



Feeds and Speeds for RAKU[®] TOOL WB-1404



formula for calculating speed (spindle)

$$n = \frac{V_c \times 12,0001}{D_c \times \pi}$$

$$15715 \text{ [rpm]} = \frac{3084 \text{ [ft/min]} \times 12,0001}{\frac{3}{4} \text{ [in]} \times 3,14}$$

formula for calculating axis feed rate

$$V_f = n \times f_z \times z_n$$

$$285 \text{ [in/min]} = 15715 \text{ [rpm]} \times 0,0091 \text{ [in]} \times 2 \text{ [number]}$$

recommended cutting data for roughing

parameter	symbol	unit
radial infeed:	a_e	[in]
axial infeed:	a_p	[in]
number of teeth:	Z_n	[number]

roughing recommendation		
min.	ideal	max.
- x D_c	0.50 x D_c	0.80 x D_c
0.10 x D_c	1.00 x D_c	2.00 x D_c
1	2	4

recommended cutting data for finishing

parameter	symbol	unit
radial infeed:	a_e	[in]
axial infeed:	a_p	[in]
number of teeth:	Z_n	[number]

finishing recommendation		
min.	ideal	max.
- x D_c	0.01 x D_c	0.10 x D_c
0,01 x D_c	0.10 x D_c	0.50 x D_c
1	2	4

validated cutting data for roughing

Type	D_c [in]	Z_n [number]	V_c [ft/min]	f_z [in]	n [rpm]	V_f [in/min]	a_e [in]	a_p [in]	L_1 [in]	L_2 [in]
torus	$\frac{3}{4}$	2	3084	0,0091	15.715	285	0,394	0,787	3,386	0,787
torus	$\frac{1}{2}$	2	1837	0,0083	14.043	232	0,236	0,472	2,165	0,630
torus	$\frac{1}{4}$	2	919	0,0081	14.043	227	0,118	0,236	0,906	0,315

validated cutting data for finishing

Type	D_c [in]	Z_n [number]	V_c [ft/min]	f_z [in]	n [rpm]	V_f [in/min]	a_e [in]	a_p [in]	L_1 [in]	L_2 [in]
ball	$\frac{3}{4}$	2	3084	0,0236	15.715	742	0,008	0,079	2,638	0,669
ball	$\frac{1}{2}$	2	1837	0,0228	14.043	641	0,005	0,047	2,047	0,413
ball	$\frac{1}{4}$	2	919	0,0224	14.043	630	0,002	0,024	0,906	0,394

parameter	symbol	unit
cutting speed:	V_c	[ft/min]
feed/tooth:	f_z	[in]

speed (spindle):	n	[rpm]
axis feed rate:	V_f	[in/min]

cutting diameter:	D_c	[in]
tool total length:	L_0	[in]
tool unclamping length:	L_1	[in]
tool cutting length:	L_2	[in]

