



高硬度钢用带底刀螺纹铣刀

Vol.3

AT-2

Thread Mill with End-cutting Edge for High-hardness Steels

有效螺纹长度2D型・2.5D型
Effective thread length 2 x D type and 2.5 x D type

M16 ~ M20 / No.8 ~ 1/2U

锥管螺纹型

Tapered pipe thread type

Rc (PT) 1 / 1/16NPT ~ 1NPT

共计追加29款
29 new items added



AT-2

螺旋铣孔 + 螺纹铣削同时加工!

Helical drilling + threading can be done simultaneously!

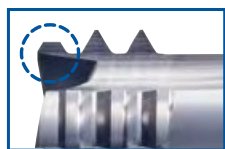
左刃

Left-hand cut

顺铣使用寿命长

Long tool life is achieved by climb milling

※因为是左刃，所以请主轴逆转使用。
Spindle rotation must be counterclockwise due to the left-hand cut configuration.



粗加工切削刃

Roughing teeth

通过粗加工切削刃来分散负荷
Roughing teeth are added to distribute the load

DUROREY 涂层

DUROREY coating

面向高硬度钢的创新涂层
Innovative new coating for high-hardness steel

特殊刃型

[PAT. in Japan]

Special cutting edge shape

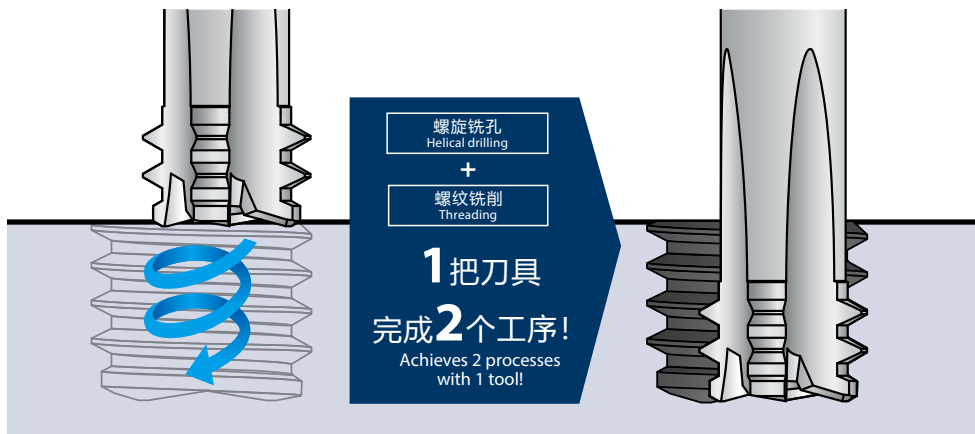
抑制刀具让刀

Bending of the tool can be controlled

DUROREY是OSG公司的注册商标。
DUROREY is a registered trademark of OSG Corporation

无需底孔! 无切屑问题的稳定加工

No pre-drilled hole is required! Stable machining without chip trouble



辅助螺纹铣刀加工的3种工具

3 Supportive Tools for Your Thread Milling Needs

1 NC程序编程软件ThreadPro 简单创建程序

Thread Milling NC Code Generator Software

Creates programs easily

NEW

Web版ThreadPro已发布
Web version of ThreadPro is now available

※ AT-2仅支持Web版

AT-2 is supported by Web version only

2 刀具半径补偿量的参考值 RPRG 减少半径补偿工作

Reference value of tool radius offset

Reduces correction works

3 半径补偿工具 DCT 稳定刀具寿命

Diameter Correction Tool

Stabilizes tool life

详情请见P.19

Please refer to p.19 for details.



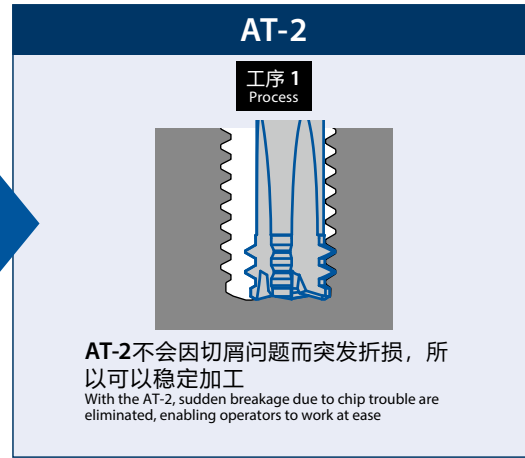
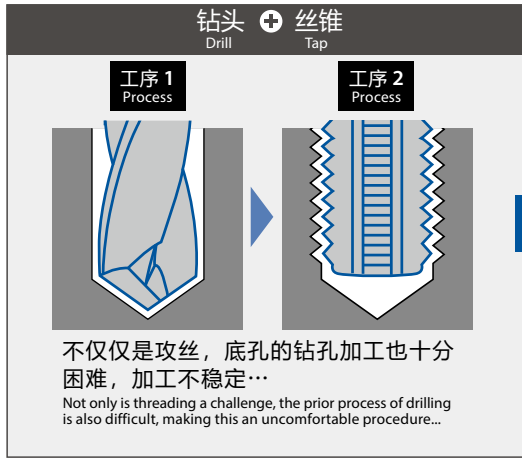
最适合高难度的高硬度钢加工!

Ideal for highly difficult high hardness steel applications!



螺旋铣孔+ 螺纹铣削的同时加工, 从而降低高硬度钢加工的风险

Helical drilling + threading can be done simultaneously, which reduces the risk of potential machining problems in the processing of high hardness steels



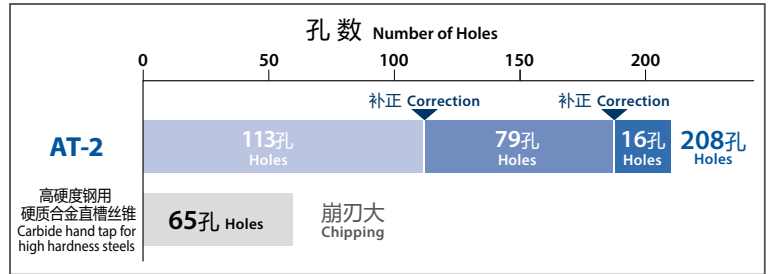
AT-2可以细小分断切屑并顺畅排出, 降低了突发折损的风险。

另外, 由于无需底孔, 所以可以兼顾工程集约与避免刀具的折损风险。

The risk of sudden tool breakage can be minimized by breaking chips into small and manageable pieces and evacuating them smoothly. Since no pre-drilled hole is required, process integration and the risk of breakage can be avoided.

与丝锥相比, 刀具使用寿命长、稳定, 螺纹品质高 Long and stable tool life with higher thread quality compared to cutting taps

使用工具 Tool	AT-2 $\phi 6.2 \times 16$ P1.25	高硬度钢用硬质合金直槽丝锥 Carbide hand tap for high hardness steels M8 $\times 1.25$ 3P
加工材料 Work Material	SKD11 (60HRC)	
切削速度 Cutting Speed	45m/min (2,310min ⁻¹)	2m/min (80min ⁻¹)
进给速度 Feed	83mm/min (0.04mm/t)	100mm/min
底孔尺寸 Drill Hole Size	无 None	$\phi 6.8 \times 23.5$ mm (盲孔) Blind
内螺纹尺寸 Internal Thread Size	M8 $\times 1.25$	
螺纹长度 Threading Length	16mm (2D)	
切削油剂 Coolant	气冷式 Air blow	油性切削油剂 Non-Water-soluble
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center	立式加工中心 (BT40) Vertical Machining Center



※切削试验的评价方法请参考P.3。
※Please refer to p. 3 for evaluation method of cutting test.

最适合高硬度钢加工的超耐热性·高韧性DUROREY涂层

DUROREY coating enables superior heat resistance and high toughness optimized for high-hardness steel milling!

PAT.P in Japan

超耐热层 Super Heat Resistant Layer

通过含有SiC的超耐热材料和结晶微小化, 实现表面平滑化、高硬化、高韧性及耐溶着强化

Smoothing of surface, high toughness and adhesion resistance due to the SiC containing ultra-heat-resistance material and crystal miniaturization

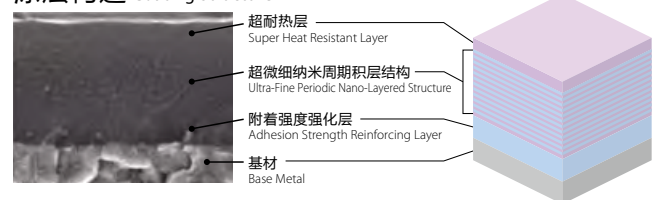
超微细纳米周期积层结构 Ultra-Fine Periodic Nano-Layered Structure

通过纳米周期积层和耐磨损层的积层构造, 使结晶微小化和机械特性提高
Crystal miniaturization and improvement of mechanical properties due to the laminated structure of periodic nano-layer and wear-resistant layer

含有SiC的超耐热层和超微细纳米周期积层结构, 具有高耐热性和耐磨损性的同时, 发挥优异的韧性。

即使在高硬度加工中也可抑制崩刃, 实现工具的长寿命化。

涂层构造 Coating Structure



Super heat resistant layer and ultra-fine periodic nano-layered structure provide superior toughness while maintaining high heat resistance and abrasion resistance. Also suppresses chipping even in high hardness milling and achieves long tool life.

涂层色 Coating Color	涂层构造 Coating Structure	硬度 (GPa) Hardness	氧化开始温度 (°C) Oxidation Temperature	耐热性 Heat Resistance	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
黑灰色 Black Gray	超微细纳米周期积层 Ultra-Fine Periodic Nano-Layered	41	1,300	☆	◎	○	☆	◎	◎

(标准) ○ → ◎ → ☆ (最佳)
Fair Best

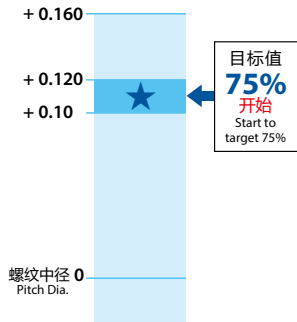


切削试验评价方法 Evaluation method of cutting test

①将内螺纹精度的75%作为有效尺寸的目标值开始试验。

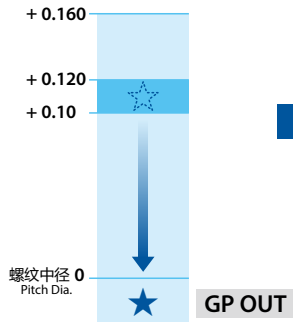
Start the test by setting the 75% accuracy of internal thread to be the target of acceptable pitch diameter.

