



高效率·多功能挤压丝锥

Vol.5

A-XPF

Highly Efficient Multi-purpose Forming Tap

A-XPF · A-OIL-XPF · A-LT-XPF · A-LT-DH-XPF



A-XPF

追加22款
22 new items added

A-LT-XPF

追加27款
27 new items added

A-LT-DH-XPF

追加8款
8 new items added

共计追加57款
57 new items added

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



零切屑提高生产效率

Improves productivity with zero cutting chips

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
特殊螺纹牙
式样

[PAT. in Japan]
Special thread
configuration
Improves thread rigidity

高性能丝锥专用的
VI 涂层

[PAT. P. in Japan]
VI coating dedicated to
high-performance
taps

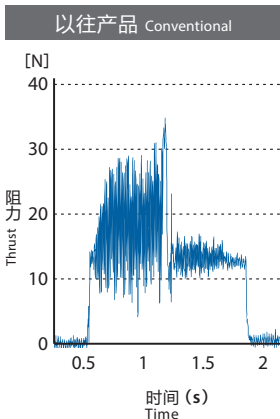
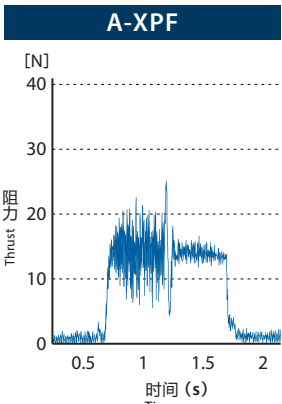
高耐磨性的
粉末高速钢

Powder Metallurgy
HSS(CPM)
High wear resistance

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	φ2.8×9mm(盲孔) Blind
攻丝长度 Tapping Length	6mm (2D)
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 20倍 Water-soluble Chlorine-free (5%)
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

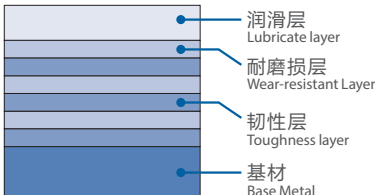
Improved machining efficiency and durability

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

• VI 涂层
VI 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(°C) 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	◎	☆	◎	☆	◎

VI 涂层是 OSG 株式会社的注册商标。VI coating is registered trademarks of OSG Corporation.

(标准) ○→◎→☆(最佳)
Fair Best





通过减少机械停止时间来节约能源

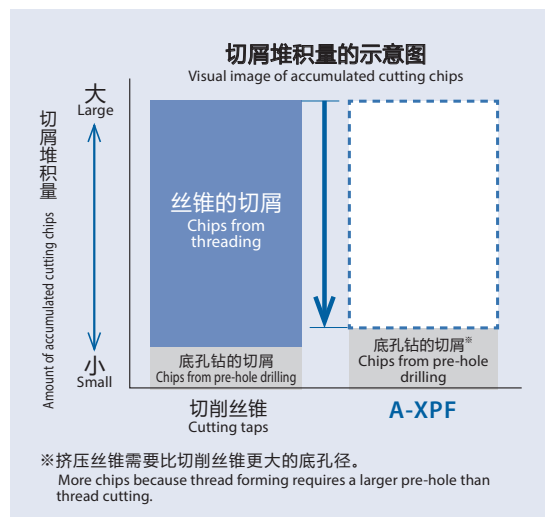
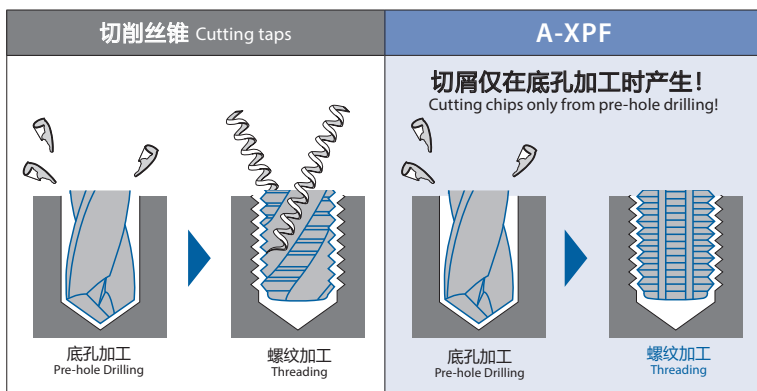
Energy conservation by reducing machine downtime

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

■ 挤压丝锥在螺纹加工过程中不会产生切屑，从而减少整体的切屑堆积量。

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



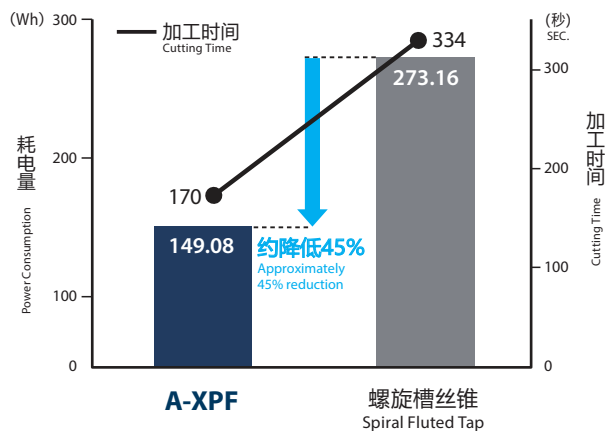
■ 连续加工可提高加工效率、降低耗电量。

Enabling uninterrupted machining improves machining efficiency and reduces power consumption.

使用工具 Tool	A-XPF		螺旋槽丝锥 Spiral Fluted Tap
尺寸 Size	M6×1		
加工材料 Work Material	S45C		
底孔 Drill Hole Size	φ5.52×15mm (通孔) Through		φ5×15mm (通孔) Through
切削速度 Cutting Speed	30m/min (1,592min ⁻¹)		
攻丝长度 Tapping Length	12mm (2D)		
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)		
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center		

加工100孔时的耗电量和加工时间

Power consumption and processing time when machining 100 holes



※ 螺旋槽丝锥发生因切屑缠绕而导致机械停止6次

*The machine stopped 6 times due to entangled cutting chips of the spiral tap.

※ 以上为一个示例，实际情况取决于尺寸及加工环境。

*The above is an example; result may vary depending on tool size and actual machining environment.



特殊切削锥式样和VI涂层, 可实现稳定·高效率加工

Special chamfer specification and VI coating enable stable and high-efficiency machining

■ 小径的加工 Small diameter threading

减低阻力实现小径加工的优良耐久性

Achieves excellent durability in small-diameter machining by reducing thrust

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 (2D)
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20倍 Water-soluble Chlorine-free (5%)
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出色的耐久性

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

■ 高硬度材料加工的切削速度可达30m/min Achieves cutting speed of 30m/min in high-hardness material

利用VI涂层的协同作用, 高速加工高硬度材料

High-speed machining of high-hardness material with the synergistic effect of VI Coating

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 (2D)
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20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center



可高速·稳定加工 SCM440 (30HRC)

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

* 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.

