高效率 · 多功能挤压丝锥

A-XPF

Highly Efficient Multi-purpose Forming Tap

The A Brand

攻丝加工中，是否有困扰？

Do you have any problems with tapping?

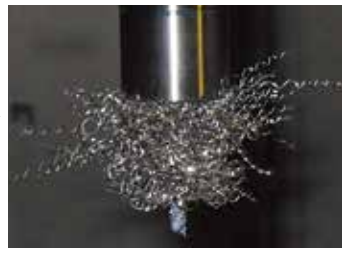
导致攻丝加工困扰的主要因素是排屑不稳定。A-XPF通过材料的塑性变形形成螺纹牙，因此无切屑产生。它是可对应广泛加工材料和切削条件的划时代产品。

Most tapping troubles are caused by unstable chip evacuation. The A-XPF forms threads by plastic deformation of the work material and does not generate cutting chips. It is a revolutionary product that excels in a wide range of work materials and cutting conditions.

攻丝加工的问题 TOP3 Tapping Troubles		
No.1	折损・崩刃 Breakage and chipping	26%
No.2	螺纹精度不良 Dimensional error	17%
No.3	烂牙、刮痕等 Galling	14%
	其他 Others	43%

资料来源：本公司技术咨询实绩
Source: OSG Technical Consultation Division

主要困扰因素是"切屑"
Main factor is chip packing



实现低阻力的
特殊切削锥式样
[PAT. in Japan]
Special chamfer specification
Achieves low thrust

提高螺纹部刚性的
特殊螺纹部式样
[PAT. in Japan]
Special thread configuration
Improves thread rigidity

高性能的
丝锥专用特殊涂层
[PAT.P. in Japan]
Special coating designated for high-performance taps

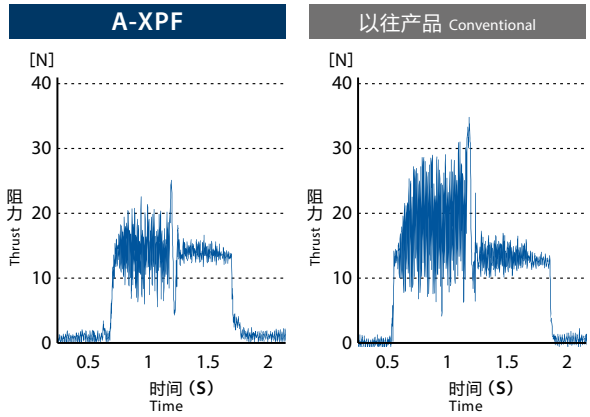
高耐磨损性
粉末高速钢
Powder Metallurgy HSS(CPM)
High wear resistance

零切屑提高生产效率

Improves productivity with zero cutting chips

减低阻力实现稳定加工 Stable machining with reduced thrust

使用工具 Tool	A-XPF M3×0.5 2P
加工材料 Work Material	SCM440（30HRC）
底孔 Drill Hole Size	φ2.8×6mm(盲孔) Blind
攻丝长度 Tapping Length	9mm
切削速度 Cutting Speed	15m/min (1,591min^{-1})
切削油剂 Coolant	水溶性切削油剂 无氯 10% Water-Soluble Chlorine-Free (10%)
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center

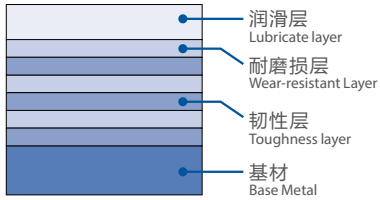


加工效率・耐久性的提高 Improved machining efficiency and durability

・特殊螺纹牙形状， 提高刃尖刚性
Improved cutting edge rigidity by a special thread shape

・丝锥专用特殊涂层 NEW
Special tap coating

具有高硬度、耐氧化性，润滑性优良的涂层，适用于高负荷加工
Coating with high-hardness, oxidation resistance, and excellent lubricity that is suitable for high-load machining



涂层色 Coating Color	涂层构造 Coating Structure	硬度(GPa) Hardness	氧化开始温度(℃) Oxidation Temperature	附着力 Adhesion Strength	表面粗糙度 Surface Roughness	耐磨损性 Wear Resistance	耐溶着性 Welding Resistance	韧性 Toughness
黑 Black	Cr系复合多层膜 Cr-based composite multilayer film	45	1,100	◎	☆	◎	☆	◎