例: M8X1.25 内螺纹精度6H (0~+0.160mm)
Example Accuracy of internal thread
目标值75%: +0.120mm
Target value



②如果GP OUT, 则进行修正, 恢复至目标值。

Perform correction when a gauge-out occurs and return to the target value.

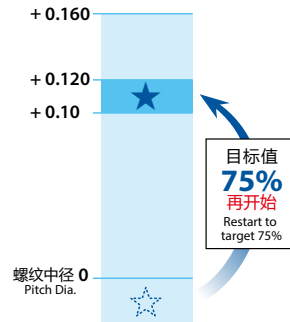


③重复①和②, 直到折损或修正后的加工连续不足5个孔为止。

※修正后的加工连续不足5孔时, 判断为刀具寿命

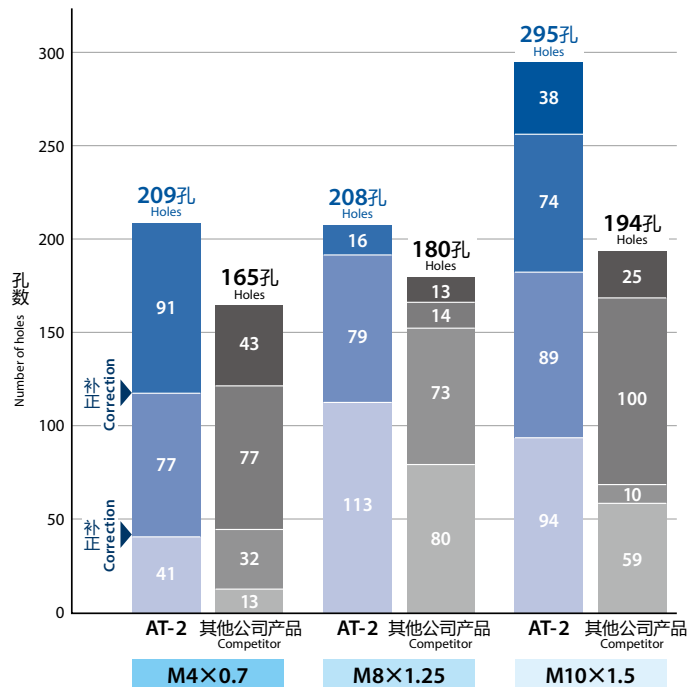
Repeat steps 1 and 2 until processing after breakage or correction is less than 5 consecutive holes.

※ If machining after correction is less than 5 consecutive holes, it is judged as tool life.



采用气冷式切削, 卓越的耐久性 Outstanding durability by cutting with air-blow

尺寸 Size	φ3.1×8 P0.7	φ6.2×16 P1.25	φ7.5×20 P1.5
加工材料 Work Material	SKD11 (60HRC)		
切削速度 Cutting Speed	45m/min (4,621min ⁻¹)	45m/min (2,310min ⁻¹)	35m/min (1,485min ⁻¹)
进给速度 Feed	46mm/min (0.011mm/t)	83mm/min (0.04mm/t)	56mm/min (0.038mm/t)
内螺纹尺寸 Internal Thread Size	M4×0.7	M8×1.25	M10×1.5
螺纹长度 Threading Length	7mm	14.8mm	18.5mm
切削油剂 Coolant	气冷式 Air Blow		
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center	立式加工中心 (HSK63) Vertical Machining Center	

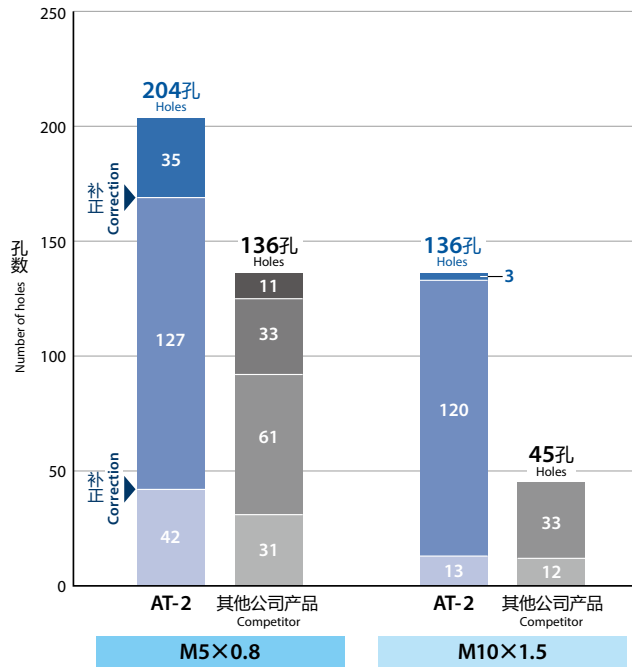


■ 即使使用水溶性切削油剂也可具有稳定的耐久性 Stable durability with water-soluble coolant

尺寸 Size	φ4×10 P0.8	φ7.5×20 P1.5
加工材料 Work Material	SKD11 (60HRC)	
切削速度 Cutting Speed	45m/min (3,581min ⁻¹)	45m/min (1,910min ⁻¹)
进给速度 Feed	66mm/min (0.023mm/t)	73mm/min (0.038mm/t)
内螺纹尺寸 Internal Thread Size	M5×0.8	M10×1.5
螺纹长度 Threading Length	9.2mm	18.5mm
切削油剂 Coolant	水溶性切削油剂 Water-Soluble	
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center	立式加工中心 (HSK63) Vertical Machining Center

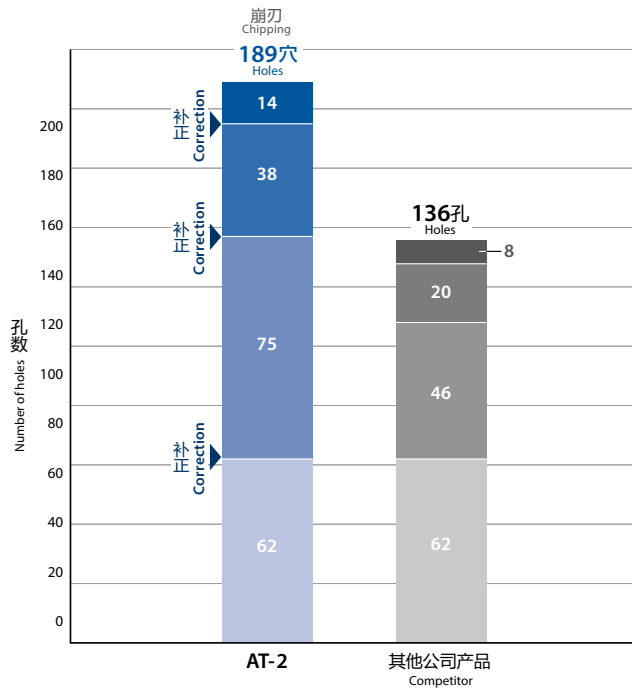
与大多数使用油性切削油剂的攻丝加工不同，因为可以使用水溶性切削油剂，所以可减少更换机械的时间。

Unlike processing with cutting taps, which often involves the use of non-water-soluble coolant, water-soluble coolant can be used with the AT-2, reducing the need to switch machines.



■ 即使是2.5D的螺纹长度也可稳定加工 Stable threading of 2.5 x D made possible

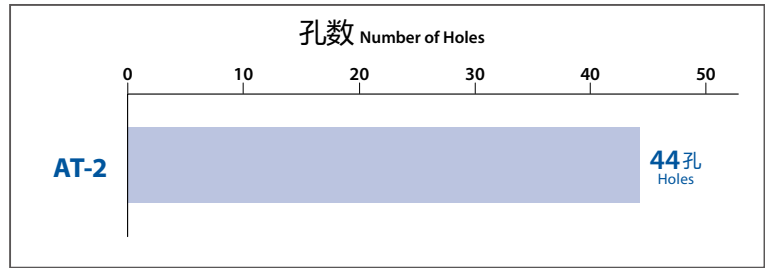
使用工具 Tool	AT-2 φ7.5×25 P1.5
加工材料 Work Material	SKD11 (60HRC)
切削速度 Cutting Speed	35m/min (1,485min ⁻¹)
进给速度 Feed	56mm/min (0.038mm/t)
内螺纹尺寸 Internal Thread Size	M10×1.5
螺纹长度 Threading Length	22.5mm
切削油剂 Coolant	气冷式 Air Blow
使用机械 Machine	立式加工中心 (HSK63) Vertical Machining Center



请参考切削条件基准表 (P.11 ~ P.15) 选择适合加工的冷却剂。
Refer to the cutting condition tables (p.11 ~ p.15) to select a suitable coolant for machining.

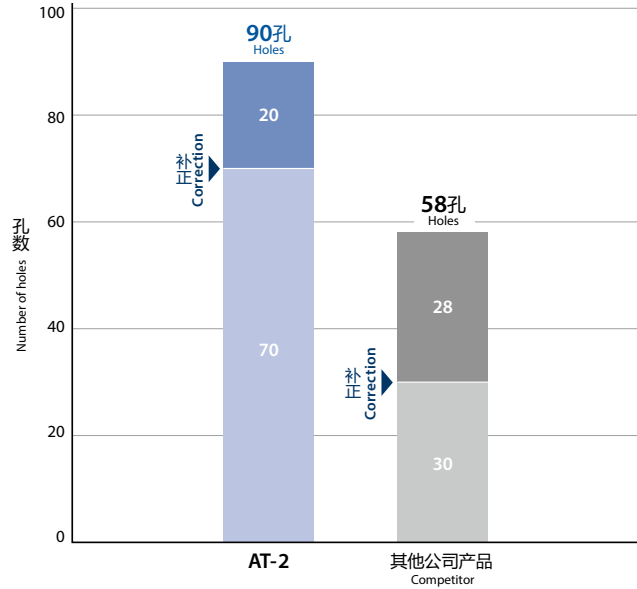
■ 加工65HRC的材料时，具有惊人的耐久性 Remarkable durability in 65 HRC work material

使用工具 Tool	AT-2 $\phi 4 \times 10$ P0.8
加工材料 Work Material	SKH相当 (65HRC) Equivalent to SKH
切削速度 Cutting Speed	45m/min (3,581min ⁻¹)
进给速度 Feed	29mm/min (0.01mm/t)
内螺纹尺寸 Internal Thread Size	M5×0.8
螺纹长度 Threading Length	8mm(2D)
切削油剂 Coolant	气冷式 Air Blow
使用机械 Machine	卧式加工中心 Horizontal Machining Center



