



One Pass Thread Mill

# AT-1

Volume 3



# KEY FEATURES: AT-1

**1** Unequal spacing with variable lead flute reduces vibration

**2** Right-hand cut & left-hand helix geometry prevents bending

**3** EgiAs coating with exceptional wear resistance and toughness

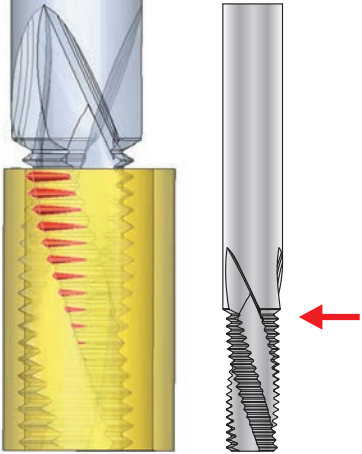
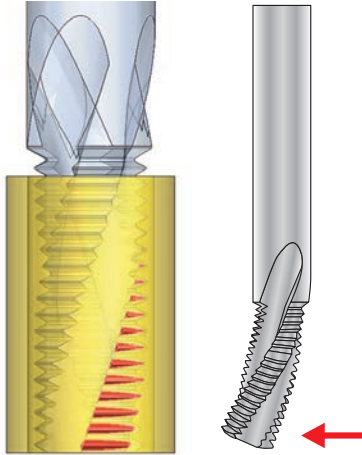
**4** Ultra-Fine Grain Carbide with high wear resistance and toughness



# AT-1: THE SECRET TO 1-PASS CUTTING

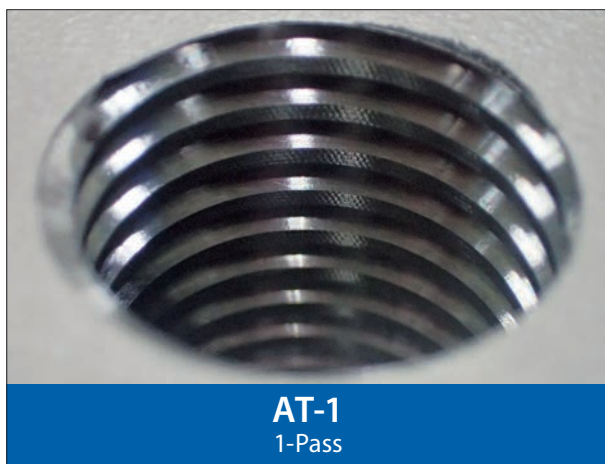
## The secret to 1-pass cutting

Evolution from conventional 2-pass cutting to 1-pass cutting by preventing bending, reducing cutting time.

AT-1 Left Hand Helix	Conventional Thread Mill Right Hand Helix
 <p data-bbox="268 1039 625 1137">Starts cutting from the shank side <b>Reduced deflection</b> Climb milling recommended</p>	 <p data-bbox="1007 1039 1284 1111">Starts cutting from the tip <b>Big deflection</b></p>

Threading | Thread milling

## High quality internal threading



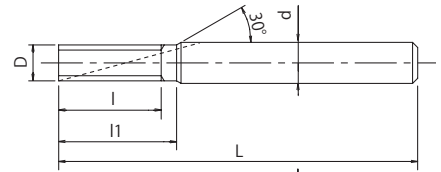
Size	Ø19,7 x 54 P3 6F
Work Material	SUS304
Cutting Speed	40 m/min (646min <sup>-1</sup> )
Feed	14 mm/min (0,02mm/t)
Internal Thread Size	M24 x 3
Tapping length	45 mm
Coolant	Water-Soluble
Machine	Horizontal Machining Center

# AT-1

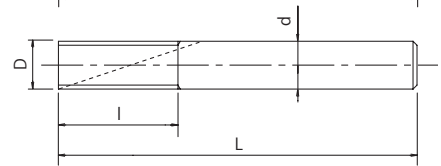
Threading | Thread milling | Metric & Metric Fine



Type 1



Type 2



- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- Milling for internal thread

<b>P</b> C: ≤0,2%	<b>P</b> C: 0,25-0,4%	<b>P</b> C: ≥0,45%	<b>P</b> SCM	<b>M</b> INOX	<b>K</b> GG	<b>K</b> GGG	<b>N</b> Al	<b>N</b> AC,ADC	<b>H</b> 25-35 HRC	<b>H</b> 35-45 HRC	m/min
80-160	80-160	80-160	60-120	60-120	80-160	60-120	80-160	100-300	80-200	80-200	

**A**
**M**
**MF**
**MJ**
**CARBIDE**
**EgiAs**
**9°~13°**
**h6**
page 16

EDP	Min. cutting bore $\varnothing$	P	D	L	l	l1	d	Z	Type	Price
8331000	M6	0,75	4,5	75	13,5	16	6	4	1	
8331001	M6	1	4,5	75	14	16	6	4	1	
8331002	M8	0,5	5,7	75	17	-	6	4	2	
8331003	M8	1	5,7	75	18	-	6	4	2	
8331004	M8	1,25	5,7	75	18,75	-	6	4	2	
8331005	M10	1	7,7	85	22	-	8	4	2	
8331006	M10	1,25	7,7	85	22,5	-	8	4	2	
8331007	M10	1,5	7,7	85	24	-	8	4	2	
8331008	M12	1	9,7	100	26	-	10	5	2	
8331009	M12	1,25	9,7	100	27,5	-	10	5	2	
8331010	M12	1,5	9,7	100	27	-	10	5	2	
8331011	M12	1,75	9,7	100	28	-	10	5	2	
8331012	M14	0,5	11,7	120	29	-	12	5	2	
8331013	M14	0,75	11,7	120	30	-	12	5	2	
8331014	M14	1	11,7	120	30	-	12	5	2	
8331015	M14	1,5	10,7	120	31,5	34,5	12	5	1	
8331016	M14	2	9,7	100	32	-	10	5	2	
8331017	M16	1	13,7	135	34	39	16	5	1	
8331018	M16	1,5	13,7	135	36	39	16	5	1	
8331019	M16	2	11,7	120	36	-	12	5	2	
8331020	M18	2,5	11,7	120	42,5	-	12	5	2	
8331021	M20	1,5	15,7	135	43,5	-	16	5	2	
8331022	M20	2,5	13,7	135	45	50	16	5	1	
8331023	M24	1,5	19,7	150	51	-	20	6	2	
8331024	M24	2	19,7	150	52	-	20	6	2	
8331025	M24	3	19,7	150	54	-	20	6	2	

Threading | Thread milling

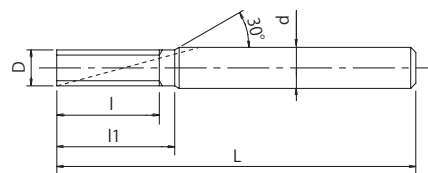
Metric & Metric Fine

# AT-1

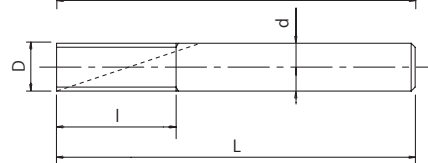
Threading | Thread milling | U UNJ UNC UNJC UNF UNJF



Type 1



Type 2



- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- Milling for internal thread

<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>M</b>	<b>K</b>	<b>K</b>	<b>N</b>	<b>N</b>	<b>H</b>	<b>H</b>	m/min
C: ≤0,2%	C: 0,25-0,4%	C: ≥0,45%	SCM	INOX	GG	GGG	Al	AC,ADC	25-35 HRC	35-45 HRC	
80-160	80-160	80-160	60-120	60-120	80-160	60-120	80-160	100-300	80-200	80-200	

<b>A</b>	<b>U</b>	<b>UNJ</b>	<b>UNC</b>	<b>UNJC</b>	<b>UNF</b>	<b>UNJF</b>	<b>CARBIDE</b>	<b>EgiAs</b>	<b>9° ~13°</b>	<b>h6</b>	page 16
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EDP	Min. cutting bore $\varnothing$	TPI	D	L	I	I1	d	Z	Type	Price
8331026	1/4	20	4,55	75	15,24	17,78	6	4	1	
8331027	1/4	28	4,55	75	15,42	17,23	6	4	1	
8331028	5/16	18	5,7	75	19,75	-	6	4	2	
8331029	5/16	24	5,7	75	19,04	-	6	4	2	
8331030	5/16	32	5,7	75	17,47	-	6	4	2	
8331031	3/8	16	6,7	85	22,23	25,41	8	4	1	
8331032	3/8	24	6,7	85	22,22	24,33	8	4	1	
8331033	3/8	32	6,7	85	20,64	22,23	8	4	1	
8331034	7/16	14	7,7	85	27,21	-	8	4	2	
8331035	7/16	20	7,7	85	25,40	-	8	4	2	
8331036	1/2	13	8,7	100	29,31	33,22	10	5	1	
8331037	1/2	20	8,7	100	27,94	30,48	10	5	1	
8331038	1/2	28	8,7	100	28,12	29,93	10	5	1	
8331039	9/16	12	9,7	100	33,87	-	10	5	2	
8331040	9/16	18	9,7	100	32,45	-	10	5	2	
8331041	5/8	11	10,7	120	36,94	41,56	12	5	1	
8331042	5/8	18	10,7	120	35,28	38,10	12	5	1	
8331043	5/8	24	10,7	120	34,91	37,03	12	5	1	
8331044	3/4	10	11,7	120	43,18	-	12	5	2	
8331045	3/4	16	11,7	120	41,29	-	12	5	2	
8331046	7/8	9	13,7	135	50,80	56,44	16	5	1	
8331047	7/8	14	13,7	135	48,98	52,61	16	5	1	
8331048	1	8	18,7	150	57,15	63,50	20	6	1	
8331049	1	20	18,7	150	53,34	55,88	20	6	1	