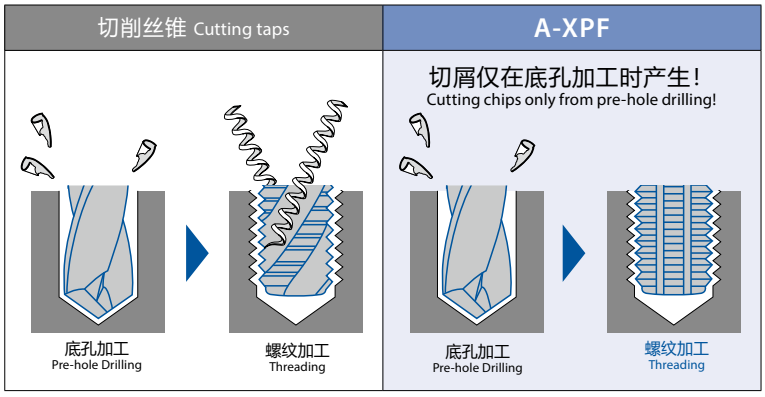
（标准）○→◎→☆（最佳）
Fair Best

Environmental Considerations
环境保护

通过减少机械停止时间来节约能源
Energy conservation by reducing machine downtime

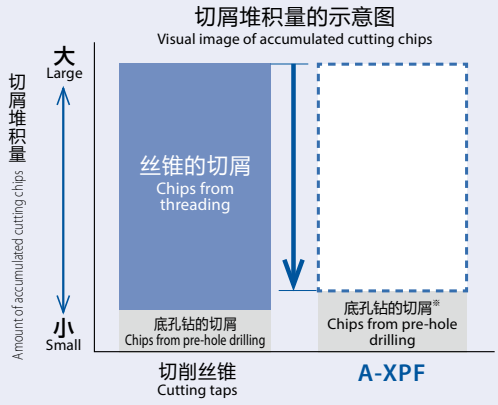
减少由于切屑问题导致的工具交换时间和去除堆积切屑时的机械停止时间。
可实现稳定连续的加工， 从而降低功率消耗。

Reduction of tool change time caused by cutting chip troubles and machine downtime required for removing accumulated cutting chips.
By enabling stable and uninterrupted machining, power consumption can be reduced



挤压丝锥在螺纹切削加工中不产生切屑， 因此减少了整体的切屑堆积量。

Forming taps do not generate cutting chips during threading, which reduces the overall amount of chip accumulation.



※挤压丝锥需要比切削丝锥更大的底孔径。
More chips because thread forming requires a larger pre-hole than thread cutting.

加工数据 Cutting Data

■ 小径的加工 Small diameter threading

使用工具 Tool	A-XPF M1×0.25 2P
加工材料 Work Material	SUS420J2(192HBW)
底孔 Drill Hole Size	φ0.91×3.5mm(盲孔) Blind
攻丝长度 Tapping Length	2mm
切削速度 Cutting Speed	10m/min(3,183min^{-1})
切削油剂 Coolant	水溶性切削油剂 无氯 10% Water-soluble Chlorine-free (10%)
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center

即使是马氏体不锈钢的小径螺纹加工也有超群的耐久性

Outstanding durability even when machining small-diameter threads in martensitic stainless steel

■ 实现切削速度30m/min 的高硬度材料加工 Achieves cutting speed of 30m/min in high-hardness material

使用工具 Tool	A-XPF M6×1 2P
加工材料 Work Material	SCM440(30HRC)
底孔 Drill Hole Size	φ5.52×19mm(盲孔) Blind
攻丝长度 Tapping Length	12mm
切削速度 Cutting Speed	30m/min(1,591min^{-1}) ※
切削油剂 Coolant	水溶性切削油剂 无氯 10% Water-soluble Chlorine-free (10%)
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center

※为了切削试验， 以往产品也在高速条件下加工。
For testing purposes, the conventional product was also used under high-speed cutting condition.

可高速 · 稳定加工SCM440（30HRC）

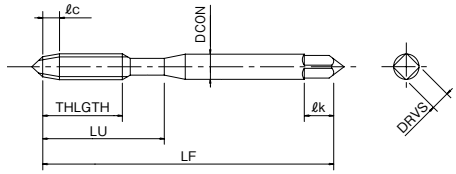
Achieves high-speed and stable machining in SCM440(30 HRC)