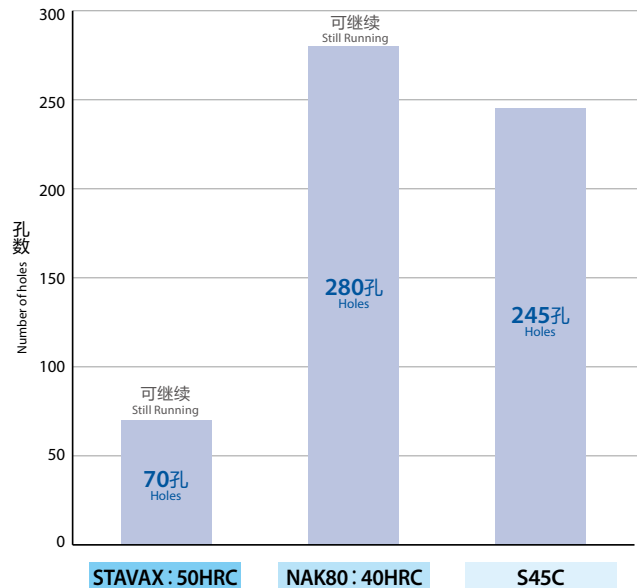
■ 即使是60HRC的锥管螺纹也可稳定加工 Stable processing is made possible even in tapered pipe threads of 60 HRC

使用工具 Tool	AT-2 $\phi 5.76 \times 16.8$ Rc28
加工材料 Work Material	SKD11 (60HRC)
切削速度 Cutting Speed	45m/min (2,512min ⁻¹)
进给速度 Feed	39mm/min(0.01mm/t)
内螺纹尺寸 Internal Thread Size	Rc 1/8-28
螺纹长度 Threading Length	6.2mm
切削油剂 Coolant	气冷式 Air Blow
使用机械 Machine	立式加工中心 (BT40) Vertical Machining Center



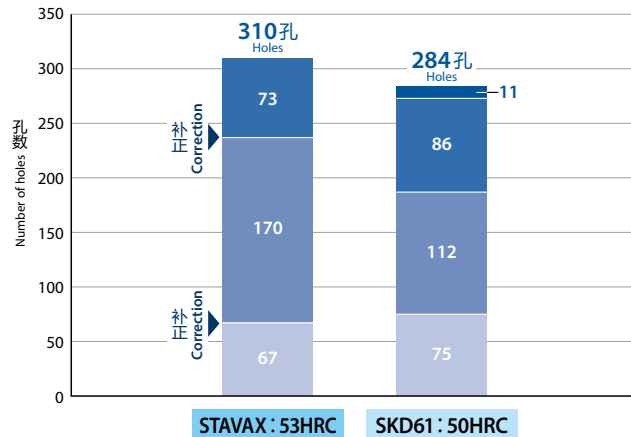
■ 普通钢的锥管螺纹加工 Processing of tapered pipe threads in general steel

使用工具 Tool	AT-2 $\phi 5.76 \times 16.8$ Rc28		
加工材料 Work Material	STAVAX(50HRC)	NAK80(40HRC)	S45C
切削速度 Cutting Speed	45m/min(2,512min ⁻¹)		
进给速度 Feed	39mm/min(0.01mm/t)		
内螺纹尺寸 Internal Thread Size	Rc 1/8-28		
螺纹长度 Threading Length	6.2mm		
切削油剂 Coolant	气冷式 Air Blow		
使用机械 Machine	立式加工中心 (BT40) Vertical Machining Center		



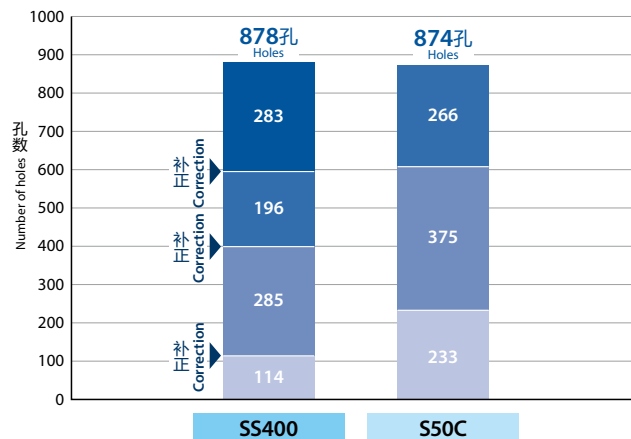
■ 即使在STAVAX(50 HRC左右)的加工中,也具有优异的耐久性 Excellent durability even in STAVAX (around 50 HRC)

使用工具 Tool	AT-2 $\phi 7.5 \times 20$ P1.5	
加工材料 Work Material	STAVAX(53HRC)	SKD61(50HRC)
切削速度 Cutting Speed	55m/min(2,331min ⁻¹)	
进给速度 Feed	89mm/min(0.038mm/t)	
内螺纹尺寸 Internal Thread Size	M10×1.5	
螺纹长度 Threading Length	18mm	
切削油剂 Coolant	气冷式 Air Blow	
使用机械 Machine	卧式加工中心 (BT40) Horizontal Machining Center	



■ 普通钢也可稳定加工 Stable performance even in general steels

使用工具 Tool	AT-2 $\phi 3.1 \times 8$ P0.7	
加工材料 Work Material	SS400	S50C
切削速度 Cutting Speed	45m/min (4,621min ⁻¹)	85m/min (8,728min ⁻¹)
进给速度 Feed	46mm/min (0.011mm/t)	86mm/min (0.011mm/t)
内螺纹尺寸 Internal Thread Size	M4×0.7	
螺纹长度 Threading Length	7mm(2D)	
切削油剂 Coolant	水溶性切削油剂 Water-Soluble	
使用机械 Machine	立式加工中心 Vertical Machining Center	



由于不存在切屑问题,有效避免了刀具折损的风险。此外,工序也可集中。

Since there is no cutting chip trouble, it is effective for avoiding the risk of tool breakage. Processing consolidation is also made possible.

请参考切削条件基准表 (P.11 ~ P.15) 选择适合加工的冷却剂。
Refer to the cutting condition tables (p.11 ~ p.15) to select a suitable coolant for machining.

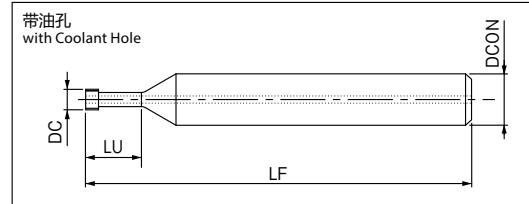
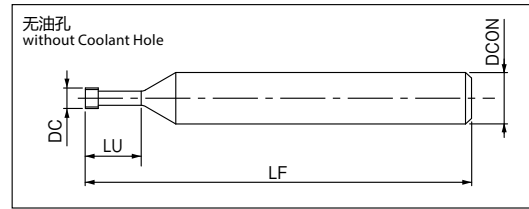
AT-2

有效螺纹长度2D型
Effective thread length 2 x D type



CARBIDE
DUROREY
SHANK h6
SPEED FEED P11~P15

因为是左刃，所以请主轴逆转使用。
Spindle rotation must be counterclockwise due to the left-hand cut configuration.



螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	加工径 Thread Size	最大加工径*1 Max. Processing Dia.	外径 DC	全长 LF	最大螺纹长度 Maximum threading length	颈长 LU	柄径 DCON	槽数 Flutes	油孔 Oil Hole	库存 Stock
8331200	M 3×0.5	4.2	2.4	50	6	7.2	6	4	—	B ●
8331201	M 4×0.7	5.3	3.1	50	8	9.7	6	4	—	
8331202	M 5×0.8	7	4	50	10	12	6	4	—	
8331203	M 6×1	8	4.6	50	12	14.5	6	4	—	
8331204	M 8×1.25	10.9	6.2	70	16	19.1	10	4	—	
8331205	M10×1.5	13.2	7.5	70	20	23.7	10	4	Yes	
8331206	M12×1.75	15.9	9	80	24	28.3	10	4	Yes	D ○
※ 8331240	M16×2	21.1	11.7	100	32	37	12	4	Yes	
※ 8331241	M18×2.5	25.1	14	135	36	42.2	16	4	Yes	
※ 8331242	M20×2.5	28.5	15.7	135	40	46.2	16	4	Yes	○

●=标准库存品 ●=Standard stock item ○= 准标准库存品 (请确认库存。) ○=Limited standard stock item
※=NEW SIZES

螺纹种类：U

单位:mm Unit:mm

商品号 EDP No.	加工径 Thread Size	最大加工径*1 Max. Processing Dia.	外径 DC	全长 LF	最大螺纹长度 Maximum threading length	颈长 LU	柄径 DCON	槽数 Flutes	油孔 Oil Hole	库存 Stock
※ 8331246	No. 8 - 32UNC	5.2	3.1	50	8.33	10.3	6	4	—	D ○
※ 8331247	No.10 - 24UNC	6.1	3.7	70	9.65	12.2	6	4	—	
※ 8331248	¼ - 20UNC	7.6	4.55	70	12.7	15.8	6	4	—	
※ 8331249	¼ - 28UNF	8	4.55	70	12.7	14.9	6	4	—	
※ 8331250	⅝ - 18UNC	9.7	5.7	80	15.88	19.4	10	4	—	
※ 8331251	⅝ - 16UNC	11.6	6.7	80	19.05	23	10	4	—	
※ 8331252	⅞ - 14UNC	13.3	7.7	80	22.22	26.7	10	4	Yes	
※ 8331253	½ - 13UNC	16.2	9.2	80	25.4	30.2	10	4	Yes	

○ = 准标准库存品 (请确认库存。) ○=Limited standard stock item

- AT-2为内螺纹加工专用。
- ThreadPro的路径类型请选择“单刃进给”。

- AT-2 is only for milling internal threads.
- Please select "single-feed" for the path type in ThreadPro.

※1螺旋铣孔和螺纹铣削同时加工时的最大值。
加工超过最大加工径的内螺纹尺寸时，请进行底孔加工。

※1 This is the maximum value when helical drilling and threading take place at the same time. Please make a pre-drilled hole when machining an internal thread size that exceeds the maximum processing diameter.

标识说明 Guide for Icons

1 材质 Tool Materials

CARBIDE 硬质合金
Tungsten Carbide

2 表面处理 Surface Treatment

DUROREY DUROREY 涂层
DUROREY Coating

3 柄部 Shank

SHANK 表示刀具的柄部精度
h6 Tolerance for Shank Diameter

4 切削条件 Cutting Conditions

SPEED FEED 表示切削条件基准表所在页码
Indicates page no. for recommended conditions.