Threading | Thread milling

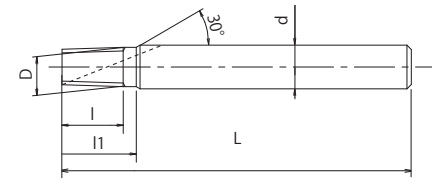
U UNJ UNC UNJC UNF UNJF

# AT-1 NEW

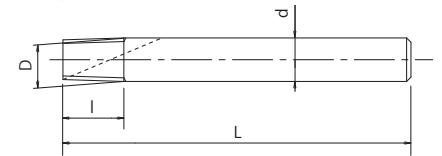
Threading | Thread milling | R (PT), Rc (PT), Rp (PS), G (PF), NPT



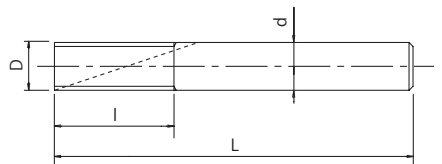
Type 1



Type 2



Type 3



- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- Milling for internal thread

<b>P</b> C: ≤0,2%	<b>P</b> C: 0,25-0,4%	<b>P</b> C: ≥0,45%	<b>P</b> SCM	<b>M</b> INOX	<b>K</b> GG	<b>K</b> GGG	<b>N</b> Al	<b>N</b> AC,ADC	<b>H</b> 25-35 HRC	<b>H</b> 35-45 HRC	m/min
80-160	80-160	80-160	60-120	60-120	80-160	60-120	80-160	100-300	80-200	80-200	

**A**
**Rc (PT)**
**R (PT)**
CARBIDE
EgiAs
9°~13°
h6



EDP	Range of thread size	TPI	D	L	l	l1	d	Z	Type	Price
8331075	1/16 1/8	28	5,67	60	9,1	-	6	4	2	
8331076	1/8	28	7,67	60	9,1	12,7	8	4	1	
8331077	1/4 3/8	19	9,67	75	14,7	-	10	5	2	
8331078	3/8	19	11,67	85	14,7	20	12	5	1	
8331079	1/2 3/4	14	11,67	85	20	-	12	5	2	
8331080	3/4	14	15,67	95	20	-	16	5	2	
8331081	1 ~ 2	11	19,67	105	27,7	-	20	6	2	

**A**
**Rp (PS)**
**G (PF)**
CARBIDE
EgiAs
9°~13°
h6

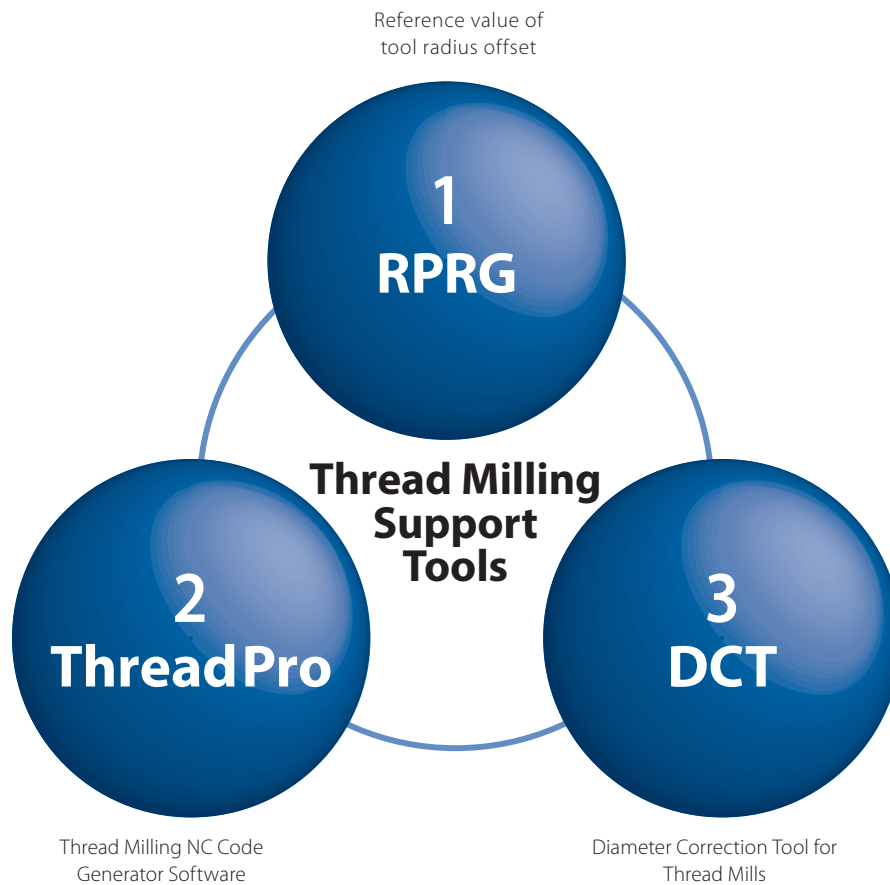
EDP	Range of thread size	TPI	D	L	l	l1	d	Z	Type	Price
8331082	1/16 1/8	28	5,67	60	11,8	-	6	4	3	
8331083	1/8	28	7,67	65	14,5	-	8	4	3	
8331084	1/4 3/8	19	9,67	80	20,1	-	10	5	3	
8331085	3/8	19	11,67	100	25,4	-	12	5	3	
8331086	1/2 7/8	14	11,67	100	32,7	-	12	5	3	
8331087	3/4 7/8	14	15,67	115	39,9	-	16	5	3	
8331088	1 ~ 2	11	19,67	130	50,8	-	20	6	3	

**A**
**NPT**
CARBIDE
EgiAs
9°~13°
h6






EDP	Range of thread size	TPI	D	L	l	l1	d	Z	Type	Price
8331089	1/16 1/8	27	5,67	60	10,35	-	6	4	2	
8331090	1/8	27	7,67	60	10,35	-	8	4	2	
8331091	1/4 3/8	18	9,67	75	15,52	-	10	5	2	
8331092	3/8	18	11,67	85	15,52	-	12	5	2	
8331093	1/2 3/4	14	15,67	95	19,96	-	16	5	2	
8331094	1 ~ 2	11,5	18,72	105	24,3	28,7	20	6	1	

# SUPPORT TOOLS FOR YOUR THREAD MILLING NEEDS

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



## Recommended work materials

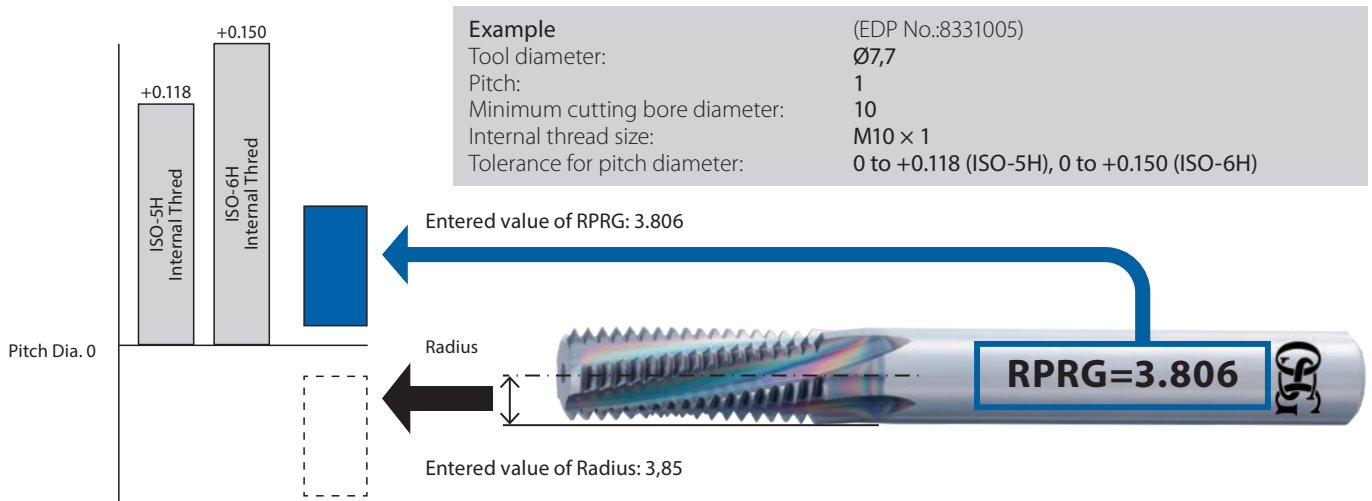
	Material	AT-1 	WX-PNC 	WXO-ST-PNC 	WH-VM-PNC WX-ST-PNC-3P 	WH-EM-PNC 
<b>P</b>	Steel (C:≤0,2%)	⊙	○	○	○	
	Steel (C:0,25~0,45%)	⊙	○	⊙	○	
	Steel (C:≥0,45%)	⊙	○	⊙	○	○
	Alloy Steel (SCM)	⊙	○	⊙	○	○
<b>M</b>	Stainless Steel (INOX)	⊙	○	○	○	
<b>K</b>	Cast Iron (GG)	⊙	○	○	○	
	Cast Iron (GGG)	⊙	○	○	○	
<b>N</b>	Aluminium	⊙	○	○	○	
	Aluminium Alloy	⊙	○	○	○	
<b>S</b>	Titanium (Ti)		⊙		⊙	○
	Nickel Alloy (Ni)		⊙		⊙	○
<b>H</b>	25~35 HRC	⊙	○	⊙	⊙	⊙
	35~45 HRC	⊙	○	⊙	⊙	⊙
	45~52 HRC					⊙
	52~62 HRC					○

○ :Good   ⊙ :Very Good

# SUPPORT TOOLS FOR YOUR THREAD MILLING NEEDS

## 1 RPRG

Use RPRG to reduce the workload. RPRG is the reference value of tool radius offset.