高效率・多功能挤压丝锥 Highly Efficient Multi-purpose Forming Tap

A-XPF

材质 Tool Material

CPM



・表面处理 丝锥专用特殊涂层
Surface treatment : special tap coating

螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	螺纹尺寸 Thread Size	精度标记 Grade	精度 TAP Limit	切削锥长 ℓc	全长 LF	螺纹长 THLGTH	颈长 LU	柄径 DCON	突顶尖 External Center	库存 Stock	
8327814	M1 ×0.25	STD	RH4	2P	30	5.5	–	3	–	B	●
8327816	M1.2 ×0.25			2P	32	5.5	–	3	–		●
8327818	M1.4 ×0.3			2P	34	7	–	3	–		●
8327820	M1.6 ×0.35			2P	36	8	–	3	–		●
8327822	M1.6 ×0.2			2P	36	8	–	3	–		●
8327824	M1.7 ×0.35			2P	36	8	–	3	–		●
8327828	M2 ×0.4			2P	40	8	–	3	–		●
8327832	M2.3 ×0.4			2P	42	9.5	–	3	–		●
8327834	M2.5 ×0.45			2P	44	9.5	–	3	–		●
8327836	M2.6 ×0.45			2P	44	9.5	–	3	–		●

商品号 EDP No.	螺纹尺寸 Thread Size	精度标记 Grade	精度 TAP Limit	切削锥长 ℓc	全长 LF	螺纹长 THLGTH	颈长 LU	柄径 DCON	突顶尖 External Center	库存 Stock	
8327837	M3 ×0.5	STD	RH5	4P	46	9	18	4	Yes	B	●
8327838				2P					–		●
8327841	M4 ×0.7	STD	RH6	4P	52	10	20	5	Yes		●
8327842				2P					–		●
8327845	M5 ×0.8			4P	60	11	22	5.5	Yes		●
8327846				2P					–		●
8327849	M6 ×1	STD	RH7	4P	62	10	24	6	Yes		●
8327850				2P					–		●

●＝标准库存品 ●=Standard stock item

・突顶尖长・柄部四方部尺寸ℓk，DRVS请参考综合样本「孔加工·螺纹加工工具」。
1. 精度栏 为2级内螺纹的丝锥推荐精度。
   中径的上公差和RH 精度相同，但是公差为18μm。
2. 丝锥精度不能保证内螺纹的精度。
3. M2.6以下无油槽。
4. 切削锥长4P：P(通孔用)、2P：B((盲孔用)
5. 为了提升底孔插入性，先端面与不完全牙部分预留了1P左右距离。
※ 挤压丝锥与切削丝锥的底孔径不同。
   挤压丝锥的底孔尺寸请参考综合样本「孔加工·螺纹加工工具」。

・Please refer to the "Drilling & Threading Tools" general catalog for length of external center and shank square dimension ℓk and DRVS.
1. The recommended TAP Limit corresponds to JIS class 2 internal thread standards. Upper limit of pitch diameter tolerance is same as RH limit , but tolerance is 18μm.
2. TAP Limit does not gurantee thread limit for the internal thread after tapping.
3. Thread Size ≦ M2.6 : without oil groove.
4. ℓc : 4P : P (for through holes), 2P : B (for blind holes)
5. 1P of center surface and incomplete thread is remained to improve tap insertion of the drill holes.
※ The drill hole diameter for fluteless taps differs from fluted taps.
   Please refer to the "Drilling & Threading Tools" general catalog for drill hole sizes of fluteless taps.

切削条件基准表 Cutting Condition

加工材料 Work Material		切削速度 Cutting Speed (m/min)	A-XPF
软钢・低碳素钢・中碳素钢 Mild Steel・Low Carbon Steel・Medium Carbon Steel	C0.4%以下 ≦C0.4%	10～50	◎
高碳素钢 High Carbon Steel	C0.45%以上 ≧C0.45%	10～40	◎
合金钢 Alloy Steel	SCM	10～35	◎
调质钢 Hardened Steel	25～35HRC	5～30	◎
铸钢 Cast Steel	SC	10～40	○
不锈钢 Stainless Steel	SUS304 SUS420	5～15	◎*1

加工材料 Work Material		切削速度 Cutting Speed (m/min)	A-XPF
铜 Copper	Cu	10～30	◎
黄铜・黄铜铸件 Brass・Brass Casting	Bs·BsC	10～30	◎
铝轧制钢 Alminum Rolled Steel	Al	20～50	◎
铝合金铸件 Alminum Alloy Casting	AC·ADC	20～50	◎
锌合金铸件 Zinc Alloy Casting	ZDC	10～30	◎

最佳◎ 合适○ Best◎ Good○

注： 此切削条件基准表适用于水溶性切削油剂（无氯）。
*1：加工不锈钢请使用油性切削油剂或润滑性优良的水溶性切削油剂。

Note : The indicated speeds and feeds are for tapping with chlorine-free water soluble coolant.
*1 : We recommend using non-water-soluble coolant or highly lubricated water-soluble coolant for stainless steels.

欧士机（上海）精密工具有限公司

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