■ 标识种类 Guide for Icons

1 材质 Tool Materials

CPM 粉末高速钢
Powder Metallurgy HSS(CPM)

2 表面处理 Surface Treatment

VI 涂层
VI coating

3 切削条件 Cutting Conditions

SPEED FEED 表示切削条件基准表所在页码
Indicates page number for cutting conditions



优化的油孔形状, 提高刀具刚性和耐溶着性

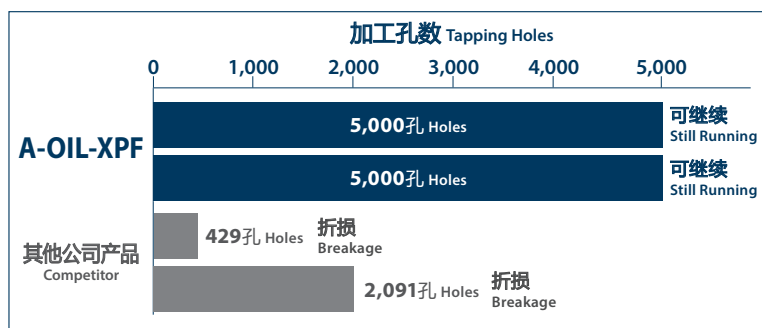
Optimized coolant hole shape improves tool rigidity and welding resistance

■ 耐折损性的提高 Improved breakage resistance

可实现稳定的长寿命加工

Enables stable, long tool life machining

使用工具 Tool	A-OIL-XPF M5×0.8 2P
加工材料 Work Material	SCM440 (30HRC)
底孔 Drill Hole Size	φ4.64×12mm (通孔) Through
攻丝长度 Tapping Length	10mm
切削速度 Cutting Speed	30m/min (1,910min ⁻¹)
切削油剂 Coolant	水溶性切削油剂无氯20倍 (内部供油) Water-soluble Chlorine-free (5%) Internal
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center



■ 内部供油, 提高耐溶着性 Improved resistance to welding with internal coolant

压铸铝的加工中, 实现无溶着的稳定加工

Achieves stable machining without welding in aluminum die casting

使用工具 Tool	A-OIL-XPF M5×0.8 2P
加工材料 Work Material	ADC12
底孔 Drill Hole Size	φ4.64×16mm (通孔) Through
攻丝长度 Tapping Length	10mm (2D)
切削速度 Cutting Speed	50m/min (3,185min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 (内部供油) Water-soluble Chlorine-free (5%) Internal
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center





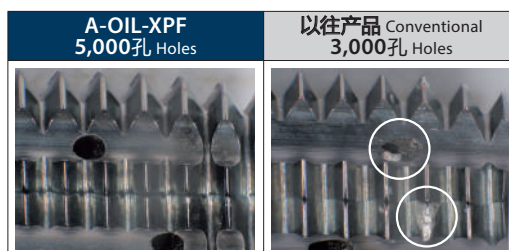
可适用于油雾加工，减少废弃物

Compatible with mist coolant processing to reduce waste

内冷油孔 A-OIL-XPF 即使在油雾加工中也能获得稳定的耐久性。
因为油雾加工无需废油处理，所以可以减少废弃物。
而且切削油剂的飞溅较少，有助于改善加工环境。

The A-OIL-XPF with internal coolant holes provides stable durability even in mist coolant processing.
Mist coolant cutting eliminates the need for waste oil disposal, which helps reduce waste.
Furthermore, there is less scattering of cutting oil, which also leads to an improved work environment.

使用工具 Tool	A-OIL-XPF M5×0.8 2P
加工材料 Work Material	ADC12
底孔 Drill Hole Size	φ4.64×16mm (通孔) Through
攻丝长度 Tapping Length	10mm (2D)
切削速度 Cutting Speed	60m/min (3,820min ⁻¹)
切削油剂 Coolant	MQL (内部供油) Internal
使用机械 Machine	卧式加工中心 (HSK63) Horizontal Machining Center

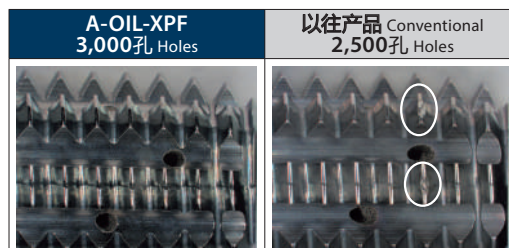


内部供油，使用寿命长 Long tool life with internal coolant

稳定的磨损情况，加工高硬度材料也可长寿命

Stable tool wear enables long tool life in high-hardness material

使用工具 Tool	A-OIL-XPF M10×1.5 2P
加工材料 Work Material	SCM440 (30HRC)
底孔 Drill Hole Size	φ9.25×25mm (通孔) Through
攻丝长度 Tapping Length	20mm (2D)
切削速度 Cutting Speed	15m/min (478min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 (内部供油) Water-soluble Chlorine-free (5%) Internal
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center



深孔用长柄型可对应10D深孔加工

Supports 10D deep hole machining with an optimized long shank design

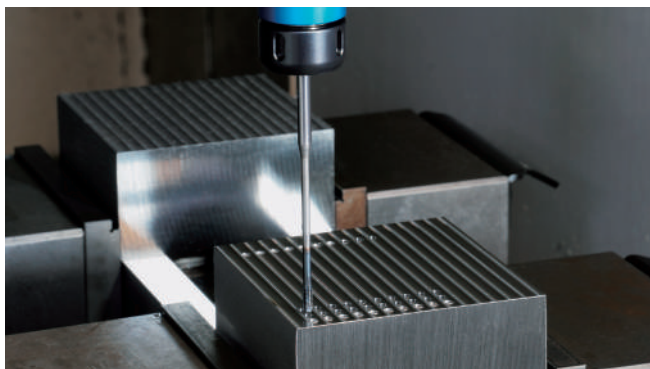
■ 不锈钢有效攻丝长度(10D) 的加工

Machining of stainless steel effective thread length (10D)

在高难度深孔加工中具有良好的螺纹精度

Achieves high thread accuracy even in challenging deep hole machining application