### 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. RPRG values established for taper pipes (R/Rc) are effective when using the thread milling NC code generator software ThreadPro available on our website.
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 Revamped Thread Milling NC Code Generator Software "ThreadPro"

Create machining programs at ease with OSG's revamped NC code generator software ThreadPro.



## 3 Achieve stable tool life with the DCT for accurate diameter measurement

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





## Troubled by the following problems?

<p>Unsure of diameter correction value. Increase passes which results in longer setup time.</p>	<p>An incorrect diameter correction that result in a defective internal thread (gauge-out).</p>	<p>Unstable tool life</p>
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## Solved with the Diameter Correction Tool DCT



Simple measurement of pitch diameter by visual judgment

<p>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.</p>	<p>Visibility of internal thread pitch diameter at entry enables reliable diameter corrections. The DCT is useful for reducing defective workpieces.</p>	<p>Digitized measurement ensures consistent internal thread pitch diameters after tool changes. The same starting and finishing position ensures consistent and stable tool life.</p>
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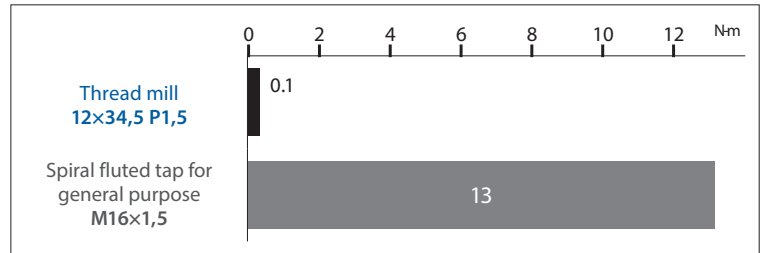
# ADVANTAGES OF USING THREAD MILLS

## A single tool cuts various sizes of diameters

A single tool can cut different threads such as M10 × 1.5, M12 × 1.5, and M16 × 1.5 if their pitch is the same.

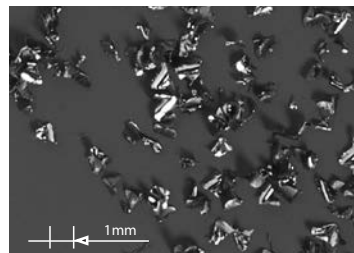
## Cuts large-diameter threads on low-power machine

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

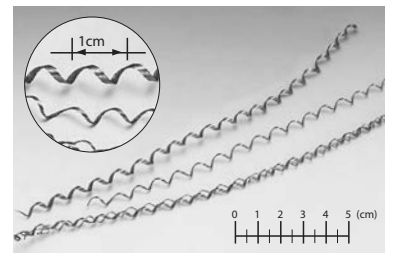


## Smooth handling of chips to reduce problems

Thread mills break chips into small pieces and eject them smoothly, ensuring stable, problem-free thread cutting.



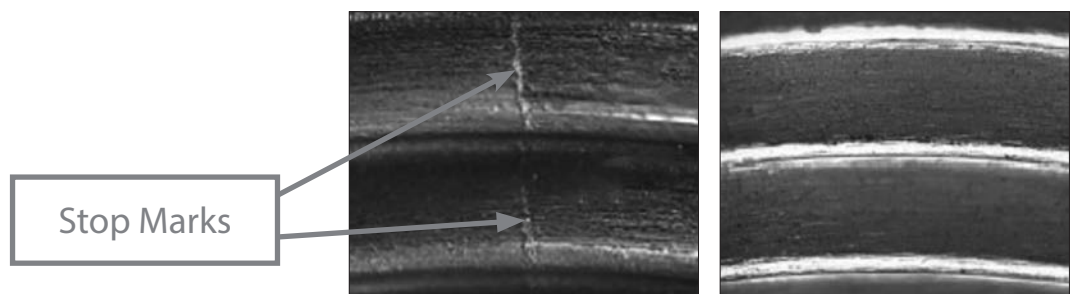
Thread mill chips  
Material S45C



Spiral fluted tap chips

## High-precision taper pipe threading (no stop marks)

Airtight threads by having no stop marks.



## Thread cutting in drill holes with little allowance

Thread milling cuts the thread closer to the bottom of a hole than tapping, leaving only one incomplete crest of thread



# CUTTING DATA

## Effects of left-hand helix

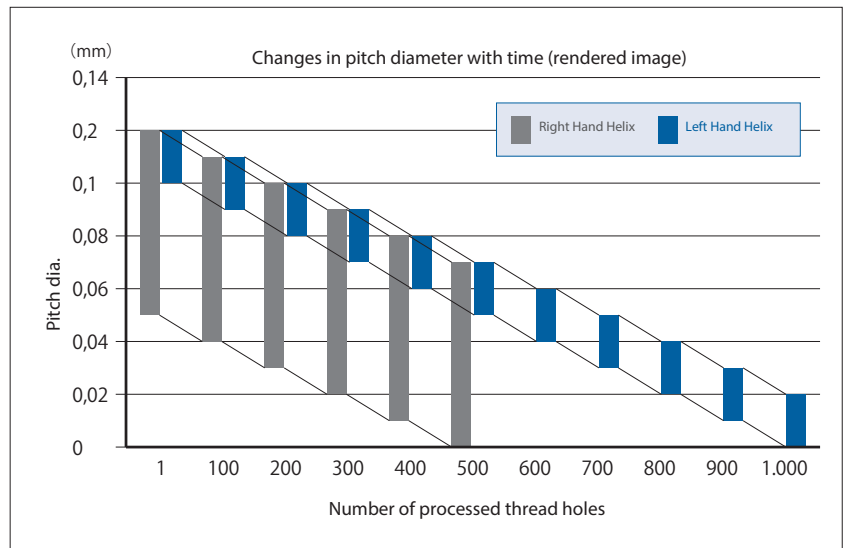
Comparison of differences in internal thread pitch diameter at initial cutting stage.

Size	Ø7,7 × 22 P1 4F
Work Material	SCM440 (30 HRC)
Cutting Speed	100 m/min (4.136min <sup>-1</sup> )
Feed	380 mm/min (0,1mm/t)
Internal Thread Size	M10 x 1 mm
Drill Hole Size	Ø9 × 18 mm (Through)
Threading Length	15 mm
Machining Method	Climb milling 1-Pass
Coolant	Water-Soluble
Machine	Vertical Machining Center

The left-hand helix's small pitch diameter difference between the hole entry and inner hole allows a delay in gauge-out failure. Moreover, longer tool life can be achieved with "zero cutting" for correcting bending being eliminated.

	Hole Entry	Inner Hole Area	Dia. Difference
Right Hand Helix	+0,120 ~ +0,140	+0,040 ~ +0,060	0,060 ~ 0,100
Left Hand Helix	+0,120 ~ +0,140	+0,120 ~ +0,140	<b>0 ~ +0,020</b>

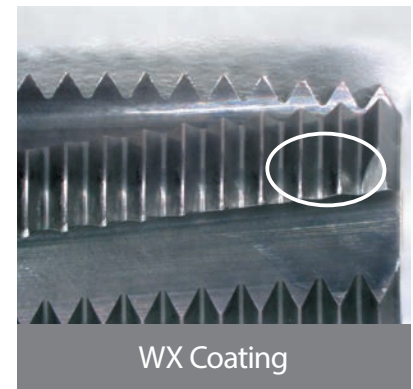
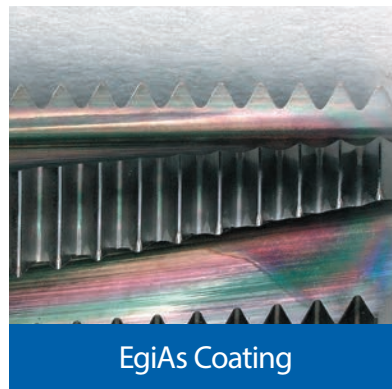
Pitch diameter measurement method : Step gauge



## Effects of EgiAs coating

Cutting edge after threading 2.000 holes.

Size	Ø7,7 × 22 P1 4F
Work Material	SCM440 (30 HRC)
Cutting Speed	100 m/min (4.136min <sup>-1</sup> )
Feed	380 mm/min (0,1mm/t)
Internal Thread Size	M10 x 1 mm
Drill Hole Size	Ø9 × 18 mm (Through)
Threading Length	15 mm
Coolant	Water-Soluble
Machine	Vertical Machining Center



# CUTTING DATA

Work materials ① to ② are machined under the conditions shown below.