5 加工螺纹种类 Thread Type

内螺纹用
for Internal Thread

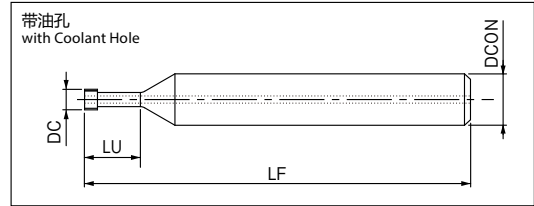
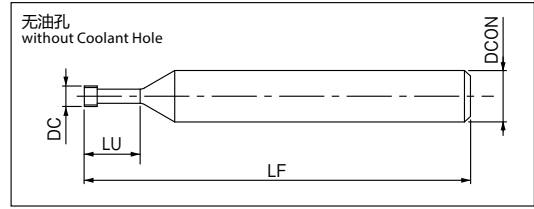
AT-2

有效螺纹长度2.5D型
Effective thread length 2.5 x D type



CARBIDE
DUOREY
SHANK h6
SPEED FEED P11~P15

因为是左刃，所以请主轴逆转使用。
Spindle rotation must be counterclockwise due to the left-hand cut configuration.



螺纹种类：M

单位:mm Unit:mm

商品号 EDP No.	加工径 Thread Size	最大加工径 ^{*1} Max. Processing Dia.	外径 DC	全长 LF	最大螺纹长度 Maximum threading length	颈长 LU	柄径 DCON	槽数 Flutes	油孔 Oil Hole	库存 Stock
8331207	M 3 × 0.5	4.2	2.4	50	7.5	8.7	6	4	—	●
8331208	M 4 × 0.7	5.3	3.1	50	10	11.7	6	4	—	●
8331209	M 5 × 0.8	7	4	50	12.5	14.5	6	4	—	●
8331210	M 6 × 1	8	4.6	50	15	17.5	6	4	—	●
8331211	M 8 × 1.25	10.9	6.2	70	20	23.1	10	4	—	●
8331212	M10 × 1.5	13.2	7.5	70	25	28.7	10	4	Yes	●
8331213	M12 × 1.75	15.9	9	80	30	34.3	10	4	Yes	●
* 8331243	M16 × 2	21.1	11.7	100	40	45	12	4	Yes	○
* 8331244	M18 × 2.5	25.1	14	135	45	51.2	16	4	Yes	○
* 8331245	M20 × 2.5	28.5	15.7	135	50	56.2	16	4	Yes	○

● = 标准库存品 ● = Standard stock item ○ = 准标准库存品 (请确认库存。) ○ = Limited standard stock item

* = NEW SIZES

螺纹种类：U

单位:mm Unit:mm

商品号 EDP No.	加工径 Thread Size	最大加工径 ^{*1} Max. Processing Dia.	外径 DC	全长 LF	最大螺纹长度 Maximum threading length	颈长 LU	柄径 DCON	槽数 Flutes	油孔 Oil Hole	库存 Stock
* 8331254	No. 8 - 32UNC	5.2	3.1	50	10.42	12.4	6	4	—	○
* 8331255	No.10 - 24UNC	6.1	3.7	70	12.07	14.7	6	4	—	○
* 8331256	¼ - 20UNC	7.6	4.55	70	15.88	19	6	4	—	○
* 8331257	¼ - 28UNF	8	4.55	70	15.88	18.1	6	4	—	○
* 8331258	⅝ - 18UNC	9.7	5.7	80	19.85	23.3	10	4	—	○
* 8331259	⅜ - 16UNC	11.6	6.7	80	23.81	27.7	10	4	—	○
* 8331260	⅞ - 14UNC	13.3	7.7	80	27.78	32.3	10	4	Yes	○
* 8331261	½ - 13UNC	16.2	9.2	80	31.75	36.6	10	4	Yes	○

○ = 准标准库存品 (请确认库存。) ○ = Limited standard stock item

* = NEW SIZES

- 标识说明请参阅p.7.
- AT-2为内螺纹加工专用。
- ThreadPro的路径类型请选择“单刃进给”。
- *1 螺旋铣孔和螺纹铣削同时加工时的最大值。
加工超过最大加工径的内螺纹尺寸时，请进行底孔加工。

- See p.7 for explanation of icons.
- AT-2 is only for milling internal threads.
- Please select "single-feed" for the path type in ThreadPro.
- *1 This is the maximum value when helical drilling and threading take place at the same time. Please make a pre-drilled hole when machining an internal thread size that exceeds the maximum processing diameter.

更多信息请咨询本公司营业人员。
Please contact our sales staff for more information.

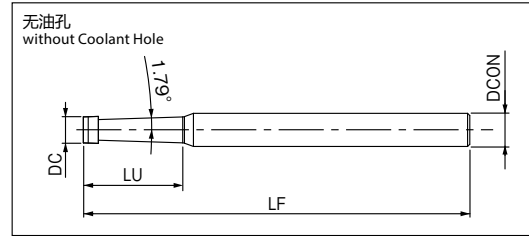
也可提供不同尺寸的非标品。
Custom order with specific requests on diameter, length and accuracy is accepted.



AT-2

锥管螺纹型

Tapered pipe thread type



CARBIDE DUROREY SHANK h6 SPEED FEED P11~P15

因为是左刃，所以请主轴逆转使用。
Spindle rotation must be counterclockwise due to the left-hand cut configuration.

螺纹种类：Rc (PT)

单位:mm Unit:mm

商品号 EDP No.	加工径 Thread Size	底孔适用尺寸*1 Applicable size for pre-drilled hole	牙数 TPI	标准外径 DC	全长 LF	最大螺纹长度 Maximum threading length	颈长 LU	柄径 DCON	槽数 Flutes	油孔 Oil Hole	库存 Stock
8331214	1/16 - 28	1/8 - 28 (φ4~8.2)	28	4.86	70	15.8	18	6	4	—	●
8331215	1/8 - 28	—	28	5.76	70	16.8	19	6	4	—	●
8331216	1/4 - 19	3/8 - 19 (φ6~14.4)	19	7.98	80	24.76	28	10	4	—	●
8331217	3/8 - 19	—	19	9.68	80	24.76	28	10	4	—	●
8331218	1/2 - 14	3/4 - 14 (φ8~23)	14	11.61	110	30.6	35	12	4	—	●
※ 8331219	1 - 11	1 - 11 (φ10~29)	11	15.54	135	39.4	45	16	4	—	○

● = 标准库存品 ● = Standard stock item ○ = 准标准库存品 (请确认库存。) ○ = Limited standard stock item

※ = NEW SIZES

螺纹种类：NPT

单位:mm Unit:mm

商品号 EDP No.	加工径 Thread Size	底孔适用尺寸*1 Applicable size for pre-drilled hole	牙数 TPI	标准外径 DC	全长 LF	最大螺纹长度 Maximum threading length	颈长 LU	柄径 DCON	槽数 Flutes	油孔 Oil Hole	库存 Stock
※ 8331234	1/16 - 27	1/8 - 27 (φ4~8.43)	27	4.86	70	15.7	18	6	4	—	○
※ 8331235	1/8 - 27	—	27	5.76	70	16.7	19	6	4	—	○
※ 8331236	1/4 - 18	3/8 - 18 (φ6~14.27)	18	7.98	80	24.5	28	10	4	—	○
※ 8331237	3/8 - 18	—	18	9.68	80	24.5	28	10	4	—	○
※ 8331238	1/2 - 14	3/4 - 14 (φ8~17.86)	14	11.61	110	30.5	35	12	4	—	○
※ 8331239	1 - 11 1/2	1 - 11 1/2 (φ10~28.98)	11.5	15.54	135	39.6	45	16	4	—	○

○ = 准标准库存品 (请确认库存。) ○ = Limited standard stock item

※ = NEW SIZES

- 标识说明请参阅p.7。
- AT-2为内螺纹加工专用。
- ThreadPro的路径类型请选择“单刃进给”。

*1 加工底孔后进行螺纹加工时的可加工尺寸。
Rc(PT)1-11和1-11 / NPT需要底孔加工。

- See p.7 for explanation of icons.
 - AT-2 is only for milling internal threads.
 - Please select "single-feed" for the path type in ThreadPro.
- *1 Machinable size for threading after pre-drilled hole.
Rc (PT) 1-11 and 1-11 / NPT require pre-drilled hole.

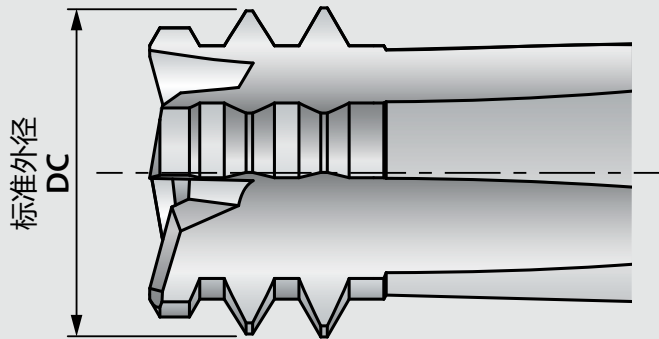
更多信息请咨询本公司营业人员。
Please contact our sales staff for more information.

也可提供不同尺寸的非标品。
Custom order with specific requests on diameter, length and accuracy is accepted.



■ 锥管螺纹型的标准外径 (DC) 是指切削刃中部的尺寸。

The standard outer diameter (DC) of the tapered pipe type represents the dimension of the outer diameter of the central cutting edge.



螺纹铣刀是加工锥管螺纹的理想工具

Thread mills are ideal for machining tapered pipe threads

■ 无停止线，真圆度高，可加工耐密性高的
高精度螺纹

High-precision threading can be achieved with no stop marks and high roundness

停止线
Stop Marks



丝锥加工
Processing by tap



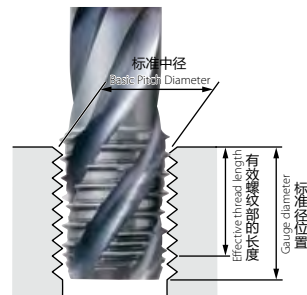
螺纹铣刀加工
Processing by thread mill

■ 可加工比短螺纹型丝锥更浅的锥管螺纹

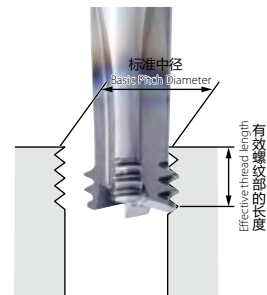
Capable of processing even shallower tapered threads than tapered pipe taps

即使底孔很浅，丝锥不能插入标准径位置的情况下，螺纹铣刀也可以通过程序指定螺纹长度来加工比短螺纹规格浅的锥管螺纹。

Even if the drill hole is shallow and the tap cannot be inserted to the gauge diameter position, a thread mill can process tapered threads that are shallower than the short thread standard by specifying the thread length through programming.