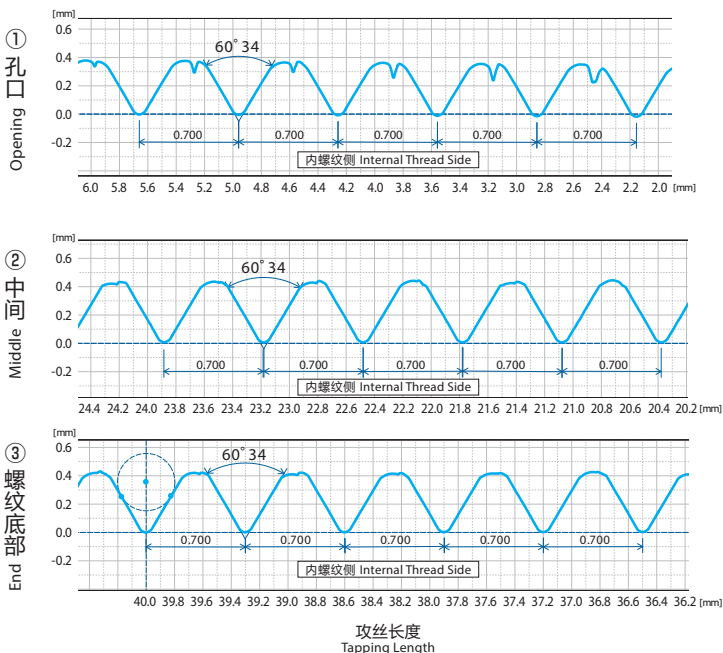
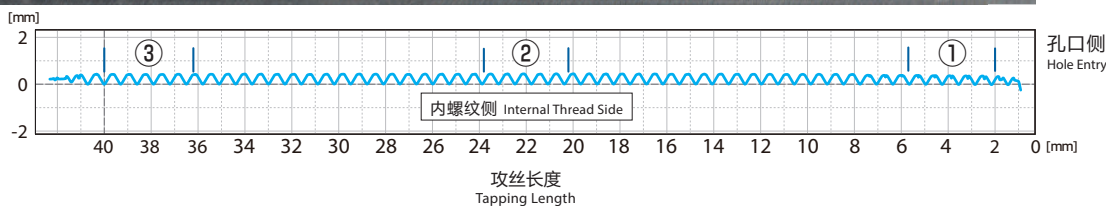
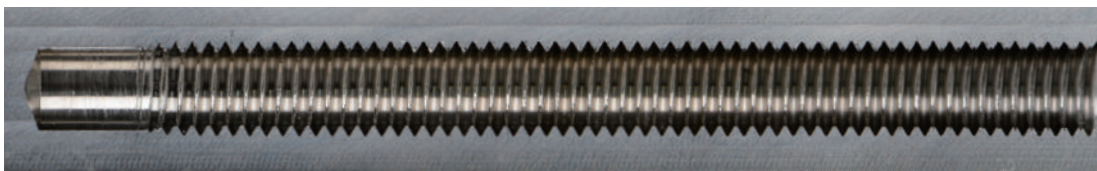
使用工具 Tool	A-LT-DH-XPF M4×0.7×120 2P
加工材料 Work Material	SUS304
底孔 Drill Hole Size	φ3.7×46mm (盲孔) Blind
攻丝长度 Tapping Length	40mm
切削速度 Cutting Speed	4m/min (318min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center



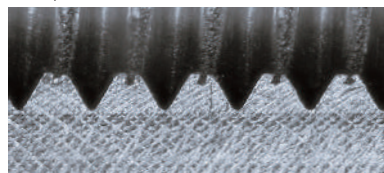
无烂牙，螺距误差也较小的良好内螺纹牙形

Excellent internal thread profile, free from burrs and minimal pitch error

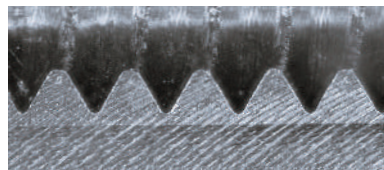
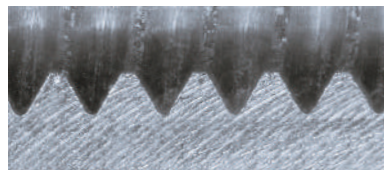
工件横截面
Workpiece Cross-section



螺纹部扩大
Close-up of Thread Section



※ 孔口的螺纹牙高度较低，是由于底孔加工时导向孔的影响所致
Thread height reduction at the hole entry is attributed to the pre-drilled hole machining process



对应底孔无余量的薄壁轻量化小型精密零部件加工

Suitable for small precision parts that are becoming thinner and lighter with little room for pre-hole

短切削锥 (切削锥部长: 1P)

Short chamfer (length of chamfer: 1P)

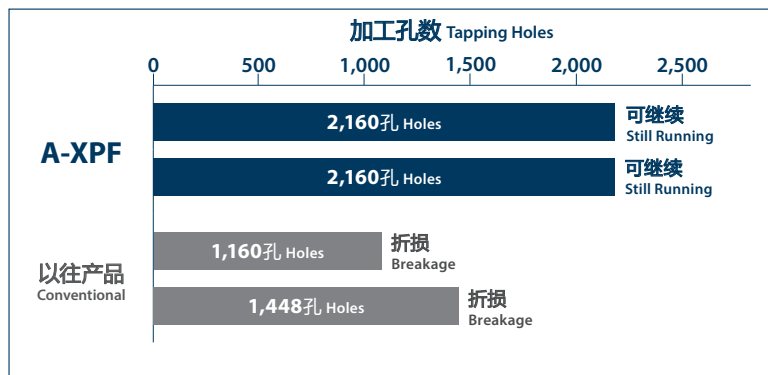
高硬度材料的加工 Machining of high-hardness material

使用工具 Tool	A-XP F M6×1 1P
加工材料 Work Material	SCM440(30HRC)
底孔 Drill Hole Size	φ5.52×15mm (盲孔) Blind
攻丝长度 Tapping Length	12mm (2D)
切削速度 Cutting Speed	10m/min(530min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center



小径的加工 Small diameter threading

使用工具 Tool	A-XP F M1×0.25 1P
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 (2D)
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20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center



特殊螺纹牙式样，耐久性稳定 Stable durability with special thread specification

使用工具 Tool	A-XP F M3×0.5 1P
加工材料 Work Material	SUS304
底孔 Drill Hole Size	φ2.8×9mm (盲孔) Blind
攻丝长度 Tapping Length	6mm (2D)
切削速度 Cutting Speed	10m/min(1,061min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	立式加工中心 (BT30) Vertical Machining Center



特殊切削锥式样和VI涂层实现稳定加工

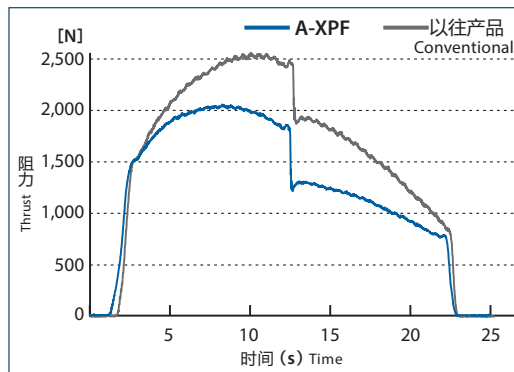
Stable machining with special chamfer specification and VI coating

大径螺纹

Large thread

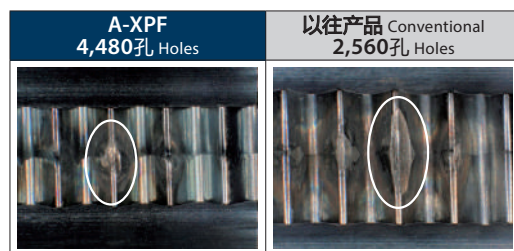
降低阻力 Thrust reduction

使用工具 Tool	A-XPf M16×1.5 2P
加工材料 Work Material	SCM440(30HRC)
底孔 Drill Hole Size	φ15.3×30mm (通孔) Through
攻丝长度 Tapping Length	30mm
切削速度 Cutting Speed	15m/min(298min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	卧式加工中心 (BT50) Horizontal Machining Center



高硬度材料的稳定耐久性 Stable durability in high-hardness material

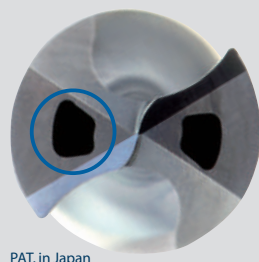
使用工具 Tool	A-XPf M16×1.5 2P
加工材料 Work Material	SCM440(30HRC)
底孔 Drill Hole Size	φ15.3×30mm (通孔) Through
攻丝长度 Tapping Length	30mm
切削速度 Cutting Speed	15m/min(298min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	卧式加工中心 (BT50) Horizontal Machining Center



抑制底孔加工时的加工硬化，稳定加工 Stable machining by suppressing work hardening during pre-hole drilling

抑制像不锈钢等加工材料的加工硬化至关重要

It is crucial to suppress work hardening in work materials such as stainless steel



PAT. in Japan

MEGA COOLER是OSG株式会社的注册商标。
MEGA COOLER is a registered trademark of OSG Corporation.

