Advanced Engineering
Hitachi Tool

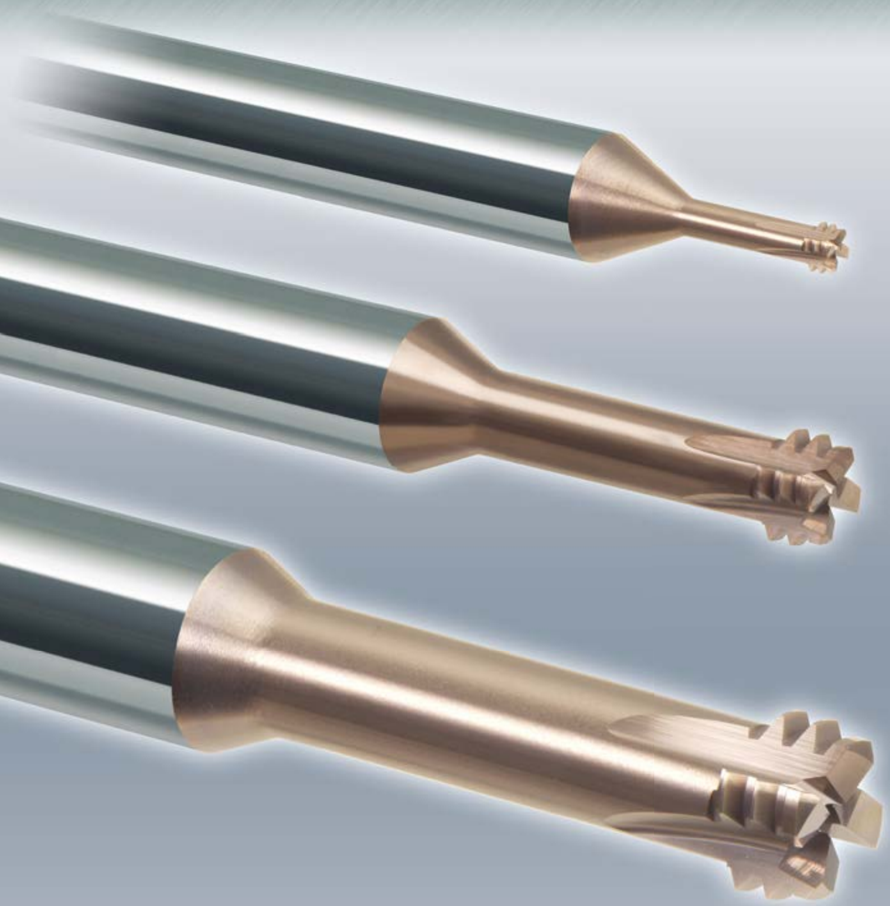
HITACHI
Inspire the Next

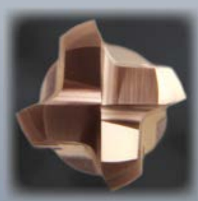
No. 445

Epoch21 ADVANCED TH60+ NANO-PVD COATING

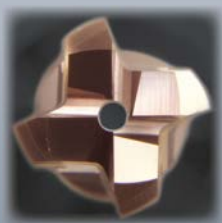
EDT-TH
Epoch Direct Thread Mill

Thread Milling without or with core hole for Materials up to 66 HRC





Up to M10:
without coolant hole



From M10:
with coolant hole

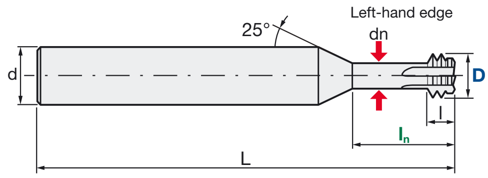
- M2–M16
- L_n 2.5 D
- Aluminium up to hardened steels ≤ 66HRC
- Fine Pitch possible

Hitachi Tool Engineering Europe GmbH
www.high-speed-cutting.com

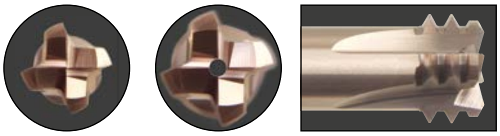
Ultra Micro Grain Solid Carbide Direct Thread Mill

EDT-TH | Epoch Direct Thread Mill TH

HRC 66 | No. of Teeth 4 | Counter Clockwise (left rotation)