丝锥加工
Processing by tap



螺纹铣刀加工
Processing by thread mill

提供各种螺纹量规

A vast lineup of thread gauges is available.

可用于检测平行管螺纹量规无法检测的小径尺寸的锥管螺纹用小径塞规

Tapered pipe thread plug gauges for inspecting the minor diameter that cannot be inspected with a tapered pipe thread gauge



切削条件基准表 Cutting Conditions

加工材料 Work Material			软钢·低碳素钢 Mild Steel · Low Carbon Steel ~C0.25%			中碳素钢·高碳素钢 Medium Carbon Steel · High Carbon Steel C0.25%~			合金钢 Alloy Steel SCM		
推荐切削油剂 Recommended Coolant			水溶性切削油剂 Water-Soluble			水溶性切削油剂 Water-Soluble			水溶性切削油剂 Water-Soluble		
切削速度 Cutting Speed (m/min)			35 ~ 55			80 ~ 160			60 ~ 120		
螺纹分类 Thread	加工径 Thread Size	DC	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)
M	M 3 × 0.5	2.4	5,968	48	0.01	10,610	85	0.01	7,958	64	0.01
	M 4 × 0.7	3.1	4,621	62	0.015	8,214	111	0.015	6,161	83	0.015
	M 5 × 0.8	4	3,581	49	0.017	6,366	87	0.017	4,775	65	0.017
	M 6 × 1	4.6	3,114	58	0.02	5,536	103	0.02	4,152	78	0.02
	M 8 × 1.25	6.2	2,310	62	0.03	4,107	111	0.03	3,080	83	0.03
	M 10 × 1.5	7.5	1,910	67	0.035	3,395	119	0.035	2,546	89	0.035
	M 12 × 1.75	9	1,592	72	0.045	2,829	127	0.045	2,122	95	0.045
	M 16 × 2	11.7	1,224	72	0.055	2,176	129	0.055	1,632	96	0.055
	M 20 × 2.5	15.7	912	51	0.065	1,622	91	0.065	1,216	68	0.065
U	No. 8 - 32UNC	3.1	4,621	47	0.01	8,214	84	0.01	6,161	63	0.01
	No.10 - 24UNC	3.7	3,871	54	0.015	6,882	96	0.015	5,162	72	0.015
	1/4 - 20UNC	4.55	3,148	89	0.025	5,597	159	0.025	4,197	119	0.025
	1/4 - 28UNF	4.55	3,148	89	0.025	5,597	159	0.025	4,197	119	0.025
	5/16 - 18UNC	5.7	2,513	85	0.03	4,468	151	0.03	3,351	113	0.03
	3/8 - 16UNC	6.7	2,138	89	0.035	3,801	158	0.035	2,851	118	0.035
	7/16 - 14UNC	7.7	1,860	91	0.04	3,307	162	0.04	2,480	122	0.04
Rc (PT)	1/2 - 13UNC	9.2	1,557	77	0.045	2,768	137	0.045	2,076	103	0.045
	1/16 - 28	4.86	2,982	※1	0.025	5,302	※1	0.025	3,976	※1	0.025
	1/8 - 28	5.76	2,512	※1	0.03	4,465	※1	0.03	3,349	※1	0.03
	1/4 - 19	7.98	1,814	※1	0.04	3,225	※1	0.04	2,419	※1	0.04
	3/8 - 19	9.68	1,493	※1	0.045	2,654	※1	0.045	1,990	※1	0.045
	1/2 - 14	11.61	1,246	※1	0.055	2,215	※1	0.055	1,661	※1	0.055
NPT	1 - 11	15.54	930	※1	0.065	1,654	※1	0.065	1,240	※1	0.065
	1/16 - 27	4.86	2,984	※1	0.025	5,304	※1	0.025	3,978	※1	0.025
	1/8 - 27	5.76	2,513	※1	0.03	4,467	※1	0.03	3,350	※1	0.03
	1/4 - 18	7.98	1,815	※1	0.04	3,227	※1	0.04	2,420	※1	0.04
	3/8 - 18	9.68	1,493	※1	0.045	2,655	※1	0.045	1,991	※1	0.045
	1/2 - 14	11.61	1,246	※1	0.055	2,215	※1	0.055	1,661	※1	0.055
1 - 11 1/2	15.54	930	※1	0.065	1,653	※1	0.065	1,240	※1	0.065	

※1. 取决于所要加工的孔深。

1. 此切削条件基准表为标准值。加工时推荐使用NC编程软件ThreadPro创建的程序。
2. 请根据工件的刚性，机械、夹具的刚性适当变更切削条件。
3. 请将刀具振动精度控制在最小限度时使用。
4. 加工镁合金时，请务必使用切削油剂厂家推荐的切削油剂。还有，处理切屑时请注意，以免造成火灾。
5. 因为是左刃，所以请主轴逆转使用。

※1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.



加工材料 Work Material			调质钢 Hardened Steel								
			25~45HRC			45~50HRC			50~65HRC		
推荐切削油剂 Recommended Coolant			气冷 Air Blow								
切削速度 Cutting Speed (m/min)			35 ~ 75			35 ~ 65			35 ~ 55		
螺纹分类 Thread	加工径 Thread Size	DC	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)
M	M 3 × 0.5	2.4	5,968	48	0.01	5,968	48	0.01	5,968	48	0.01
	M 4 × 0.7	3.1	4,621	62	0.015	4,621	62	0.015	4,621	62	0.015
	M 5 × 0.8	4	3,581	49	0.017	3,581	49	0.017	3,581	49	0.017
	M 6 × 1	4.6	3,114	58	0.02	3,114	58	0.02	3,114	58	0.02
	M 8 × 1.25	6.2	2,310	62	0.03	2,310	62	0.03	2,310	62	0.03
	M 10 × 1.5	7.5	1,910	67	0.035	1,910	67	0.035	1,910	67	0.035
	M 12 × 1.75	9	1,592	72	0.045	1,592	72	0.045	1,592	72	0.045
	M 16 × 2	11.7	1,224	72	0.055	1,224	72	0.055	1,224	72	0.055
U	No. 8 - 32UNC	3.1	4,621	47	0.01	4,621	47	0.01	4,621	47	0.01
	No.10 - 24UNC	3.7	3,871	54	0.015	3,871	54	0.015	3,871	54	0.015
	¼ - 20UNC	4.55	3,148	89	0.025	3,148	89	0.025	3,148	89	0.025
	¼ - 28UNF	4.55	3,148	89	0.025	3,148	89	0.025	3,148	89	0.025
	⅝ - 18UNC	5.7	2,513	85	0.03	2,513	85	0.03	2,513	85	0.03
	⅜ - 16UNC	6.7	2,138	89	0.035	2,138	89	0.035	2,138	89	0.035
	⅞ - 14UNC	7.7	1,860	91	0.04	1,860	91	0.04	1,860	91	0.04
Rc (PT)	½ - 13UNC	9.2	1,557	77	0.045	1,557	77	0.045	1,557	77	0.045
	⅛ - 28	4.86	2,982	※1	0.025	2,982	※1	0.025	2,982	※1	0.025
	⅜ - 28	5.76	2,512	※1	0.03	2,512	※1	0.03	2,512	※1	0.03
	¼ - 19	7.98	1,814	※1	0.04	1,814	※1	0.04	1,814	※1	0.04
	⅜ - 19	9.68	1,493	※1	0.045	1,493	※1	0.045	1,493	※1	0.045
	½ - 14	11.61	1,246	※1	0.055	1,246	※1	0.055	1,246	※1	0.055
NPT	1 - 11	15.54	930	※1	0.065	930	※1	0.065	930	※1	0.065
	⅛ - 27	4.86	2,984	※1	0.025	2,984	※1	0.025	2,984	※1	0.025
	⅜ - 27	5.76	2,513	※1	0.03	2,513	※1	0.03	2,513	※1	0.03
	¼ - 18	7.98	1,815	※1	0.04	1,815	※1	0.04	1,815	※1	0.04
	⅜ - 18	9.68	1,493	※1	0.045	1,493	※1	0.045	1,493	※1	0.045
	½ - 14	11.61	1,246	※1	0.055	1,246	※1	0.055	1,246	※1	0.055
1 - 11 ½	15.54	930	※1	0.065	930	※1	0.065	930	※1	0.065	

※1. 取决于所要加工的孔深。

1. 此切削条件基准表为标准值。加工时推荐使用NC编程软件ThreadPro创建的程序。
2. 请根据工件的刚性，机械、夹具的刚性适当变更切削条件。
3. 请将刀具振动精度控制在最小限度时使用。
4. 加工镁合金时，请务必使用切削油剂厂家推荐的切削油剂。还有，处理切屑时请注意，以免造成火灾。
5. 因为是左刃，所以请主轴逆转使用。