ADO-SUS 不锈钢·钛合金用钻头 Carbide Drill Series for Stainless Steel and Titanium Alloy

① 重视锋利性的刃尖形状

Sharp Cutting Edge

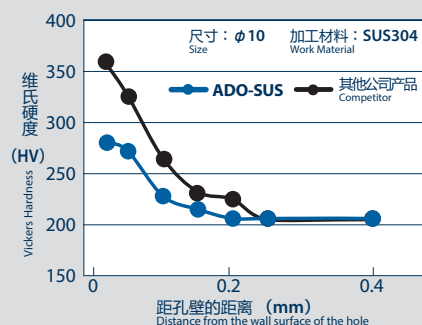
切削阻力低，抑制加工硬化

Reduces cutting resistance and suppresses work hardening

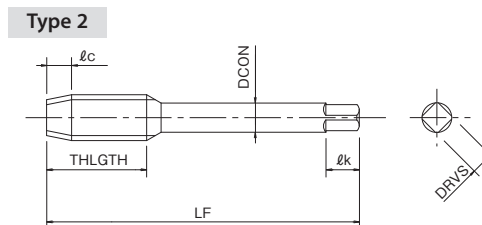
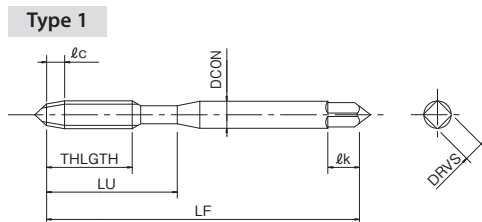
② 采用新型的“MEGA COOLER”内冷油孔形状，增大冷却油的喷出量

New oil hole shape "MEGA COOLER" increases coolant flow

■ 孔入口附近的硬度 Work Hardness Near Hole Entry



A-XPF



螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	螺纹尺寸 Thread Size	精度标识 Grade	精度 TAP Limit	切削锥长 l _c	全长 LF	螺纹部长度 THLGTH	颈长 LU	柄径 DCON	形状 Type	突顶尖 External Center	库存 Stock
※ 8327892	M 1 × 0.25	STD	RH4	4P	30	5.5	—	3	1	Yes	●
8327814		STD	RH4	2P						—	●
8327870		STD	RH4	1P						—	●
※ 8327893	M 1.2 × 0.25	STD	RH4	4P	32	5.5	—	3	1	Yes	●
8327816		STD	RH4	2P						—	●
8327871		STD	RH4	1P						—	●
※ 8327894	M 1.4 × 0.3	STD	RH4	4P	34	7	—	3	1	Yes	●
8327818		STD	RH4	2P						—	●
8327872		STD	RH4	1P						—	●
※ 8327895	M 1.6 × 0.35	STD	RH4	4P	36	8	—	3	1	Yes	●
8327820		STD	RH4	2P						—	●
8327873		STD	RH4	1P						—	●
※ 8327896	M 1.6 × 0.2	STD	RH4	4P	36	8	—	3	1	Yes	●
8327822		STD	RH4	2P						—	●
8327874		STD	RH4	1P						—	●
※ 8327897	M 1.7 × 0.35	STD	RH4	4P	36	8	—	3	1	Yes	●
8327824		STD	RH4	2P						—	●
8327875		STD	RH4	1P						—	●
※ 8327898	M 2 × 0.4	STD	RH4	4P	40	8	—	3	1	Yes	●
8327828		STD	RH4	2P						—	●
8327876		STD	RH4	1P						—	●
※ 8327899	M 2.3 × 0.4	STD	RH4	4P	42	9.5	—	3	1	Yes	●
8327832		STD	RH4	2P						—	●
8327877		STD	RH4	1P						—	●
※ 8327900	M 2.5 × 0.45	STD	RH4	4P	44	9.5	—	3	1	Yes	●
8327834		STD	RH4	2P						—	●
8327878		STD	RH4	1P						—	●
※ 8327901	M 2.6 × 0.45	STD	RH4	4P	44	9.5	—	3	1	Yes	●
8327836		STD	RH4	2P						—	●
8327879		STD	RH4	1P						—	●
8327837	M 3 × 0.5	STD	RH5	4P	46	9	18	4	1	Yes	●
8327838		STD	RH5	2P						—	●
8327880		STD	RH5	1P						—	●
8327841	M 4 × 0.7	STD	RH6	4P	52	10	20	5	1	Yes	●
8327842		STD	RH6	2P						—	●
8327881		STD	RH6	1P						—	●

■ 标识说明请参考 p.3。 ■ See p.3 for explanation of icons.

※ = NEW SIZES

● = 标准库存品 ● = Standard stock item

FROM

单位:mm Unit:mm

商品号 EDP No.	螺纹尺寸 Thread Size	精度标识 Grade	精度 TAP Limit	切削锥长 ℓc	全长 LF	螺纹部长度 THLGTH	颈长 LU	柄径 DCON	形状 Type	突顶尖 External Center	库存 Stock
8327845	M 5 × 0.8	STD	RH6	4P	60	11	22	5.5	1	Yes	●
8327846		STD	RH6	2P						—	●
8327882		STD	RH6	1P						—	●
8327849	M 6 × 1	STD	RH7	4P	62	10	24	6	1	Yes	●
8327850		STD	RH7	2P						—	●
8327883		STD	RH7	1P						—	●
※ 8327902	M 8 × 1.25	STD+2	RH9	2P	70	12	—	6.2	2	—	●
※ 8327903		STD-2	RH5	2P							●
8327851		STD	RH7	4P							●
8327852	M 8 × 1	STD	RH7	2P	70	12	—	6.2	2	—	●
※ 8327904		STD+1	RH8	2P							●
8327853		STD	RH7	4P							●
8327854	M 10 × 1.5	STD	RH7	2P	75	15	—	7	2	—	●
※ 8327905		STD-2	RH5	2P							●
8327855		STD	RH7	4P							●
8327856	M 10 × 1.25	STD	RH7	2P	75	15	—	7	2	—	●
※ 8327906		STD+2	RH9	2P							●
※ 8327907		STD-2	RH5	2P							●
8327857	M 10 × 1	STD	RH7	4P	75	15	—	7	2	—	●
8327858		STD	RH7	2P							●
※ 8327908		STD+1	RH8	2P							●
※ 8327909	M 12 × 1.75	STD	RH7	4P	82	17	—	8.5	2	—	●
8327859		STD	RH7	2P							●
※ 8327910		STD-2	RH6	2P							●
8327860	M 12 × 1.5	STD	RH8	4P	82	17	—	8.5	2	—	●
8327861		STD	RH8	2P							●
※ 8327911		STD+2	RH10	2P							●
※ 8327912	M 12 × 1.25	STD	RH7	4P	82	17	—	8.5	2	—	●
8327862		STD	RH7	2P							●
8327863		STD	RH7	4P	82	17	—	8.5	2	—	●
8327864	M 12 × 1	STD	RH7	2P							●
※ 8327913		STD	RH7	4P	82	17	—	8.5	2	—	●
8327865		STD	RH7	2P							●
8327866	M 14 × 2	STD	RH10	2P	88	20	—	10.5	2	—	●
8327867	M 14 × 1.5	STD	RH9	2P	88	20	—	10.5	2	—	●
8327868	M 16 × 2	STD	RH10	2P	95	20	—	12.5	2	—	●
8327869	M 16 × 1.5	STD	RH9	2P	95	20	—	12.5	2	—	●
8327884	M 18 × 2.5	STD	RH11	2P	125	20	—	14	2	—	●
8327885	M 18 × 1.5	STD	RH10	2P	110	15	—	14	2	—	●
8327886	M 20 × 2.5	STD	RH11	2P	140	20	—	15	2	—	●
8327887	M 20 × 1.5	STD	RH10	2P	125	15	—	15	2	—	●
8327888	M 22 × 2.5	STD	RH11	2P	140	20	—	17	2	—	●
8327889	M 22 × 1.5	STD	RH10	2P	125	15	—	17	2	—	●
8327890	M 24 × 3	STD	RH13	2P	160	18	—	19	2	—	●
8327891	M 24 × 1.5	STD	RH10	2P	140	15	—	19	2	—	●