Internal Thread Size	M10 x 1 mm
Drill Hole Size	Ø9 x 25 mm (Blind)
Threading Length	19 mm
Coolant	Water-Soluble
Machine	Vertical Machining Center

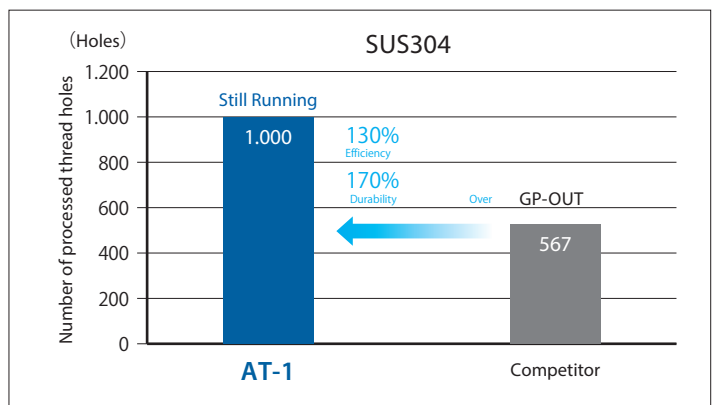
1. Internal thread pitch diameter difference between hole entry and inner hole area: 20µm or less

Eg: +0.080 step gauge passes completely, +0.100 step gauge stops less than or equal to one revolution.

2. Fastest cutting condition (including number of passes) while fulfilling the requirement of Condition 1.

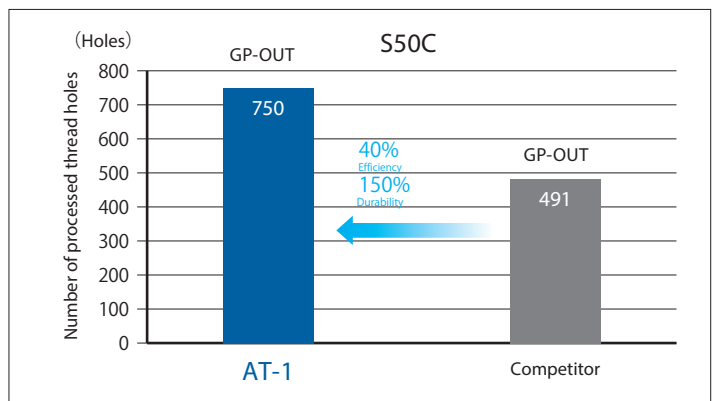
## ① Machining SUS304

Tool	AT-1 Ø7,7x22 P1 4F	Competitor
Cutting Speed	120m/min (4.961min <sup>-1</sup> )	140m/min (5.122min <sup>-1</sup> )
Feed	228mm/min (0,05mm/t)	200mm/min (0,1mm/t)
Number of Passes	1-Pass	2-Passes
Cutting Time	2,26 sec	3,03 sec



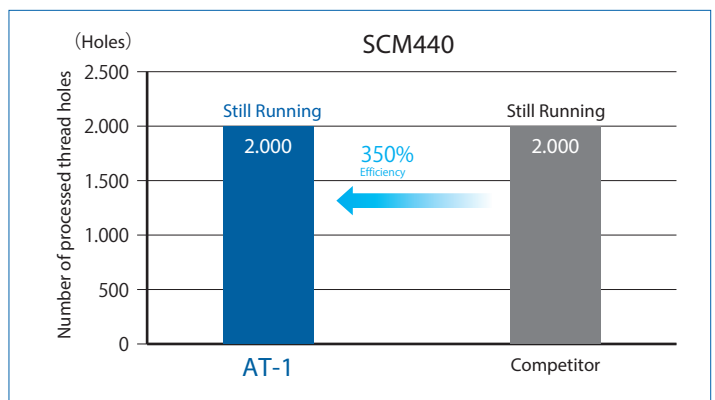
## ② Machining S50C

Tool	AT-1 Ø7,7x22 P1 4F	Competitor
Cutting Speed	160m/min (6.614min <sup>-1</sup> )	140m/min (5.122min <sup>-1</sup> )
Feed	122mm/min (0,02mm/t)	200mm/min (0,1mm/t)
Number of Passes	1-Pass	3-Passes
Cutting Time	4,28 sec	45,4 sec



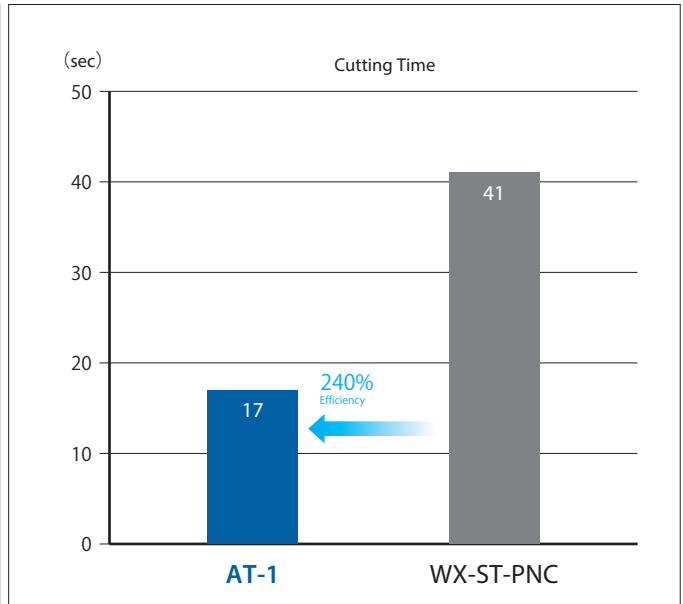
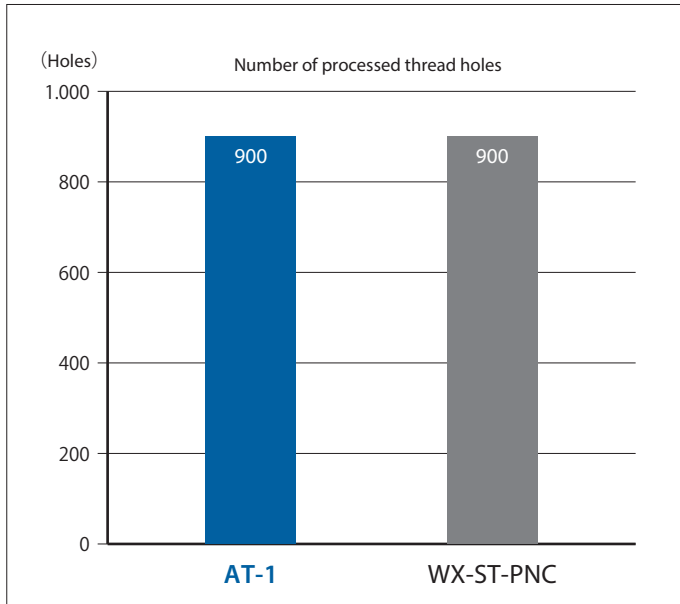
## ③ Machining SCM440

Tool	AT-1 Ø7,7x22 P1 4F	Competitor
Cutting Speed	80m/min (3.307min <sup>-1</sup> )	140m/min (5.122min <sup>-1</sup> )
Feed	30mm/min (0,01mm/t)	200mm/min (0,1mm/t)
Number of Passes	1-Pass	4-Passes
Cutting Time	17,12 sec	60,54 sec