※1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

切削条件基准表 Cutting Conditions

加工材料 Work Material			不锈钢·工具钢 Stainless Steel·Tool Steel SUS304·SKD			铸钢·铸铁·球墨铸铁 Cast Steel·Cast Iron·Ductile Cast Iron SC·FC·FCD			铜·黄铜·黄铜铸件·青铜 Copper·Brass·Brass Casting·Bronze Cu·Bs·BsC·PB					
推荐切削油剂 Recommended Coolant			水性切削油剂 Water-Soluble			气冷 Air Blow			~20HRC			20HRC~		
切削速度 Cutting Speed (m/min)			35~100			35~100			35~100			35~75		
螺纹分类 Thread	加工径 Thread Size	DC	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)
M	M 3 × 0.5	2.4	5,968	48	0.01	7,958	64	0.01	7,958	64	0.01	5,968	48	0.01
	M 4 × 0.7	3.1	4,621	62	0.015	6,161	83	0.015	6,161	83	0.015	4,621	62	0.015
	M 5 × 0.8	4	3,581	49	0.017	4,775	65	0.017	4,775	65	0.017	3,581	49	0.017
	M 6 × 1	4.6	3,114	58	0.02	4,152	78	0.02	4,152	78	0.02	3,114	58	0.02
	M 8 × 1.25	6.2	2,310	62	0.03	3,080	83	0.03	3,080	83	0.03	2,310	62	0.03
	M 10 × 1.5	7.5	1,910	67	0.035	2,546	89	0.035	2,546	89	0.035	1,910	67	0.035
	M 12 × 1.75	9	1,592	72	0.045	2,122	95	0.045	2,122	95	0.045	1,592	72	0.045
	M 16 × 2	11.7	1,224	72	0.055	1,632	96	0.055	1,632	96	0.055	1,224	72	0.055
	M 20 × 2.5	15.7	912	51	0.065	1,216	68	0.065	1,216	68	0.065	912	51	0.065
U	No. 8 - 32UNC	3.1	4,621	47	0.01	6,161	63	0.01	6,161	63	0.01	4,621	47	0.01
	No.10 - 24UNC	3.7	3,871	54	0.015	5,162	72	0.015	5,162	72	0.015	3,871	54	0.015
	¼ - 20UNC	4.55	3,148	89	0.025	4,197	119	0.025	4,197	119	0.025	3,148	89	0.025
	¼ - 28UNF	4.55	3,148	89	0.025	4,197	119	0.025	4,197	119	0.025	3,148	89	0.025
	⅝ - 18UNC	5.7	2,513	85	0.03	3,351	113	0.03	3,351	113	0.03	2,513	85	0.03
	⅜ - 16UNC	6.7	2,138	89	0.035	2,851	118	0.035	2,851	118	0.035	2,138	89	0.035
	⅞ - 14UNC	7.7	1,860	91	0.04	2,480	122	0.04	2,480	122	0.04	1,860	91	0.04
	½ - 13UNC	9.2	1,557	77	0.045	2,076	103	0.045	2,076	103	0.045	1,557	77	0.045
Rc (PT)	⅞ - 28	4.86	2,982	※1	0.025	3,976	※1	0.025	3,976	※1	0.025	2,982	※1	0.025
	⅝ - 28	5.76	2,512	※1	0.03	3,349	※1	0.03	3,349	※1	0.03	2,512	※1	0.03
	¼ - 19	7.98	1,814	※1	0.04	2,419	※1	0.04	2,419	※1	0.04	1,814	※1	0.04
	⅜ - 19	9.68	1,493	※1	0.045	1,990	※1	0.045	1,990	※1	0.045	1,493	※1	0.045
	½ - 14	11.61	1,246	※1	0.055	1,661	※1	0.055	1,661	※1	0.055	1,246	※1	0.055
	1 - 11	15.54	930	※1	0.065	1,240	※1	0.065	1,240	※1	0.065	930	※1	0.065
NPT	⅞ - 27	4.86	2,984	※1	0.025	3,978	※1	0.025	3,978	※1	0.025	2,984	※1	0.025
	⅝ - 27	5.76	2,513	※1	0.03	3,350	※1	0.03	3,350	※1	0.03	2,513	※1	0.03
	¼ - 18	7.98	1,815	※1	0.04	2,420	※1	0.04	2,420	※1	0.04	1,815	※1	0.04
	⅜ - 18	9.68	1,493	※1	0.045	1,991	※1	0.045	1,991	※1	0.045	1,493	※1	0.045
	½ - 14	11.61	1,246	※1	0.055	1,661	※1	0.055	1,661	※1	0.055	1,246	※1	0.055
	1 - 11 ½	15.54	930	※1	0.065	1,240	※1	0.065	1,240	※1	0.065	930	※1	0.065

※1. 取决于所要加工的孔深。

1. 此切削条件基准表为标准值。加工时推荐使用NC编程软件ThreadPro创建的程序。
2. 请根据工件的刚性，机械、夹具的刚性适当变更切削条件。
3. 请将刀具振动精度控制在最小限度时使用。
4. 加工镁合金时，请务必使用切削油剂厂家推荐的切削油剂。还有，处理切屑时请注意，以免造成火灾。
5. 因为是左刃，所以请主轴逆转使用。

※1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.



加工材料 Work Material			铝轧制钢·铝合金铸件 Aluminum Rolled Steel·Aluminum Alloy Casting AL·AC·ADC			镁合金铸件·锌合金铸件 Magnesium Alloy Casting·Zinc Alloy Casting MC·ZDC			钛合金※ Titanium Alloy Ti-6Al-4V		
推荐切削油剂 Recommended Coolant			水溶性切削油剂 Water-Soluble			水溶性切削油剂 Water-Soluble			水溶性切削油剂 Water-Soluble		
切削速度 Cutting Speed (m/min)			35 ~ 100			35 ~ 100			35 ~ 55		
螺纹分类 Thread	加工径 Thread Size	DC	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)
M	M 3 × 0.5	2.4	10,610	85	0.01	7,958	64	0.01	5,968	48	0.01
	M 4 × 0.7	3.1	8,214	111	0.015	6,161	83	0.015	4,621	62	0.015
	M 5 × 0.8	4	6,366	87	0.017	4,775	65	0.017	3,581	49	0.017
	M 6 × 1	4.6	5,536	103	0.02	4,152	78	0.02	3,114	58	0.02
	M 8 × 1.25	6.2	4,107	111	0.03	3,080	83	0.03	2,310	62	0.03
	M 10 × 1.5	7.5	3,395	119	0.035	2,546	89	0.035	1,910	67	0.035
	M 12 × 1.75	9	2,829	127	0.045	2,122	95	0.045	1,592	72	0.045
	M 16 × 2	11.7	2,176	129	0.055	1,632	96	0.055	1,224	72	0.055
U	No. 8 - 32UNC	3.1	8,214	84	0.01	6,161	63	0.01	4,621	47	0.01
	No.10 - 24UNC	3.7	6,882	96	0.015	5,162	72	0.015	3,871	54	0.015
	¼ - 20UNC	4.55	5,597	159	0.025	4,197	119	0.025	3,148	89	0.025
	¼ - 28UNF	4.55	5,597	159	0.025	4,197	119	0.025	3,148	89	0.025
	⅝ - 18UNC	5.7	4,468	151	0.03	3,351	113	0.03	2,513	85	0.03
	⅜ - 16UNC	6.7	3,801	158	0.035	2,851	118	0.035	2,138	89	0.035
	⅞ - 14UNC	7.7	3,307	162	0.04	2,480	122	0.04	1,860	91	0.04
½ - 13UNC	9.2	2,768	137	0.045	2,076	103	0.045	1,557	77	0.045	
Rc (PT)	⅝ - 28	4.86	5,302	※1	0.025	3,976	※1	0.025	2,982	※1	0.025
	⅜ - 28	5.76	4,465	※1	0.03	3,349	※1	0.03	2,512	※1	0.03
	¼ - 19	7.98	3,225	※1	0.04	2,419	※1	0.04	1,814	※1	0.04
	⅜ - 19	9.68	2,654	※1	0.045	1,990	※1	0.045	1,493	※1	0.045
	½ - 14	11.61	2,215	※1	0.055	1,661	※1	0.055	1,246	※1	0.055
	1 - 11	15.54	1,654	※1	0.065	1,240	※1	0.065	930	※1	0.065
NPT	⅝ - 27	4.86	5,304	※1	0.025	3,978	※1	0.025	2,984	※1	0.025
	⅜ - 27	5.76	4,467	※1	0.03	3,350	※1	0.03	2,513	※1	0.03
	¼ - 18	7.98	3,227	※1	0.04	2,420	※1	0.04	1,815	※1	0.04
	⅜ - 18	9.68	2,655	※1	0.045	1,991	※1	0.045	1,493	※1	0.045
	½ - 14	11.61	2,215	※1	0.055	1,661	※1	0.055	1,246	※1	0.055
	1 - 11 ½	15.54	1,653	※1	0.065	1,240	※1	0.065	930	※1	0.065

※1. 取决于所要加工的孔深。

1. 此切削条件基准表为标准值。加工时推荐使用NC编程软件ThreadPro创建的程序。
2. 请根据工件的刚性，机械、夹具的刚性适当变更切削条件。
3. 请将刀具振动精度控制在最小限度时使用。
4. 加工镁合金时，请务必使用切削油剂厂家推荐的切削油剂。还有，处理切屑时请注意，以免造成火灾。
5. 因为是左刃，所以请主轴逆转使用。

※关于钛合金·镍基合金，上述条件表仅适用于使用水溶性切削油剂，且螺纹长度1D左右或适应油孔尺寸（油孔栏：印○）。

※1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

※ For titanium alloys and Ni-based alloys, the above condition table applies only when using a water-soluble cutting fluid and processing with a thread length of approximately 1xD or an oil hole compatible size (oil hole column: ○ mark).

加工材料 Work Material			镍基合金※ Ni-based Alloy Inconel			塑料 Plastic —		
推荐切削油剂 Recommended Coolant			水溶性切削油剂 Water-Soluble			水溶性切削油剂 Water-Soluble		
切削速度 Cutting Speed (m/min)			35 ~ 55			35 ~ 100		
螺纹分类 Thread	加工径 Thread Size	DC	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)	转速 Speed (min ⁻¹)	进给速度 Feed (mm/min)	每刃进给量 Feed per Tooth (mm/t)
M	M 3 × 0.5	2.4	4,642	37	0.01	7,958	64	0.01
	M 4 × 0.7	3.1	3,594	49	0.015	6,161	83	0.015
	M 5 × 0.8	4	2,785	38	0.017	4,775	65	0.017
	M 6 × 1	4.6	2,422	45	0.02	4,152	78	0.02
	M 8 × 1.25	6.2	1,797	49	0.03	3,080	83	0.03
	M 10 × 1.5	7.5	1,485	52	0.035	2,546	89	0.035
	M 12 × 1.75	9	1,238	56	0.045	2,122	95	0.045
	M 16 × 2	11.7	952	56	0.055	1,632	96	0.055
	M 18 × 2.5	14	796	42	0.06	1,364	73	0.06
M 20 × 2.5	15.7	710	40	0.065	1,216	68	0.065	
U	No. 8 - 32UNC	3.1	3,594	37	0.01	6,161	63	0.01
	No.10 - 24UNC	3.7	3,011	42	0.015	5,162	72	0.015
	¼ - 20UNC	4.55	2,449	69	0.025	4,197	119	0.025
	¼ - 28UNF	4.55	2,449	69	0.025	4,197	119	0.025
	⅜ - 18UNC	5.7	1,955	66	0.03	3,351	113	0.03
	⅜ - 16UNC	6.7	1,663	69	0.035	2,851	118	0.035
	⅞ - 14UNC	7.7	1,447	71	0.04	2,480	122	0.04
½ - 13UNC	9.2	1,211	60	0.045	2,076	103	0.045	
Rc (PT)	⅞ - 28	4.86	2,320	※1	0.025	3,976	※1	0.025
	⅞ - 19	5.76	1,954	※1	0.03	3,349	※1	0.03
	¼ - 19	7.98	1,411	※1	0.04	2,419	※1	0.04
	⅜ - 19	9.68	1,161	※1	0.045	1,990	※1	0.045
	½ - 14	11.61	969	※1	0.055	1,661	※1	0.055
	1 - 11	15.54	724	※1	0.065	1,240	※1	0.065
NPT	⅞ - 27	4.86	2,321	※1	0.025	3,978	※1	0.025
	⅞ - 27	5.76	1,954	※1	0.03	3,350	※1	0.03
	¼ - 18	7.98	1,412	※1	0.04	2,420	※1	0.04
	⅜ - 18	9.68	1,161	※1	0.045	1,991	※1	0.045
	½ - 14	11.61	969	※1	0.055	1,661	※1	0.055
	1 - 11 ½	15.54	723	※1	0.065	1,240	※1	0.065

※1. 取决于所要加工的孔深。

1. 此切削条件基准表为标准值。加工时推荐使用NC编程软件ThreadPro创建的程序。
2. 请根据工件的刚性，机械、夹具的刚性适当变更切削条件。
3. 请将刀具振动精度控制在最小时度时使用。
4. 加工镁合金时，请务必使用切削油剂厂家推荐的切削油剂。还有，处理切屑时请注意，以免造成火灾。
5. 因为是左刃，所以请主轴逆转使用。

※关于钛合金·镍基合金，上述条件表仅适用于使用水溶性切削油剂，且螺纹长度1D左右或适应油孔尺寸（油孔栏：印○）。

※1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

※ For titanium alloys and Ni-based alloys, the above condition table applies only when using a water-soluble cutting fluid and processing with a thread length of approximately 1xD or an oil hole compatible size (oil hole column: ○ mark).