※=NEW SIZES

●=标准库存品 ●=Standard stock item

·突顶尖·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)、1P:短切削锥

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。

(短切削锥除外)

※ 挤压丝锥与切削丝锥的底孔径不同。底孔尺寸请参考p.17。

·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 guarantee 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), 1P: short chamfer

5. 1P of center surface and incomplete thread is remained to improve tap insertion of the drill holes. (Excluding short chamfer)

※ The drill hole diameter for fluteless taps differs from fluted taps.

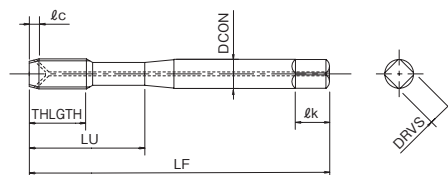
For drill hole size, please refer to p.17.



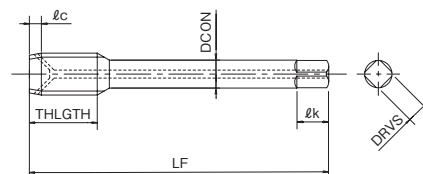
A-OIL-XPF



Type 1



Type 2



螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	螺纹尺寸 Thread Size	精度标识 Grade	精度 TAP Limit	切削锥长 ℓ_c	全长 LF	螺纹部长度 THLGTH	颈长 LU	柄径 DCON	形状 Type	突顶尖 External Center	库存 Stock
8328000	M 5 × 0.8	STD	RH6	2P	60	11	22	5.5	1	—	●
8328001	M 6 × 1	STD	RH7	2P	62	10	24	6	1	—	●
8328002	M 8 × 1.25	STD	RH7	2P	70	12	—	6.2	2	—	●
8328003	M 8 × 1	STD	RH7	2P	70	12	—	6.2	2	—	●
8328004	M10 × 1.5	STD	RH7	2P	75	15	—	7	2	—	●
8328005	M10 × 1.25	STD	RH7	2P	75	15	—	7	2	—	●
8328006	M10 × 1	STD	RH7	2P	75	15	—	7	2	—	●
8328007	M12 × 1.75	STD	RH8	2P	82	17	—	8.5	2	—	●
8328008	M12 × 1.25	STD	RH7	2P	82	17	—	8.5	2	—	●
8328009	M14 × 1.5	STD	RH9	2P	88	20	—	10.5	2	—	●
8328010	M16 × 2	STD	RH10	2P	95	20	—	12.5	2	—	●
8328011	M16 × 1.5	STD	RH9	2P	95	20	—	12.5	2	—	●

■ 标识说明请参考 p.3.

■ See p.3 for explanation of icons.

● = 标准库存品 ● = Standard stock item

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 $18\mu\text{m}$ 。

2. 丝锥精度不能保证内螺纹的精度。

3. 切削锥长2P：B(盲孔用)

4. 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。底孔尺寸请参考 p.17。

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 $18\mu\text{m}$.

2. TAP Limit does not guarantee thread limit for the internal thread after tapping.

3. ℓ_c 2P : B (for blind holes)

4. 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.

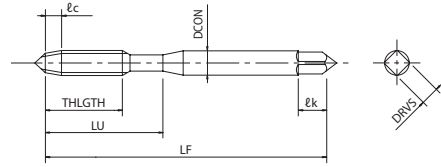
For drill hole size, please refer to p.17.



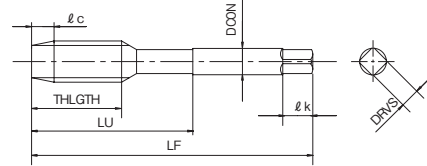
A-LT-XPF



Type 1



Type 2



螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	螺纹尺寸 Thread Size	精度标识 Grade	精度 TAP Limit	切削锥长 ℓc	全长 LF	螺纹部长度 THLGTH	颈长 LU	柄径 DCON	形状 Type	突顶尖 External Center	库存 Stock
8328101	M3 × 0.5 × 80	STD	RH5	4P	80	9	18	4	1	Yes	●
8328102		STD	RH5	2P						—	●
8328103	M3 × 0.5 × 120	STD	RH5	4P	120	9	18	4	1	Yes	●
8328104		STD	RH5	2P						—	●
8328105	M4 × 0.7 × 80	STD	RH6	4P	80	10	20	5	1	Yes	●
8328106		STD	RH6	2P						—	●
8328107	M4 × 0.7 × 120	STD	RH6	4P	120	10	20	5	1	Yes	●
8328108		STD	RH6	2P						—	●
8328109	M5 × 0.8 × 100	STD	RH6	4P	100	11	22	5.5	1	Yes	●
8328110		STD	RH6	2P						—	●
8328111	M5 × 0.8 × 150	STD	RH6	2P	150	11	22	5.5	1	—	●
8328112	M6 × 1 × 100	STD	RH7	4P	100	10	24	6	1	Yes	●
8328113		STD	RH7	2P						—	●
8328114	M6 × 1 × 150	STD	RH7	2P	150	10	24	6	1	—	●
8328115	M8 × 1.25 × 100	STD	RH7	4P	100	12	—	6.2	2	—	●
8328116		STD	RH7	2P						—	●
8328117	M8 × 1.25 × 150	STD	RH7	2P	150	12	—	6.2	2	—	●
8328118	M10 × 1.5 × 100	STD	RH7	4P	100	15	—	7	2	—	●
8328119		STD	RH7	2P						—	●
8328120	M10 × 1.5 × 150	STD	RH7	2P	150	15	—	7	2	—	●
8328121	M10 × 1.25 × 100	STD	RH7	4P	100	15	—	7	2	—	●
8328122		STD	RH7	2P						—	●
8328123	M10 × 1.25 × 150	STD	RH7	2P	150	15	—	7	2	—	●
8328124	M12 × 1.75 × 150	STD	RH8	4P	150	17	—	8.5	2	—	●
8328125		STD	RH8	2P						—	●
8328126	M12 × 1.5 × 150	STD	RH7	2P	150	17	—	8.5	2	—	●
8328127	M12 × 1.25 × 150	STD	RH7	2P	150	17	—	8.5	2	—	●

■ 标识说明请参考 p.3.