Carbide Micro Grain | TH60+ Nano-PVD Coating

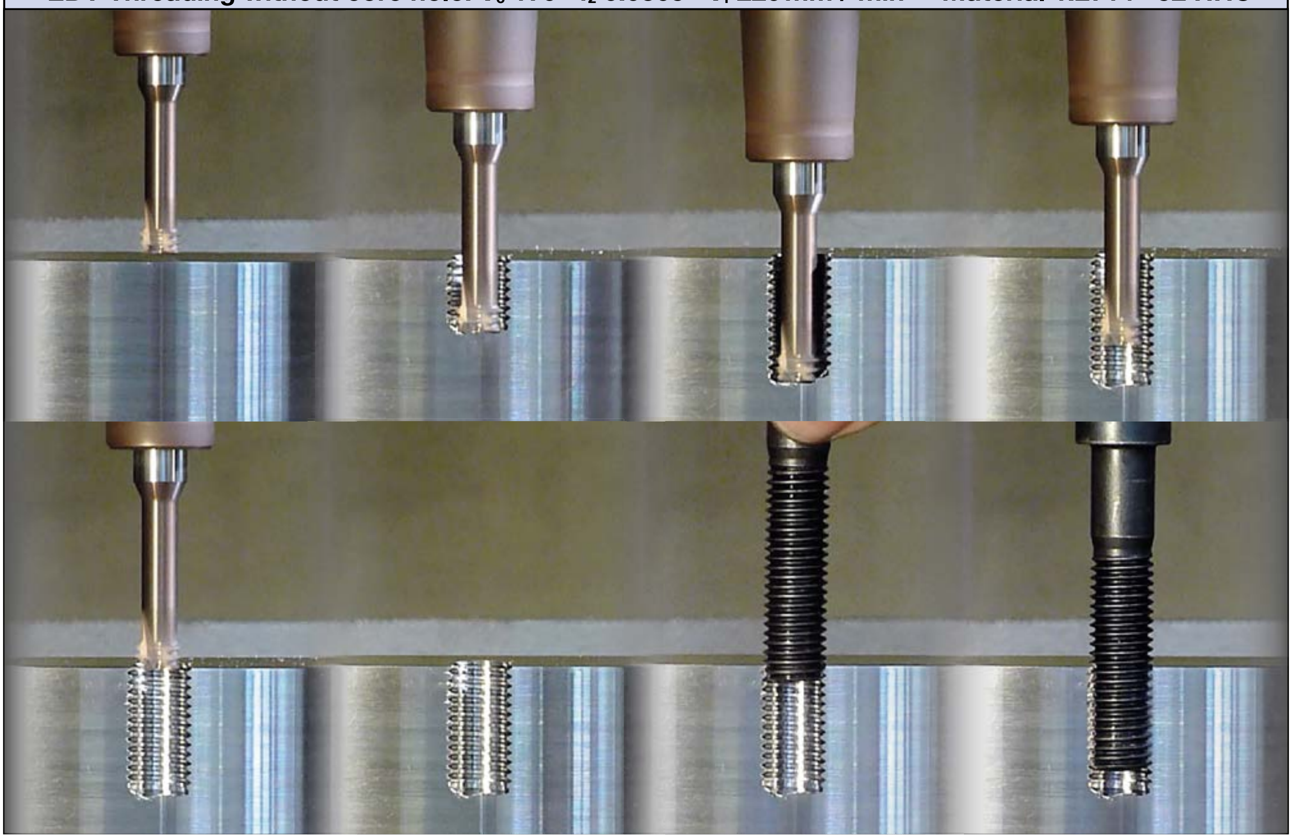


Thread depth D× 2.5
(in case of standard thread)

ID Code	Item Code	Regular Thread	Z	Size (mm) D	Pitch	l_n	l	dn	L	d	Neck R	Inner coolant hole
EP1595	**EDT-0.4-5-TH**	M2	4	**1.4**	0.4	**5**	1.2	0.91	50	6	1	–
EP1596	**EDT-0.45-6.25-TH**	M2.5		**1.8**	0.45	**6.25**	1.35	1.24				
EP1597	**EDT-0.5-7.5-TH**	M3		**2.4**	0.5	**7.5**	1.5	1.78				
EP1598	**EDT-0.7-10-TH**	M4		**3.1**	0.7	**10**	2.1	2.24				
EP1600	**EDT-0.8-12.5-TH**	M5		**3.8**	0.8	**12.5**	2.4	2.8				
EP1601	**EDT-1.0-15-TH**	M6		**4.6**	1.0	**15**	3	3.36				
EP1603	**EDT-1.25-20-TH**	M8		**6.2**	1.25	**20**	3.75	4.64	70	10	2	
EP1599	**EDT-0.75-20-TH**	-			0.75		2.25	5.16				
EP1604	**EDT-1.5-25-TH**	M10		**7.5**	1.5	**25**	4.5	5.61				•
EP1602	**EDT-1.0-25-TH**	-			1.0		3	6.11				
EP1605	**EDT-1.75-30-TH**	M12		**9.0**	1.75	**30**	5.25	6.78	80			
EP1606	**EDT-2-40-TH**	M16		**11.5**	2.0	**40**	6	8.87	100	12		

*** is only for fine pitch type thread**

EDT Threading without core hole: V_c 170 · f_z 0.0365 · V_f 220 mm / min^{-1} · Material 1.2714 · 52 HRC

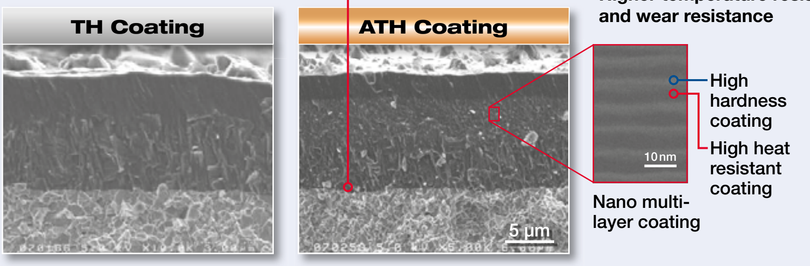


Ultra Micro Grain Solid Carbide Direct Thread Mill

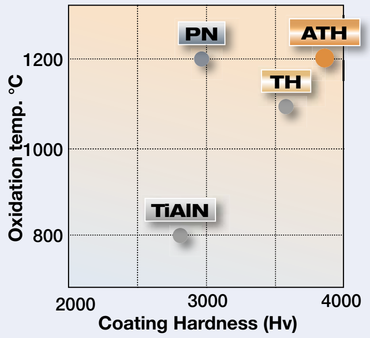
EDT-TH | Epoch Direct Thread Mill TH

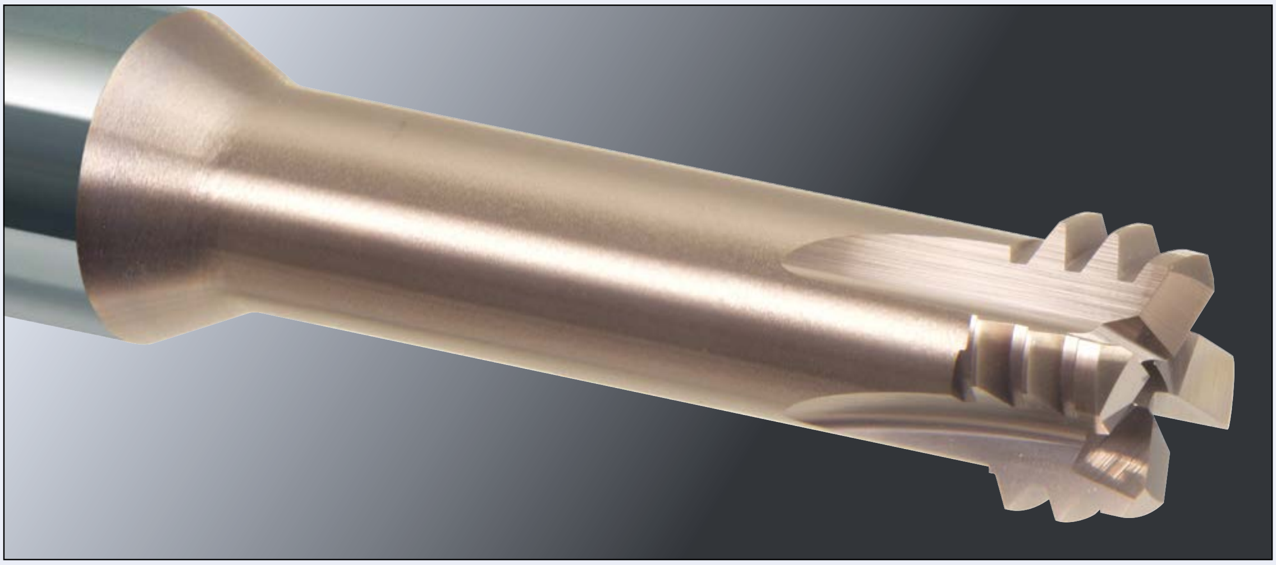
ATH (Advanced TH) Coating – Characteristics

- Excellent adhesion strength
- Oxidation temperature: 1200°C
- Coating Hardness: 3800Hv
- Higher temperature resistance and wear resistance

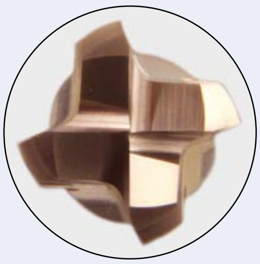


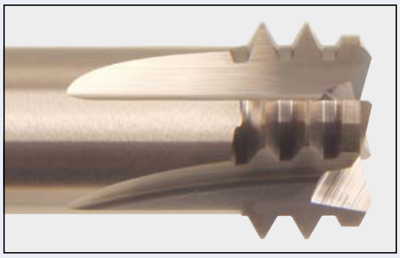
TH Coating (Conventional)   ATH Coating





Optimized EDT cutting edges for thread milling





End cutting edges

- Threading without the need for initial core hole.
- If core hole already exists EDT achieves final size hole without the need for several cuts.
- When core hole already exists EDT works without the need for exact core hole diameter.