user specifications
selection in the diagram
selection in the diagram

calculation by user
calculation by user

processing specific
processing specific
processing specific
processing specific

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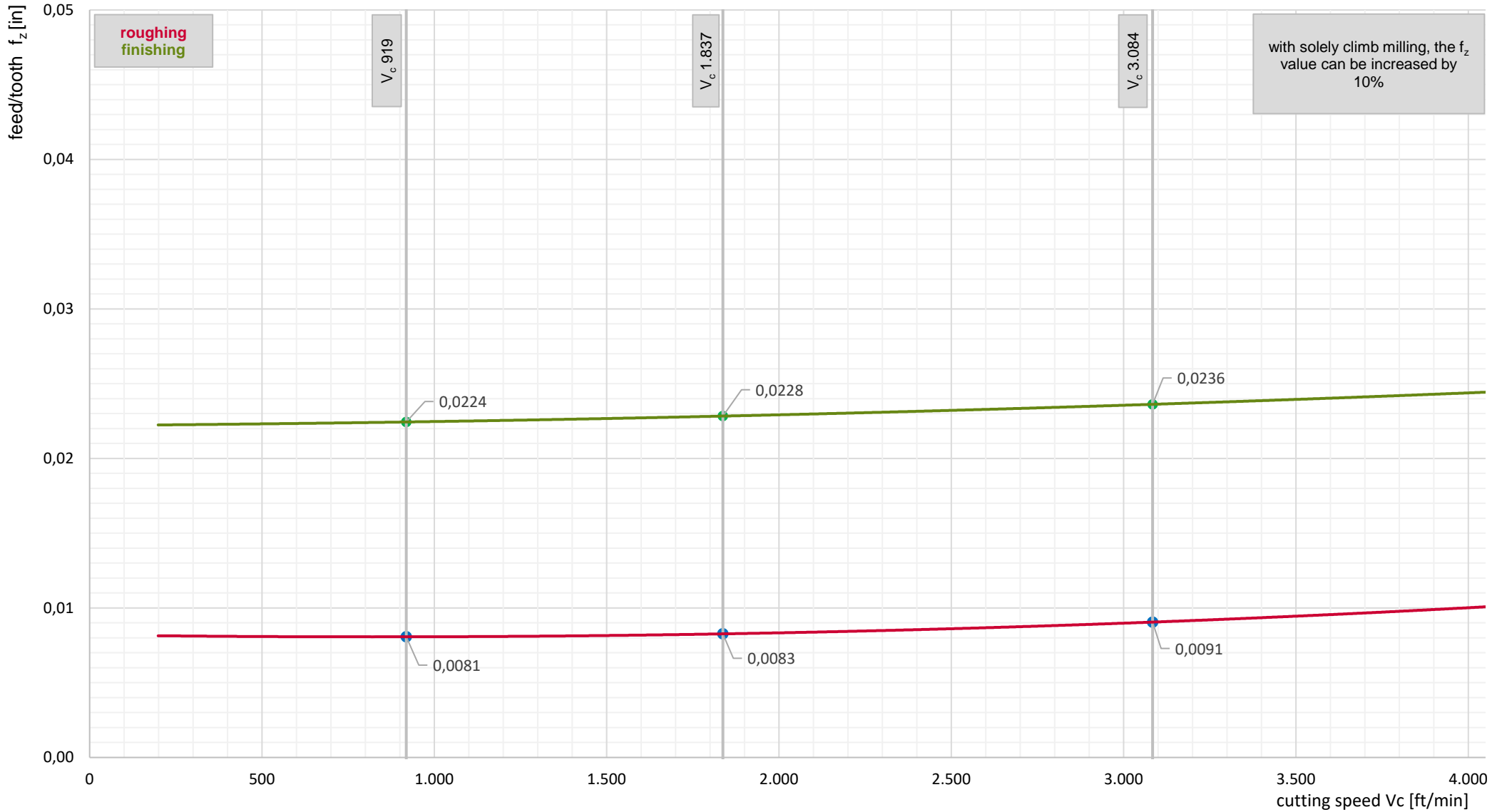
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Our recommendations on the use of the material are based on many years of experience and current scientific and practical knowledge. They are, however, provided without any obligation on our part and do not relieve the buyer of the need for suitability tests. They do not constitute a legal relationship, nor are any protected third party rights what's ever affected thereby.

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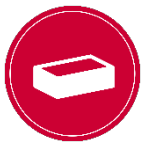


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cutting data used on the demonstrator

sequence of processing	processing strategy	a_e [in]	a_p [in]	offset [in]	f_z [in]	V_c [ft/min]
roughing torus D6	vol. roughing following contour	0,118	0,236	0,024	0,009	919
roughing torus D12	vol. roughing following contour	0,236	0,472	0,005	0,008	1837
roughing torus D20	vol. roughing following contour	0,394	0,787	0,079	0,008	3084
finishing ball D6	zigzag stroke milling	0,002	0,024	0,000	0,022	919
finishing ball D12	zigzag stroke milling	0,005	0,047	0,000	0,023	1837
finishing ball D20	zigzag stroke milling	0,008	0,079	0,000	0,024	3084

tools used on the demonstrator

tool manufacturer	tool type	D_c [in]	L_0 [in]	L_1 [in]	L_2 [in]	Z_n [number]
hufschmied-tools.com/de/	PROTO-LINE / torus	1/4	2,36	0,91	0,31	2
hufschmied-tools.com/de/	PROTO-LINE / torus	1/2	3,94	2,17	0,63	2
hufschmied-tools.com/de/	PROTO-LINE / torus	3/4	4,09	3,39	0,79	2
hufschmied-tools.com/de/	PROTO-LINE / ball	1/4	2,36	0,91	0,39	2
hufschmied-tools.com/de/	PROTO-LINE / ball	1/2	3,27	2,05	0,41	2
hufschmied-tools.com/de/	PROTO-LINE / ball	3/4	4,09	2,64	0,67	2



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