■ See p.3 for explanation of icons.

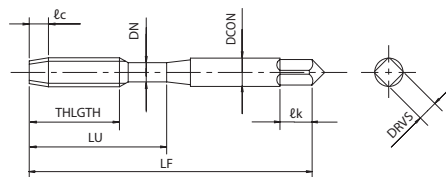
1. 精度栏 为2级内螺纹的丝锥推荐精度。中径的上公差和RH精度相同，但是螺距1以上产品的公差不是通常的12.7μm而是18μm。
 2. 丝锥精度不能保证内螺纹的精度。
 3. 切削锥长4P：P（通孔用）、2P：B（盲孔用）
 4. 为了提升底孔插入性，先端面与不完全牙部分预留了1P左右距离。
- ※ 挤压丝锥与切削丝锥的底孔径不同。底孔尺寸请参考 p.17。

● = 标准库存品 ● = Standard stock item

1. The recommended tap limit corresponds to JIS class 2 internal thread standards. The upper limit of the pitch diameter is the same as the RH Limit. For taps with a pitch above one, the limit will be 18μm instead of the standard 12.7μm.
 2. TAP Limit does not guarantee thread limit for the internal thread after tapping.
 3. ℓc 4P : P (for through holes), 2P : B (for blind holes)
 4. 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.
For drill hole size, please refer to p.17.



A-LT-DH-XPF



螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	螺纹尺寸 Thread Size	精度标识 Grade	精度 TAP Limit	切削锥长 ℓ_c	全长 LF	螺纹部长度 THLGTH	颈长 LU	柄径 DCON	颈径 DN	突顶尖 External Center	库存 Stock
8328221	M 2 × 0.4 × 80	STD	RH4	2P	80	4.8	20	3	1.5	—	●
8328222	M 2.3 × 0.4 × 80	STD	RH4	2P	80	4.8	20	3	1.8	—	●
8328223	M 2.5 × 0.45 × 80	STD	RH4	2P	80	5.4	25	3	1.9	—	●
8328224	M 2.6 × 0.45 × 80	STD	RH4	2P	80	5.4	26	3	2	—	●
8328225	M 3 × 0.5 × 120	STD	RH5	2P	120	6	59	4	2.4	—	●
8328226	M 4 × 0.7 × 120	STD	RH6	2P	120	8.4	60	5	3.1	—	●
8328227	M 5 × 0.8 × 120	STD	RH6	2P	120	9.6	61	5.5	4	—	●
8328228	M 6 × 1 × 120	STD	RH7	2P	120	12	62	6	4.7	—	●

■ 标识说明请参考 p.3。

■ See p.3 for explanation of icons.

● = 标准库存品 ● = Standard stock item

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，但是螺距1以上产品的公差不是通常的12.7μm而是18μm。

2. 丝锥精度不能保证内螺纹的精度。

3. 切削锥长2P：B(盲孔用)

4. 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。底孔尺寸请参考 p.17。

1. The recommended tap limit corresponds to JIS class 2 internal thread standards. The upper limit of the pitch diameter is the same as the RH Limit. For taps with a pitch above one, the limit will be 18μm instead of the standard 12.7μm.

2. TAP Limit does not guarantee thread limit for the internal thread after tapping.

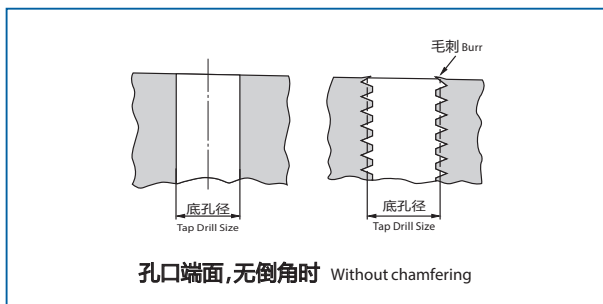
3. ℓ_c 2P : B (for blind holes)

4. 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. For drill hole size, please refer to p.17.

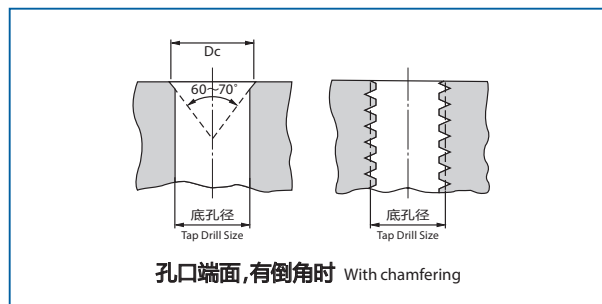
内螺纹孔口毛刺对策

Measures against burrs at entry point of internal threads



挤压丝锥是通过塑性变形来形成螺纹牙, 工件的孔口·端面无倒角时, 会产生毛刺。为防止毛刺的产生, 推荐进行60°~70°的倒角。

Forming tap forms threads by plastic deformation. Without adequate chamfering, this process often leads to burrs forming on the hole's edge. To ensure a clean finish and prevent burrs, chamfering the hole at 60° - 70° is strongly recommended.



此外, 若钻孔加工需要118°倒角时, 只需将倒角端面直径控制在螺纹尺寸+2个螺距的范围内, 即可有效抑制毛刺的产生。

例: M10×1.5时, 10mm+(1.5×2)=13mm

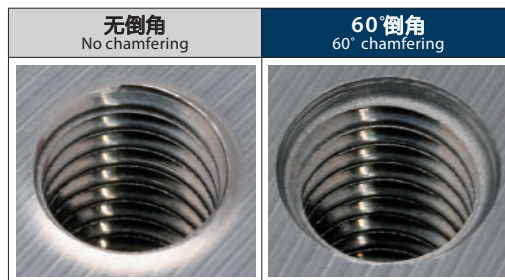
If a 118° chamfer is needed due to drilling requirements, burrs can be prevented by setting the chamfer diameter to the thread size + 2 pitches.

Example: M10×1.5⇒10mm+(1.5×2)=13mm

使用工具 Tool	A-XPf M8×1.25 2P
加工材料 Work Material	S45C
底孔 Drill Hole Size	φ7.4×12mm (通孔) Through
攻丝长度 Tapping Length	12mm
切削速度 Cutting Speed	30m/min (1,194min ⁻¹)
切削油剂 Coolant	水溶性切削油剂 无氯20倍 Water-soluble Chlorine-free (5%)
使用机械 Machine	卧式加工中心 (BT50) Horizontal Machining Center

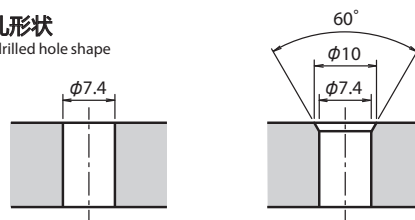
内螺纹孔口的状态

Conditions of internal thread hole entry



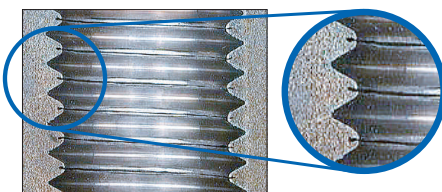
底孔形状

Pre-drilled hole shape



螺纹牙形的区别

Differences in Thread Profiles



使用挤压丝锥加工的内螺纹, 其牙顶会形成带有裂口的特殊形状。(参考照片)

The crests of internal threads machined with a forming tap will be split or notched (see photo).