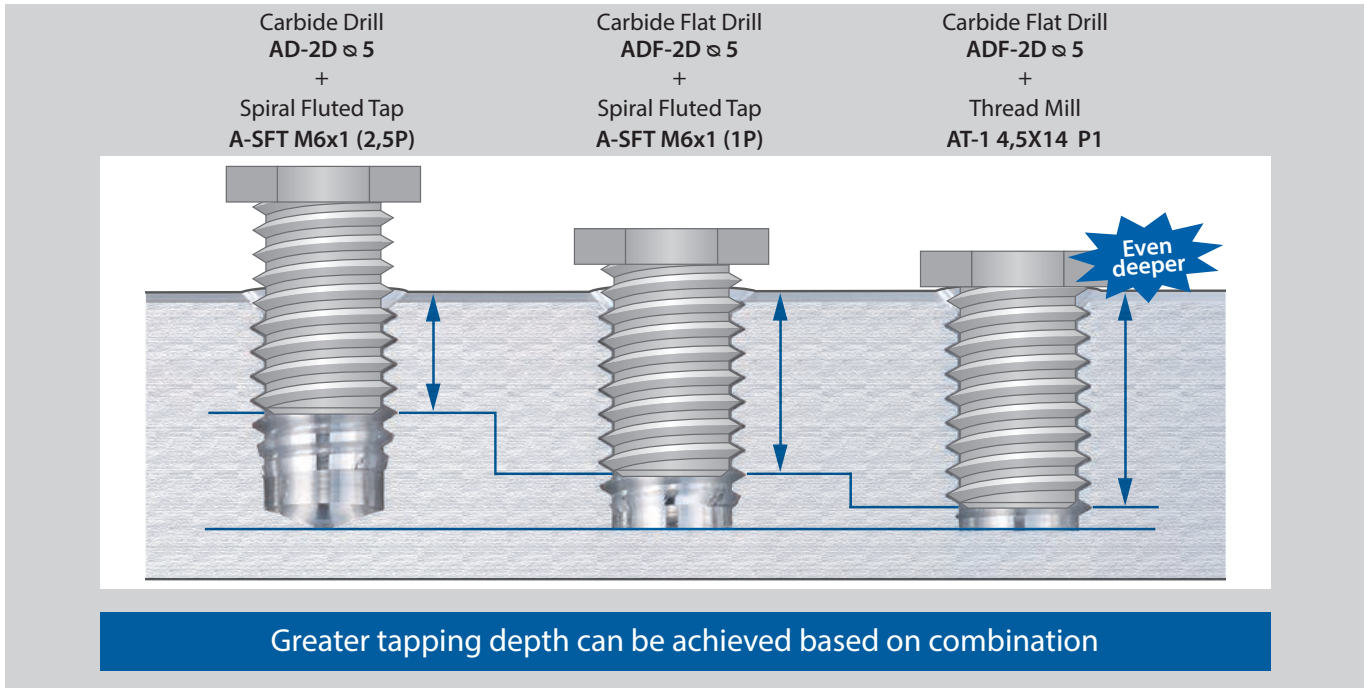
## SUS304 durability test result

Tool	AT-1 Ø9,7×27 P1,5 5F	WX-ST-PNC Ø9,5×22,5 P1,5
Work Material	SUS304	
Cutting Speed	100m/min (3.283min <sup>-1</sup> )	120m/min (4.021min <sup>-1</sup> )
Feed	12,5mm/min (0,01mm/t)	42mm/min (0,01mm/t)
Internal Thread Size	M12 x 1,5	
Drill Hole Size	Ø10,5 × 25 mm (Through)	
Threading Length	22,5 mm	
Coolant	Water-Soluble	
Machine	Vertical Machining Center	
Number of Passes	1-Pass	2-Passes



## Machining Tips

Taps and drill combination



Threading | Thread milling

## Solve them with the Diameter Correction Tool (DCT)

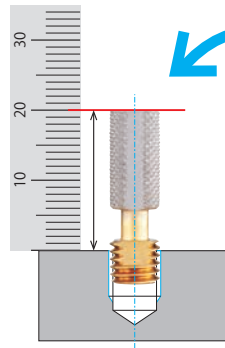
DCT

Simple measurement of pitch diameter by visual judgment



DCT75

**Low-cost type**  
Measurement and calculation system



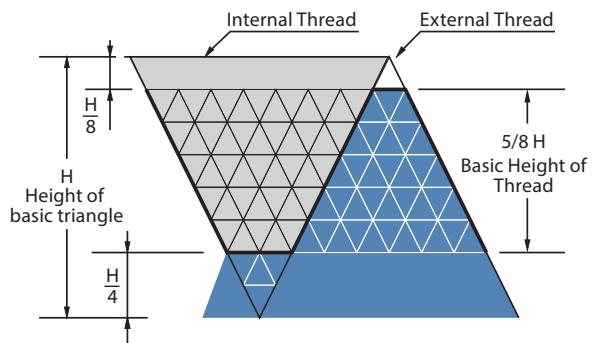
**High-performance type**  
Digital display system

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

# Q&A FAQ ABOUT THREAD MILLING

## Why internal thread cutting tools cannot be used to cut external threads?

Metric and unified threads have different thread profiles between internal and external threads. For these threads, internal thread cutting tools cannot be used to cut external threads because in their basic thread profiles, the crest and root shapes are not uniform. However, for pipe threads, which have uniform crests and roots, thread cutting tools can be shared for internal and external thread cutting.



Compare the shapes of internal and external threads.

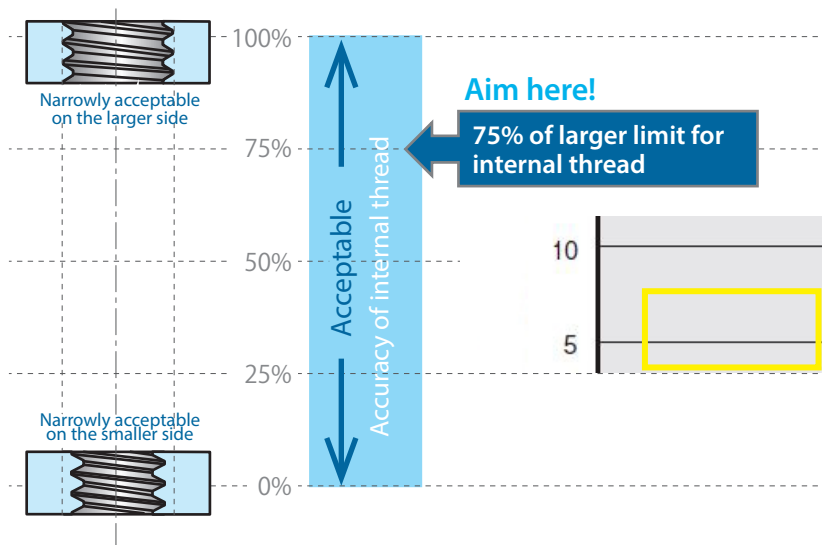
?	1/8 H	1/4 H
Height cut off from crest:	External Thread	Internal Thread
?	1/4 H	1/8 H
Height cut off at root:	External Thread	Internal Thread

Both threads have the same basic height of thread (5/8H). However, their shapes are different from each other.

Example of basic thread profile (metric thread)

## What does the number "75" under "Fit %" mean, which is displayed on the data entry screen of ThreadPro?

It means to aim at the acceptable range of threads. Default values are 75% (larger side) for internal threads and 25% (smaller side) for external threads in light of their engagement. You can change these to your desired values.



## Is ThreadPro compatible with NC programs developed for custom-made thread mills?

Yes, please consult our sales representatives.

# CUTTING CONDITIONS

Threading | Thread milling | Cutting conditions

## AT-1

Work Material		Vc (m/min)	F (mm/tooth)
Low Tensile Strength Steel	C~0,25%	80~160	0,01~0,05
Medium Tensile Strength Steel	C~0,25% ~ 0,45%	80~160	0,01~0,05
High Tensile Strength Steel	C0,45%~	80~160	0,01~0,05
Alloy Steel	SCM	60~120	0,01~0,05
Hardened Steel	25~45 HRC	80~200	0,01~0,05
	45~55 HRC	-	-
	50~60 HRC	-	-
Stainless Steel	SUS	60~120	0,01~0,05
Tool Steel	SKD	-	-
Cast Steel	SC	60~120	0,01~0,05
Cast Iron	FC	80~160	0,01~0,05
Ductile Cast Iron	FCD	60~120	0,01~0,05
Copper	Cu	80~160	0,03~0,1
Brass	Bs	80~160	0,03~0,1
Brass Casting	BsC	80~160	0,03~0,1
Bronze	PB	80~160	0,03~0,1
Aluminium Rolled Steel	AL	80~160	0,03~0,1
Aluminium Alloy Casting	AC, ADC	100~300	0,05~0,2
Magnesium Alloy Casting	MC	100~300	0,05~0,2
Zinc Alloy Casting	ZDC	100~300	0,05~0,2
Titanium Alloys	Ti-6AL-4V	-	-
Nickel Alloys	Inconel®	-	-
Thermosetting plastic	-	80~160	0,03~0,1
Thermoplastic	-	80~160	0,03~0,1

1. The indicated speeds and feeds are for water-soluble oil.
2. Water-soluble oil is not suitable for tapping magnesium alloy.
3. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
4. If the tapping length is long, or when machining a large-pitch thread, select a smaller feed rate and separate the machining process into a few segments.
5. If a machined parallel internal thread is tapered and prevents the go-gauge from going through, add a zero cut (finish machining).

Threading | Thread milling

## Formula for calculating the feed rate of thread mill

$$V_f = \frac{f \times z \times n \times (D_m \pm D_c)}{D_m} \text{ (mm/min)}$$

$v_f$	Feed (mm/min)	$z$	Number of Flutes
$D_m$	Actual Dia. (mm)	$f$	Feed (mm/t)
$D_c$	Tool Dia. (mm)	$n$	Speed (min <sup>-1</sup> )

