



**MOLDINO**

The Edge To Innovation

MMC Hitachi Tool Engineering Europe GmbH

**ETR** *Epoch Turbo Rib*  
**ETRP** *Epoch Turbo Rib Pencil Neck*  
**4-Flute Deep Cutting End Mill for Rib Applications**

**D1mm ~ D3mm**

- **Special Diameters:**  
1.25 | 1.75 | 2.5mm
- **CR: 0.2 | 0.3 | 0.5 | 0.8**
- $l_n$  up to 50xD
- **Oval Geometry**
- **Compound Neck Shape**



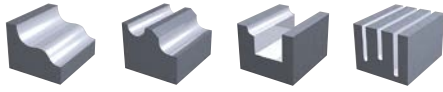
*Carbide End Mills · Nano PVD Coated*

[www.mmc-hitachitool-eu.com](http://www.mmc-hitachitool-eu.com)

No. 423.2 | ETR-ETRP

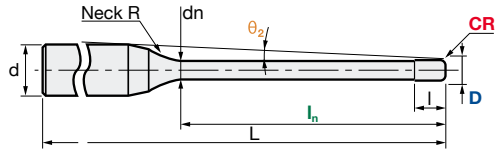
**ETR** | Epoch Turbo Rib

<b>V max</b> High Speed	<b>▽</b> Roughing	<b>▽▽</b> Semi-Finishing	<b>HRC</b> 65	<b>Rib. Miniature</b>	<b>No. of Teeth</b> 4
----------------------------	----------------------	-----------------------------	------------------	-----------------------	--------------------------



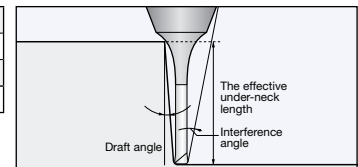
**Oval Geometry for less vibrations**

For tool setup be careful to measure main flute



<b>Carbide</b> Micro Grain	<b>TH45+</b> Nano-PVD Coating	<b>Rake Angle</b> Negative
-------------------------------	----------------------------------	-------------------------------

