺纹底孔直径公差小，精度高
- 良好的冷却润滑
- 螺距不超过6mm
- 扭矩高，功率大 (切削丝锥的1.5-2倍)

特殊螺纹

- 已经可以加工大约40种不同类型螺纹
- 包括圆螺纹、梯形螺纹和锯齿形螺纹

ADVANTAGES compared to thread cutting

- elimination of chip problems
- high process reliability also for large thread depths
- increased strength against thread wear
- better surface quality/profile finish
- exact tolerance and thread profile
- no threads with axial miscut
- higher tool life
- higher cutting speed possible
- with BASS – only one roll tap for the machining of through holes, blind holes and different materials

REQUIREMENTS

- tensile strength of material up to 1,200 N/mm²
- elongation at rupture of min. 8%
- precise bore hole diameter with smaller tolerance
- good coolant-lubrication
- thread pitch up to 6 mm
- input power for higher torque (1.5-2 x cutting tap)

SPECIAL THREADS

- already about 40 thread types have been realized
- including round, trapezoidal and buttress threads

复合槽型 – 一种革命性的槽型设计

在螺纹挤压过程中，尤其是MQL微凉润滑，很容易产生一些材料的微小颗粒。

这些微小的颗粒会损伤刀具和工件，因此降低刀具寿命，还需要额外增加工件清洗。

通过深入分析和大量的测试，我们开发了一种革命性的专利挤压丝锥槽型–复合槽型。其特殊的几何尺寸可以在加工过程中带走这些微小颗粒。

退刀后刀具和工件上均无任何残留。

相比于传统的槽型设计，我们的挤压丝锥可提高最大30%的寿命。

The multi-groove – a revolutionary groove form.

During the thread forming process, especially with MQL, small material particles are moving out of the ridge of the furrow.

These particles contaminate both the tool and the part. As a result, tool life decreases, making necessary a subsequent component cleaning.

Through intensive engineering work and series of testing, we have developed a groove form that is revolutionary and patented – the multi-groove. Its special geometry removes contaminants already during the manufacturing process.

Both tool and part henceforth come out clean.

The tool life of the threading tool, compared to a traditional groove form, can be increased by up to 30 %.

patented groove form for a longer tool life and clean parts

multi-groove

multi-groove

专利的挤压槽型设计可达到更高的寿命和干净的零件

TIN / TICN / HL / BT

for high cutting speed and tool life

coatings

涂层

TIN / TICN / HL / BT

用于高参数和寿命

MKR - radial internal coolant for Minimum Quantity Lubrication, disposal at square with internal cone

MKR AK - as above but with external cone

MQL

微凉润滑

MKR – 丝锥方隼上带有内锥度，用于微凉润滑的径向内冷

MKR AK – 同上但方隼上带有外锥度

axial for improved coolant lubrication in blind holes

radial for improved coolant lubrication in through holes

internal coolant

内冷

轴向内冷用于提高盲孔加工的冷却润滑

径向内冷用于提高通孔加工的冷却润滑

with oil grooves for standard applications

without oil grooves for small thread depths, thin-walled parts and non-ferrous metals

oil grooves

油槽

带油槽丝锥可用于通用加工

不带油槽丝锥可用于浅螺纹、薄壁件和有色金属

HSSE-PM for high tensile strength and tool life

solid carbide (VHM) for stable machining conditions to achieve a very high tool life

tool material

丝锥材质

粉末冶金丝锥用于高强度材料和高寿命

硬质合金（VHM）丝锥在稳定工况下能达到极高的寿命

acc. to DIN 2175

C / 2-3 teeth for standard applications

E / 1.5-2 teeth for short thread run-outs

chamfer forms

丝锥导向

按照DIN2175标准

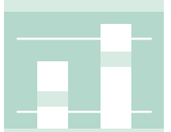
C / 2-3 牙
通用加工

E / 1.5-2 牙
用于丝锥出头距离短的情况

standard tolerances 4HX / 6HX / 6GX / 7GX / 2BX / X

other tolerances upon request

thread tolerances



螺纹公差

标准公差
4HX / 6HX / 6GX / 7GX / 2BX / X

可非标订制其他公差

h9 for standard applications

h6 also suitable for shrink fit holders and hydraulic chucks

shank tolerances

柄部公差

h9用于通用加工

h6可用于热缩刀柄或液压刀柄

for deep-seated threads

shank long (SL)