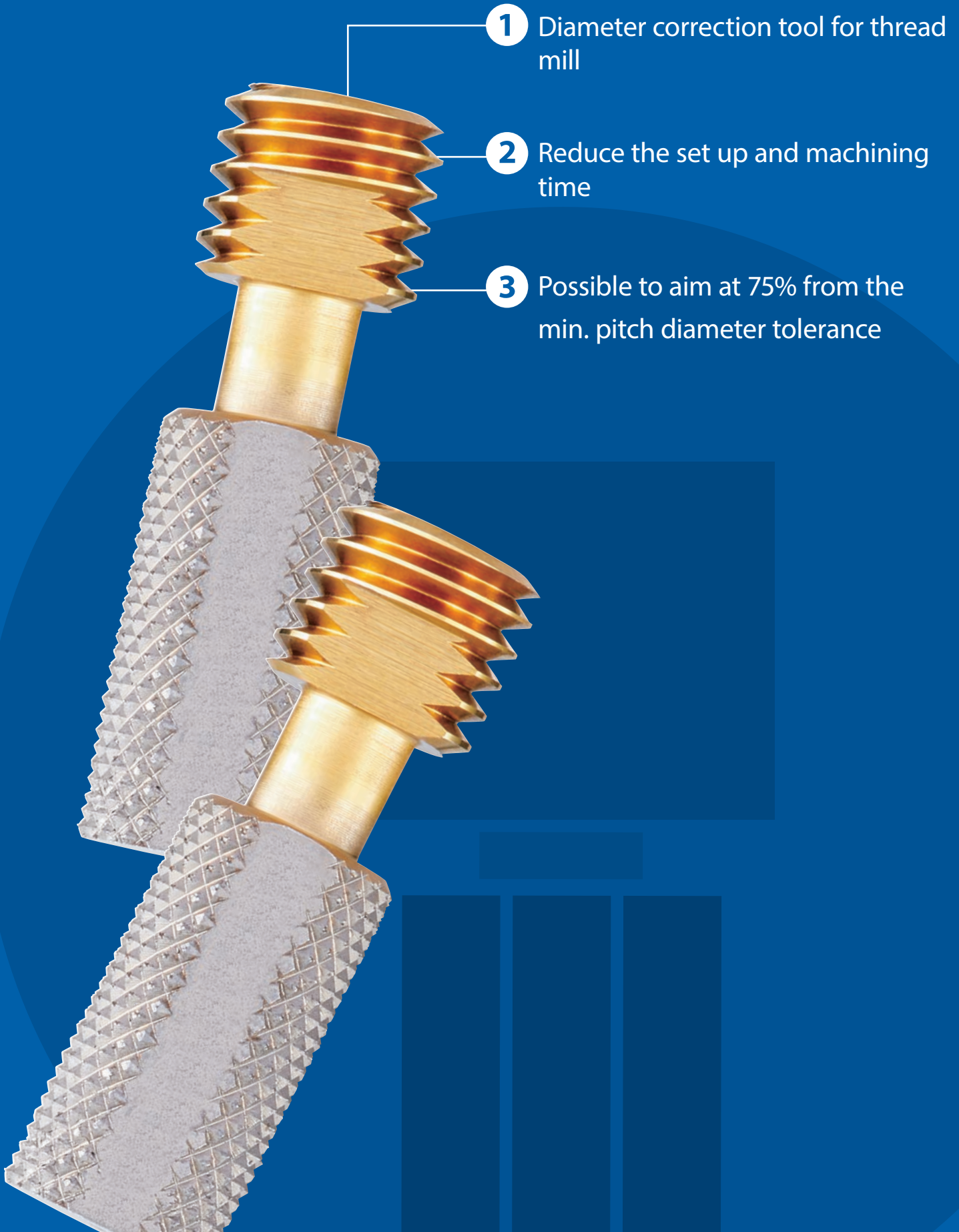
Note Internal: -                      External: +

For the arc cutting process of machining external and internal threads, the feed rate at the tool center can be obtained by multiplying the linear cut feed rate with a coefficient. The formulas for calculating coefficients vary between external and internal thread cutting. 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.



# KEY FEATURES: DCT75

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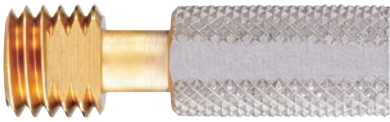
**1** Diameter correction tool for thread mill

**2** Reduce the set up and machining time

**3** Possible to aim at 75% from the min. pitch diameter tolerance

# DCT75 NEW

Threading | Measuring | M(J)



- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Possible to aim at 75% from the min. pitch diameter tolerance

Threading | Measuring

M

MJ

EDP	Thread size	Thread length	d	Taper	Applicable Recommended Height Master
9342019*	M6 X 1	6,2	ø 10	1/25	⑧
9342020*	M8 X 1,25	7,3	ø 10	1/25	⑧
9342021*	M8 X 1	6,2	ø 10	1/25	⑧
9342022*	M10 X 1,5	8,3	ø 10	1/25	⑦
9342023*	M10 X 1,25	7,3	ø 10	1/25	⑦
9342024*	M10 X 1	6,2	ø 10	1/25	⑦
9342025*	M12 X 1,75	9,7	ø 12	1/25	⑦
9342026*	M14 X 1,50	8,7	ø 14	1/25	⑦
9342027*	M16 X 1,5	8,7	ø 16	1/25	⑦

\* Please be sure to purchase the DCT75 and the height master as a set.



M(J)

# DCT75 NEW

Threading | Measuring | U, UNJ



- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Possible to aim at 75% from the min. pitch diameter tolerance

UNC   UNF   UNEF

EDP	Thread size	Thread length	d	Taper	Applicable Recommended Height Master
9342028*	1/4 - 20 UNC	7	∅ 10	1/25	⑧
9342029*	1/4 - 28 UNF	5	∅ 10	1/25	⑧
9342030*	5/16 - 18 UNC	7	∅ 10	1/25	⑧
9342031*	5/16 - 24 UNF	7	∅ 10	1/25	⑧
9342032*	5/16 32 UNEF	5	∅ 10	1/25	⑧
9342033*	3/8 - 16 UNC	8,8	∅ 10	1/25	⑦
9342034*	3/8 - 24 UNF	7	∅ 10	1/25	⑦
9342035*	7/16 14 UNC	10	∅ 12	1/25	⑦
9342036*	7/16 - 20 UNF	7	∅ 12	1/25	⑦
9342037*	1/2 13 - UNC	10,8	∅ 13	1/25	⑦
9342038*	1/2 - 20 UNF	7	∅ 13	1/25	⑦

\* Please be sure to purchase the DCT75 and the height master as a set.



# DCT75 DIGITAL INDICATOR

Threading | Measuring



- High performance type
- Digital display system
- Eliminate measurement and calculation with a digital display

EDP	Application size	Sleeve dia	Sleeve hole dia	Application Tapper
9342052*	M6 ~ M16 U1/4~1/2	∅ 23,5	∅ 17,5	1/25
9342053*	R (PT) 1/16 ~ 3/8	∅ 23,5	∅ 17,5	1/16

\* Please be sure to purchase the DCT75 and the height master as a set.



# DCT75 HEIGHT MASTER

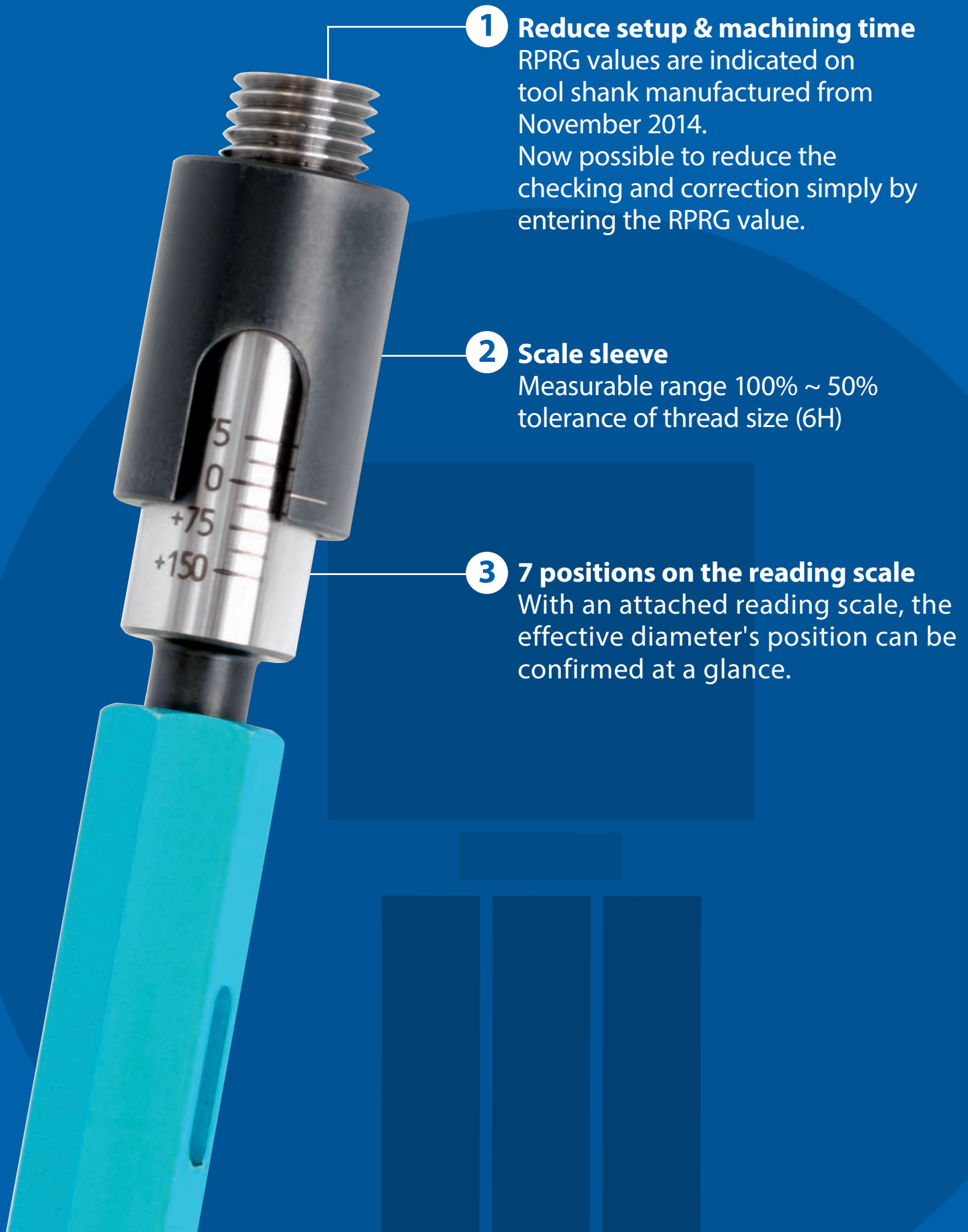
Threading | Measuring

	EDP	Size
①	9342043*	28
②	9342044*	28,25
③	9342045*	28,5
④	9342046*	28,75
⑤	9342047*	29
⑥	9342048*	29,25
⑦	9342049*	29,5
⑧	9342050*	29,75
⑨	9342051*	30

\* Please be sure to purchase the DCT75 and the height master as a set.