螺纹铣刀的进给速度计算公式 Formula for calculating the feed rate of thread mill

$$V_f = \frac{f_z \times z \times n \times (D_m - DC)}{D_m} \text{ (mm/min)}$$

V_f : 工作台进给速度 (mm/min)
 D_m : 加工径 (mm)
 DC : 工具径 (mm)
 z : 刃数
 f_z : 进给量 (mm/t)
 n : 转速 (min⁻¹)

注 内螺纹加工时：—
Note Internal

圆弧切削加工内螺纹时，刀具中心的进给速度可以通过直线切削的进给速度乘以系数得到。左边列出的公式表示包含直线切削时进给速度相关的系数计算公式的圆弧切削时工具进给速度的计算公式。

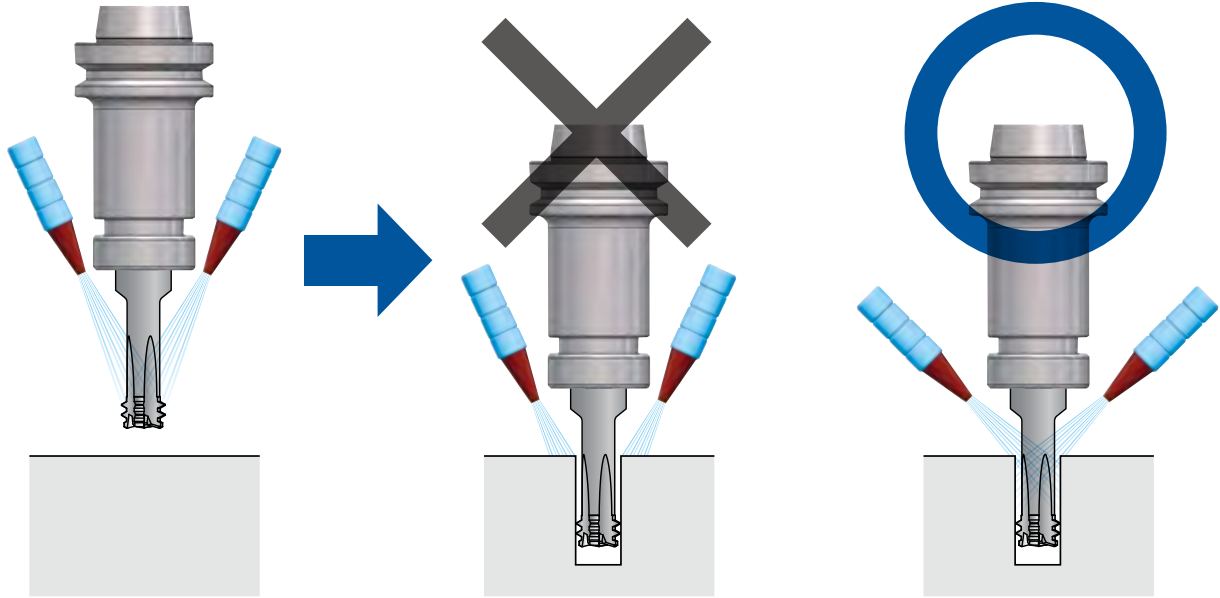
For the arc cutting process of machining internal threads, the feed rate at the tool center can be obtained by multiplying the linear cut feed rate with a coefficient. The formula listed left are for calculating the tool feed rate during arc-cutting, including calculating the coefficients to be used for multiplication with the linear-cut feed rate.



使用冷却剂时的注意事项 Proper Usage of Coolant

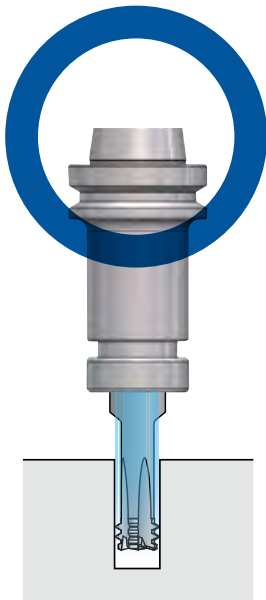
■ 当使用外部供油时，请确保气冷或切削油剂正确地供给至孔中。

When using external coolant, ensure that the cutting fluid is properly positioned so that it is supplied into the hole.



■ 当使用含内部供油装置的加工中心时，推荐使用内冷弹簧夹套。

If you are using a machining center with a through-spindle coolant system, the use of coolant through collet is recommended.



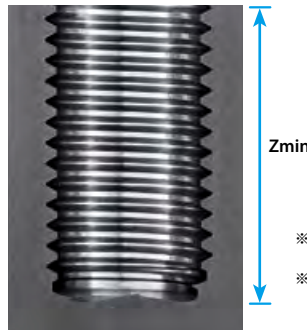
请参考切削条件基准表 (P.11 ~ P.15) 选择适合加工的冷却剂。
Refer to the cutting condition tables (p.11 ~ p.15) to select a suitable coolant for machining.

Q. AT-2的不完全螺纹部长度应该为多少?

What is the length of the incomplete thread part of AT-2?

A. 通过ThreadPro创建程序时, 可以确认「Zmin(加工深度)」。可以从「螺纹长度(Lo)」和「Zmin(加工深度)」之间差值计算出不完全螺纹部长度。

The Zmin (processing depth) can be confirmed when creating the program with ThreadPro. The length of the incomplete thread can be calculated from the difference between "threading length (Lo)" and "Zmin (processing depth)."



※ AT-2带有底刃和粗加工切削刃, 不完全螺纹部长度比一般螺纹铣刀的长度要长。

※ Since the AT-2 has an end-cutting edge and a roughing teeth specification, the length of the incomplete threaded portion may be longer than that of general thread mill.

Q. AT-2只适用于高硬度钢吗?

Is the AT-2 only suitable for high hardness steels?

A. 在适当的加工条件下, 从一般钢到耐热合金、高硬度钢, 可适用于广泛的加工材料。

Under appropriate machining condition, the AT-2 is suitable for a variety of materials, ranging from general steel to heat-resistant alloys and high hardness steel.

Q. 忘记螺纹加工, 但已进行淬火处理的工件可以加工吗?

Is it possible to process a workpiece that has been quenched?

A. 可以。
仅加工底孔时, 仍然可以像往常一样通过ThreadPro创建程序进行加工。

Yes. Even if only the pre-drilled hole is machined, you can still use the program created with ThreadPro to process as usual.

Q.

在高硬度材料的加工中，螺纹加工是在热处理前进行的，但由于热处理引起的变形等导致螺纹精度不稳定。对策是什么？

In the processing of high hardness materials, threading is performed before heat treatment, but the thread accuracy is not stable due to distortion caused by heat treatment. What is the countermeasure?

A.

AT-2可对应硬度达65HRC的加工材料。

由于可进行热处理后的螺纹加工，因此产品完成后的螺纹精度稳定。

The AT-2 can be used with work material hardness up to 65 HRC.

Since threading after heat treatment is possible, stable thread accuracy of the finished product can be obtained.

Q.

至今为止的铣削·钻孔加工、攻丝加工中使用不同的机械，AT-2应该使用哪种机械？

Until now, different machines are used between the milling and drilling process and the tapping process. Which machine should the AT-2 be used on?

A.

请使用铣削加工中使用的机械。

螺纹铣刀可使用于具有螺旋功能的机械设备。

另外，一般即使是在低转速下进行攻丝加工的高硬度材料，AT-2也可以以较高的转速进行螺纹加工，因此可以在高速主轴的机械上使用。

而且AT-2不需要底孔加工，减少刀具使用数量，也可集中工序。

Please use the machine for milling. Thread mills can be used on machinery with helical functions. The AT-2 can also be threaded at high rotational speeds, even for hard materials that are generally tapped at low rotational speeds, so they can be used on machines with high-speed spindles.

In addition, the AT-2 does not require pre-drilled hole, so the number of tools can be reduced, and processes can be consolidated.

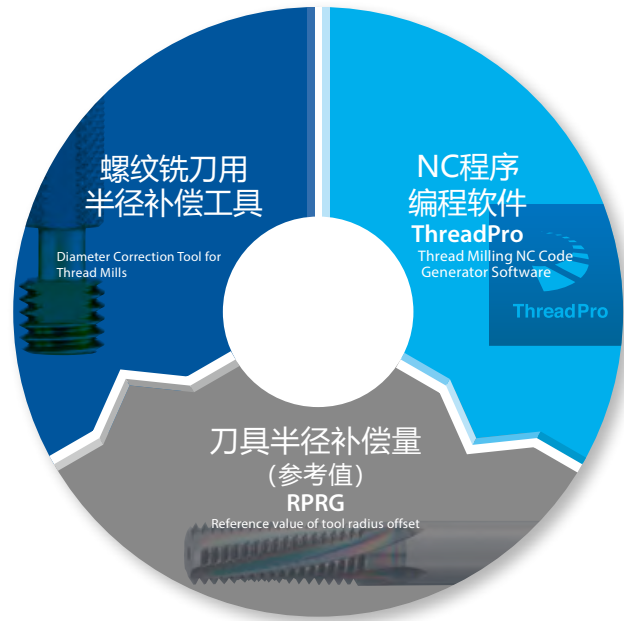


辅助螺纹铣刀加工的3款工具

3 Supportive Tools for Your Thread Milling Needs

使用3款工具来实现
缩减调试时间
缩减加工时间
稳定刀具寿命

Reduce setup, machining time, and achieve stable tool life with 3 supportive tools.