柄部加长（SL）

用于深孔螺纹

BASS
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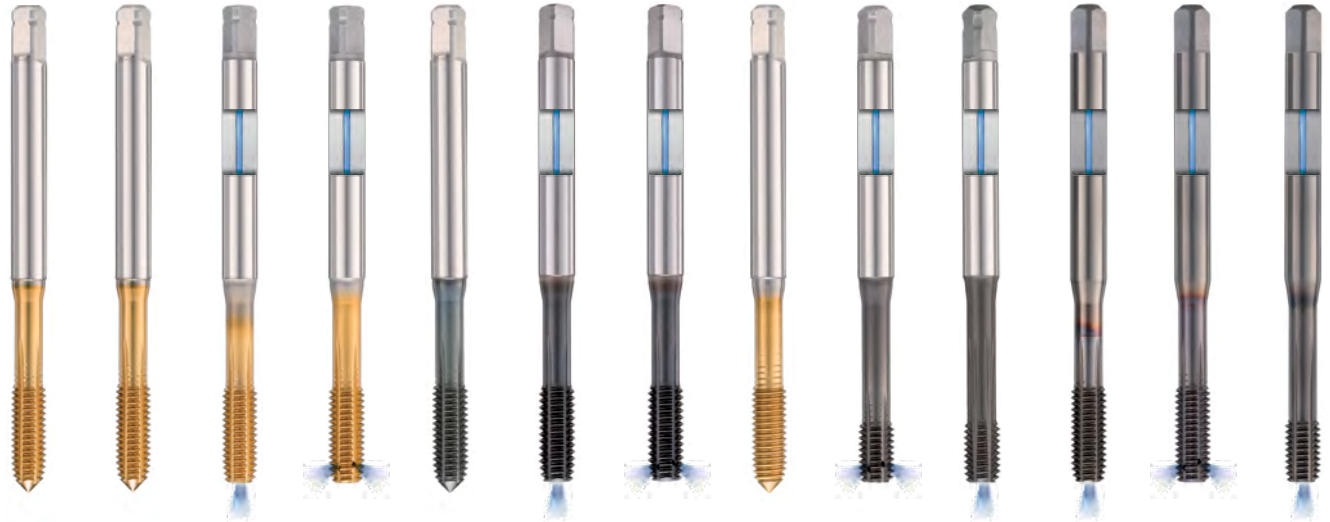
	粉末冶金 / HSSE-PM										硬质合金 / VHM		
	DURAMAX N	DURAMAX H	DURAMAX H	DURAMAX H	DURAMAX H	DURAMAX H	DURAMAX H	DURAMAX HO	DURAMAX GAL	DURAMAX GAL	DURAMAX H	DURAMAX H	DURAMAX GAL
													
规格 model	TIN TIN SL	TIN	KA TIN	KR TIN	BT	KA BT	KR BT	TIN	MKR HL / MKR AK HL	MKA BT MG	KA TICN	KR TICN	KA HL
导向 chamfer form	C / 2-3 E / 1,5-2	C / 2-3	C / 2-3	C / 2-3	C / 2-3 E / 1,5-2	C / 2-3	C / 2-3	C / 2-3	E / 1,5-2	E / 1,5-2	E / 1,5-2	C / 2-3	E / 1,5-2
螺纹种类 thread type	M / MF UNC / UNF G	M / MF	M / MF	M	M / MF	M	M	M	M / MF	M / MF	M	M	M
公差 tolerance	6HX 6GX / 7GX 2BX	6HX 6GX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX

	材料应用	Application	抗拉强度N/mm²	HB硬度											
1.	**钢件**	**Steel materials**													
1.1	软磁钢	Magnetic soft steel	> 100 < 450		**20 - 30**	**20 - 30**	**20 - 30**	**20 - 30**	**20 - 35**	**20 - 35**	**20 - 35**	20 - 30			**30 - 40**	**30 - 40**	
1.2	结构钢 / 表面硬化钢	Construction steel / case hardening steel	> 300 < 700		**20 - 50**	**20 - 50**	**20 - 50**	**20 - 50**	**20 - 55**	**20 - 55**	**20 - 55**	20 - 50			**20 - 60**	**20 - 60**	
1.3	碳钢	Carbon steel	> 400 < 950		**20 - 30**	**20 - 30**	**20 - 30**	**20 - 30**	**20 - 35**	**20 - 35**	**20 - 35**	20 - 30			**20 - 60**	**20 - 60**	
1.4	合金 / 热处理钢	Alloyed / heat-treatable steel	> 450 < 950		**15 - 30**	**15 - 30**	**15 - 30**	**15 - 30**	**15 - 35**	**15 - 35**	**15 - 35**	15 - 30		15 - 35	**20 - 50**	**20 - 50**	
1.5	合金钢	Alloyed steel	> 800 < 1250	> 235 < 370	**10 - 20**	**10 - 20**	**10 - 20**	**10 - 20**	**10 - 25**	**10 - 25**	**10 - 25**	10 - 20		**10 - 25**	**15 - 35**	**15 - 35**	
2.	**不锈钢**	**Stainless steel**															
2.1	铁素体 / 马氏体 不锈钢	Ferritic / martensitic steel	> 450 < 1200		**6 - 12**	**6 - 12**	**6 - 12**	**6 - 12**	**6 - 15**	**6 - 15**	**6 - 15**	6 - 12			**10 - 25**	**10 - 25**	
2.2	奥氏体不锈钢	Austenitic steel	> 400 < 950		**8 - 12**	**8 - 12**	**8 - 12**	**8 - 12**	**8 - 15**	**8 - 15**	**8 - 15**	8 - 12			**10 - 25**	**10 - 25**	
2.3	耐热钢	High temperature steel	> 850 < 1550	> 250 < 455	4 - 10	**4 - 10**	**4 - 10**	**4 - 10**	**4 - 12**	**4 - 12**	**4 - 12**	4 - 10			**10 - 25**	**10 - 25**	
4.	**紫铜**	**Copper**															
4.1	纯铜	Copper non-alloyed	> 200 < 400	> 60 < 120	10 - 30	10 - 30	10 - 30	10 - 30	10 - 35	10 - 35	10 - 35	**10 - 30**			25 - 50	**25 - 50**	
4.3	黄铜（长屑）	Brass (long chipping)	> 150 < 700	> 45 < 200	**15 - 35**	**15 - 35**	**15 - 35**	**15 - 35**	**15 - 40**	**15 - 40**	**15 - 40**	15 - 35			**25 - 60**	**25 - 60**	
5.	**铝镁合金**	**Aluminium / Magnesium**															
5.1	含硅量≤ 0,5%铝合金	Alu wrought alloy Si ≤ 0,5%	> 100 < 700	> 30 < 200					15 - 40	15 - 40	15 - 40		**20 - 40**	**20 - 50**	25 - 80	**25 - 80**	**30 - 90**
5.2	含硅量≤ 6%铝合金	Alu alloyed Si ≤ 6%	> 150 < 700	> 45 < 200	**20 - 40**	**20 - 40**	**20 - 40**	**20 - 40**	**20 - 60**	**20 - 60**	**20 - 60**	20 - 40	**20 - 40**	**20 - 60**	**30 - 80**	**30 - 80**	**30 - 90**
5.3	含硅量> 6%铝合金	Alu alloyed Si > 6%	> 150 < 900	> 45 < 265	**15 - 40**	**15 - 40**	**15 - 40**	**15 - 40**	**15 - 50**	**15 - 50**	**15 - 50**	15 - 40	**15 - 40**	**15 - 50**	**30 - 60**	**30 - 60**	**30 - 70**
7.	**镍基合金**	**Nickel**															
7.1	纯镍	Nickel non-alloyed	> 400 < 600	> 120 < 175	**10 - 25**	**10 - 25**	**10 - 25**	**10 - 25**	**10 - 25**	**10 - 25**	**10 - 25**	10 - 25	**10 - 25**	**10 - 25**	**12 - 35**	**12 - 35**	

若螺距大于3mm以上请另外告知我们。 / For thread pitches starting 3 mm please contact us.