Thread cutting edges

- Strong cutting edges reduce the risk of chipping.
- Minimizes the cutting edge wear and guarantees the correct size of thread.

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte: p.			
Cutting Conditions without Core Hole	Page 6	Cutting Conditions with Core Hole	Page 7

Ultra Micro Grain Solid Carbide Direct Thread Mill

EDT-TH | Epoch Direct Thread Mill TH

Usage of EDT

NEVER FORGET COUNTER CLOCKWISE ROTATION (M4)!

* **Please use the circle inside of your machine controller or define the tool path as shown in the graphic**

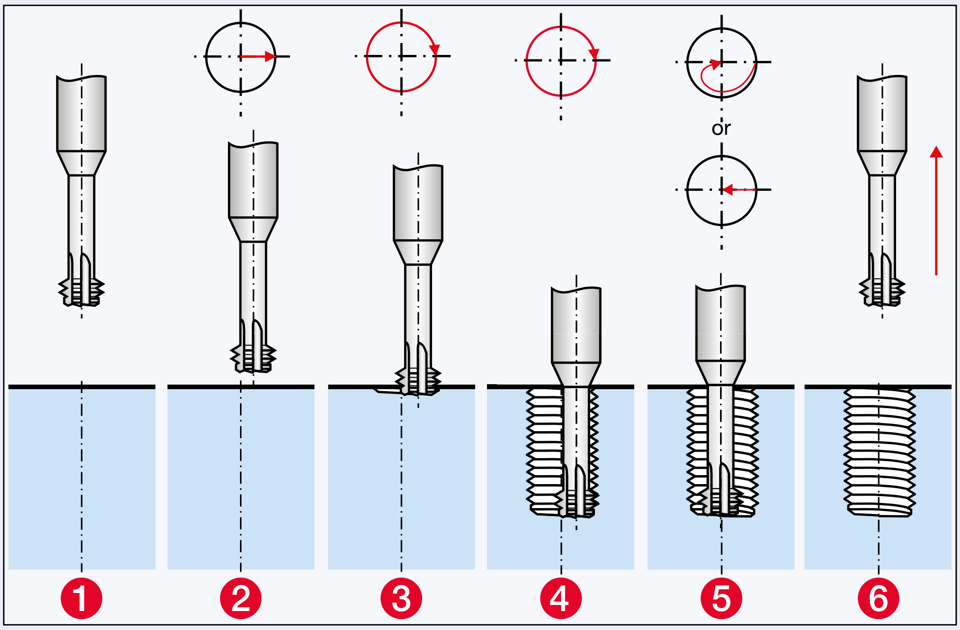
1. Start point, centre of hole
2. Move to helical starting position.
3. Ramp down with helical path.
4. Produce thread with helical path.
5. Move to centre of hole after required depth.
6. Return to start point.

Anwendung des EDT

ACHTUNG: BITTE STELLEN SIE DEN LINKSLAUF (M4) DER SPINDEL SICHER – EDT IST EIN LINKS-SCHNEIDENDES WERKZEUG!

* **Bitte benutzen Sie den vordefinierten Zyklus Ihrer Maschinen-steuerung, oder definieren Sie den Werkzeugpfad wie in der Grafik beschrieben:**

1. Startposition, Zentrum der Bohrung
2. An Startposition für das Helikalfräsen annähern
3. Anfahren mit helikaler Rotation
4. Gewindeschneiden mit helikaler Rotation
5. Nach Fertigstellung des Gewindes den Fräser mit helikaler Rotati-on ins Zentrum der Bohrung zurückführen.
6. Fräser zurück an Startposition bewegen



Usage of EDT

ATTENZIONE. LA ROTAZIONE DEL MANDRINO DEVE ESSERE SINISTRORSA (M4)!

* **utilizzare il cerchio all'interno del vostro controllo numerico o definire il percorso utensile come mostrato del grafico**

1. Punto iniziale
2. Raggiungere il punto di inizio del percorso elicoidale
3. Approccio sul profilo con percorso elicoidale
4. Fresatura del filetto con percorso elicoidale
5. Ritorrno graduale nel centro del foro una volta conclusa la fresatura del filetto
6. Ritorno della fresa sul punto iniziale

Uso de EDT

NO OLVIDE ROTACION DEL CABEZAL A IZQUIERDAS (M4)!

* **Por favor, use el círculo interno del control de su máquina o defina la trayectoria de la herramienta, como se muestra en el gráfico.**

1. Punto de inicio
2. Llegue a la posición del inicio helicoidal
3. Baje con trayectoria helicoidal
4. Rosque con trayectoria helicoidal
5. Movimiento mecanizando gradualmente hacia el centro con trayectoria helicoidal después del acabado del roscado
6. Levante al punto de inicio

Utilisation de l'EDT

NE JAMAIS OUBLIER LA ROTATION BROCHE ANTIHORAIRE (M4) !

* **Veuillez utiliser le cycle prédéfini de la commande Numérique de votre machine ou créez un parcours tel qu'illustré dans le graphique.**

1. Point de départ
2. Déplacement vers le point de départ de l'interpolation hélicoïdale
3. Approche verticale hélicoïdale
4. Filetage en interpolation hélicoïdale
5. Dégagement en rayon de la fraise vers le centre du trou, une fois le filetage terminé
6. Dégagement de la fraise vers le point de départ

Uso da EDT

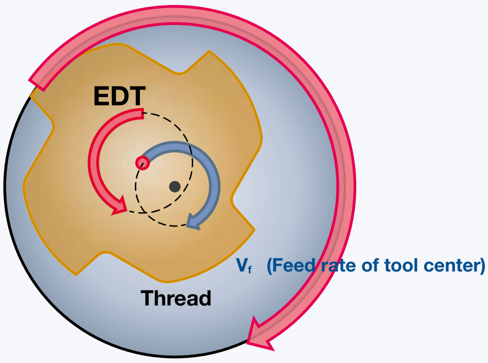
NUNCA ESQUECER, ROTAÇÃO DO EIXO DA ÁRVORE À ESQUERDA! (M4)!