D	(0 / -0.02)
CR	± 0.01
d	h5
Helix angle	45°

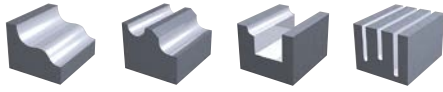


Size											Actual Effective Length in Incline Angles													
ID Code	Item Code	Z	D	CR	l <sub>n</sub>	l	dn	L	d	Neck R	θ <sub>2</sub> °	0.5°	1°	1.5°	2°	3°								
EP1763	ETR-4010-3-02-TH	4	1	0.2	3	1	0.94	50	60	60	9.66	3.69	3.86	4.01	4.14	4.39								
EP1764	ETR-4010-5-02-TH				5						8.52	5.79	6.01	6.21	6.38	6.75								
EP1765	ETR-4010-10-02-TH				10						6.58	10.98	11.32	11.58	12.09	13.39								
EP1766	ETR-4010-15-02-TH				15						5.35	16.15	16.55	17.24	18.07	20.03								
EP1767	ETR-4010-20-02-TH				20						4.51	21.29	21.92	22.94	24.06	26.66								
EP1768	ETR-4010-25-02-TH				25						3.90	26.41	27.37	28.64	30.04	33.30								
EP1769	ETR-4010-30-02-TH				30						3.44	31.52	32.82	34.34	36.02	39.94								
EP1770	ETR-40125-5-02-TH				4						1.25	0.2	5	1.25	1.18	50	60	70	8.38	5.81	6.03	6.22	6.39	6.79
EP1771	ETR-40125-10-02-TH												10						6.42	11.00	11.33	11.59	12.12	13.42
EP1772	ETR-40125-15-02-TH	15	5.20	16.16		16.56	17.26	18.10	20.06															
EP1773	ETR-40125-20-02-TH	20	4.37	21.30		21.95	22.97	24.09	26.69															
EP1774	ETR-40125-25-02-TH	25	3.77	26.42		27.39	28.67	30.07	33.33															
EP1775	ETR-40125-30-02-TH	30	3.31	31.54	32.84	34.37	36.05	39.97																
EP1776	ETR-4015-5-03-TH	4	1.5	0.3	5	1.5	1.42	50	60	70	8.28	5.83	6.05	6.23	6.40	6.79								
EP1777	ETR-4015-7.5-03-TH				7.5						7.14	8.43	8.70	8.93	9.14	10.10								
EP1778	ETR-4015-10-03-TH				10						6.28	11.02	11.34	11.60	12.13	13.42								
EP1779	ETR-4015-15-03-TH				15						5.05	16.18	16.57	17.28	18.11	20.06								
EP1780	ETR-4015-20-03-TH				20						4.23	21.31	21.96	22.98	24.09	26.69								
EP1781	ETR-4015-25-03-TH				25						3.63	26.43	27.41	28.68	30.08	33.33								
EP1782	ETR-4015-30-03-TH				30						3.19	31.55	32.86	34.38	36.06	39.97								
EP1783	ETR-40175-5-03-TH				4						1.75	0.3	5	1.75	1.65	50	60	60	8.10	5.88	6.08	6.26	6.42	6.85
EP1784	ETR-40175-10-03-TH												10						6.09	11.06	11.37	11.63	12.18	13.48
EP1785	ETR-40175-20-03-TH	20	4.07	21.34		22.01	23.03	24.15	26.76															
EP1786	ETR-4020-6-05-TH	4	2	0.5	6	2	1.92	50	60	70	7.55	6.86	7.10	7.30	7.48	8.05								
EP1787	ETR-4020-10-05-TH				10						5.98	11.01	11.33	11.59	12.09	13.36								
EP1788	ETR-4020-15-05-TH				15						4.75	16.17	16.56	17.25	18.07	19.99								
EP1789	ETR-4020-20-05-TH				20						3.94	21.31	21.95	22.95	24.06	26.63								
EP1790	ETR-4020-25-05-TH				25						3.36	26.43	27.39	28.65	30.04	33.27								
EP1791	ETR-4020-30-05-TH				30						2.93	31.54	32.84	34.36	36.02	x								
EP1792	ETR-4020-35-05-TH				35						2.60	36.67	38.29	40.06	42.00	x								
EP1793	ETR-4020-40-05-TH				40						2.34	41.88	43.73	45.76	47.99	x								
EP1794	ETR-4025-10-05-TH				4						2.5	0.5	10	2.5	2.4	50	60	70	5.57	11.05	11.36	11.61	12.15	13.42
EP1795	ETR-4025-20-05-TH	20	3.59	21.34		22.00	23.00	24.11	26.69															
EP1796	ETR-4025-30-05-TH	30	2.64	31.57		32.89	34.41	36.08	x															
EP1797	ETR-4025-40-05-TH	40	2.09	41.93		43.79	45.81	48.04	x															
EP1798	ETR-4030-10-08-TH	10	5.17	11.12		11.40	11.66	12.20	13.45															
EP1799	ETR-4030-20-08-TH	20	3.23	21.39	22.07	23.07	24.17	26.72																
EP1800	ETR-4030-30-08-TH	4	3	0.8	30	3	2.86	70	80	90	2.35	31.61	32.97	34.47	36.13	x								
EP1801	ETR-4030-40-08-TH				40						1.85	42.02	43.86	45.88	x	x								
EP1802	ETR-4030-50-08-TH				50						1.52	52.45	54.76	57.28	x	x								

x = no interference

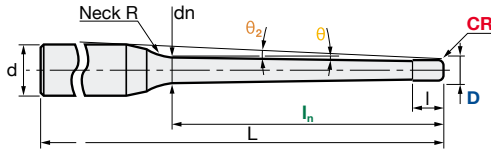
**ETRP** | Epoch Turbo Rib Pencil Neck

<b>V max</b> High Speed	<b>▽</b> Roughing	<b>▽▽</b> Semi-Finishing	<b>HRC</b> 65	<b>Rib. Miniature</b>	<b>No. of Teeth</b> 4
----------------------------	----------------------	-----------------------------	------------------	-----------------------	--------------------------