A-XPf 大径螺纹的加工扭矩。 大径加工的扭矩（计算值）请参考下表。

Machining torque for large diameter threads using A-XPf. Refer to the table below for calculated torque values.

大径螺纹的加工扭矩一览表 Machining Torque Chart for Large Diameter Threads

单位: N·m Unit: N·m

螺纹尺寸 Thread Size	中径(E)mm Pitch Diameter	加工材料系数(K) Coefficient of Work Material					
		2	4	8	11	12	14
		AC	ADC	BS	SS400	S45C	SCM (~35HRC)
M 18 × 2.5	16.376	14	28	56	77	84	98
M 18 × 1.5	17.026	5	11	21	29	32	37
M 20 × 2.5	18.376	16	32	63	87	95	110
M 20 × 1.5	19.026	6	12	24	32	35	41
M 22 × 2.5	20.376	17	35	70	96	105	122
M 22 × 1.5	21.026	6	13	26	36	39	45
M 24 × 3	22.051	27	54	109	150	163	191
M 24 × 1.5	23.026	7	14	28	39	43	50

※本表所列加工扭矩仅供参考，并不作加工扭矩保证。实际加工扭矩会因切削速度、切削油剂、底孔径等条件不同而产生变动。

※本数据为使用水溶性切削油剂(外部供油)时的参考标准。

*This chart offers approximate machining torque values, not a guarantee. Actual torque will vary with conditions such as cutting speed, cutting fluid, and pre-drilled hole diameter.

*Applies to situations using water-soluble cutting fluid (external lubrication).

表中未列出的尺寸，请按以下计算公式进行推算 Calculate unlisted sizes using the following formulas

挤压丝锥的加工扭矩计算公式 Formulas for calculating forming tap machining torque

以往的挤压丝锥 Conventional Forming Taps

$$T = 0.09806 \times K \times E \times P^2$$

XPf系列 XPf series

$$T = 0.06864 \times K \times E \times P^2$$

例) A-XPf M24×3，加工SCM440材料时

For machining M24 × 3 (SCM440 material)

$$T = 0.06864 \times 14 \times 22.051 \times 3^2 \div 191 \text{ [N·m]}$$

T: 扭矩 [N·m]
Torque

K: 加工材料系数
Coefficient of Work Material

E: 中径 [mm]
Pitch Diameter

P: 螺距 [mm]
Pitch

加工材料 Work Material	加工材料系数 (K) Coefficient of Work Material
铝 合 金 Aluminum Alloy	2
压 铸 铝 Aluminum Die Casting	3 ~ 4
黄 铜 Brass	6 ~ 8
一般构造用钢 Mild Steel	10 ~ 11
碳 素 钢 Carbon Steel	11 ~ 12
合金 (调质) 钢 Alloy Steel (Hardened Steel)	13 ~ 14

注) 本数据是使用水溶性切削油剂(外部供油)时的参考值。

请注意实际加工数值会因加工环境等因素而变动。

This is a guideline for use with water-soluble cutting fluid (external lubrication). Please note that values may vary depending on the machining environment and other conditions.



加工材料 Work Material		切削速度 Cutting Speed (m/min)				
		A-XPF	~ M12	M14 ~	短切削锥型 Short Chamfer	—
		A-OIL-XPF	~ M12	M14 ~	—	—
		A-LT-XPF	~ M12	—	—	—
		A-LT-DH-XPF	—	—	—	~ M6
软钢・低碳素钢・中碳素钢 Mild Steel・Low Carbon Steel・Medium Carbon Steel	C<0.45%	◎	10 ~ 50	5 ~ 25	5 ~ 25	5 ~ 25
高碳素钢 High Carbon Steel	0.45%≤C	◎	10 ~ 40	5 ~ 20	5 ~ 20	5 ~ 20
合金钢 Alloy Steel	SCM	◎	10 ~ 35	5 ~ 15	5 ~ 15	5 ~ 15
调质钢 Hardened Steel	25~35HRC	◎	5 ~ 30	5 ~ 15	5 ~ 15	5 ~ 15
铸钢 Cast Steel	SC	○	10 ~ 40	5 ~ 15	5 ~ 15	5 ~ 15
不锈钢 Stainless Steel	SUS304 SUS420	◎*1	5 ~ 15	5 ~ 10	5 ~ 10	3 ~ 5
铜 Copper	Cu	◎	10 ~ 30	5 ~ 20	5 ~ 15	5 ~ 15
黄铜・黄铜铸件 Brass・Brass Casting	Bs・BsC	◎	10 ~ 30	5 ~ 20	5 ~ 15	5 ~ 15
铝轧制材 Aluminum Rolled Steel	Al	◎	20 ~ 50	10 ~ 30	10 ~ 25	10 ~ 25
铝合金铸件 Aluminum Alloy Casting	AC・ADC	◎	20 ~ 50	10 ~ 30	10 ~ 25	10 ~ 25
锌合金铸件 Zinc Alloy Casting	ZDC	◎	10 ~ 30	5 ~ 15	5 ~ 15	5 ~ 15

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.

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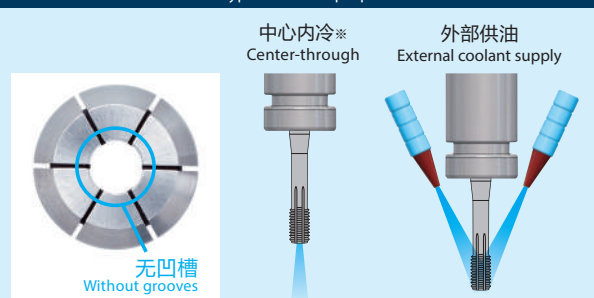
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螺纹底孔加工推荐径 Recommended Tap Drill Size