* **Utilize o círculo do seu controlador da máquina ou defina o caminho da ferramenta conforme apresentado no gráfico.**

1. Ponto inicial
2. Vá para a posição de partida helicoidal
3. Aproxime-se para baixo com o trajeto helicoidal
4. Com o trajeto helicoidal
5. Mova gradualmente a fresa para o centro do furo com o trajeto helicoidal, depois de ter terminado.
6. Levante a fresa para o ponto inicial.

EDT-TH | Epoch Direct Thread Mill TH

Point 1: Feed rate set up

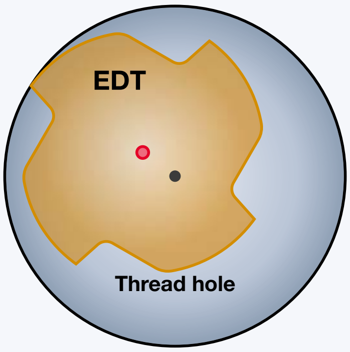


$$V_f\,(\text{Center}) = \underbrace{f_z \times z \times n}_{V_f\,(\text{peripheral})} \times (D1 - Dc)/D1$$

V_f:	Feed rate of tool center (mm/min)
f_z:	Feed rate per tooth(mm/t)
z:	cutting edges number
n:	rotation(min^{-1})
D1	thread diameter(mm)
Dc:	tool diameter (mm)

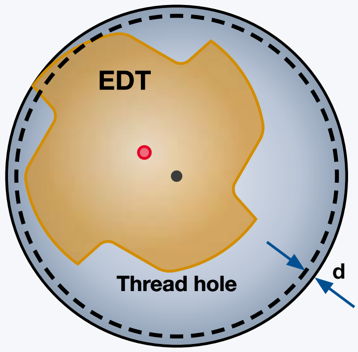
Please be careful of feed rate set-up in program.

Point 2: Compensation



Theoretical situation

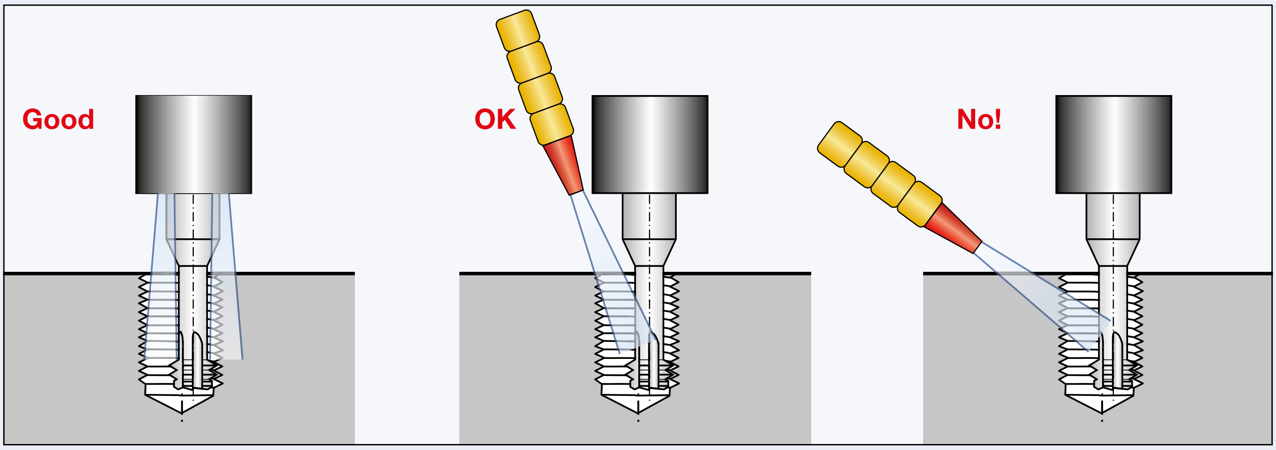
Difference d is probably caused by deflection or reduced diameter of tool, therefore smaller threads will be reduced.



Possible situation

Compensation or spring cut could be helpful to reach the requested thread size.

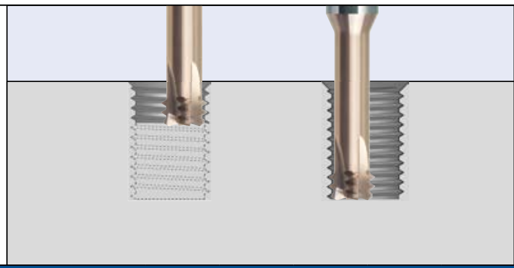
Point 3: Chip evacuation



Chip evacuation is very important!

Ultra Micro Grain Solid Carbide Direct Thread Mill

EDT-TH | Cutting Condition without Core Hole



Standard

Material group	Cutting Parameter		Thread	M2	M2.5	M3	M4	M5	M6	M8	M10	M12	M16
			Pitch	0.4	0.45	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0
			D mm	1.4	1.8	2.4	3.1	3.8	4.6	6.2	7.5	9.0	11.5
Pre-hardened steel (25-35HRC)	V_c	m/min		65	65	65	65	65	65	65	65	65	65
	n	min^{-1}		14,800	11,500	8,600	6,700	5,400	4,500	3,300	2,800	2,300	1,800
	f_z	mm/tooth		0.0057	0.0076	0.0105	0.0143	0.0171	0.0219	0.0295	0.0361	0.0428	0.0523
	$V_{f\,(peripheral)}$	mm		340	350	360	380	370	390	390	400	390	380
Tool Steels (35-45HRC)	V_c	m/min		55	55	55	55	55	55	55	55	55	55
	n	min^{-1}		12,500	9,700	7,300	5,700	4,600	3,800	2,800	2,300	1,900	1,500
	f_z	mm/tooth		0.0054	0.0072	0.0099	0.0135	0.0162	0.0207	0.0279	0.0342	0.0405	0.0495
	$V_{f\,(peripheral)}$	mm		270	280	290	310	300	310	310	310	310	300
Tool Steels (46-55HRC)	V_c	m/min		45	45	45	45	45	45	45	45	45	45
	n	min^{-1}		10,200	8,000	6,000	4,600	3,800	3,100	2,300	1,900	1,600	1,200
	f_z	mm/tooth		0.0051	0.0068	0.0094	0.0128	0.0153	0.0196	0.0264	0.0323	0.0383	0.0468
	$V_{f\,(peripheral)}$	mm		210	220	220	230	230	240	240	250	240	220
Hardened Steel (56-62HRC)	V_c	m/min		35	35	35	35	35	35	35	35	35	35
	n	min^{-1}		8,000	6,200	4,600	3,600	2,900	2,400	1,800	1,500	1,200	1,000
	f_z	mm/tooth		0.0045	0.0060	0.0083	0.0113	0.0135	0.0173	0.0233	0.0285	0.0338	0.0413
	$V_{f\,(peripheral)}$	mm		140	150	150	160	160	170	170	170	160	170
Hardened Steel and High speed steel (63-66HRC)	V_c	m/min		25	25	25	25	25	25	25	25	25	25
	n	min^{-1}		5,700	4,400	3,300	2,600	2,100	1,700	1,300	1,100	900	700
	f_z	mm/tooth		0.0039	0.0052	0.0072	0.0098	0.0117	0.0150	0.0202	0.0247	0.0293	0.0358
	$V_{f\,(peripheral)}$	mm		90	90	90	100	100	100	100	110	110	100
Stainless Steel , Titan alloy (25-35HRC)	V_c	m/min		35	35	35	35	35	35	35	35	35	35
	n	min^{-1}		8,000	6,200	4,600	3,600	2,900	2,400	1,800	1,500	1,200	1,000
	f_z	mm/tooth		0.0048	0.0064	0.0088	0.0120	0.0144	0.0184	0.0248	0.0304	0.0360	0.0440
	$V_{f\,(peripheral)}$	mm		150	160	160	170	170	180	180	180	170	180
Alumium Carbon Steels,Alloy Steels Cast Irons EN-JL(GG),EN-JS (GGG) (-300HB)	V_c	m/min		70	70	70	70	70	70	70	70	70	70
	n	min^{-1}		15,900	12,400	9,300	7,200	5,900	4,800	3,600	3,000	2,500	1,900
	f_z	mm/tooth		0.0060	0.0080	0.0110	0.0150	0.0180	0.0230	0.0310	0.0380	0.0450	0.0550
	$V_{f\,(peripheral)}$	mm		380	400	410	430	420	440	450	460	450	420

