

Feeds and Speeds for RAKU[®] TOOL SB-0240



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

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

$$857 \text{ [in/min]} = 11452 \text{ [rpm]} \times 0,0374 \text{ [in]} \times 2 \text{ [number]}$$

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	2247	0,0374	11.452	857	0,394	0,787	3,386	0,787
torus	$\frac{1}{2}$	2	1394	0,0364	10.658	776	0,236	0,472	2,165	0,630
torus	$\frac{1}{4}$	2	715	0,0354	10.933	775	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	2133	0,0394	10.867	856	0,079	0,394	2,638	0,669
ball	$\frac{1}{2}$	2	1280	0,0394	9.780	770	0,047	0,236	2,047	0,413
ball	$\frac{1}{4}$	2	640	0,0394	9.780	770	0,024	0,118	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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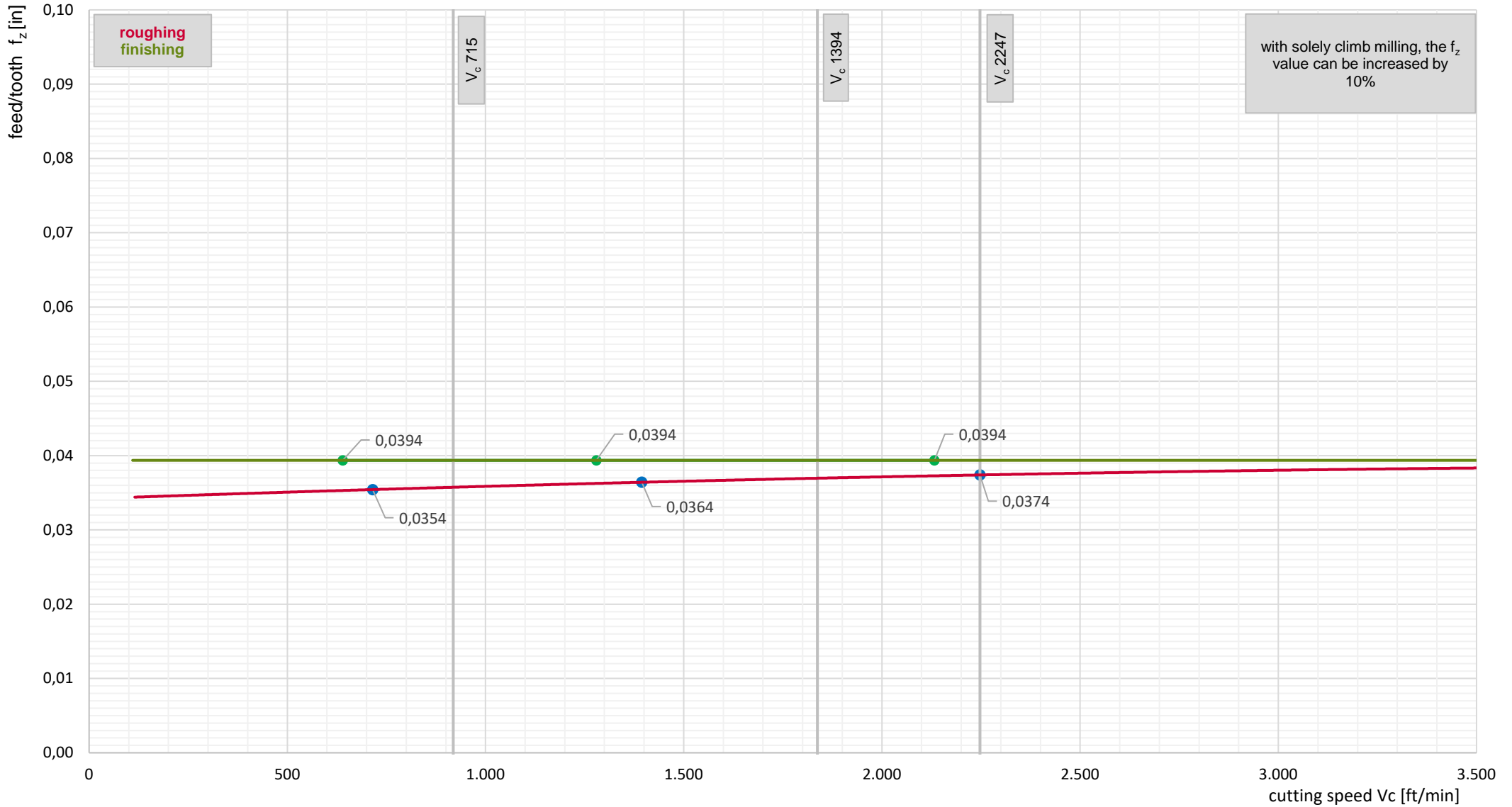
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cutting data used on the demonstrator

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	0,035	715
roughing torus D12	vol. roughing following contour	0,236	0,472	0,047	0,010	1394
roughing torus D20	vol. roughing following contour	0,394	0,787	0,079	0,037	2247
finishing ball D6	zigzag stroke milling	0,024	0,118	0,000	0,039	640
finishing ball D12	zigzag stroke milling	0,047	0,236	0,000	0,039	1280
finishing ball D20	zigzag stroke milling	0,079	0,394	0,000	0,039	2133

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	¼	2,36	0,91	0,31	2
hufschmied-tools.com/de/	PROTO-LINE / torus	½	3,94	2,17	0,63	2
hufschmied-tools.com/de/	PROTO-LINE / torus	¾	4,09	3,39	0,79	2
hufschmied-tools.com/de/	PROTO-LINE / ball	¼	2,36	0,91	0,39	2
hufschmied-tools.com/de/	PROTO-LINE / ball	½	3,27	2,05	0,41	2
hufschmied-tools.com/de/	PROTO-LINE / ball	¾	4,09	2,64	0,67	2



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