# Key features: DCT

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**1 Reduce setup & machining time**

RPRG values are indicated on tool shank manufactured from November 2014. Now possible to reduce the checking and correction simply by entering the RPRG value.

**2 Scale sleeve**

Measurable range 100% ~ 50% tolerance of thread size (6H)

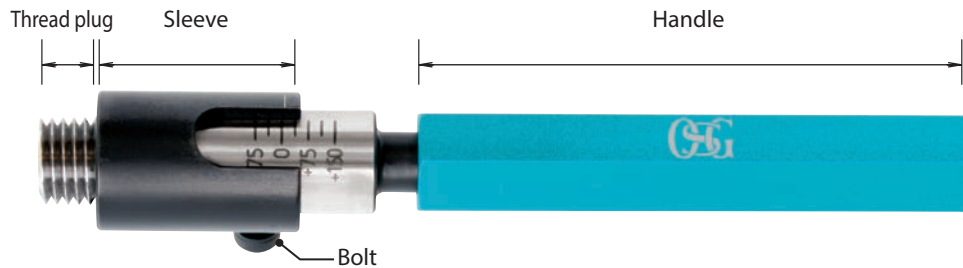
**3 7 positions on the reading scale**

With an attached reading scale, the effective diameter's position can be confirmed at a glance.

# Key features & benefits DCT

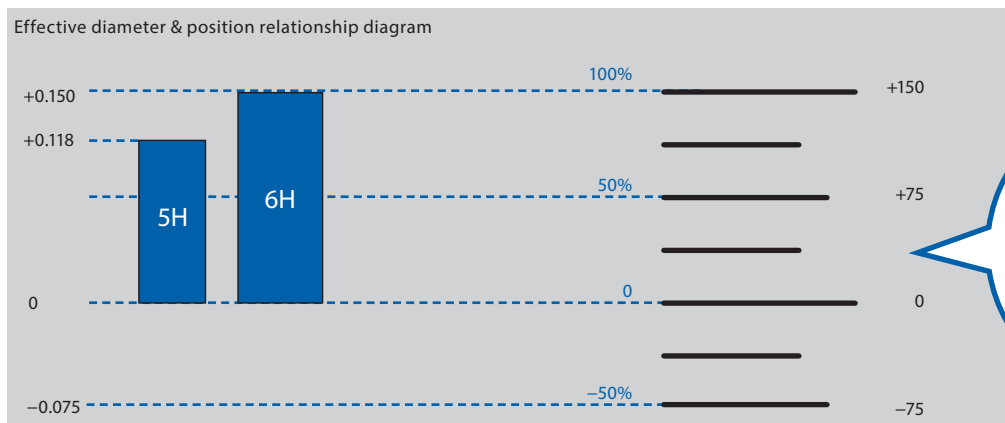
## 1 Reduce setup & machining time

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



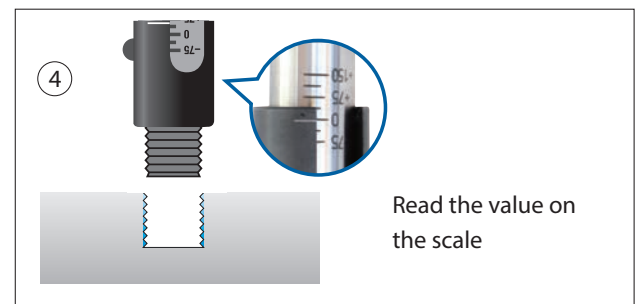
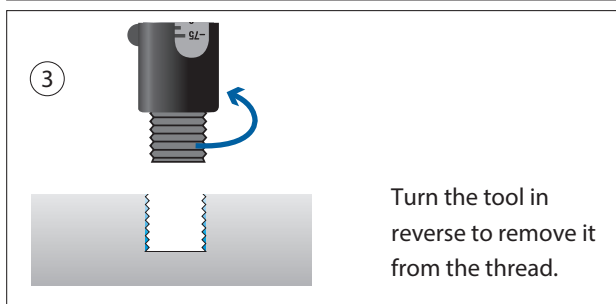
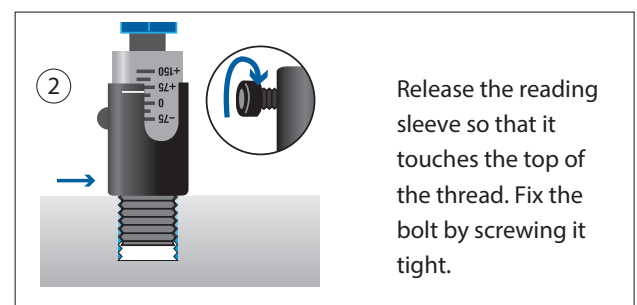
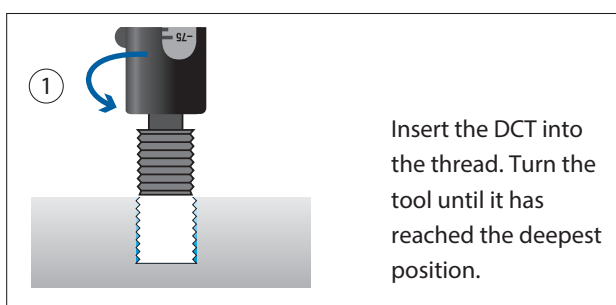
## 2 Scale sleeve

The DCT is made up of three components – the thread plug, scale sleeve and bolt for fixing the position. Measurable range from 100% ~ -50% tolerance of thread size (6H); with 7 positions on the reading scale.



Threading | Measuring

## 3 Measuring method



\* The reading value should be used as reference only. To inspect the screw thread please use the limit gauge (refer to p.6).  
 \* Depending on work environment this product may not be applicable.



- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Measurable range 100% ~-50% tolerance of thread size 6H

Threading | Measuring  
Metric

EDP	Thread size	Measurable depth (mm) in Blind Hole	Sleeve diameter
9342000	M6 X 1 -1,5 D	9~	Ø13
9342001	M8 X 1,25-1,5 D	12~	Ø13
9342002	M8 X 1 -1,5 D	12~	Ø13
9342003	M10 X 1,5 -1,2 D	12~	Ø15
9342004	M10 X 1 -1,2 D	12~	Ø15
9342005	M12 X 1,75 -1,2 D	14,4~	Ø17
9342006	M12 X 1,5 -1,2 D	14,4~	Ø17
9342007	M12 X 1,25 -1,2 D	14,4~	Ø17
9342008	M14 X 2 -1,2 D	16,8~	Ø19
9342009	M14 X 1,5 -1,2 D	16,8~	Ø19
9342010	M14 X 1 -1,2 D	16,8~	Ø19
9342011	M16 X 2 -1 D	16~	Ø21
9342012	M16 X 1,5 -1 D	16~	Ø21
9342013	M18 X 2,5 -1 D	18~	Ø23
9342014	M18 X 1,5 -1 D	18~	Ø23
9342015	M20 X 2,5 -1 D	20~	Ø25
9342016	M20 X 1,5 -1 D	20~	Ø25
9342017	M24 X 3 -1 D	24~	Ø29





# KEY FEATURES: E-DCT

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**1** Diameter correction tool for thread milled hole

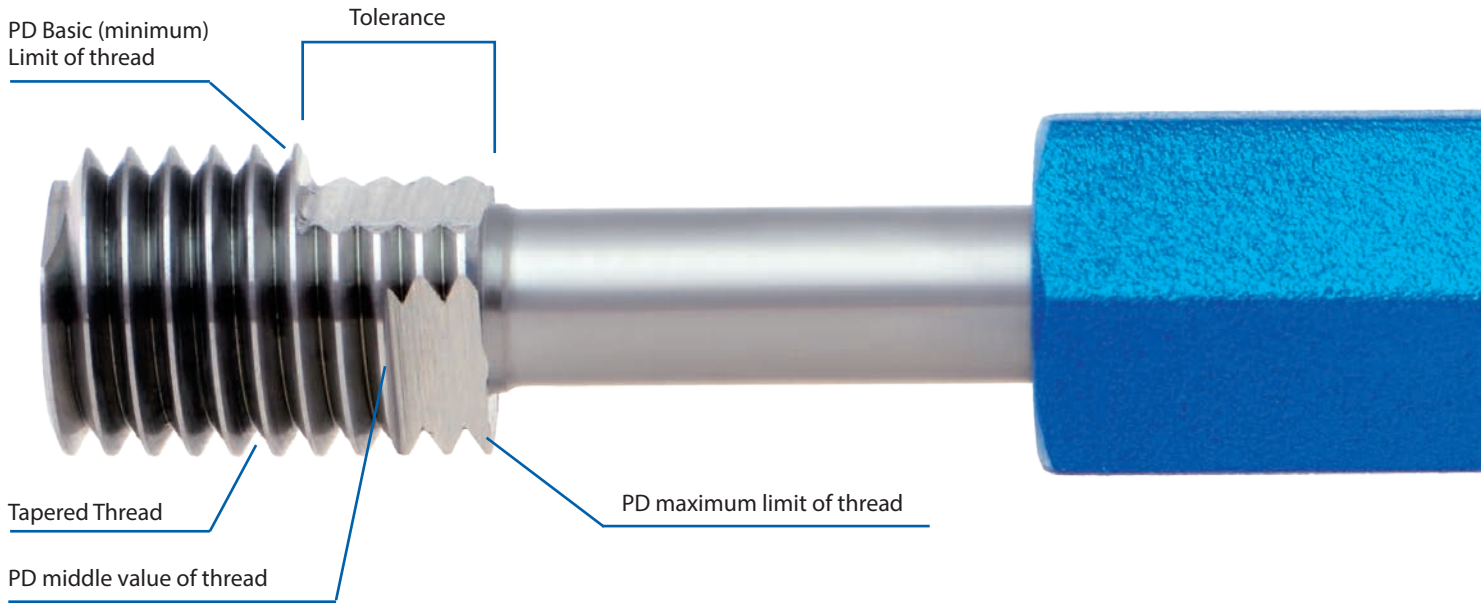
**2** Reduce the set up and machining time