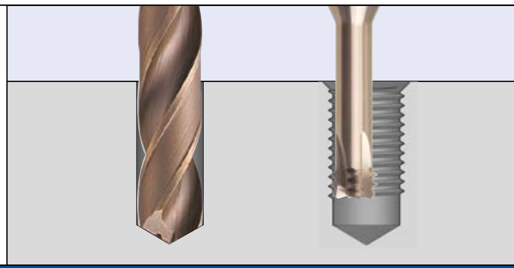
Efficient

Material group	Cutting Parameter		Thread	M2	M2.5	M3	M4	M5	M6	M8	M10	M12	M16
			Pitch	0.4	0.45	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0
			D mm	1.4	1.8	2.4	3.1	3.8	4.6	6.2	7.5	9.0	11.5
Pre-hardened steel (25-35HRC)	V_c	m/min		75	75	75	75	75	75	75	75	75	75
	n	min^{-1}		17,100	13,300	10,000	7,700	6,300	5,200	3,900	3,200	2,700	2,100
	f_z	mm/tooth		0.0058	0.0078	0.0107	0.0146	0.0175	0.0223	0.0301	0.0369	0.0437	0.0534
	$V_{f\,(peripheral)}$	mm		400	410	430	450	440	460	470	470	470	450
Tool Steels (35-45HRC)	V_c	m/min		65	65	65	65	65	65	65	65	65	65
	n	min^{-1}		14,800	11,500	8,600	6,700	5,400	4,500	3,300	2,800	2,300	1,800
	f_z	mm/tooth		0.0056	0.0074	0.0102	0.0140	0.0167	0.0214	0.0288	0.0353	0.0419	0.0512
	$V_{f\,(peripheral)}$	mm		330	340	350	370	360	390	380	400	390	370
Tool Steels (46-55HRC)	V_c	m/min		55	55	55	55	55	55	55	55	55	55
	n	min^{-1}		12,500	9,700	7,300	5,700	4,600	3,800	2,800	2,300	1,900	1,500
	f_z	mm/tooth		0.0053	0.0070	0.0097	0.0132	0.0158	0.0202	0.0273	0.0334	0.0396	0.0484
	$V_{f\,(peripheral)}$	mm		260	270	280	300	290	310	310	310	300	290
Hardened Steel (56-62HRC)	V_c	m/min		45	45	45	45	45	45	45	45	45	45
	n	min^{-1}		10,200	8,000	6,000	4,600	3,800	3,100	2,300	1,900	1,600	1,200
	f_z	mm/tooth		0.0048	0.0064	0.0088	0.0120	0.0144	0.0184	0.0248	0.0304	0.0360	0.0440
	$V_{f\,(peripheral)}$	mm		200	200	210	220	220	230	230	230	230	210
Hardened Steel and High speed steel (63-66HRC)	V_c	m/min		35	35	35	35	35	35	35	35	35	35
	n	min^{-1}		8,000	6,200	4,600	3,600	2,900	2,400	1,800	1,500	1,200	1,000
	f_z	mm/tooth		0.0045	0.0060	0.0083	0.0113	0.0135	0.0173	0.0233	0.0285	0.0338	0.0413
	$V_{f\,(peripheral)}$	mm		140	150	150	160	160	170	170	170	160	170
Stainless Steel , Titan alloy (25-35HRC)	V_c	m/min		45	45	45	45	45	45	45	45	45	45
	n	min^{-1}		10,200	8,000	6,000	4,600	3,800	3,100	2,300	1,900	1,600	1,200
	f_z	mm/tooth		0.0051	0.0068	0.0094	0.0128	0.0153	0.0196	0.0264	0.0323	0.0383	0.0468
	$V_{f\,(peripheral)}$	mm		210	220	220	230	230	240	240	250	240	220
Alumium Carbon Steels,Alloy Steels Cast Irons EN-JL(GG),EN-JS (GGG) (-300HB)	V_c	m/min		85	85	85	85	85	85	85	85	85	85
	n	min^{-1}		19,300	15,000	11,300	8,700	7,100	5,900	4,400	3,600	3,000	2,400
	f_z	mm/tooth		0.0060	0.0080	0.0110	0.0150	0.0180	0.0230	0.0310	0.0380	0.0450	0.0550
	$V_{f\,(peripheral)}$	mm		460	480	500	520	510	540	550	550	540	530

Please choose the cutting condition based on Tool diameter.