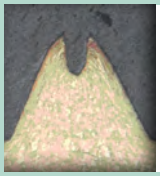
非常适合 / 较适合 – **Tool well suitable** / Tool suitable

底孔直径

螺纹底孔尺寸决定了材料挤压的程度和内螺纹的小径。所提供的底孔直径为经验值。我们建议单独通过刀具测试来选择最合适的钻头直径。

Bore hole diameter

The size of the bore hole diameter defines the extent of material deformation and thereby the minor diameter of the internal thread. The given bore hole diameters are approximative. We recommend to select the most suitable drill size by additional tool testing.



底孔合适
- 螺纹挤压成形良好
- 小径公差7H符合DIN13标准第50部分，螺纹通规能过

correct bore hole diameter
- optimally formed thread
- minor diameter tolerance 7H according to DIN 13 part 50, thread is true to gauge

底孔偏大
- 螺纹未完全成形
- 小径偏大
- 结果：螺纹拔出强度不够

bore hole too big
- thread is not formed completely
- minor diameter too big
- result: insufficient pull out strength

底孔偏小
- 螺纹过分挤压
- 扭矩过大
- 有断刀风险
- 小径偏小，不符合标准

bore hole too small
- thread is "over-formed"
- too high torque
- risk of tool breakage
- minor diameter is too small

选取部分BASS产品范围

更多螺纹直径和类型可参考我们网站www.bass-tools.com/service 上的样本资料和螺纹底孔直径海报。

Extract from BASS product range

Information on further dimensions and thread types are available in our catalog and on the poster on bore hole diameters, which can also be found on our website under www.bass-tools.com/service.

公制粗牙螺纹 DIN13 — **ISO metric coarse thread DIN 13**

直径 D	螺距(mm) P in mm	底孔直径（mm） Bo. Ø in mm
M 2	0,4	1,82 ± 0,02
M 3	0,5	2,80 ± 0,02
M 4	0,7	3,70 ± 0,03
M 5	0,8	4,65 ± 0,03
M 6	1	5,55 ± 0,03
M 8	1,25	7,45 ± 0,04
M 10	1,5	9,35 ± 0,04
M 12	1,75	11,20 ± 0,05
M 14	2	13,10 ± 0,05
M 16	2	15,10 ± 0,05
M 18	2,5	16,80 ± 0,05
M 20	2,5	18,80 ± 0,05
M 22	2,5	20,80 ± 0,05
M 24	3	22,60 ± 0,05
M 27	3	25,60 ± 0,05
M 30	3,5	28,30 ± 0,05
M 33	3,5	31,30 ± 0,05
M 36	4	34,10 ± 0,05
M 39	4	37,10 ± 0,05
M 42	4,5	39,80 ± 0,05
M 45	4,5	42,80 ± 0,05
M 48	5	45,60 ± 0,05

公制细牙螺纹 DIN13 — **ISO metric fine thread DIN 13**

直径 D	螺距(mm) P in mm	底孔直径（mm） Bo. Ø in mm
M 4	0,5	3,80 ± 0,02
M 5	0,5	4,80 ± 0,02
M 6	0,5	5,80 ± 0,02
M 6	0,75	5,65 ± 0,03
M 8	1	7,55 ± 0,03
M 10	1	9,55 ± 0,03
M 10	1,25	9,45 ± 0,04
M 12	1	11,55 ± 0,03
M 12	1,25	11,45 ± 0,04
M 12	1,5	11,35 ± 0,04
M 14	1	13,55 ± 0,03
M 14	1,5	13,35 ± 0,04
M 16	1	15,55 ± 0,03
M 16	1,5	15,35 ± 0,04
M 18	1,5	17,35 ± 0,04
M 20	1,5	19,35 ± 0,04
M 22	1,5	21,35 ± 0,04

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