

Feeds and Speeds for RAKU[®] TOOL WB-0700



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	0,0079	14.043	221	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	0,0201	15.715	631	0,008	0,079	2,638	0,669
ball	$\frac{1}{2}$	2	1837	0,0201	14.043	564	0,005	0,047	2,047	0,413
ball	$\frac{1}{4}$	2	919	0,0201	14.043	564	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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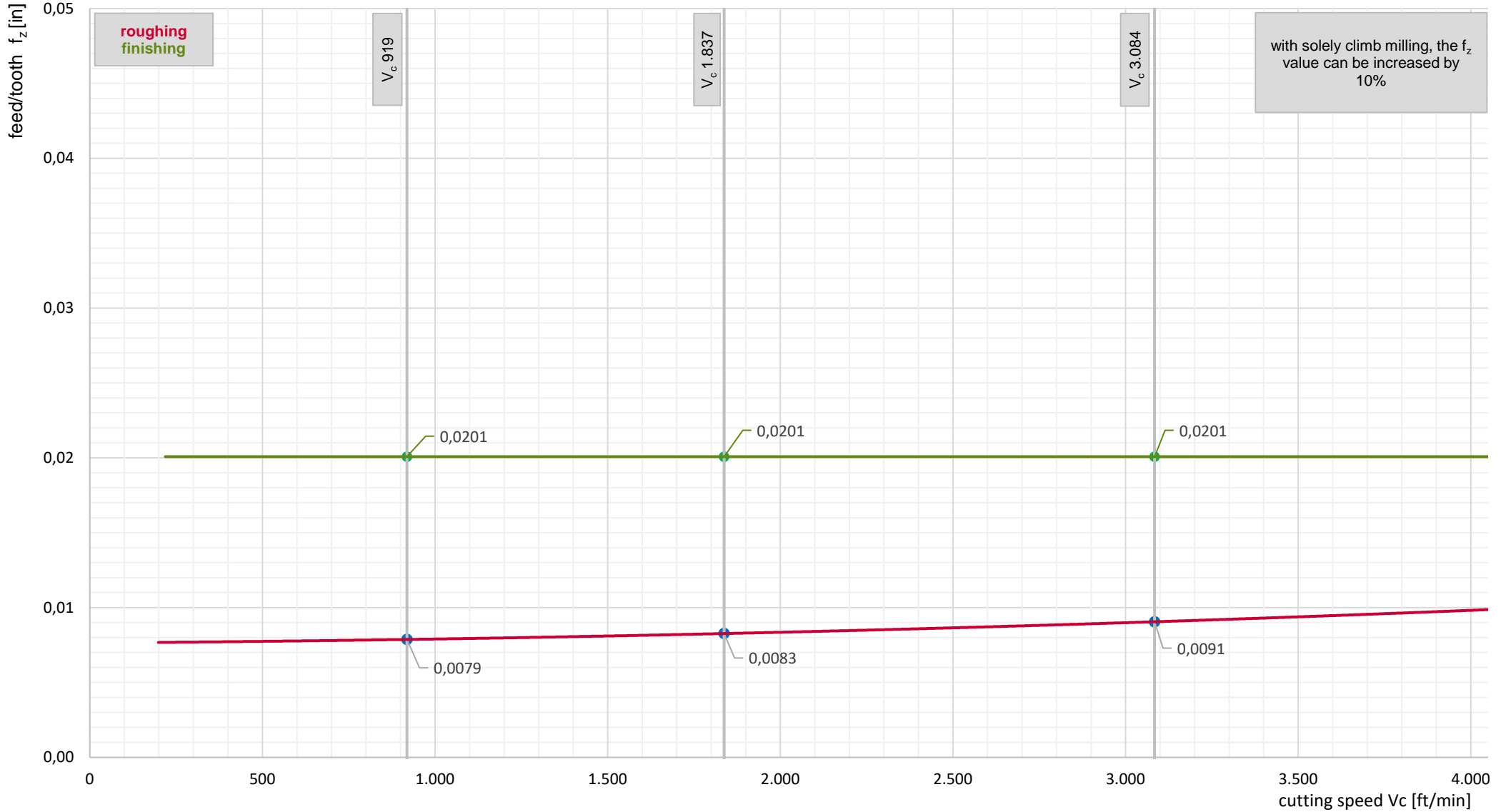
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cutting data used on the demonstrator

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	0,008	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	0,009	3084
finishing ball D6	zigzag stroke milling	0,002	0,024	0,000	0,020	919
finishing ball D12	zigzag stroke milling	0,005	0,047	0,000	0,020	1837
finishing ball D20	zigzag stroke milling	0,008	0,079	0,000	0,020	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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