EDT-TH | Recommended Cutting Conditions

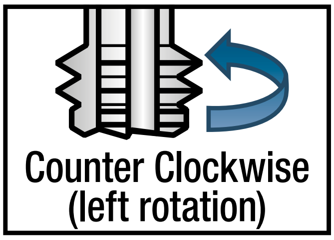
EDT-TH | Cutting Condition with Core Hole



Standard

Material group	Cutting Parameter		Thread	M2	M2.5	M3	M4	M5	M6	M8	M10	M12	M16
			Pitch	0.4	0.45	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0
			D mm	1.4	1.8	2.4	3.1	3.8	4.6	6.2	7.5	9.0	11.5
Pre-hardened steel (25-35HRC)	V_c	m/min		85	85	85	85	85	85	85	85	85	85
	n	min^{-1}		19,300	15,000	11,300	8,700	7,100	5,900	4,400	3,600	3,000	2,400
	f_z	mm/tooth		0.0060	0.0080	0.0110	0.0150	0.0180	0.0229	0.0309	0.0379	0.0449	0.0549
	$V_{f\,(peripheral)}$	mm		460	480	500	520	510	540	540	550	540	530
Tool Steels (35-45HRC)	V_c	m/min		75	75	75	75	75	75	75	75	75	75
	n	min^{-1}		17,100	13,300	10,000	7,700	6,300	5,200	3,900	3,200	2,700	2,100
	f_z	mm/tooth		0.0057	0.0076	0.0104	0.0142	0.0170	0.0217	0.0293	0.0359	0.0425	0.0520
	$V_{f\,(peripheral)}$	mm		390	400	420	440	430	450	460	460	460	440
Tool Steels (46-55HRC)	V_c	m/min		65	65	65	65	65	65	65	65	65	65
	n	min^{-1}		14,800	11,500	8,600	6,700	5,400	4,500	3,300	2,800	2,300	1,800
	f_z	mm/tooth		0.0054	0.0071	0.0098	0.0134	0.0161	0.0205	0.0277	0.0339	0.0402	0.0491
	$V_{f\,(peripheral)}$	mm		320	330	340	360	350	370	370	380	370	350
Hardened Steel (56-62HRC)	V_c	m/min		55	55	55	55	55	55	55	55	55	55
	n	min^{-1}		12,500	9,700	7,300	5,700	4,600	3,800	2,800	2,300	1,900	1,500
	f_z	mm/tooth		0.0047	0.0063	0.0087	0.0118	0.0142	0.0181	0.0244	0.0299	0.0354	0.0433
	$V_{f\,(peripheral)}$	mm		240	240	250	270	260	280	270	280	270	260
Hardened Steel and High speed steel (63-66HRC)	V_c	m/min		45	45	45	45	45	45	45	45	45	45
	n	min^{-1}		10,200	8,000	6,000	4,600	3,800	3,100	2,300	1,900	1,600	1,200
	f_z	mm/tooth		0.0041	0.0055	0.0075	0.0102	0.0123	0.0157	0.0212	0.0259	0.0307	0.0375
	$V_{f\,(peripheral)}$	mm		170	170	180	190	190	190	190	200	200	180
Stainless Steel , Titan alloy (25-35HRC)	V_c	m/min		55	55	55	55	55	55	55	55	55	55
	n	min^{-1}		12,500	9,700	7,300	5,700	4,600	3,800	2,800	2,300	1,900	1,500
	f_z	mm/tooth		0.0050	0.0067	0.0092	0.0126	0.0151	0.0193	0.0260	0.0319	0.0378	0.0462
	$V_{f\,(peripheral)}$	mm		250	260	270	290	280	290	290	290	290	280
Alumium Carbon Steels,Alloy Steels Cast Irons EN-JL(GG),EN-JS (GGG) (-300HB)	V_c	m/min		95	95	95	95	95	95	95	95	95	95
	n	min^{-1}		21,600	16,800	12,600	9,800	8,000	6,600	4,900	4,000	3,400	2,600
	f_z	mm/tooth		0.0063	0.0084	0.0116	0.0158	0.0189	0.0242	0.0326	0.0399	0.0473	0.0578
	$V_{f\,(peripheral)}$	mm		540	560	580	620	600	640	640	640	640	600

Please choose the cutting condition based on Tool diameter.



NEVER forget counter clockwise rotation (M4), because EDT has left cutting edge!

Achtung: Bitte stellen Sie den Linkslauf (M4) der Spindel sicher – EDT ist ein linksschneidendes Werkzeug!

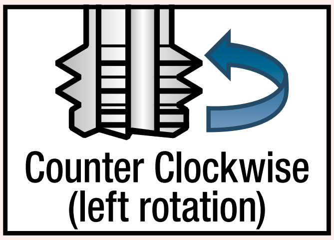
Attenzione: programmare la rotazione del mandrino sinistrorsa (M4), visto che le frese EDT hanno tagliente sinistro!

No olvide rotacion del cabezal a kizquierdas (M4), porque EDT tiene el filo de corte a izquierdas!

Note : Assurez-vous d’avoir une rotation à gauche (antihoraire), l’EDT a une hélice à gauche !

Nota: Garanta rotação do eixo da árvore à esquerda porque o EDT tem arestas de corte esquerdas!

EDT-TH | Recommended Cutting Conditions



NEVER FORGET COUNTER CLOCKWISE ROTATION (M4), BECAUSE EDT HAS LEFT CUTTING EDGE!

Be careful of feed rate needed by programming (tool center feed rate or tool peripheral feed rate), when you need V_f center, please calculate by V_f center = V_f peripheral* (Thread Dia.-Tool Dia.) /Thread Dia.

Please choose coolant system which leads to better chip evacuation, for reference emulsion normally give better chip removal ability and air blow give longer tool life in hard material. For stainless material please use emulsion if possible.

NO OLVIDE ROTACION DEL CABEZAL A IZQUIERDAS (M4), PORQUE EDT TIENE EL FILO DE CORTE A IZQUIERDAS!

Tenga cuidado al establecer el avance en el programa (Avance al centro de la herramienta o Avance periférico). Si necesita determinar el Vf al centro calcúlelo por favor en base a Vf al centro = Vf periférico * (diámetro rosca – diámetro herramienta) / diámetro rosca.

Por favor, elija el sistema de refrigeración que permite una mejor evacuación de viruta. Un sistema con taladrina proporciona mejor evacuación de viruta. Un sistema con aire soplado proporciona más vida en materiales duros. Para aceros inoxidables, por favor utilice taladrina si es posible.

ACHTUNG: BITTE STELLEN SIE DEN LINKSLAUF (M4) DER SPINDEL SICHER – EDT IST EIN LINKSSCHNEIDENDES WERKZEUG!

Beachten Sie die erforderliche Vorschubrate bei der Programmierung (Vorschubrate des Werkzeug-Zentrums oder des Werkzeug-Umfangs). Um V_f [Wkz.-Zentrum] zu erhalten, berechnen Sie bitte: V_f [Wkz.-Zentrum] = V_f [Wkz-Umfang] · (D Gewinde - D Wkz.) / D Gewinde.

Bitte wählen Sie die Kühlmethode mit der bestmöglichen Späneabfuhr: Kühlung mit Emulsion verbessert die Späneabfuhr, während Luftkühlung die Lebensdauer des Werkzeugs bei harten Materialien verlängert. Für die Bearbeitung rostfreier Materialien bitte möglichst Kühlemulsion verwenden.

NE JAMAIS OUBLIER LA ROTATION BROCHE ANTIHORAIRE (M4), L'EDT A UNE HÉLICE À GAUCHE !