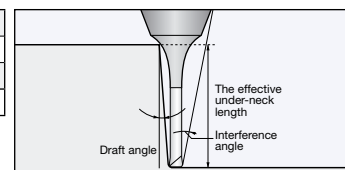
**Oval Geometry for less vibrations**

For tool setup be careful to measure main flute



<b>Carbide</b> Micro Grain	<b>TH45+</b> Nano-PVD Coating	<b>Rake Angle</b> Negative
-------------------------------	----------------------------------	-------------------------------

D	(0 / -0.02)
CR	± 0.01
d	h5
Helix angle	45°



ID Code	Item Code	Z	Size										Actual Effective Length in Incline Angles																		
			D	CR	In	I	dn	L	d	Neck R	θ°	θ <sub>2</sub> °	0°	1°	1.5°	2°	3°														
EP676	ETRP-4010-5-0902-TH	4	1	0.2	5	1	1.066	60	70	10	4	0.9°	8.67	2.91	5.70	5.96	6.17	6.51													
EP677	ETRP-4010-10-0902-TH				10										0.9°	2.91	11.04	11.60	12.03	12.70											
EP678	ETRP-4010-15-0902-TH				15												16.35	17.25	17.89	18.89											
EP679	ETRP-4010-20-0902-TH				20												21.42	22.49	23.22	24.80											
EP680	ETRP-4010-25-0902-TH				25												26.49	27.70	28.52	30.95											
EP681	ETRP-4010-30-0902-TH				30												31.55	32.90	33.79	37.09											
EP682	ETRP-4010-35-0902-TH				35												36.61	38.08	39.03	43.24											
EP683	ETRP-4010-40-0902-TH				40												41.67	43.25	44.54	x											
EP684	ETRP-4010-45-0902-TH				45												46.73	48.41	50.08	x											
EP685	ETRP-4010-50-0902-TH				50												51.78	53.56	55.62	x											
EP686	ETRP-40125-10-0902-TH				1.25												1.25	0.2	10	1.455	60	70	10	7	0.9°	6.62	3.47	11.10	11.65	12.06	12.73
EP687	ETRP-40125-20-0902-TH																		20									11.04	11.60	12.03	12.70
EP688	ETRP-40125-30-0902-TH																		30									16.35	17.25	17.89	18.89
EP689	ETRP-40125-40-0902-TH																		40									21.42	22.49	23.22	24.80
EP690	ETRP-40125-50-0902-TH																		50									26.49	27.70	28.52	30.95
EP691	ETRP-4015-10-0903-TH	1.5	1.5	0.3	10	1.687	60	70	10	7	0.9°	6.47	4.04	11.15			11.67	12.08	12.74												
EP692	ETRP-4015-20-0903-TH				20									11.04	11.60	12.03	12.70														
EP693	ETRP-4015-30-0903-TH				30									16.35	17.25	17.89	18.89														
EP694	ETRP-4015-40-0903-TH				40									21.42	22.49	23.22	24.80														
EP695	ETRP-4015-50-0903-TH				50									26.49	27.70	28.52	30.95														
EP696	ETRP-40175-10-0903-TH	1.75	1.75	0.3	10	1.909	60	70	10	7	0.9°	6.28	4.93	11.24	11.74	12.13	12.77														
EP697	ETRP-40175-20-0903-TH				20									11.04	11.60	12.03	12.70														
EP698	ETRP-40175-30-0903-TH				30									16.35	17.25	17.89	18.89														
EP699	ETRP-40175-40-0903-TH				40									21.42	22.49	23.22	24.80														
EP700	ETRP-40175-50-0903-TH				50									26.49	27.70	28.52	30.95														
EP701	ETRP-4020-20-0905-TH	2	2	0.5	20	2.486	70	80	10	7	0.9°	4.12	4.54	21.29	22.10	22.67	24.86														
EP702	ETRP-4020-30-0905-TH				30									31.69	32.96	33.83	37.16														
EP703	ETRP-4020-40-0905-TH				40									41.80	43.31	44.63	x														
EP704	ETRP-4020-50-0905-TH				50									51.90	53.16	55.71	x														
EP705	ETRP-4020-60-0905-TH				60									62.00	63.89	x	x														
EP706	ETRP-4025-20-0905-TH	2.5	2.5	0.5	20	2.950	70	80	10	7	0.9°	3.76	5.68	21.39	22.16	22.72	24.98														
EP707	ETRP-4025-30-0905-TH				30									31.80	33.02	33.88	x														
EP708	ETRP-4025-40-0905-TH				40									41.90	43.36	44.73	x														
EP709	ETRP-4025-50-0905-TH				50									52.00	53.66	x	x														
EP710	ETRP-4025-60-0905-TH				60									62.09	63.93	x	x														
EP711	ETRP-4030-20-0908-TH	3	3	0.8	20	3.394	70	80	10	7	0.9°	3.39	7.45	21.50	22.22	22.76	25.05														
EP712	ETRP-4030-30-0908-TH				30									31.59	32.54	33.74	x														
EP713	ETRP-4030-40-0908-TH				40									42.03	43.42	x	x														
EP714	ETRP-4030-50-0908-TH				50									52.12	53.72	x	x														
EP715	ETRP-4030-60-0908-TH				60									62.20	x	x	x														