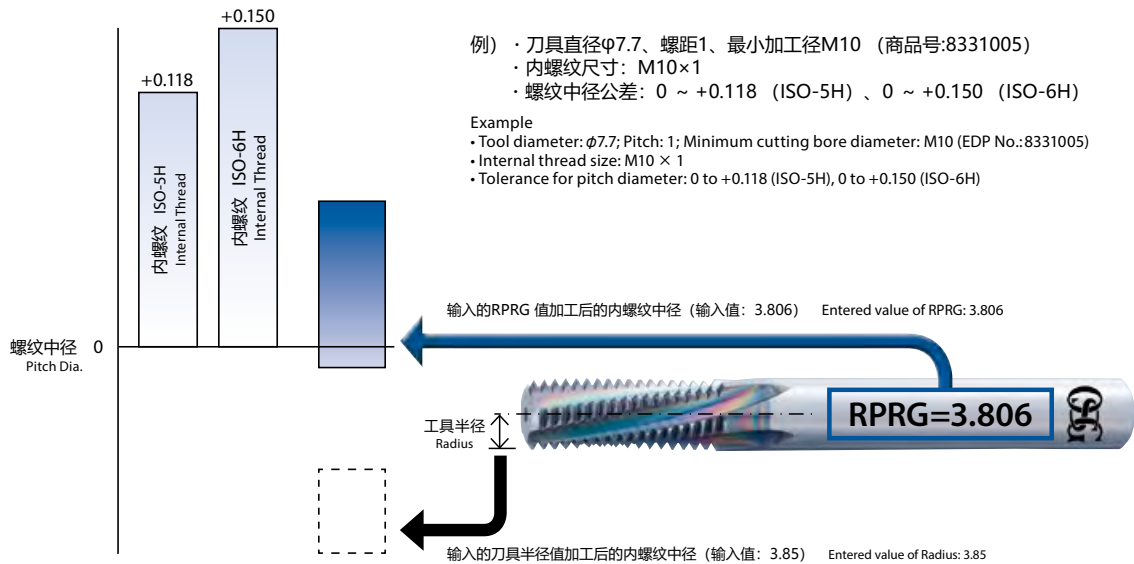


1 使用RPRG提高工作效率

Use RPRG to reduce the workload

RPRG值是指螺纹铣削加工时所必要的刀具半径补偿量的参考值。

RPRG is the reference value of tool radius offset



注意事项

1. RPRG值为参考数值, 在实际加工时, 根据加工环境会有所变化, 请在调试加工后再做调整。
2. RPRG值的设定是以满足公制螺纹ISO:5H (旧JIS1级), 美制螺纹ANSI: 3B内螺纹精度情况下, 所推荐的最佳值。
3. RPRG值的设定是以满足当前刀具所允许加工的最小螺纹尺寸为基准进行计算的, 当所需加工的螺纹尺寸大于最小螺纹尺寸时, 所设定的半径补偿量应该小于当前的RPRG值。

Notes

1. RPRG are reference values. Optimal values for actual cutting depend on the machining environment. Determine optimal values after trial cutting.
2. RPRG values are optimally established to achieve ISO:5H (formerly Grade 1) internal thread limits for metric threads and ANSI:3B internal thread limits for unified threads.
3. For diameters of thread mills, RPRG values are calculated based on the minimum cutting bore diameter (the minimum cutting internal thread size of the tool diameter). To cut other diameters, it is necessary to use a smaller value than RPRG.



2 优化的NC 编程软件ThreadPro

Revamped Thread Milling NC Code Generator Software "ThreadPro"

更便捷的Web版ThreadPro已发布!

A more convenient Web version of ThreadPro is now available!

使用NC螺纹铣刀编程软件(Thread Pro),
任何操作者都能简单容易的编制程序。
即使是没有电脑的外出目的地,也可使用智
能手机或平板电脑进行访问。

Generate codes for complex machining couldn't be easier. Create machining programs at ease with OSG's revamped NC code generator software ThreadPro. ThreadPro can be accessed via smartphones and PC tablets even when you are on the road without a computer.

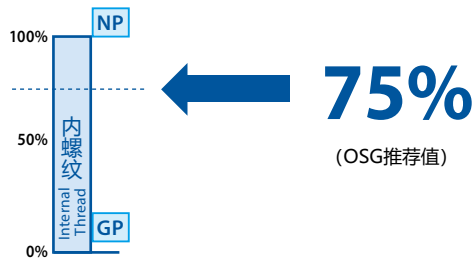


※AT-2只支持Web版 ThreadPro。

※AT-2 is supported by Web version only

3 使用DCT, 刀具半径的补偿更简单, 寿命更稳定

Achieve Stable Tool Life with the DCT for Accurate Diameter Measurement



螺纹铣刀用半径补偿工具使至今颇为困难的内螺纹孔口部的中径测量也可以简单的数值化。

The internal thread effective diameter, which used to be difficult to determine, can now be measured with readable values.

加工时有没有这样的烦恼? Troubled by the following problems?

半径补偿值的误差调整。使调试加工次数增加, 延长生产准备时间。

因内螺纹孔口部的中径数值可以测量, 所以调试切削次数可以大幅减少, 调试时间也可缩短。并且, DCT的测量范围包括中径负偏差, 所以即使螺纹通规无法通过时, 也可测量螺纹中径。

Unsure of diameter correction value. Increase passes which results in longer setup time.

Visibility of internal thread pitch diameter at entry enables the reduction of passes to minimize setup time significantly. Moreover, the DCT is able to measure pitch diameter smaller than the tolerance limit. The DCT can measure the pitch diameter of the female internal thread even if it does not fit into the Go-Gauge.

半径补偿错误, 内螺纹加工精度不良(螺纹塞规止规不止)。

因内螺纹孔口部的中径数值可以测量, 所以可以准确的进行半径补偿。有效降低工件的不良率。

An incorrect diameter correction that result in a defective internal thread (gauge-out).

Visibility of internal thread pitch diameter at entry enables reliable diameter corrections. The DCT is useful for reducing defective workpieces.

刀具寿命不稳定。

因内螺纹孔口部的中径数值可见化, 可以使刀具更换后的内螺纹中径基本一致。通过使起始位置相同, 目标位置(刀具寿命)也一致, 实现刀具寿命的稳定化。

Unstable tool life

Digitized measurement ensures consistent internal thread pitch diameters after tool changes. The same starting and finishing position ensures consistent and stable tool life.

通过半径补偿工具DCT就可以解决 Solve them with the Diameter Correction Tool (DCT)

DCT

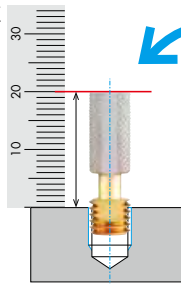
在有效测量范围内目测判断

Simple measurement of pitch diameter by visual judgment



DCT75

简易经济型
通过实测与
计算确定测量值
Low-cost type
Measurement and
calculation system



高性能型
数码显示

High-performance type
Digital display system








数码显示表与简易
经济型结合后可以
自动显示测量数值

Eliminate measurement
and calculation with the
combination of a digital
display.

OSG螺纹铣刀的产品阵容 Line up

请结合加工材料或用途进行选择。
Tool selection based on work material and application.

高硬度钢 High-hardness Steel	钢·不锈钢 Steel·Stainless Steel	非铁 Nonferrous Metal	耐热合金 Heat-Resistant Alloy
<p>A One Revolution 螺纹铣刀 AT-1 One pass thread mill</p>  <ul style="list-style-type: none"> ■ 可进行One pass 加工 ■ 对应螺纹分类： M、U、Rc、Rp、NPT ▪ Thread milling in 1-pass ▪ Compatible thread classification： M、U、Rc、Rp、NPT 			
<p>A 带底刃型 AT-2 With end-cutting edge</p>  <ul style="list-style-type: none"> ■ 螺旋铣孔 + 螺纹铣削同时加工 ■ 对应以高硬度钢为首的广泛加工材料* ■ 对应螺纹分类 > M、U、Rc、NPT ▪ Helical drilling + threading can be done simultaneously ▪ Compatible with a wide range of work materials including high hardness steels* ▪ Compatible thread classification : M、U、Rc、NPT 			
		<p>非铁金属用高效率型 AT-2 R-SPEC AT-2 R-SPEC high-efficiency thread mill for non-ferrous metals</p> <p>A</p>  <ul style="list-style-type: none"> ■ 螺旋铣孔 + 螺纹铣削同时加工 ■ 对应螺纹分类：M ▪ Helical drilling + threading can be done simultaneously ▪ Compatible thread classification : M 	
		<p>非铁·耐热合金用 WX-PNC for Nonferrous Metal and Heat-Resistant Alloy</p>  <ul style="list-style-type: none"> ■ 最适合非铁·耐热合金加工 ■ 对应螺纹分类： M、U、Rc、Rp、NPT ▪ Ideal for processing non-ferrous metals and heat-resistant alloys ▪ Compatible thread classification : M、U、Rc、Rp、NPT 	
		<p>可转位式 HY PRO P Indexable Type</p>  <ul style="list-style-type: none"> ■ 可对应大径螺纹加工 ■ 对应螺纹分类： M、U、G、W、Rc、NPT、NPTF ▪ Compatible for processing large diameter threads ▪ Compatible thread classification : M、U、G、W、Rc、NPT、NPTF 	
		<p>小径型 WH-VM-PNC for Small Diameter</p>  <ul style="list-style-type: none"> ■ 可对应M1~M5的小径螺纹 ■ 对应螺纹分类：S、M、U ▪ Compatible for small diameter threads from M1 to M5 ▪ Compatible thread classification : S、M、U 	

螺纹分类 Thread **M** 公制螺纹 Metric thread **U** 美制螺纹 Unified thread **Rc、NPT、NPTF** 锥管螺纹 Tapered pipe thread **Rp、G** 平行管螺纹 Parallel pipe thread **W** 惠氏螺纹 Whitworth thread **S** 小径螺纹 Miniature thread

※关于耐热合金(钛合金·镍基合金)，请参考切削条件基准表(P.11~P.15)。
※For heat-resistant alloys (titanium alloys and Ni-based alloys), refer to the cutting condition tables on pages 11-15.

其他螺纹铣刀
详细信息请扫描
扫描下方二维码

For details of other
thread mill offering






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