Faîtes attention au type d'avance nécessaire à la programmation (avance au centre de l'outils ou avance périphérique), pour calculer l'avance au centre outil, procéder de la façon suivante : Vf périphérique*(Diamètre taraudage - Diamètre outil) / Diamètre taraudage

Veuillez choisir la lubrification la plus efficace en termes d'évacuation des copeaux. À titre indicatif, l'émulsion soluble permet une meilleure évacuation des copeaux et le soufflage d'air donne une meilleure durée de vie dans les matériaux durs. Pour les inoxydables, utiliser de l'émulsion, si possible.

ATTENZIONE: PROGRAMMARE LA ROTAZIONE DEL MANDRINO SINISTRORSA (M4), VISTO CHE LE FRESE EDT HANNO TAGLIENTE SINISTRO!

Fare attenzione alla velocità di avanzamento nella programmazione (Avanzamento al centro dell' utensile o Avanzamento periferico). In caso si necessiti di avanzamento rispetto al centro calcolare l'avanzamento stesso (V_f), come segue: V_f centro = V_f periferico* (Diametro Filetto - Diametro Utensile) / Diametro Filetto.

Si prega di scegliere il sistema refrigerante che garantisce la migliore evacuazione dei trucioli trucioli, l' emulsione di solito garantisce una migliore capacità di asportazione mentre l'aria garantisce una maggiore vita utensile con materiali ad alta durezza. Per materiali inossidabili si raccomanda l'utilizzo di emulsione.

NOTA: GARANTA ROTAÇÃO DO EIXO DA ÁRVORE À ESQUERDA PORQUE O EDT TEM ARESTAS DE CORTE ESQUERDAS!

**Esteja atento ao avanço necessário pela programação (avanço central ou avanço periférico), quando necessitar de V_f Central,
calcule com V_f Central = V_f periférico* (Thread Diâmetro – Diâmetro da ferramenta) / Diâmetro Thread.**

Selecione um sistema de refrigeração que gere melhor remoção de aparas – para referência, normalmente a emulsão confere melhor capacidade de remoção das aparas e o sopro de ar confere melhor tempo de vida útil de ferramenta em metal duro. Para material inoxidável utilize emulsão sempre que possível.

Ultra Micro Grain Solid Carbide Direct Thread Mill

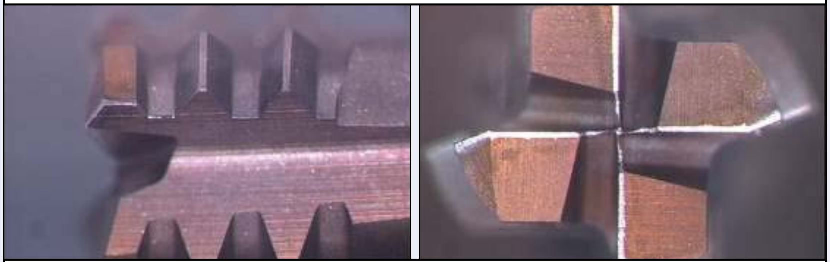
EDT-TH | Epoch Direct Thread Mill TH

Performance Example of EDT – Threading without Core Hole

1.4301 (SUS304)*

EDT-0.7-10-TH
Thread size: M4×P0.7
Spindle: SK50
Coolant: Emulsion
n = 3600 min^{-1} (V_c = 35m/min)
V_f = 217 (49) mm/min (f_z = 0.015 mm/t)
Depth: 10mm
Machining time: 59 sec/threads

After 600 threads

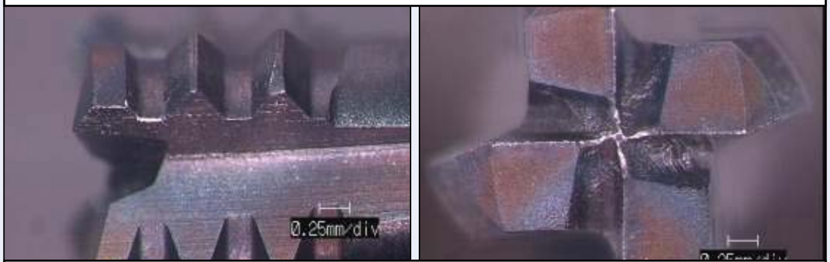


Possible for further using

Pre-hardened steel (40HRC)

EDT-0.7-10-TH
Thread size: M4×P0.7
Spindle: HSK-A63
Coolant: Air Blow
n = 5650 min^{-1} (V_c = 55m/min)
V_f = 333 (75) mm/min (f_z = 0.015 mm/t)
Depth: 10mm
Machining time: 38 sec/threads

After 400 threads

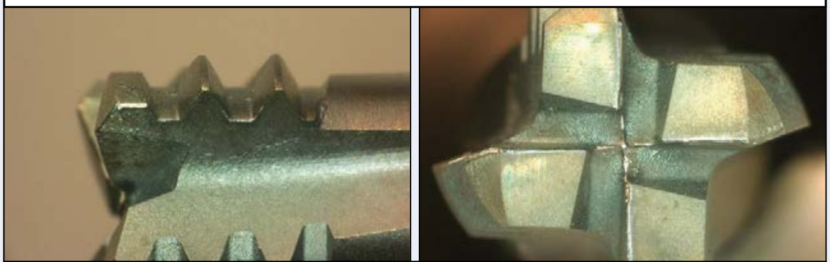


Possible for further using

1.2343 (45HRC)

EDT-1.25-20-TH
Thread size: M8×P1.25
Spindle: HSK-A63
Coolant: Air Blow
n =2 820 min^{-1} (V_c = 55m/min)
V_f = 333 (75) mm/min (f_z = 0.03mm/t)
Depth:16mm
Machining time: 66 sec/threads

After 200 threads

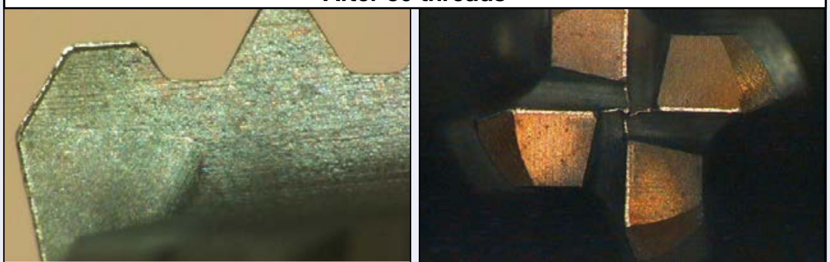


Possible for further using

1.2379 (62HRC)

EDT-0.7-10-TH
Thread size: M4×P0.7
Spindle: HSK-A63
Coolant: Air Blow
n = 4620 min^{-1} (V_c = 45m/min
V_f = 277 (62) mm/min (fz = 0.015mm/t)
Depth: 7mm