x = no interference

D 1 - D 3:		Cutting Conditions	
Roughing: Page 6 - 7		Semi-Finishing: Page 6 - 7	





Table with 20 columns: ETR, Workpiece Material, D, CR, I, a\_p, a\_e, n, V\_c, f\_z, V\_f, II, a\_p, a\_e, n, V\_c, f\_z, V\_f, III, a\_p, a\_e, n, V\_c, f\_z, V\_f. Title: Recommended Cutting Conditions - Roughing ▽

Table with 20 columns: ETR, Workpiece Material, D, CR, I, a\_p, a\_e, n, V\_c, f\_z, V\_f, II, a\_p, a\_e, n, V\_c, f\_z, V\_f, III, a\_p, a\_e, n, V\_c, f\_z, V\_f. Title: Recommended Cutting Conditions - Semi-Finishing ▽

PLEASE NOTE: All a\_p - values are maximum, please do not exceed!



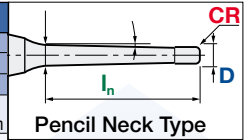








Table with 3 main columns: IV Pre-Hardened Steel (35-45HRC), V Hardened Steel (45-55HRC), VI Hardened Steel (55-65HRC). Each column contains 5 sub-columns: ap, ae, n, Vc, fz, Vr. Rows list various cutting parameters.



Pencil Neck Type

PLEASE NOTE:

The values in these tables are only recommended under the following conditions:

- 1. The use of a machining centre and toolholder with highest precision, concentricity and rigidity
2. All components - including machine and controller - are of the latest technology



Modification if too high:
• Keep fz stable
• Reduce rpm to set best result on non-HQ machines

Table with 3 main columns: IV Pre-Hardened Steel (35-45HRC), V Hardened Steel (45-55HRC), VI Hardened Steel (55-65HRC). Each column contains 5 sub-columns: ap, ae, n, Vc, fz, Vr. Rows list various cutting parameters.

PLEASE NOTE: All ap - values are maximum, please do not exceed!

**Always up to date: Please check our P50 QuickFinder**



**Product Range**

Solid Carbide End Mills



Indexable Milling Tools



WHNSB Drills



Milling Chucks



**Distributed by:**

**MMC Hitachi Tool Engineering Europe GmbH**

Itterpark 12 · 40724 Hilden · Germany · Phone +49 (0) 21 03-24 82-0 · Fax +49 (0) 21 03-24 82-30  
E-Mail [info@mmc-hitachitool-eu.com](mailto:info@mmc-hitachitool-eu.com) · Internet [www.mmc-hitachitool-eu.com](http://www.mmc-hitachitool-eu.com)  
© 2018 by MMC Hitachi Tool Engineering Europe GmbH · 2nd Edition · Printed in Germany