**3** Measuring level at the workpiece surface

**4** Estimate the position within tolerance by notch

# E-DCT: KEY FEATURES & BENEFITS

## E-DCT Specification

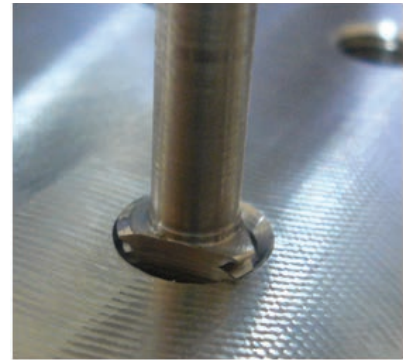
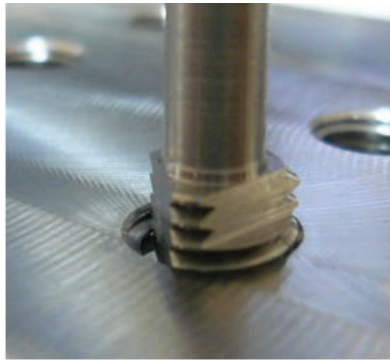
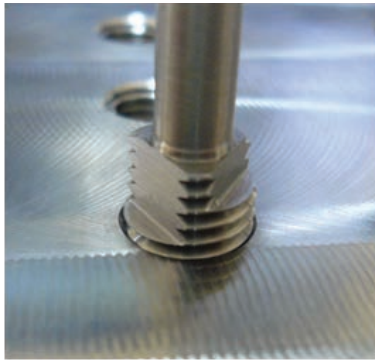


## Judgement of internal thread with E-DCT

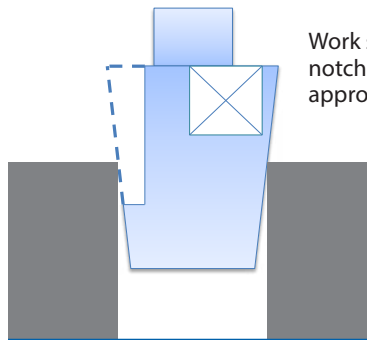


Hole No.	1	2	3	4	5
Position of gauge (depth) E-DCT					
GP gauge go through	NG	NG	NG (not go through)	<b>OK</b>	OK
NP gauge stop	OK	OK	OK	<b>OK</b>	NG
Judgement	NG (-)	NG (0)	NG	<b>OK</b>	NG (+)
Reason of Judgement	Smaller than Basic Pitch Diameter	Pitch Diameter is around Basic Pitch Diameter	Internal thread Tapered		Larger than maximum tolerance of Pitch Diameter

## 1. Estimate the PD by position of the notches



### 1.1 Work surface is between 1<sup>st</sup> notch and 2<sup>nd</sup> notch

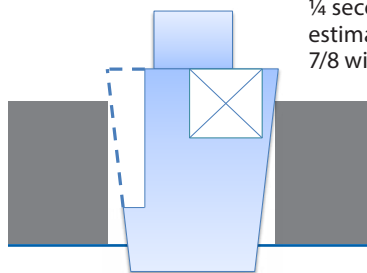


Work surface is between 1<sup>st</sup> notch and 2<sup>nd</sup> notch, which is approx. 1/4 of PD tolerance.

Example: M10X1.5 6H  
Tolerance  
9.026 +0.180 / 0  
 $+0.180 \times 1/4 = +0.045$

**PD of the thread is about +0.045**

### 1.2 Work surface is between 2<sup>nd</sup> notch and 3<sup>rd</sup> notch

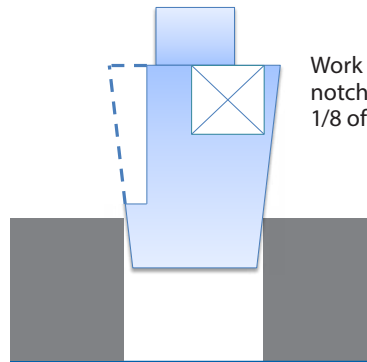
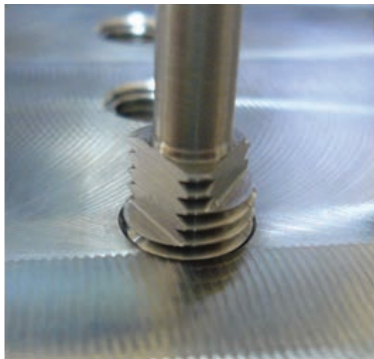


Work surface is at upper position about 1/4 second and third notch. Soof you can estimate PD is about 7/8 within tolerance.

Example: M10X1.5 6H  
Tolerance  
9.026 +0.180 / 0  
 $+0.180 \times 7/8 = +0.158$

**PD of the thread is about +0.160**

## 1.3 Work surface is below the first notch (minimum limit)

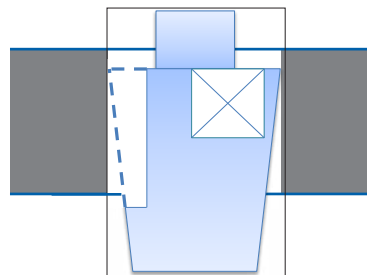
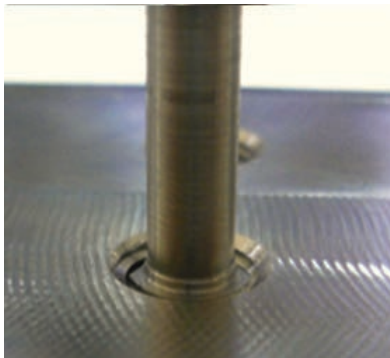


Work surface is below the first notch (Bottom Limit), about 1/8 of PD tolerance.

Example: M10X1.5 6H  
Tolerance  
9.026 +0.180 / 0  
+0.180X -1/8 = -0.023

**PD of the thread is about -0.020. (Not pass for small PD)**

## 1.4 Work surface is over the 3<sup>rd</sup> notch (maximum limit)



Work surface is over the 3<sup>rd</sup> notch (maximum Limit), about 1/8 of PD tolerance.

Example: M10X1.5 6H  
Tolerance  
9.026 +0.180 / 0  
+0.180X +9/8 = +0.203

**PD of the thread is about +0.203. (Not pass for large PD)**

## How to calculate the correction value?

- 1) After threadmilling inspect the female thread with a plug gauge GP-NP.
- 2) After process 1), inspect position of pitch diameter with "E-DCT"
- 3) Notch ① indicates the tolerance of the pitch diameter.  
Notch ② indicates medium value of tolerance and over.

E-DCT shows pitch diameter value is around 0 in the below photo.



Ex) M10X1.5-6H Tolerance of pitch diameter is 0.180  
pitch diameter value is around 0 as show on left photo.  
If target value is 75% of tolerance , threadmill should rotate larger.

Correction value should be . . . . .

- Based on diameter =  $0.180 \times 75\% = 0.135$
- Based on semi-diameter =  $0.135 / 2 = 0.068$

Tolerance of pitch diameter is marked on shank of E-DCT.  
Tolerance of pitch diameter x ratio of notch(%) = correction value.





# E-DCT

Threading | Measuring | UNJC | UNJF



- Diameter correction tool for thread mill
- Reduce the set up and machining time

UNJC

UNJF

For 3B

EDP	Thread size		Price
G1609623	1/4 - 20	UN(J)C	
G1609624	1/4 - 28	UN(J)F	
G1609625	5/16 - 18	UN(J)C	
G1609626	5/16 - 24	UN(J)F	
G1609627	3/8 - 16	UN(J)C	
G1609628	3/8 - 24	UN(J)F	
G1609631	1/2 - 13	UN(J)C	
G1609632	1/2 - 20	UN(J)F	
G1609635	5/8 - 11	UN(J)C	
G1609636	5/8 - 18	UN(J)F	
G1609638	3/4 - 16	UN(J)F	

For EG-3B Helicoil

EDP	Thread size		Price
G1609723	1/4 - 20	UN(J)C	
G1609724	1/4 - 28	UN(J)F	
G1609726	5/16 - 24	UN(J)F	
G1609728	3/8 - 24	UN(J)F	
G1609731	1/2 - 13	UN(J)C	
G1609732	1/2 - 20	UN(J)F	
G1609736	5/8 - 18	UN(J)F	
G1609738	3/4 - 16	UN(J)F	

Threading | Measuring



UNJF



shaping your dreams

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