单位:mm Unit:mm

螺纹尺寸 Thread size	旧JIS1级螺纹 for JIS class 1 drill hole dia.		旧JIS2级螺纹 for JIS class 2 drill hole dia.		4H		5H		6H	
	RH 精度 RH Limits	最小~最大 (咬合率) Min. ~ Max. (Thread Overlap Ratio)	RH 精度 RH Limits	最小~最大 (咬合率) Min. ~ Max. (Thread Overlap Ratio)	RH 精度 RH Limits	最小~最大 (咬合率) Min. ~ Max. (Thread Overlap Ratio)	RH 精度 RH Limits	最小~最大 (咬合率) Min. ~ Max. (Thread Overlap Ratio)	RH 精度 RH Limits	最小~最大 (咬合率) Min. ~ Max. (Thread Overlap Ratio)
M1 × 0.25	—	—	4	0.9 ~ 0.92 (100%~80%)	—	—	4	0.901~0.92 (100%~80%)	—	—
1.2×0.25	—	—	4	1.1 ~ 1.12 //	—	—	4	1.101~1.12 //	—	—
1.4×0.3	—	—	4	1.27 ~ 1.294 //	—	—	4	1.27 ~ 1.294 //	4	1.27 ~ 1.291 (100%~82%)
1.6×0.35	—	—	4	1.44 ~ 1.48 (100%~75%)	—	—	4	1.44 ~ 1.466 (100%~81%)	4	1.44 ~ 1.475 (100%~75%)
1.6×0.2	—	—	—	—	—	—	—	—	4	1.53 ~ 1.55 (100%~75%)
※ 1.7×0.35	—	—	4	1.54 ~ 1.58 (100%~75%)	—	—	—	—	—	—
2 × 0.4	—	—	4	1.81 ~ 1.85 //	—	—	4	1.81 ~ 1.84 (100%~81%)	4	1.81 ~ 1.849 (100%~75%)
※ 2.3×0.4	—	—	4	2.11 ~ 2.15 //	—	—	—	—	—	—
2.5×0.45	—	—	4	2.28 ~ 2.33 //	—	—	4	2.28 ~ 2.312 (100%~82%)	4	2.28 ~ 2.324 (100%~75%)
※ 2.6×0.45	—	—	4	2.38 ~ 2.43 //	—	—	—	—	—	—
3 × 0.5	—	—	5	2.76 ~ 2.81 (100%~75%)	—	—	5	2.762~2.798 (100%~82%)	5	2.762~2.812 (100%~75%)
4 × 0.7	—	—	6	3.65 ~ 3.7 (100%~85%)	—	—	—	—	6	3.66 ~ 3.69 (100%~85%)
5 × 0.8	—	—	6	4.59 ~ 4.66 (100%~80%)	—	—	—	—	6	4.6 ~ 4.65 (100%~80%)
6 × 1	—	—	7	5.48 ~ 5.57 //	—	—	—	—	7	5.49 ~ 5.56 //
8 × 1.25	5	7.31 ~ 7.38 (100%~85%)	7	7.34 ~ 7.41 (100%~85%)	5	7.31 ~ 7.36 (100%~90%)	7	7.34 ~ 7.4 (100%~87%)	7	7.34 ~ 7.41 (100%~85%)
8 × 1	—	—	7	7.48 ~ 7.57 (100%~80%)	—	—	—	—	7	7.49 ~ 7.56 (100%~80%)
10 × 1.5	5	9.16 ~ 9.22 (100%~90%)	7	9.18 ~ 9.28 (100%~85%)	5	9.16 ~ 9.21 (100%~91%)	7	9.19 ~ 9.24 (100%~90%)	7	9.19 ~ 9.27 (100%~85%)
10 × 1.25	5	9.31 ~ 9.38 (100%~85%)	7	9.34 ~ 9.41 //	5	9.31 ~ 9.36 (100%~90%)	7	9.34 ~ 9.4 (100%~87%)	7	9.34 ~ 9.41 //
10 × 1	—	—	7	9.48 ~ 9.57 (100%~80%)	—	—	—	—	7	9.49 ~ 9.56 (100%~80%)
12 × 1.75	5	11.01 ~ 11.08 (100%~90%)	8	11.05 ~ 11.15 (100%~85%)	5	11.01 ~ 11.07 (100%~91%)	8	11.05 ~ 11.11 (100%~90%)	8	11.05 ~ 11.15 (100%~85%)
12 × 1.5	—	—	7	11.18 ~ 11.28 //	—	—	7	11.19 ~ 11.24 //	7	11.19 ~ 11.27 //
12 × 1.25	—	—	7	11.34 ~ 11.41 //	—	—	7	11.34 ~ 11.4 (100%~87%)	7	11.34 ~ 11.41 //
12 × 1	—	—	7	11.48 ~ 11.57 (100%~80%)	—	—	—	—	7	11.49 ~ 11.56 (100%~80%)
14 × 2	—	—	10	12.92 ~ 13.04 (100%~85%)	—	—	10	12.93 ~ 13 (100%~90%)	10	12.93 ~ 13.04 (100%~85%)
14 × 1.5	—	—	9	13.21 ~ 13.3 //	—	—	9	13.21 ~ 13.27 //	9	13.21 ~ 13.3 //
16 × 2	—	—	10	14.92 ~ 15.04 //	—	—	—	—	10	14.93 ~ 15.04 //
16 × 1.5	—	—	9	15.21 ~ 15.3 (100%~80%)	—	—	9	15.21 ~ 15.27 (100%~90%)	9	15.21 ~ 15.3 //
18 × 2.5	—	—	11	16.63 ~ 16.78 (100%~85%)	—	—	11	16.64 ~ 16.73 //	11	16.64 ~ 16.78 //
18 × 1.5	—	—	10	17.22 ~ 17.31 //	—	—	—	—	10	17.23 ~ 17.31 //
20 × 2.5	—	—	11	18.63 ~ 18.78 //	—	—	11	18.64 ~ 18.73 (100%~90%)	11	18.64 ~ 18.78 //
20 × 1.5	—	—	10	19.22 ~ 19.31 //	—	—	—	—	10	19.23 ~ 19.31 //
22 × 2.5	—	—	11	20.63 ~ 20.78 (100%~85%)	—	—	—	—	11	20.63 ~ 20.78 (100%~85%)
22 × 1.5	—	—	10	21.22 ~ 21.31 //	—	—	—	—	10	21.22 ~ 21.31 //
24 × 3	—	—	13	22.36 ~ 22.53 //	—	—	—	—	13	22.36 ~ 22.53 //
24 × 1.5	—	—	10	23.22 ~ 23.31 //	—	—	—	—	10	23.22 ~ 23.31 //

※JIS B 0205-2:2001 表2中未列出的螺纹尺寸。

※Nominal size of a screw that is not listed in JIS B 0205-2:2001 Table 2.

1. 上表的底孔径因加工材料不同而变化, 仅供参考。
2. 底孔径根据加工材料·硬度·形状尺寸等塑性多少会变, 请试加工后再做选择。
3. 底孔径稍大点比较有利于刀具寿命。请按照需求选型。
4. 底孔弯曲、变形、错位等将导致加工困难, 请注意。

1. The proper drill hole size may change due to material variety. Use the recommended drill hole size as a benchmark.
2. As the hole diameter may vary by behavior of plasticity depending on the material, hardness and shapes of workpiece, the hole diameter should be determined through trial tapping prior to final machining.
3. A larger drill hole size is better for extending tool life. Select a drill hole size based on your particular application.
4. To avoid tapping trouble, correct hole must be maintained free from warp, deformation, stagger and the like.

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LG: 螺纹用极限量规 长颈型 Thread Limit Gauge Long Neck Type

颈部较长，可检查较深部位。 ※除颈部长度外，其他和标准的螺纹塞规相同
Long neck enables inspection of deep parts ※ Identical to standard thread plug gauge except for the neck length



DLC-LG: DLC 涂层螺纹用极限量规 DLC Coated Thread Limit Gauge

采用润滑性优良的 DLC 涂层，
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TIN-LG: TiN 涂层螺纹用极限量规 TiN Coated Thread Limit Gauge

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TiN coating offers superior wear resistance, contributing to extended tool life.
Wear condition can be visually monitored as a guideline.



LG: 小径用塞规 Plain Plug Gauges for Minor Diameter

挤压丝锥通过材料的塑性变形形成内螺纹，因此底孔径和内螺纹内径存在差异。
内螺纹加工完成后，可对实际内径尺寸进行检测验证。
Forming taps produce raised threads through plastic deformation, resulting in a difference between the pre-drilled hole and the internal thread diameters.
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