After 30 threads

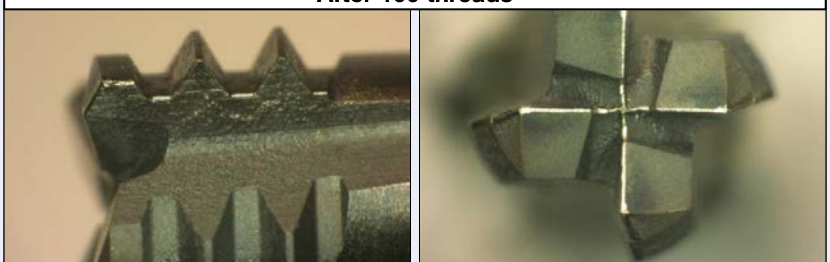


Possible for further using

1.2083 STAVAX 52HRC

EDT-0.7-10-TH
Thread size: M4×P0,7
Spindle: HSK-A63
Coolant: Emulsion
n = 3600 min^{-1} (V_c = 35m/min)
V_f = 216 (48) mm/min (f_z = 0.015 mm/t)
Depth: 10mm

After 100 threads



Possible for further using

All the threads are produced without Core Hole, and used EDT is still possible for further using.

*** Different types of stainless will create a difference in performance, please start with standard cutting conditions and ensure best chip removal.**

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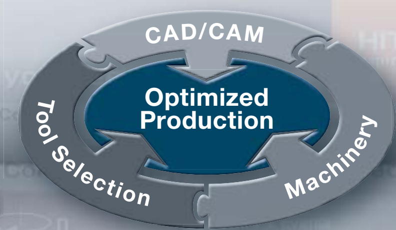

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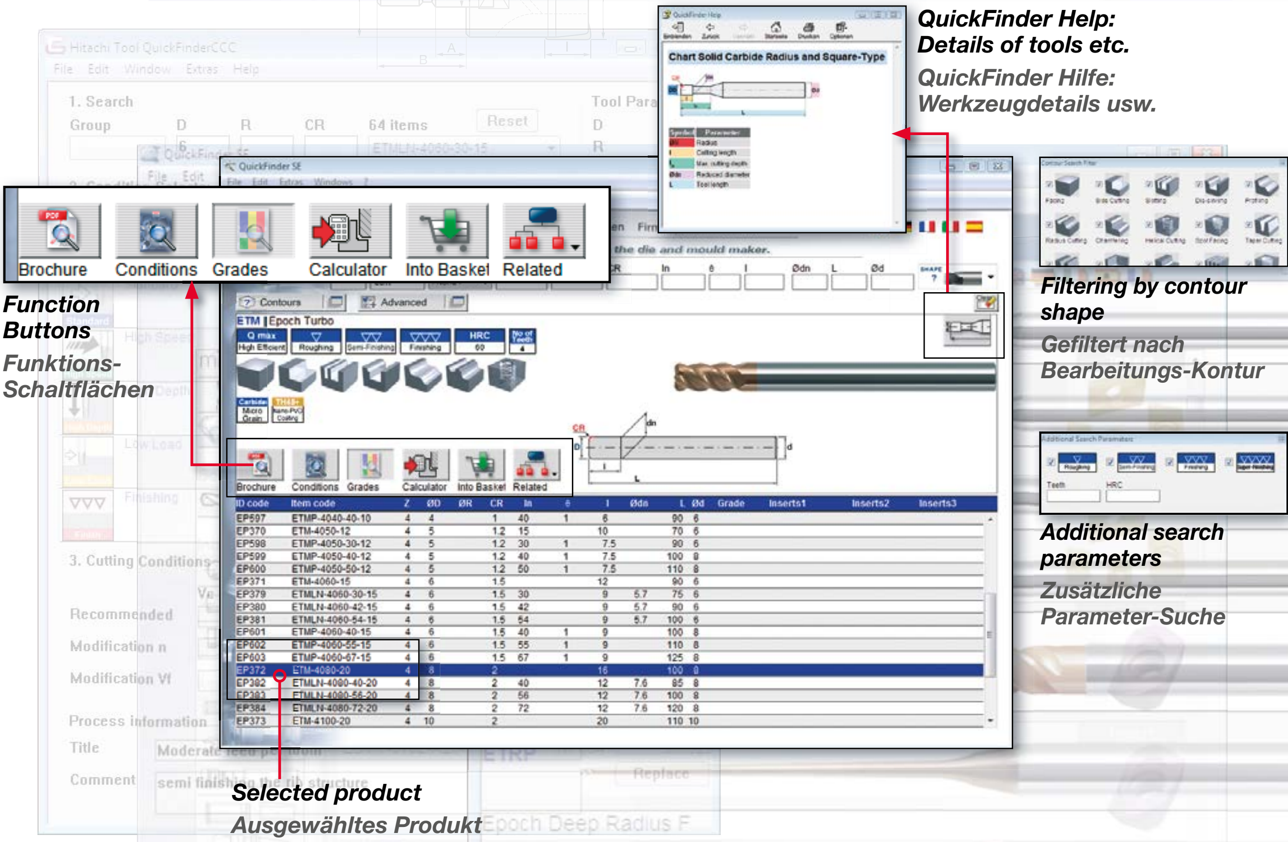

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APC | Advanced Precision Chucks

For Micro Precision Cutting

- Clamping Range 0.5 – 7.0 mm
- Extra slim design
- Runout accuracy 5 µm / 3xD
- RPM up to 40,000 (42,000) max.
- Pre balanced for high RPM
- Precision ground body

Spannfutter für die Mikropräzisionsbearbeitung

- Spanndurchmesser 0,5 – 7,0 mm
- Extra schlanke Bauform
- Rundlaufgenauigkeit 5 µm / 3xD
- Für Drehzahlen bis zu 40.000 (max. 42.000) min^{-1}
- Vorgewuchtet für hohe Drehzahlen
- Präzisionsgeschliffen

WHNSB | Carbide Oil Hole Non Step Borer

Solid Carbide Drills for High Efficiency

- D 2–13 mm, 5xD: 2–19.55
- **Higher accuracy:**
  - Due to four guide points
- **Special flute shape:**
  - For high effective chip discharge
- High efficiency drilling of holes depth up to 30 xD
- Four times more efficient than conventional gun drills
- **TH coating:**
  - High hardness & oxidising temperature for long tool life at high cutting temperatures

Vollhartmetallbohrer für die Bearbeitung mit Minimalmengenschmierung (MMS)

- D 2–13 mm, 5xD: 2–19.55
- **Höhere Genauigkeit:**
  - 4 Führungsfasen
- **Speziell geformte Schneiden:**
  - Für effektive Späneabfuhr
- Hocheffizientes Tieflochbohren bis zu 30 xD
- 4-fach höhere Performance gegenüber herkömmlichen Tieflochbohrern
- **TH-Beschichtung:**
  - Hohe Härte & Oxidationstemperatur für hohe Werkzeugstandzeiten bei hohen Bearbeitungstemperaturen

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